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SEPTEMBER 1998

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- **Alice Brannigan's History Of Frequency-Hopping WTAG**
- **Product Spotlight: TEN-TEC's 1254 Communications Receiver And Spectrum System's "FirstRate" Receiver Control Program**

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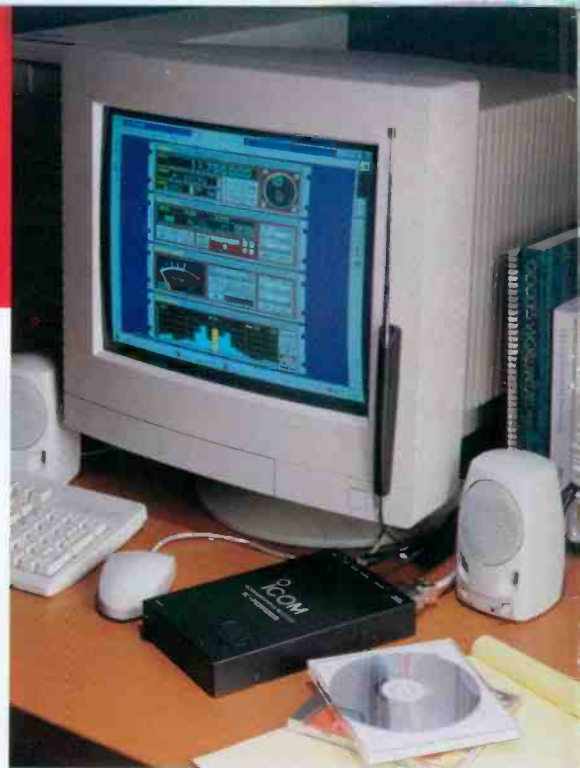
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POPULAR COMMUNICATIONS

SEPTEMBER 1998

VOLUME 17, NUMBER 1

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By J. T. Ward

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By Alice Brannigan



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ON THE COVER: Here's the tower of radio station WKLG, 102.1 FM, "Star 102," Key Largo, FL. Warm weather months are prime time for FM and TV DXing. Beat the heat — try your hand at DXing using E-skip and tropo. Check out this month's "Broadcast DXing" column on page 63. (Photo by Larry Mulvehill)

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Tuning In

AN EDITORIAL

BY HAROLD ORT, N2RLL, SSB-596

Changing Face

Want to see someone's face change really quickly? Mention CB to them. Whether they're a fellow ham, scanner user, friend, relative, or neighbor, their face will change, and it isn't pretty. It's similar to the look one gets from eating a pickle, followed quickly by a whiff of Washington politics. "You're a CBer?" they might quip. Or "CB — don't they use it on the highway and to talk skip?" are common responses.

I saw more than one face change when introducing this topic, but just last week I witnessed another change first-hand at a recent hamfest. One otherwise jovial ham, complete with hat, name tag, and HT strapped to his hip, began talking with me about recent changes in our spectrum, saying, "... yeah, we've got plenty of yahoos on the repeater now-a-days thanks to the No-Code Tech license..." I couldn't let that shot across the bow go unanswered, and proceeded to politely inform the fellow that in my humble opinion, it's *people* — not any particular license class — that ruin the party for everyone. Plenty of the antics I hear on repeaters in my travels involve a fair cross-section of operators from *all* license classes, I told him. But the icing on the cake was when I said something about doofus operators not being unique to ham frequencies, but even ruining it for the *good operators* on 11 meters as well. Suddenly his face contorted, his mouth dropped open, and his head swiveled and gyrated as if mounted on a Slinky when I said this, and, that regardless of the service, radio is radio, people will be people. I was hoping, as his face got redder by the second, that I wouldn't be charged with homicide if he died on the spot! I can see the headline now: "Man Killed With Words — Editor Given The RF Chair."

When he recovered, I got the speech my high school math teacher used to give me, "Man, something's very wrong here... you don't get it, do you?" or some such nonsense. He then proceeded to educate me about how the amateur community "lost" 11 meters, and how there's nothing but trash on CB.

But, truth is, I always get it, and so do

"And please don't tell me these characters are all ex-CBers or unlicensed operators, because I don't buy it for a minute!"

millions of other *good* CB operators who aren't just CBers — many are hams, too. And darned good ones, at that. And, truth be known, these CB operators out there are darned good operators, too. Fact is, one bad apple *doesn't* spoil them all. That's true on CB, and it's true for any other radio service, hobby, or endeavor that involves large cross-sections of our population. Because of the numbers alone, it makes sense that there will be a few hundred doofuses on CB running illegal power, cursing, and wreaking havoc on the channels. The more folks in the pool, the better your chances of getting deliberately splashed by a wise guy.

But think about the relatively small-by-comparison amateur community that prides itself on self-discipline. For the most part, let's face it, it's a highly-disciplined service, but there are a few bad apples in this barrel, too. They're the repeater kerchunkers, over-powered operators, and folks who pedal the off-color, on-air humor. And please don't tell me these characters are *all* ex-CBers or unlicensed operators, because I don't buy it for a minute! Sure, everybody does things differently, but that doesn't make it right. And certainly, there's plenty wrong with CB that will probably never be fixed to everyone's liking; everyone's got a plan for 11 meters, but until you can modify human behavior on an unpolicied and unlicensed service, the problems we discuss all the time — the ones that transformed my ham friend's face — will probably be around a long, long time.

CB, like our amateur service, has a lot going for it; it's less expensive to get on the air, get traffic reports, stay one step ahead of the weather, accidents, and yes, admittedly, get a report on the cop with radar or laser pointed in your direction.

But CB still brings mixed reviews when you mention it to anyone who's

(Continued on page 32)

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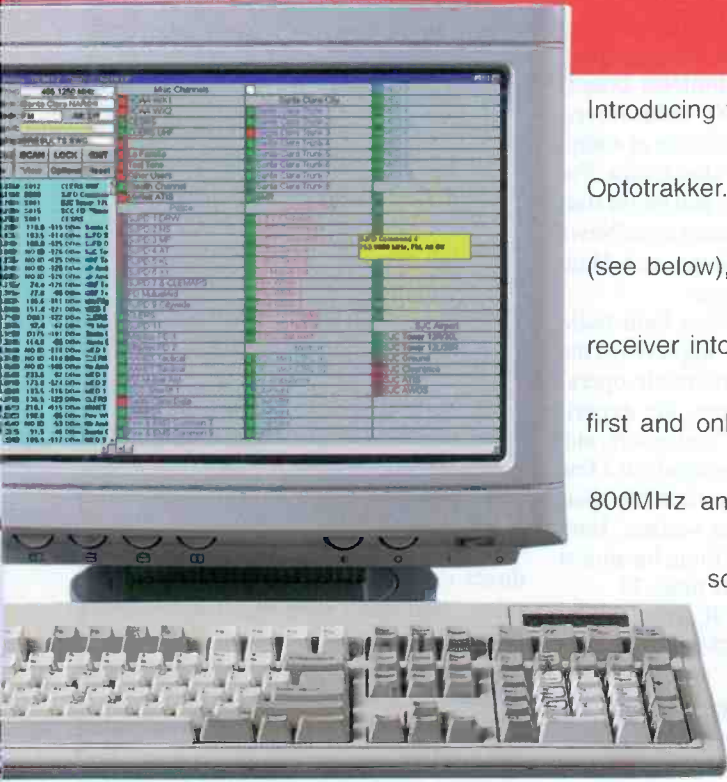
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Pop'Comm P.O.

LETTERS TO THE EDITOR

Each month, we select representative reader letters for our "Pop'Comm P.O." column. We reserve the right to condense lengthy letters for space reasons and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in "Pop'Comm P.O." Address letters to: Harold Ort, N2RLL, SSB-596, Editor, *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801-2909, or send E-mail via the Internet to <popularcom@aol.com>.

Something For Everyone

Dear Editor:

I recently celebrated the 40th anniversary of taking and passing my first FCC license exam at age 11, so I can speak with some level of experience about some segments of that population. Certainly there are the "Big Guns" that are evident on the 75-meter SSB portion of the band with their "Full Gallon" rigs and impressive antenna arrays. There are the DX types operating the pile-ups looking for country #347. These are apparent to anyone with a SW receiver.

However, another group that I associate with are the CW operators. The operation of CW operators is polite in the extreme. These are not the "I can blow you right off the air" types at all. I would never be embarrassed to transcribe the contents of any CW QSO for a Sunday school class. A sub group that seems to be growing rapidly is the QRP operator. These people operate with power levels of 5 watts or less and many use less than 1 watt! I personally have been operating QRP in the 20- and 30-meter bands *mobile* for the past five years. It has been amazing to me the number of fine QSOs, both ragchew as well as DX, yes DX, that I have had with 5 watts and an antenna that is at most eight feet tall. I have worked Japan, New Zealand, numerous European and Caribbean stations with an MFJ transceiver and a set of keyer paddles fastened to the ashtray lid on the console. Forget the preconception that CW is hard or a "special language." If my mom and I could learn the code on our own

when I was 11 and pass a test on it, it just cannot be tough.

QRP operation is attractive because the equipment for it can be much, much less expensive. There are a number of popular little rigs available in kit form for under \$100 giving the beginner some experience in electronics, as well as operating. This seems to be a rapidly growing segment. I subscribe to the Internet QRP-L listserver (a type of bulletin board) which has about 2,500 subscribers. Check out the QRP-L Web site at <<http://qrp.cc.nd.edu/QRP-L/index.html>>. For other ham radio Web sites, you might start with <http://www.yahoo.com/News_and_Media/Radio/Amateur_and_Ham_Radio/> and go from there.

There are numerous other ham radio groups that are not readily apparent to the SWLer, such as the digital mode operators, the satellite operators, the experimenters, the "boatanchor" collectors, etc.

In summary, Gary has pointed out a few of the stereotypes, but, in my humble opinion, has just scratched the surface. Ham radio is a hobby with something for almost everyone. Thanks for your time. 73

Roger B. Whitaker, K9LJB — QRP-1
#1403 <k9ljb@4u.net>

Send In The Doofuses

Dear Editor:

A total disgrace of amateur radio with the vulgar language from people who truly belong in the insane house! Is this why we need a license to operate ham radio? If the newcomers listen . . . they won't get into the hobby. If you don't find it on 14.300, it'll be on 14.313. No license is required if it is OK to operate this way. The FCC and ARRL are laying down on the job. Need fast action.

73,

Gene, KA1LWR

Dear Gene:

People will be people, like we've said, regardless of the radio service. It's truly unfortunate, but the same folks who want to be heard above everyone else in a room full of people are the same arrogant folks giving our hobby in general a bad name. Remember, what the general public hears

and remembers about our hobby isn't always the help we provide during disasters, parades, and local/regional events, it's the baloney they hear first-hand as young Johnny or Susie tunes across the bands, whether using a scanner or short-wave rig.

Can You Say "Outmoded?"

Dear Editor:

I just had to respond to Ted Lisle's assertion (May 1998) that the code requirement for amateurs is imposed by rules of the International Telecommunications Union. Although the U.S. is a signatory to that agreement, the FCC is not obligated to obey the ITU; they are obligated to follow the directives of Congress which created the FCC back in 1934.

In fact, the FCC has already established a precedent of ignoring ITU rules at least once. Remember the CB service? Last time I checked, CB was definitely within the HF spectrum, yet there is neither a code nor a licensing requirement — in direct violation of not one, but two ITU rules! And don't give me that "blanket license" crap, there's no such thing. How about I buy a car and automatically get a "blanket license" to drive? Try it!

No, the real reason there isn't a no-code HF amateur license, and likely won't be anytime soon, is because the good-old boys at the ARRL are vehemently opposed to it. After all, *they* had to learn the code, so everybody else does too. It's become nothing more than hazing — a rite of passage. They are afraid of change, even when it's for the better. With the military and Coast Guard dropping CW use, it's just not a necessity anymore. Can you say "outmoded?" How about "obsolete?" One day the ARRL will have to wake up and smell the coffee. They still claim to represent all amateur radio operators, even though only 20 to 25 percent of all U.S. hams are members. If they don't update their policies, soon they'll wind up as a shell of an organization that nobody pays attention to — and that would be a pity.

John T. Arthur, N2YQM
Belfast, New York

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CIRCLE 160 ON READER SERVICE CARD

Monitoring Our Military On Your Scanner

With A Modest Investment, You'll Be Busy For Hours!

By J.T. Ward

If you're like many radio hobbyists, you bought your first scanner so you could listen to the local police, fire fighters, and paramedics. Or maybe someone gave you an old shortwave radio that had been sitting around gathering dust. And, if you're like most, you've never progressed beyond the basics of cops and robbers, or foreign news and music. But what if I said that you could be listening in on dramatic rescues at sea, or to fighter pilots twisting and turning through the sky? With a relatively modest investment — perhaps even with the equipment you already own — you could be monitoring U.S. and other military forces from around the world. Interested?

Perhaps the easiest of the services to monitor is the United States Coast Guard. The "Coasties" use VHF marine frequencies — available on all but the most basic of scanners — as well as HF (short-wave) frequencies, making them easy to monitor from nearly anywhere. They also use the occasional UHF airband frequency, plus government land mobile frequencies (but more on those later).

The Coast Guard operates 46 Group and two Section offices whose responsibilities include listening for distress calls over VHF maritime channel 16 (**156.800 MHz**). Approximately 20,000 to 25,000 distress calls are made over this VHF system each year. On the Pacific, Atlantic, and Gulf coasts, these stations also listen for distress calls over the international radiotelephone distress frequency of 2182 kHz. These Group and Section offices also make voice broadcasts of weather and navigational warnings over VHF channel 22A (**157.100 MHz** and **2670 kHz**, respectively).

But, I Don't Live Near The Ocean!

Don't think you have to live near the ocean to hear Coast Guard action. The



A Cobra gunship helicopter accompanies a C-130 Hercules transport into a "hot" landing zone during an aerial assault operation. (All photos by the author)

Great Lakes, the Mississippi, the Ohio and other major rivers, and even landlocked bodies like Lake Tahoe on the California-Nevada border have a significant Coast Guard presence. In fact, of the 25 largest U.S. cities, 80 percent are near navigable waterways and within range of the Coast Guard's distress network.

If you do live within 20 miles or so (more with a good outside antenna) of a major lake, river, or other waterway, program **156.800**, **157.050**, and **157.100 MHz** into your scanner's memory banks. The first frequency, 156.800 MHz (Ch. 16), is the international marine hailing and distress frequency. All Coast Guard aircraft and boats monitor this channel constantly, as do most large civilian vessels. When a boater gets into trouble, you'll often hear it here first. The frequency 157.050 MHz (Ch. 21) is a Coast Guard working channel and is restricted to Coast Guard use only. Here in West Central Florida, I frequently hear Coast Guard Group St. Petersburg work-

ing aircraft, patrol boats, and cutters on this VHF channel.

The third frequency, 157.100 MHz (Ch. 22A), is a Coast Guard-public liaison channel. After responding to a call for help on 156.800 MHz, the Coast Guard radio operator will often have the calling vessel switch to 157.100 MHz so the distress channel remains clear for another emergency call. Marine weather warnings and other safety bulletins are also broadcast on this channel.

A Couple Of Shortwave Tips

If you don't live near a major lake, river, or ocean, then dust off that old shortwave radio and tune to **5.696 MHz** upper sideband. This is one of the two primary Coast Guard aviation search-and-rescue frequencies (the other is **8.983 MHz USB**). Communications here can be heard for thousands of miles. On HF, the frequency **2.182 MHz** is used for hailing and distress, much like 156.800 MHz



Aerial refueling communications can be easily monitored by most hobbyists with the right equipment and frequencies.

on VHF. There are many other frequencies used, but these will get you started.

What, you say you don't have a shortwave radio? Or perhaps the one you have doesn't receive single-sideband transmissions? Well, maybe it's time to make that modest investment we spoke about at the beginning of this article.

Small, portable shortwave radios with digital tuning and single-sideband capabilities are available new for \$250 or less. The Sony 7600G, the Grundig YB400, and the new Sangean 909 are a just few examples. The Sangean is also sold as the RadioShack DX-398, and, by most reports, it's an excellent radio.

While these radios certainly aren't in the same league as today's \$1,000-plus tabletop receivers, they do offer features and performance previously found only in top-of-the-line receivers of just a few years ago.

Spend \$500 and you can get a new Drake SW-2, or a used Yaesu FRG-100. Both are table model receivers that offer

excellent performance and a lot of value for the money. Invest in one of these and a good antenna, and you'll be listening to action on the other side of the world.

Shortwave's also a good place to start

listening to other military aircraft besides the Coast Guard. There are several frequencies — **11.175 MHz USB**, for example — that carry a lot of traffic, and you don't have to be near a military base to hear it. These frequencies are part of the U.S. Air Force's Global High Frequency System (**Table 1**). Signals here travel thousands of miles.

In addition to the GHFS network, the Air Force also operates the HF Mystic Star VIP communications net. Air Force One, transporting the President, is regularly heard on Mystic Star frequencies.

The Civilian Aero Band And Internet Resources

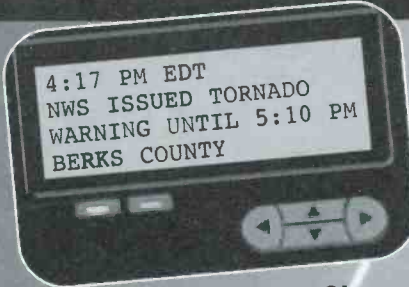
Another good place to start monitoring military aircraft is on the VHF "civilian" aero band, from **118.00 to 137.00 MHz**. All but the most basic of scanners cover the civilian air band, and virtually all military airfields have both UHF and VHF control tower frequencies. Some have VHF approach and departure frequencies as well, although these are often shared with nearby civilian airports.

A good place to look for frequencies

Table 1. Global High Frequency System
(All In USB)

4.724 MHz
6.739 MHz
8.968 MHz
8.992 MHz
11.175 MHz
13.200 MHz
15.016 MHz
17.976 MHz

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Airshows give you a chance to get up close and personal with exotic aircraft, such as this A-10 Thunderbolt II, and the men and women who fly them. Airshows are also a great place to hone your monitoring skills.

for your local airport or military airfield is on the Internet at <http://www.airnav.com>. This site lists not only frequencies, but lots of other handy information as well. There are plenty of frequency directories on the market, too. But recent base closings and unit relocations make their usefulness suspect.

One of the best sources I know of for up-to-date military monitoring information is MilCom@qth.net, an Internet

E-mail listserver. MilCom has members from across the U.S. and overseas, and most members regularly post loggings with callsigns and frequencies heard. For more information on this free service contact the list administrator at JMayson@mindspring.com.

Other Internet information sources not to be overlooked are the services themselves. Each branch of the U.S. military has its own Web site, as do many indi-

vidual bases or units. Particularly interesting are the Coast Guard, U.S. Air Force, and Navy sites at <http://www.uscg.mil/dotinfo/uscg/welcome.html>, <http://www.af.mil/>, and <http://www.navy.mil/>, respectively. While you won't find a lot of specific frequency info here, you will find a lot of good background information that will help you understand what you're hearing on the radio.

Any scanner that receives the VHF-Lo band from 30.00 to 50.00 MHz, the VHF airband of 118 to 137 MHz, VHF marine frequencies from 156.275 to 157.425 MHz; and government land mobile bands from 138.00 to 144.00 MHz, 150.075 to 150.345 MHz, 162.00 to 174.00 MHz, and 408.00 to 420.00 MHz can be used for some military monitoring.

New trunked systems (Table 2) are being installed at many military bases, but with only five to 10 active frequencies, and generally just a handful of users, they're much easier to monitor than large civilian public safety trunked systems. Many large U.S. Navy vessels also have trunked systems.

A large military base is like a small city, usually with all the problems of a civilian community. Thus, support agencies, like law enforcement, crash/fire/rescue, and medical (EMS), respond to many of the same types of calls as do their civilian counterparts. Many of these ground support communications are "in the clear," for anyone to hear, if you're tuned to the right frequency. Search the **30.00 to 50.00-MHz** and **162.00 to 174.00-MHz** ranges for these comms. *Police Call Plus*, available at RadioShack, lists support frequencies for some military bases.

To get really serious about military aviation monitoring, you need a scanner that covers the 225.00 to 400.00-MHz UHF military airband, and that allows you to manually select AM mode in the 138.00 to 144.00-MHz government land mobile range. Generally, only top-of-the-line scanners include these features. Popular current models include the Uniden BC9000XLT base and BC3000XLT handheld; the PRO-2042 table model from RadioShack; and the AOR AR8000 handheld. These radios aren't inexpensive, but for \$350 to \$500, you're buying a lot of capability.

If you're really on a tight budget, Sporty's Pilot Shop in Batavia, Ohio (1-800-LIFTOFF), is marketing a new, 20-channel, air band-only scanner that covers both VHF civilian and UHF military air bands and sells for just \$150.

I recently had the chance to use one of



An Apache gunship flares for a landing as a light observation helicopter and a Huey transport chopper wait in the background.



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SONY

these scanners for a few weeks. The JD-100 Air-Scan, as it's called, is solidly built and worked quite well. The only weak spot appeared to be the antenna, which seemed tuned for VHF, but not particularly sensitive to UHF frequencies. Replacing the stock rubber duckie with a flexible Watson broadband antenna brought an immediate improvement in reception. Watson has also recently introduced a new antenna especially for the aviation monitoring enthusiast. The W-901 "Air-Gainer" is also a flexible antenna, just 8.5-inches long, that's tuned for both civil and military airbands.

Used at home with my Uniden 9000XLT the "Air-Gainer" pulled in aviation signals nearly as well as my external groundplane. One note, however: this is not a broadband antenna. Even strong public safety frequencies in the 155.00-MHz range can be attenuated almost completely. Use this antenna only if you want to maximize your airband reception.

Experienced scanner users may be a bit frustrated by the JD-100 as it's very susceptible to intermod in high signal strength areas, and there's no channel lock-out feature. Problem frequencies must be deleted from the memory completely. Still, for the price, it's a nice radio, and the audio is the best I've heard on any handheld scanner, as might be expected for a radio meant to be used in the high noise environment of an air show.

Tactical Communications

Some of the most exciting military monitoring is the air-to-air and tactical communications found in the 138.00 to 144.00-MHz range of the land mobile band. I listen regularly to F-16 "Fighting Falcons" from the Homestead Air Reserve Base as they practice bombing and strafing at the Avon Park range south of Orlando. I also hear them as they practice aerial combat maneuvers high over the Gulf of Mexico. You'll need to be able to set your scanner to AM mode to receive the aircraft, so when buying a radio for military monitoring, make sure it has manually adjustable receive modes.

While it's not a rule, military cargo and transport aircraft use VHF frequencies much of the time, just like their civilian counterparts. Fighters and bombers, on the other hand, tend to use military UHF frequencies in the 225.00 to 400.00-MHz range when talking to air traffic controllers. There are military operations areas and practice ranges scattered all over the

Table 2. USAF Base Support Trunked Radio System Frequencies

406.3500	Group 1 Trunk
407.1500	Group 1 Trunk
407.9500	Group 1 Trunk
408.7500	Group 1 Trunk
409.5500	Group 1 Trunk
406.7500	Group 2 Trunk
407.5500	Group 2 Trunk
408.3500	Group 2 Trunk
409.1500	Group 2 Trunk
409.9500	Group 2 Trunk
406.5500	Group 3 Trunk
407.3500	Group 3 Trunk
408.1500	Group 3 Trunk
408.9500	Group 3 Trunk
409.7500	Group 3 Trunk
406.9500	Group 4 Trunk
407.7500	Group 4 Trunk
408.5500	Group 4 Trunk
409.3500	Group 4 Trunk
410.1500	Group 4 Trunk

country. Couple that with the fact that radio signals from aircraft at high altitudes can often be heard for more than 100 miles, and you'll see that you don't have to live near a base to tune in the action.

There's an old saying that goes along the lines of "flying is hours and hours of sheer boredom, punctuated by moments of stark terror." Well, military monitoring is much the same, particularly for the newbie. Sort of "monitoring is hours and hours of stone silence, punctuated by moments of sheer elation," when you finally log your first B-2 stealth bomber or SR-71 spy plane.

Military Aircraft Callsigns

One of the most challenging — and frustrating — aspects of military aviation monitoring is figuring out exactly to whom you're listening. Military aircraft use callsigns, not registration numbers or flight numbers as do civilian aircraft. Generally, callsigns are either static, mission-oriented, or tactical. **Static callsigns** are used by aircraft belonging to a specific unit, say a squadron or wing. For example, when training here in Central Florida, the F-16s belonging to the 482nd Fighter Wing at the Homestead Air Reserve Base use the callsigns MAKO and SHARK. When I hear these callsigns on the air I know who's talking.

Common static callsigns include REACH (Air Mobility Command freighters and tankers), JOSA (Joint Operational Support Aircraft, VIP transports), EVAC (medical evacuation flight), SAM (Special Air Mission, very high-level VIP transport), SENTRY (Airborne Warning And Control System, AWACS), and SPIRIT (B-2 "stealth" bomber).

Mission-specific and tactical callsigns can change every day, or even every few hours. The challenge is to catch the pilot identifying the aircraft on the radio, perhaps in conversation with air traffic controllers, or more likely with a command post, base dispatcher or weather briefer.

An excellent callsign resource is the *1997 Military Aircraft Callsign Guide*, published by Dean Charnley, 113 Kelsey Crescent, Cherry Hinton, Cambridge, CBI4XX. The guide can be ordered at the above address, for about \$15 (depending upon the currency exchange rate).

Accessories

Buy a tape recorder. Like most aviation comms, military transmissions are generally very short and cryptic. Until your ear gets used to the sound of a pilot speaking into an oxygen mask while pulling nine "Gs," a tape recorder will let you go back and review what you heard and pick out information, like frequency changes and callsigns, that you may have missed.

A Y-connector will let you plug a VOX (voice-operated) recorder and an external speaker into the earphone jack on your scanner so you can listen and record at the same time.

There's no substitute for a good antenna mounted high up on a tower. The Diamond discone and Grove Scanner-beam work well. But even if you live in a ground-floor apartment like I do, you're not out of luck. I cut the elements on an inexpensive groundplane to match the center of the 225 to 400-MHz range. A second groundplane covers the 30 to 50-MHz and 138 to 144-MHz ranges. Both are mounted on the same five-foot-tall mast which sits on my patio.

My HF (shortwave) antenna is a 50-foot length of clothesline wire that snakes around the patio roof. Ideal? Of course not. Would I like to have a discone 100 feet up and a nice dipole stretched across the yard? Darn right! But the point is, even with my far-from-ideal situation, I still tune into some pretty exciting listening, and with a little effort and ingenuity, so can you. ■

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WTAG Picked Its Own Frequency!

These Early Newspaper-Owned Stations Were Really Shifty!

By Alice Brannigan

On April 29, 1924, the Radio Division of the Department of Commerce awarded a new broadcasting license to the C.T. Sherer Co., Worcester, Massachusetts. This was for WDBH, a 100-watt station to be operated on 268 meters (that is, 1120 kHz). WDBH went on the air two days later from the C.T. Sherer Co. department store at 50-52 Front Street, corner of Commercial Street, in downtown Worcester. The Western Electric transmitter had been installed atop the building.

By the beginning of the following year, a new Western Electric 1-B 500-watt transmitter had been installed, although WDBH remained licensed for 100 watts. Also, at that time, WDBH became one of the several scattered East Coast stations to link up with New York's WEAJ for occasional rebroadcasts in an early networking experiment.

In March of 1925, WDBH changed its call letters to WCTS, and within weeks the station began mailing repeated complaints to Washington about its 1120-kHz frequency assignment being unsuitable, and asking for a new assignment. Meanwhile, as of April, the power was upped

to 500 watts.

In September, the station was still operating on 1120 kHz and had ended its pleadings for assignment to a new frequency. That was about the same time WCTS was sold to the *Worcester Telegram* newspaper. A month later, the newspaper acquired some broadcasting equipment from the former WTAG, a deleted station in Providence, Rhode Island. In fact, WCTS even changed its call letters to WTAG, which stood for *Worcester Telegram and Gazette*, although there was no actual relation to the former Providence station.

As of the fall of 1926, WTAG's new owners were again asking Washington for another frequency assignment. At some point around that time, the station simply elected to shift to 695 kHz, even though it was still licensed for 1120 kHz. During that era of no radio regulation, it was common for stations to change frequency or power levels at will, hoping to stake a claim on more favorable facilities once new legislation became enacted. In November of 1926, rebellious WTAG became a charter member of the NBC Network, being one of the first 25 NBC Red Network affiliates. The station's stu-

dios were relocated to the newspaper offices at 18 Franklin Street, though the transmitter and antenna masts remained back on Front Street.

In 1927, the newly-empowered FRC assigned WTAG to 580 kHz and the power was cut back from 500 to 250 watts. The station became known as The Voice from the Heart of the Commonwealth. In early 1931, a new RCA 1-B transmitter was installed at Front Street, with the old Western Electric 1-B relocated to Franklin Street where it was to serve as a stand-by unit. The antenna on the roof above the penthouse at Front Street was a four-wire L-type. This stand-by antenna remained in place into the 1980s.

As of April, 1932, the power was brought back up to 500 watts. During the summer of 1934, the main transmitting location was changed to 20 Franklin Street. One of the antenna towers was installed on top of the four-story Telegram Building there, and the other was placed on the nearby Bancroft Hotel.

Authority to move the transmitter to Shrewsbury St., Holden, Massachusetts, and to increase power to 1 kW was granted in May of 1936. One 254-foot-high



This veri letter from WTAG, dated 1931, provides sparse information and isn't signed. (Collection of the late Joseph Hueter, in the Pop'Comm archives.)

A 1981 photograph of the WTAG transmitter building in Holden, MA. (Photo by Jan D. Lowry, Castaic, CA) →





"Tex" Perham, shown at the transmitter he designed and built for WJAM for the Cedar Rapids Gazette. The photo was taken the first the day WJAM went on the air in 1922. This station later became WMT.

Blaw-Knox vertical radiator and two 354-foot-tall towers comprised the full-time directional antenna system. These were self-supporting steel towers. New studios in Franklin Street were opened in May of 1937.

WTAG was known as The Voice from the Heart of New England as the end of the 1930s approached. In 1939, the station was granted permission to increase its daytime power to 5 kW (1 kW at night). In 1941, authority to run 5 kW at night was granted, and, by the end of that year, WTAG was a full-time 5-kW station. Two Blaw-Knox towers were added to provide for different day and night directional patterns.

In April of 1943, WTAG dropped out of the NBC-Red Network and joined CBS. CBS had been previously carried locally by WORC, which then signed-on with NBC Blue. The CBS affiliation lasted until early 1959 when the station decided to go it as an independent. However, as of July of 1963, it had rejoined the NBC Radio Network. During the 1970s, WTAG programmed a diversified MOR music format. In September of 1982, the station hooked up with NBC's new TalkNet for its night-

time telephone talk programs, and in '83 WTAG debuted its Adult Contemporary/Talk format.

In August of 1987, a year after the Worcester Telegram was sold, WTAG was sold for \$2.8-million to the Knight Communications Corporation. Soon after, the station installed Motorola C-QUAM gear and began AM stereocasts. The studios were relocated from Franklin Street to Stereo Lane, Paxton (home of co-owned FM station WSRS), though the station remained licensed in Worcester.

Today WTAG is the fourth oldest continuously licensed AM station in Massachusetts. It operates with 5 kW on 580 kHz and with different day and night directional patterns.

Thanks to Broadcast Pro-File for granting us permission to excerpt material from their lengthy research report on WTAG. B-PF is a professional service that can, for a reasonable fee, furnish highly detailed histories about all American AM and FM stations, past and present. A complete catalog is available for \$1. Their address is Broadcast Pro-File, 28243 Royal Road, Castaic, CA 91384-3028.

Shifting Around In Iowa

Reader Dean Striley, KØRN, of Brooklyn, Iowa, forwarded us an interesting piece about the Cedar Rapids Gazette's entry into broadcasting back in 1922. It was written by Dave Rasdal and appeared recently in the Gazette. This sent us digging into our dusty files, and we dug up plenty about fancy dancing between several early newspaper-owned broadcasting stations in Iowa.

Dave Rasdal noted that Cedar Rapid's first two air one day apart back in 1922. Ham operator Harry Paar, 9CNF, who had earlier broadcast via 9XBK, his experimental license, got his commercial license as WKAA on July 29. This was from home at 1444 2nd Avenue East. WKAA was paid for by the Cedar Rapids Republican-Times newspaper.

A day later, station WJAM, financed by the rival Cedar Rapids Gazette, went on the air with 20 watts on 1100 kHz. WJAM was located at 322 3rd Avenue S.W. in the garage of its designer and builder, Douglas M. "Tex" Perham. The 115-foot antenna was located on the roof and brought in reception reports from

CEDAR RAPIDS BROADCAST COMPANY

CEDAR RAPIDS, IOWA

OPERATING
Broadcasting Station
KWCR

SUMNER D. QUARTON
President and General Manager

J. E. Hunter
1722 N 18th street
Philadelphia, Pa.

Dear Friend:

We thank you for your communication of reception of our radio station during its DX program on January 5. Your reception is herewith verified.

KWCR, operating on 1310 kilocycles 100 watts power, first came on the air January 5, 1932 with its new transmitter, which is with the studios located in Hotel Montrose.

We broadcast daily from six-thirty a.m. until ten p.m. excepting Saturday, when we are on the air until midnight. Soon we anticipate conducting weekly DX programs starting at midnight on Saturday.

We shall be pleased to hear from you again, and if ever in Cedar Rapids we extend to you a cordial invitation to visit our studios.

Yours sincerely,

DX Department

KWCR evolved from WKAA, another early Cedar Rapids station financed by a newspaper. It was eventually sold to the owners of the Des Moines Register and Tribune moved there to become KRNT. (Collection of the late Joseph Hueter, in the Pop'Comm archives.)

1380 KCS. **K S O** 500 WATTS.

Iowa Broadcasting Company

This is to verify your report of reception of our program of _____

Clarinda, Iowa, March 20, 1932.

R. B. Whitcomb Engineering Dept.

The Station Southwestern Iowa Listens To.

KSO was a station in Clarinda (when this 1932 QSL was issued) that was purchased by the owners of the Des Moines Register and Tribune and moved to that city in early 1933. This QSL states that KSO was running 500 watts, which was double the power for which KSO was licensed at the time! (Courtesy Tom Buckley, Washington, D.C.)

Minnesota to near the Missouri border. WJAM helped build its local audience by awarding \$30 and \$40 radios as prizes to citizens who signed up various numbers of new *Gazette* subscribers.

WJAM's schedule, like many early stations, didn't include a lot of daily air time. Still, it made good use of what time it had. In 1922, it scooped the Chicago stations by 10 minutes with World Series results. Once, the police chief got on the air to

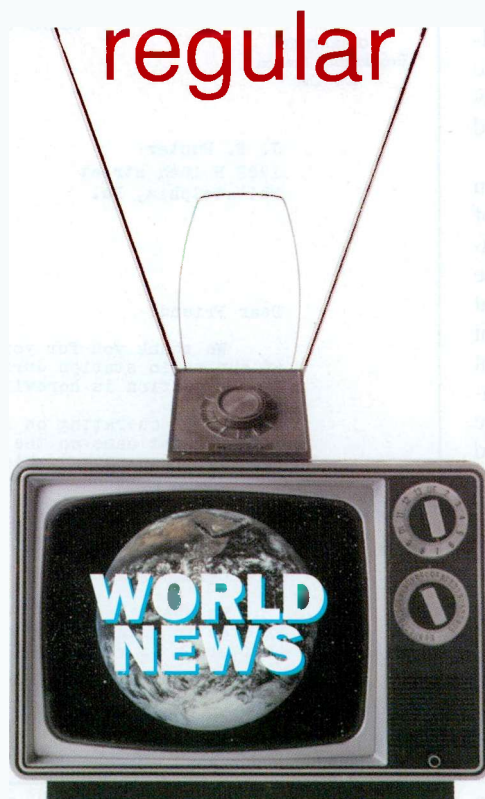
warn local residents of a swindler. The station was proud to announce the name of the winner (from 6,000 entrants) of a contest to devise a slogan for Cedar Rapids.

As of 1927, WJAM had moved to 780 kHz with 100 watts, and the following year it had increased its power to 250 watts after shifting to 1250 kHz. But 1928 saw even bigger changes for the station, when it was sold to the *Waterloo Morning Tribune*. WJAM was moved to Waterloo

and its call letters changed to WMT (to represent the new owner's initials). Once in Waterloo, the station was assigned to 600 kHz and authorized to double its power to 500 watts (250 watts at night). It became a CBS affiliate and, as of September, 1934, was running 1 kW.

By 1926, WKAA, Harry Paar's Cedar Rapids station, had changed its call letters to KWCR and was running 500 watts on 1080 kHz. With WMT moved to Waterloo, KWCR had become Cedar Rapids' only radio station. A year later though, KWCR had to shift to 780 kHz and drop to 250 watts, then it was told to shift to 1250 kHz. By 1929, continuing federally imposed reallocations and regulations had ultimately reduced KWCR to a 100-watt so-called "one lung" station on 1310 kHz splitting time on that frequency with small stations in Boone and Fort Dodge, Iowa. In late 1931, NBC Blue Network affiliate KWCR was sold to John and Mike Cowles of the *Des Moines Register and Tribune*, who were getting into radio. In February of 1933, they would buy 250-watt (100-watt nights) KSO, an NBC Blue affiliate, change its location from Clarinda to Des Moines, and shift it from 1380 kHz to 1370 kHz.

In 1932, the Cowles brothers quickly



moved their new Cedar Rapids acquisition, KWCR, onto the 7th floor of the attractive Hotel Montrose, replacing Harry Paar's old homebrewed transmitter with a new one. They brought in two broadcasting professionals, brothers Sumner and William B. Quarton, to run KWCR. It was a first-class operation. By May of 1932, Sumner Quarton had gotten KWCR shifted to 1420 kHz where it didn't have to share time, and, less than a year later, approval to shift to 1430 kHz where KWCR could run 250 watts during the day (100 watts at night). By September of 1934, Quarton had been able to get KWCR a 500-watt daytime (250-watt night) license. But, after all was said and done, KWCR remained no more than a 500-watt daytime voice trying to serve a big city.

Waterloo was smaller than Cedar Rapids, yet it had WMT, a station with an enviable frequency and a 1-kW full-time license. So, the Cowles purchased WMT, and, in March of 1935, shifted its location from Waterloo back to its original home in Cedar Rapids to replace KWCR as the local NBC Blue outlet, turning WMT into the most powerful NBC Blue affiliate in Iowa. At the same time, Cowles moved KWCR to Des Moines, where they re-

named it KRNT, to still operate with 500 watts (250 watts at night) on 1430 kHz.

After WMT left Waterloo in 1935, that city didn't get another station all its own until 50-kW KXEL opened in 1942 with an NBC Blue affiliation. In 1943, the FCC told NBC to divest itself of one of its two networks. NBC then sold its Blue Network and the former Blue Network affiliates joined the newly created ABC Network. WMT continued to maintain its studios in Waterloo (at the Russell Langdon Hotel) until 1947.

When KRNT arrived in Des Moines, it was still officially an NBC Blue affiliate, but since Cowles' KSO was already the established local NBC Blue outlet, Cowles changed KRNT's affiliation to CBS. CBS' primary competition in Des Moines was WHO, a 50-kW clear channel giant, and the only Iowa station carrying the NBC's premium Red Network's programs. By early 1935, KSO, was running 1 kW (500 watts at night) on 1320 kHz. In June of 1935, Cowles had swapped their two Des Moines stations' frequencies. Now, KRNT, with its preferable CBS programming, could run at 1 kW on 1320 kHz. KSO, with its less desirable NBC Blue Network programming, was relegated to 1430 kHz, where it was

stuck with only 500 watts.

Think about the sequence of events surrounding WMT, KWCR, KSO, and KRNT and marvel at the amount of foresight, planning, logistics, resources, and paperwork that went into it all.

In 1944, WMT was purchased by American Broadcasting Stations and its power was raised to 5 kW. As of 1946, WMT had its transmitter in Marion, with studios in Cedar Rapids' Paramount Building. WMT continues on the air, under new ownership, with 5 kW on 600 kHz from 600 Old Marion Road, N.E.

As for the *Cedar Rapids Gazette*, in 1947 the newspaper got back into broadcasting when it opened station KCRG on 1600 kHz. This popular 5-kW station now competes for listeners with Cedar Rapids' three AM other stations, including WMT, the station the *Gazette* itself created 76 years ago!

We want to hear from you. Please pass along your old time radio QSLs (good copies will do), station photos, picture postcards, newspaper clippings, station directories, memories, etc. Our E-mail address is <Radioville@juno.com>, or you can use regular mail, sent to *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801. ■

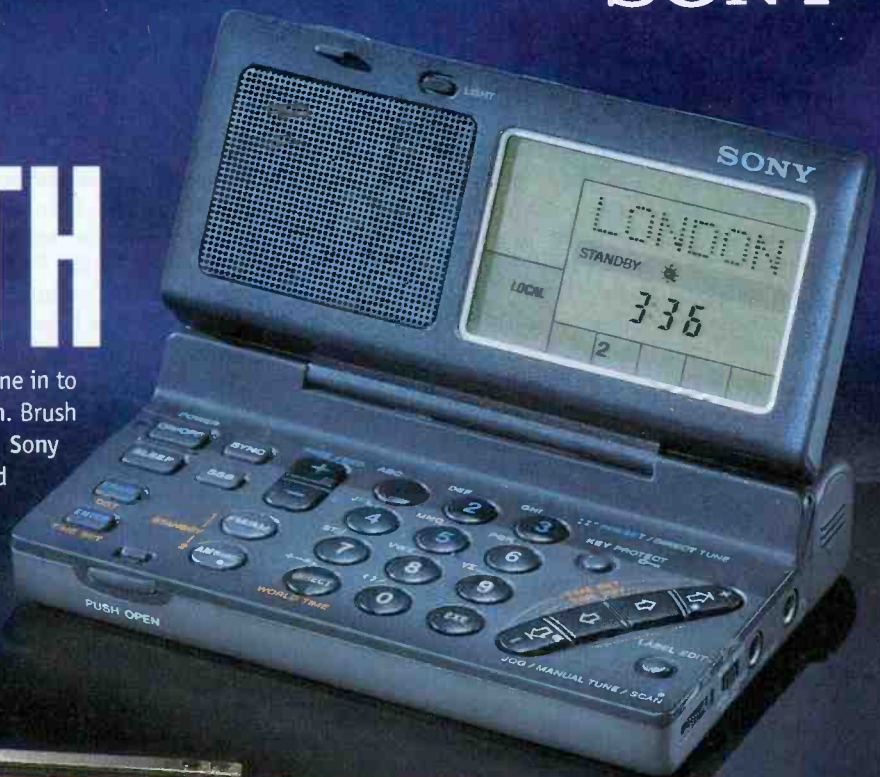
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INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Enhanced Signal Propagation

OK class, it's time for a pop quiz. Put away all of your reference materials and get set for a series of questions with multiple-choice answers. We're going to see who knows why late summer VHF and UHF radio signals travel over greater distances than they normally do in the winter and spring.

Everybody ready? Here comes your first question:

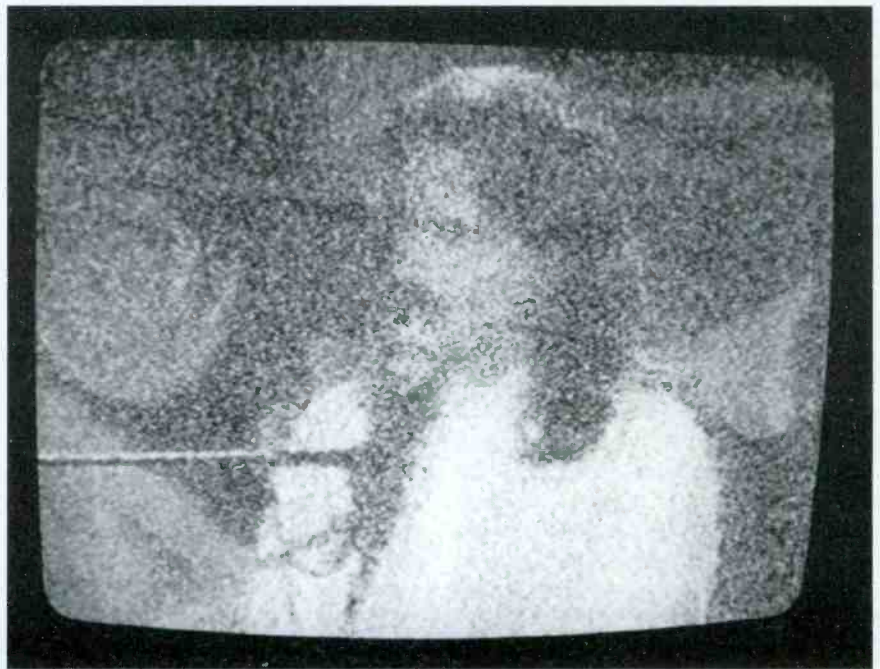
Q. What summertime and early fall seasonal factors may enhance the distance from which you can pick up very-high-frequency and ultra-high-frequency radio waves?

- a. Sporadic-E skip
- b. Increase in solar cycle activity
- c. Atmospheric anomalies
- d. All of the above

Sporadic-E skywave "short skip" will regularly prevail from June through September. While the months of August and September are on the down side of the sporadic-E June 23 peak, August and September still receive their share of VHF skywave reception.

E-skip is characterized by exceptionally strong FM signals that break squelch and provide full quieting reception for about 10 seconds. They then take a quick nosedive into the noise for about three seconds, and then come back in again, full signal strength and full quieting, for another 10 to 20 seconds... and then take another nosedive. This goes on for hours. E-skip is caused by heavily ionized patches within the E-region of our ionosphere reflecting VHF low-band and high-band signals over a path of approximately 800 to 1,000 miles. Occasionally, double E-skip may occur, yielding 2,000-mile reception results.

E-skip may sometimes occur as high as 160 MHz, but reception on VHF high-band may only last for five or 10 minutes. Reception down on low-band should last for several hours, and may extend up to 8 p.m. local time. After 8 p.m., there is generally no reception until the next morning. If you're a scanner listener, public safety calls from 30 to 50 MHz



Long-range TV reception (700 miles) from a five-day tropo duct.

should roll in every afternoon in July and August, with morning and evening two-hour events in September.

We ARE increasing up to the peak of solar cycle 23. The peak should occur around the millennium. The solar cycle has the most influence on the F-layer of the ionosphere, which, this summer and fall, may provide us with low-band 30 MHz to 50 MHz reception up to 3,000 miles away. These signals generally last 20 to 30 seconds before they take their quick nosedive. The total duration of the "opening" may only last for five or 10 minutes. Unlike E-layer skip, F-layer skip is more influenced by the solar cycle than by ionospheric E-openings created by wind shears and ultraviolet radiation within the E-region.

Atmospheric conditions may also trigger longer-than-usual conditions on all VHF and UHF frequencies. So let's get started with our next question and see how much you know about what's happening in the atmosphere. All of the above answers were correct.

Q. What weather condition triggers long-range VHF/UHF signal reception on both scanner frequencies as well as ham radio frequencies?

- a. Sunspots
- b. The 11-year solar cycle
- c. A high pressure system
- d. Surface winds

Our local weather is not necessarily influenced by the solar cycle or the number of sunspots — at least, not that we can prove at this time.

Surface winds won't push a VHF signal any further than it naturally goes: 4/3 over the horizon. Four-thirds is a natural VHF horizon range from normal weather refraction phenomena.

Your answer should have been a high-pressure cell system. When high pressure forms over a region, the upper air is heavier, so it sinks down. When it squashes the air below it, this lower layer of air heats up, stratifies, and caps a region with a dome of air that locks in smog, haze, and smoke. August and September are good months for stable high-pressure sys-



Tropo inversion hanging over the Great Plains.

tems to sit over the United States triggering longer-than-usual VHF/UHF transmission and reception.

Q. What is the atmospheric phenomena that creates a radio duct?

- a. Surface cohesion
- b. High cirrus clouds
- c. Ionospheric propagation
- d. Temperature inversion

What happens when you squish air in a tire pump? It gets warm, doesn't it? Subsiding air gets compressed when it meets the surface of the Earth, and this leads to a temperature inversion. When the temperature inversion becomes great enough, it will create a radio duct that may cause VHF and UHF radio waves to travel hundreds, and sometimes thousands, of miles along that super-heated stratified air boundary layer.

Q. What temperature change can trigger a VHF/UHF duct capable of supporting long-range, two-way communications and reception?

- a. 10 degrees
- b. 1 degree
- c. 30 degrees
- d. 2 degrees

Studies have shown that signals from 50 to 10,000 MHz may be refracted along the surface of the Earth hundreds and thousands of miles from temperatures within a tropospheric duct that are 10 degrees higher than air below and air above. Experts disagree whether the VHF signal is trapped within this temperature inversion, or if it rides along the top or the bottom of the inversion. However, all

experts agree that 10 degrees is the magic number that can usually trigger super-refractive conditions to keep the VHF signal within the stratified warm air boundary layer.

Q. What emission modes may be supported by a tropospheric duct on VHF and UHF frequencies?

- a. Any and all
- b. CW and SSB only
- c. Narrow-band direct printing
- d. Pulse width only

Once the tropospheric duct forms, *any* type of emission on VHF and UHF may be supported within the duct. This

includes television signals at 6 MHz bandwidth. In fact, monitoring your local VHF TV channels 2 through 6 should show you signs of a tropospheric duct, especially on those unused channels in between your local channels. When the duct is well formed, 5-kHz FM signals will sound crystal clear, and so will any other modes, too.

Q. How can you determine that the 800-mile-away police department on 154.805 MHz is coming in from ducting rather than sporadic-E skip?

- a. The signals go up and down about every 10 seconds
- b. The signals remain steady for many hours and sometimes days
- c. The signal regularly "rolls" from phase distortion
- d. Every 10 seconds the signal takes a quick fade and return

Atmospheric tropospheric ducting will remain in place in the presence of a high-pressure cell sitting over you and the distant receiving and transmitting station. If there is little wind to disturb the cell, the temperature inversion remains stratified for hours on end, yielding almost no change in signal quality and signal reception. However, as the duct begins to "blow out," the signal will gradually get weaker and weaker until it finally disappears.

Q. What antenna polarization is best for tropo ducting reception on public safety frequencies?

- a. Vertical
- b. Horizontal
- c. Circular
- d. Polarization is not important

If you were receiving an ionospheric

EDITOR'S NOTE:

We're listening to you! Next month, we're expanding Ken Reiss' "ScanTech" column to include scanning topics normally covered in the "Scanning The Globe" column. Ken, who will pen the expanded column, has been an avid radio enthusiast longer than he cares to remember, and also hosts AOL's weekly scanning forum, so look for some new, exciting scanning topics in the coming months in "ScanTech."

Send your scanning questions, photos and suggestions to Ken Reiss, c/o "ScanTech," Popular Communications, 25 Newbridge Road, Hicksville, New York 11801 or via E-mail to <Armadillo1@aol.com>. Best wishes to Chuck Gysi upon his departure from the magazine.

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skywave from sporadic-E or F-skip, signal polarization may continue to constantly roll, so almost any type of good antenna setup will work. But tropospheric ducting usually channels the electromagnetic wave along the same polarization as how it entered the tropo duct. Since most public safety FM communications on VHF and UHF are vertically polarized, a vertically polarized antenna will be your best bet for the *same* polarization. Tests by amateur radio operators *prove* that best transmission and reception to a distant station must keep the *same polarization*.

Q. What is a good frequency to tune in to discover distant tropo stations coming in from a duct?

- a. WWV time signals
- b. National weather channels
- c. Local TV signals
- d. Local FM signals

To discover a tropo duct, you need to tune OFF of local signals and listen in between them to discover weaker signals. In fact, during a good tropo duct, if you listen long enough, what you thought was a strong local station might actually be a very strong distant station! Always know what channels are active in your area, and stay away from them for tropo reception.

A great way to discover tropo ducting is to tune in unused local TV channels, or unused VHF FM weather channels. If 162.550 MHz is active in your area, try 162.400 MHz or 162.475 MHz. If you have TV channel 2 and 5 in your area, try TV channels 3 and 4 using an outside TV antenna.

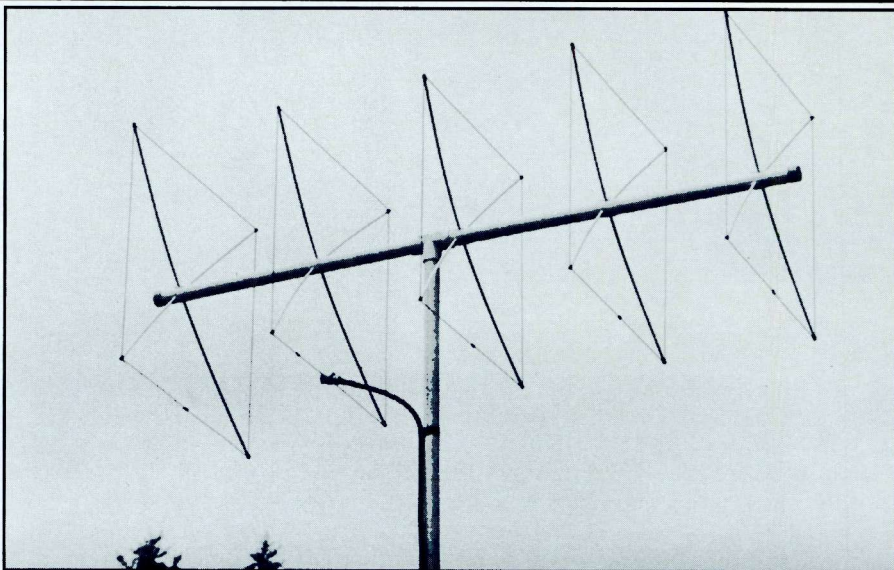
Q. Tropo ducting only occurs during summer months.

- a. True
- b. False

Tropo ducting *usually* occurs during summertime periods where stable high-pressure systems form, but it can occur anytime. This includes the Pacific High allowing California and Hawaii stations to enjoy FM stereo reception both ways, the Bermuda High for those of you down in Florida wanting to pick up foreign TV and VHF/UHF broadcasts, and the Atlantic High that ultimately might give us a shot on tropo ducting across from the U.S. to Europe. And, if you live in the middle of our country, expect good tropo conditions anytime you can spot a stable high-pressure system and the air outside is hot and smoggy.

Q. What outside weather condition may indicate good tropo conditions?

- a. High clouds and breezy
- b. Hot and windy



A directional VHF antenna will improve your tropo results on 2-meters.

- c. Hot, muggy, and smoggy
- d. Cold, undisturbed air

When do you see a mirage out in the desert? It's usually on a hot, windless day. The same thing is true for tropo ducting, which usually forms when the local weather gets stagnant and there is nary a breath of wind around. When this condition extends over several hundred miles, it will surely trigger a VHF/UHF opening.

Q. Tropo ducting decreases with an increase in frequency.

- a. True
- b. False
- c. Undecided

Amateur radio operators tune into propagation beacons down at the bottom of their 50-, 144-, 432-, and 1296-MHz bands. There are also X-band beacons at 10,000 MHz. During periods of tropo ducting, I have observed simultaneous beacon reception on four different ham bands, and I have NEVER experienced higher bands going up in signal strength where the lower bands have decreased. Rather, I find that they all proportionately go up and down together in signal strength as the tropospheric duct undulates over a several thousand or several hundred mile path.

But other hams may disagree, indicating they can sometimes hear a 432-MHz beacon 800 miles away, and not hear the 2-meter beacon at all. Maybe. But I bet their 2-meter antenna is broken. So I would suggest starting at the bottom, and working up!

Q. On what group of frequencies is tropo ducting most pronounced?

- a. 30 to 50 MHz
- b. 140 to 170 MHz

- c. 430 to 470 MHz
- d. 800 to 1000 MHz

As we go lower in frequency, wavelength becomes longer. The longer wavelengths require a larger tropospheric duct aperture. Most temperature inversions are confined to within a 100- to 200-foot band of stratified air. Somewhere within this band of warmer air is an area that captures the VHF or UHF wave front and carries it along the entire route of the duct.

The most popular frequencies for enjoying rock-solid tropo ducting results are in the VHF high band, from about 100 MHz to 170 MHz. While strong FM music stations are a good target for reception, try public safety frequencies in the 154- to 155-MHz region, too. You may be surprised by how far they can travel during a high-pressure cell.

You have about 30 days left to enjoy the effects of predictable summertime and early fall tropospheric ducting. While tropo ducting can form whenever there's a high-pressure system, that 10-degree temperature inversion usually occurs only in late summer. But there are surprises when it comes to tropo ducting, and if you have a good outside scanner antenna system, you, too, can capture signals from literally hundreds of miles further than you might normally hear.

Has anybody out there heard something from further than 100 miles away via tropo ducting? If so, drop me a QSL card or postcard here at *Pop'Comm*, and I'll publish some of the best catches that have ridden along that stable high-pressure system for more than a couple hundred of miles! ■

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A LOOK BEHIND THE DIALS

Some Days It Pays To Get Out Of Bed!

Summer is almost over. I've done my share of running to tag sales, yard sales, church bazaars — anyplace I could spend the better part of a Saturday morning enjoying the fresh air and uncovering vintage treasures. Alas, pickings have been slim. Old radios just don't seem to be popping up as often I as remember from just a few years back. Or, perhaps I am just becoming pickier about what I take home these days. And, I do really have enough radios in my collection at this point.

My wife also likes tag sales, but usually refuses to take me along since I am most likely to buy "junky radios." Of course, all too often I hear "Gee, I saw one of those pointy-topped radios you like earlier today," upon her return late in the afternoon. "What, Where, and When?" usually brings "I don't know, I forgot," or "Real early, it's gone now" for responses. I spend weeks digging up nothing; she ferrets out treasures with unfailing regularity. Life isn't fair. Last Saturday the ritual repeated itself. "I saw one of those pointy-topped radios" (read: like the ones you have too many of already). "Oh. Where was it?" I asked, feigning indifference. "About one mile from here, sitting on a table by the road." "When did you see it?" "Real early this morning" (read: I'm only telling you since its probably long gone). Then she adds, "I'll drive you there" (read: I like to see grown men cry). Sure enough, five minutes later we drive to a home in a fairly new development, and there it sits on a table in the driveway. The folks are packing up the leftovers since it's nearly 5 p.m.

I have to be cool and look at other junk. I feign interest in a used water ski. (I always thought they traveled in pairs?) Then, looking at the old radio, I say: "My, what an old clunker! I need a radio for the garage, does it play?" The owner looks at me like I am from outer space, and gives me a lecture on the value of antique radios. After some haggling, I part with a \$50 and haul the radio to the car as my wife grumbles. Another Philco 89 cathedral has joined the fold. It's a slightly dif-



Blaine and Mark search the shortwave bands for interesting stations.

ferent model than the 89 we've been featuring over the past few months. I'll do some photos of this radio for upcoming issues, and show some of the differences between the two sets. It's in pretty nice shape, only needing a little veneer work and a new grille cloth — restoration topics I'll feature in upcoming columns.

This month's column is going to take a break from the Philco topics I had originally planned to cover, because I don't like to let reader contributions sit for too long. I hope you find the following interesting.

A Gift To Remember

I imagine most of you folks who follow this column have some love for vintage radios and the nostalgia associated with radios that glow in the dark. Last year, I received a very nice letter from Dr. Edward Engelken along with several photos he had taken of his Hallicrafters S-40A receiver. Ed had this to say: "Enclosed are the pictures and description of the Hallicrafters S-40A receiver. I have had a life-long interest in radio and have been building sets since age 11. I recently retired after 35 years of biomed-

ical research, and plan to expand my radio-related activities. My main collecting interests are communication receivers and the big multiband radios from the mid-1930s. I have a vintage "listening post" with Hallicrafters, Collins, Hammerlund, and National receivers, all assembled on an eight-foot-long desk. Perhaps I can send you a picture of my listening post sometime in the future."

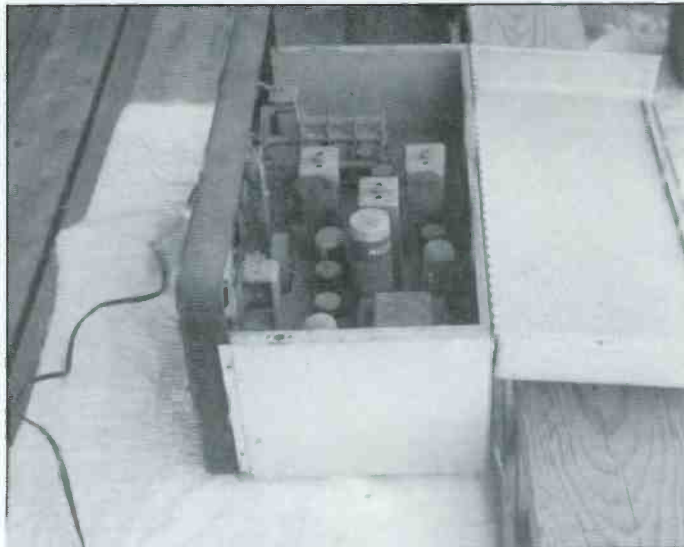
Yes, Ed, *Popular Communications* would love a photo of your listening post! Please send one in!

Ed also mentioned that the radio was to be a Christmas gift to his grandsons. This was something I *had* to run in my column! He added in a subsequent letter: "Enclosed are the photos of the Hallicrafters S-40A with my grandsons. Blaine (left, age 12) is just learning the art of SWling. He is being watched closely by his brother Mark, age nine. Hopefully, the second 'life' of this Hallicrafters radio will inspire a career in electronics, or least a rewarding hobby, for one of my grandsons."

Many years from now these young lads will fondly remember their Granddad's Christmas gift, and hopefully that old



The original plastic dial cover has shrunk and fallen off!



Several coats of ugly gray enamel were sprayed on the cabinet. Note the rust on the edge of the front panel.

Hallicrafters will still be plugging along thanks to Ed's hard work! It's important to get youngsters involved in our hobbies and interests. Blaine and Mark will be receiving a complementary one-year subscription to *Pop' Comm*.

The Restoration Of The Hallicrafters S-40A

We are taking some leeway with the use of the term "restoration" in this month's column. However, as Ed pointed out, the

radio is very common. Sets in good condition often sell for \$40 at radio meets. Basket case sets are often cannibalized for parts, or discarded. So, for the purists, allow us a little slack on this particular radio! Sure, it could have been put back to "original" condition to sit unused on some collector's shelf. I can't imagine a better use for an old radio than what Ed has done, however. There are quite a few photos, so Ed's restoration will continue into our next column.

Ed continues with his story: "The radio was given to me by a friend. It was in sad shape when he got it as a gift, and he never

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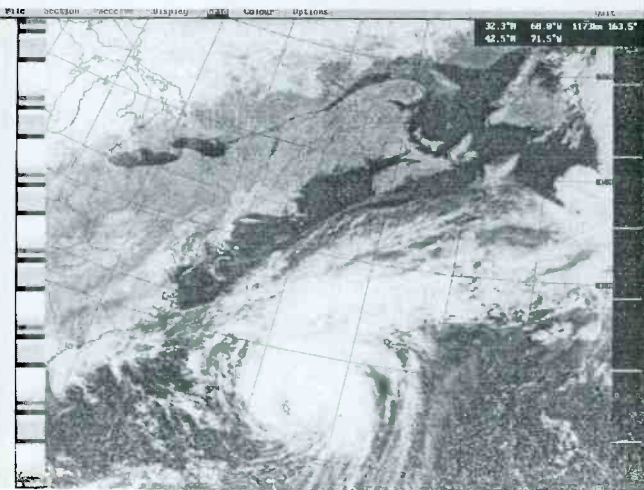
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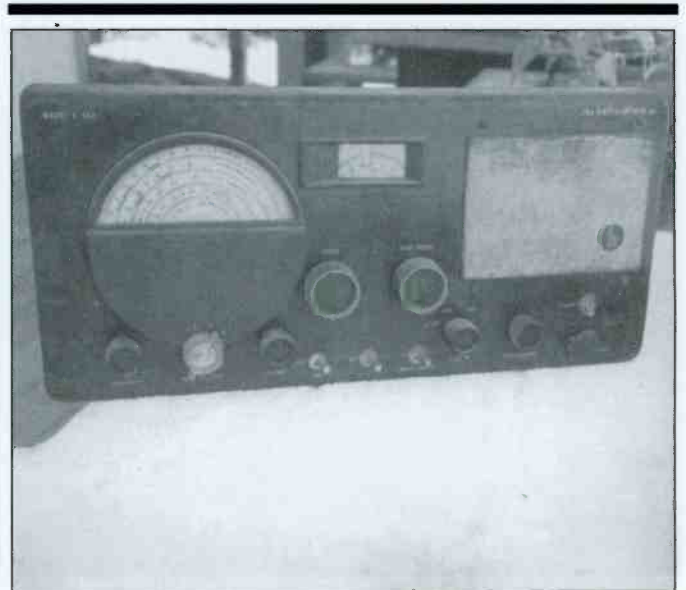
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109	110	111	112	113	114	115	116	117	118	119	120
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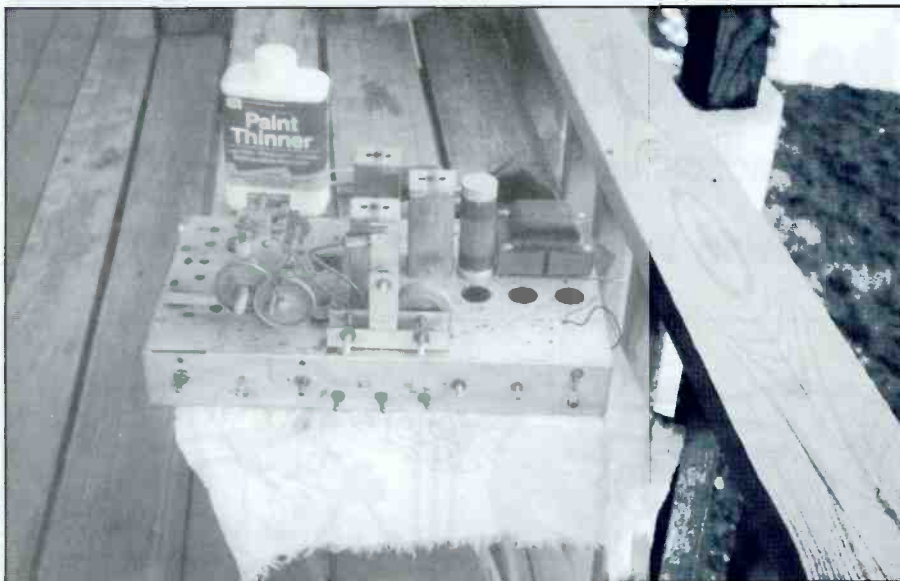
Not happy with the sloppy paint job, someone added some varnish splashes over the front panel.

put it into operation. It had been in his attic for 25 years. The set was rusty, dusty, and quite a mess. One photo shows the radio as it was given to me. The dirty warped object in the front of the main tuning dial is the dial cover. It had shrunk and fallen out! The good news was that the green tuning dials were still in great shape. The cabinet had been painted with about five coats of gray enamel. Note the heavy rust on the top edge of the front panel. [In the head-on shot of the receiver, the brown stuff on the front panel was varnish. What a mess!]

"The chassis was covered with layers of dust and grime. The 6SA7 converter tube had been replaced with a 6BE6. [Note: This involved replacing the octal socket with a miniature seven-pin socket.] The original antenna and ground strip had been replaced with a small box with a BNC connector. There were a number of other wiring and component changes under the chassis as well.



Rusty tubes, dirt, and grime — certainly a sad condition for a once-proud receiver like the S-40A.



With some loving care and elbow grease, the chassis shows its original luster.

"I cleaned up the chassis with paint thinner (mineral spirits) using a stiff brush and paper towels. [Note: This probably is a very effective method, but remember that paint thinner is flammable. This sort of cleaning is best done outdoors, away from flames. Wear latex gloves when handling strong chemicals.]

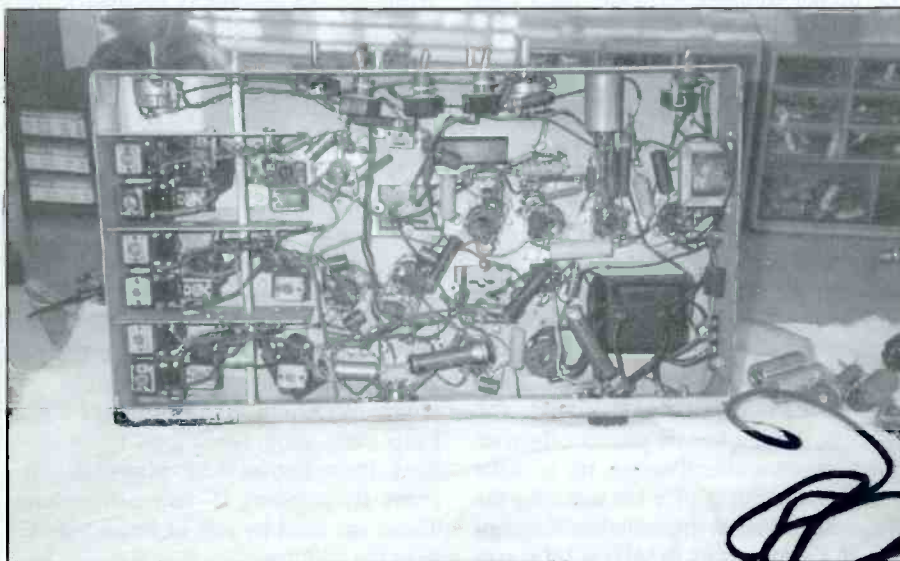
"With the power cord replaced, and the tubes removed, I slowly applied power using a Variac. [Note: Variac is a trade name for a variable auto transformer, which permits applying the voltage to the set in small increases.] Nothing smoked. Measurements showed that a lot of AC was leaking to the chassis. The leakage persisted after removing the line bypass

capacitors. I finally decided the safest option was to replace the power transformer. The set had seen some water in its distant past. All the metal tubes were rusted, some were rusted to the sockets. Most of the trimmer capacitors were frozen with rust. A liberal soaking with tuner cleaner and a not-so-gentle twisting with a screwdriver loosened all but two of them. Those had to be replaced. A lot of the original caps had been replaced, and a lot of wiring and component changes had been made. The original owner was a ham, need I say more?"

I'd offer a few comments on what Ed mentioned earlier. I've had quite a few heated discussions on the Internet regard-

ing replacing wax capacitors. Some folks feel they only should be changed when proven defective. I personally would never trust a 40-year-old wax capacitor placed across the AC line, or one whose failure would place deadly voltages on a chassis. Always replace line bypass capacitors with properly UL rated components. Many early transformers have developed AC leakage currents to the transformer shell. When you start to see a few mA of leakage current, you have a problem. Often running the transformer for several days will drive out the moisture, and the leakage currents will subside to safe levels. Such a transformer must be used frequently to keep moisture out. It's always best to use a three-wire cord on those sets to prevent any possibility of shock hazards. Most of the capacitors I see in this set are molded plastic. These are wax capacitors in a plastic shell. It would seem reasonable that the plastic casing would fair far better in keeping out moisture. Not so. This style of capacitor has an unusually high failure rate.

We'll continue the Hallicrafters S-40A restoration next month. See you then and please send in your stories and photos! ■



A look under the chassis of the S-40A before the restoration began. Note the vintage plastic caps and early style resistors.

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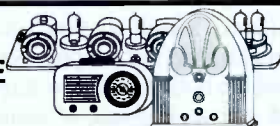
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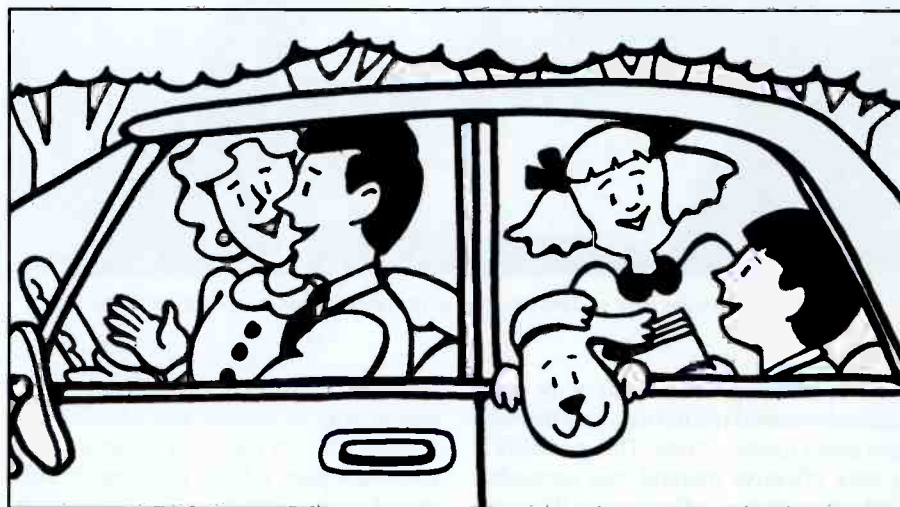
Well, it's that season again—lots of folks pile into the family car and zoom off for the annual family vacation or maybe just for the weekend. (Hmmm . . . that reminds me, I'm gonna have to speak with Harold about when I get to do that!) If you're among them, don't leave your scanner behind, because there's plenty of good listening out there even though you may not be intimately familiar with the territory or the frequencies in use.

Getting Equipped

We'll deal with putting in a permanent mobile installation at a later date, but right now I'm assuming that you want to do something temporary to take on your trip. There are about as many variations on mobile equipment as there are mobile scanning enthusiasts. Simple installations, like using a handheld in the car, may turn out to be the perfect traveling arrangement for you. Let's face it, it's supposed to be a *vacation*, and, hopefully, you'll have other things to focus on besides the radio most of the time. Still, having a scanner in the car can be helpful for those long drive times and in places where you might encounter traffic. Having a handheld can also prove convenient for times when you'd like to scan in the hotel room or around the camp fire at night.

You can also install a small base unit or mobile scanner in your car on a temporary basis. A simple cigarette lighter plug is about all you need for power (make sure the adapter you get is compatible both with the voltage and current of your radio) and, of course, *watch the polarity*. Most car cigarette lighters use a positive center (negative ground) and most scanners are wired that way too, but once in a while you come across one that doesn't work as expected. This is a good way to ruin a radio if you're not careful.

As far as antennas go, the sky's pretty much the limit. The metal body of the car makes a great ground plane, so any 1/4 wave whip, or gain antenna on a magnetic



mount should provide reception for several miles. You can also compromise on rubber duck antennas for handhelds, and if necessary, use suction cups mounted on the inside of the glass. They don't work as well as an external antenna, but something is better than nothing. If you're going to use an "internal" antenna, I've found that longer tends to be better. Those 1/4 wave telescoping antennas work quite well, and there are a number of other models that offer some gain on the higher frequencies. One that's long enough to stick up above the dashboard or window when the radio is in place can improve reception considerably.

You can also use the same method car manufacturers use to keep from having to "spoil the lines" of the car with the likes of an antenna: the old wire on the windshield trick. Solder one end of the wire to an appropriate connector for your radio, then run the other from where the radio will be positioned and around the edges of the front or back window. You can build a dipole this way by hooking a second wire to the other side of the connector. Usually, the single wire proves effective. For maximum effectiveness, try to make it an even multiple of a 1/4 wave for the frequencies you're interested in. Remember, $2832/\text{Frequency in MHz} = 1/4 \text{ wavelength in inches}$. As long as you don't pick up too much engine or computer noise

from your car's electronics, this antenna will work fine.

What To Listen To

Here's where things tend to get a bit complicated for vacation scanning. You're likely to be driving through many areas that you're unfamiliar with and don't have detailed frequency information for. Or perhaps you're flying into an area and want to concentrate on that city's system. While it's not absolutely necessary, programming your radio in advance is very helpful here and will let you make the most of the time you have.

Excellent resources like *Monitor America* and *Police Call* (available at RadioShack) can help considerably. The guides will probably give you way more information than you can deal with effectively anyway. Concentrate on the big ones: state highway patrols or police, major metro area police dispatch, fire alarm frequencies, etc. Pick out the services that you're most interested in, and punch those into your scanner. I try to keep each geographic area in its own bank. It can also be fun to plug in the itinerant frequencies if you have room. These are used by lots of businesses all over the country.

Also, keep your schedule in mind. If you're likely to be traveling at times

when the noise from the radio would disturb others, you're not likely to listen at those times. If you're in a resort or other area with lots of other things to do, again, you won't be listening as much. Think about when during the trip you might be able to listen without getting into trouble with family members, or otherwise taking away from the vacation. Remember, you're supposed to be having fun.

Here's one place where a computer-programmable radio comes in extremely handy. All you have to do is hook up the computer, back up the current data (if your radio has that option), and then download the new stuff. If you make the same trips on a regular basis, this is worth its weight in gold. I've used my ham handheld (Yaesu FT-50) for this purpose for some time, and more recently have switched to using the PRO-64 from RadioShack. It's very quick and easy to connect the computer and download a new frequency file. Those 400 channels can be programmed in just a few minutes; most of that time involves getting the thing connected and starting the download software.

Finally, I'd dedicate at least one bank on the scanner, if not more, to the destination. I'm assuming you'll be spending a big part of your trip in one spot, and there you'll have a chance to learn a little about local frequency usage, etc. You'll also have some quiet time, so if you have to, reprogramming the radio a bit is not out of the question. You might want to do this as you learn more about what's used in the area, or because you've just filled up the available banks with frequencies for use enroute. Don't forget to reprogram it for the trip home before it's too late!

It's worth leaving all of your banks on for a little while when you get to your destination. If you're in or near any relatively large metropolitan area, lots of frequencies are likely in use. In fact, if you're in a major metro area, there are probably very few *unused* frequencies. You might find something you hadn't planned on hearing on one of those frequencies you used someplace else along the way. I've found some very interesting listening quite by accident.

You can also search for frequencies using the scanner's search modes if you're so inclined. It's helpful to have search ranges pre-programmed into the scanner if you have that option, or take along a reference page or two regarding ranges where you can expect to find things. If nothing else, you'll get a feel

for how much two-way radio traffic is around you, just waiting to be captured.

Computer-Controlled Mobile Scanning

OK, you have to be pretty dedicated, and probably traveling alone to get away with this little trick, but I do know of a couple of people who actually run computer control systems in their cars while on vacation.

One person, we'll call him John (because that's his real name, and he'd probably appreciate that more than other things we could call him) hooks his PRO-2006 to vehicle power and then uses a laptop on an adapter sitting on the passenger seat. He says he really doesn't use the computer to look at the display much (a good idea while driving), but rather to switch banks in and out of service as he travels from county to county and state to state. He also logs all of the activity along the route so he can see what frequencies were active and to fine tune the system after he's done with the trip. He makes the same trip several times a year, so hopefully he's getting better and better as time goes on.

Scanner Laws!

You'll need to do a bit of research before your trip to make sure you're not opening a can of worms by carrying your scanner in the car. Some states prohibit any kind of public safety receiver in the car, while others have virtually no restrictions. Some of the states that do have restrictions also have exemptions for amateur operators and others, so you'll want to look into the situation before you find yourself on the wrong end of an innocent traffic stop. If in doubt, pack the scanner away in the trunk and don't use it until you get to your destination.

Your Input Needed

We welcome your input and questions regarding scanning. If you take a trip and find some cool new frequencies, send them in! E-mail suggestions and questions to <armadillo1@aol.com>, or via official federal mail to: Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Complaints should go to Harold Ort. Until next time, good listening! ■

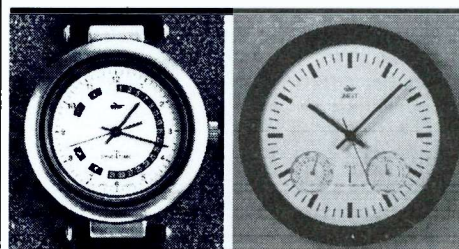
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Antennas & Things

BY JOE CARR, K4IPV

<carrj@aol.com>

SIMPLE ANTENNAS AND ACCESSORIES FOR SIGNAL IMPROVEMENT

Combining Receivers And Antennas

When you first get into the radio hobbies, your setup is bound to be rather simple. Whether you're a shortwave listener, a scanner monitor, or a ham radio operator (or, like some of us, all three), things tend to get a bit more complicated when you gain a little experience. One of the problems we constantly deal with is having too many antennas and/or too many radios for the same antenna. So, I am going to show you a few neat little circuit tricks that can help in that situation.

Simple Linear Combiner/Splitter

Figure 1 shows the circuit for perhaps the simplest form of combiner/splitter. This device uses three resistors in a Y-network to provide three ports. They are shown here as a single input (IN) driving two outputs (OUT). They could just as easily be two inputs and one output, hence the name "combiner/splitter." In one mode, a single antenna can be used to drive two receivers; in the alternate mode, two antennas can be used to drive a single receiver. In the latter case, you will want to use the antennas on the same channel, of course. One application might be combining vertical and horizontal polarization antennas (but more of that later).

The resistors inside the shielded box are all carbon composition and metal film, and can be quarter-watt types. The values of the resistors are one-third the system impedance. Huh? What's that mean? All RF systems have a standard system impedance of one value or another. In the HF and VHF/UHF bands, the standard impedance is 50 ohms for most systems, and 75 ohms for television systems. Thus, the values of the resistors are:

75-Ohm Systems: $R/3 = 25$ ohms

50-Ohm Systems: $R/3 = 16.67$ ohms

Neither of these resistors is a standard value, although they can be purchased in precision 1 percent and 0.1 percent values. However, unless you buy about 50

of them, you won't be able to obtain them easily. Fortunately, the values are not terribly critical. In 75-ohm systems, you can get away with 27-ohm resistors, and in 50-ohm systems, with 15-ohm resistors.

If you want to be a little more precise, then grab an ohmmeter and select three values that are close to the ideal. Ten percent tolerance resistors (silver color code tolerance band) will come close if you look hard enough. If you find 20 percent tolerance (no color code tolerance band), then it's even more likely that a handful of resistors will yield three of them close to the correct value.

Alternatively, you can combine resistors. For example, you can put two, 51-ohm resistors in parallel and come up with a decent approximation of 25 ohms, even with 5 percent (gold color code tolerance band) resistors. Similarly three 51-ohm resistors in parallel is close

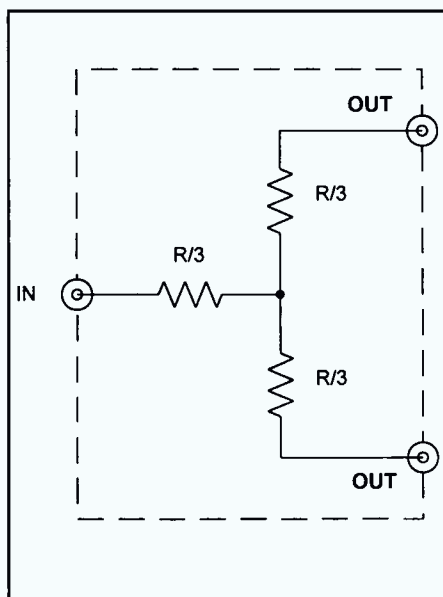


Figure 1. Resistive combiner/splitter.

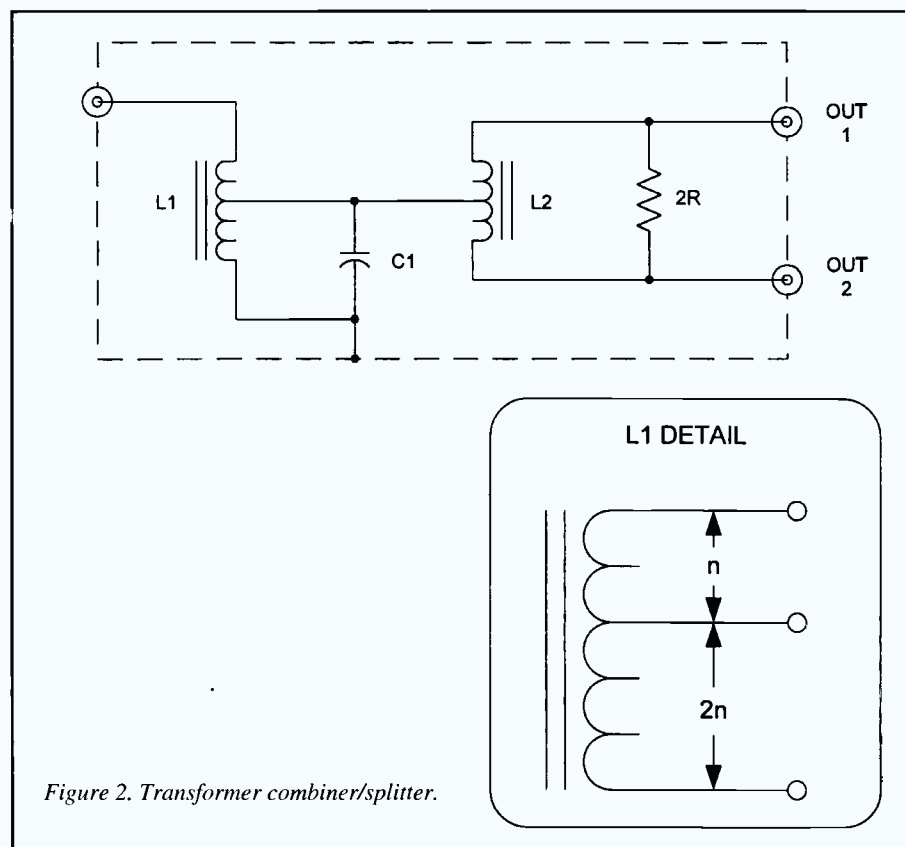


Figure 2. Transformer combiner/splitter.

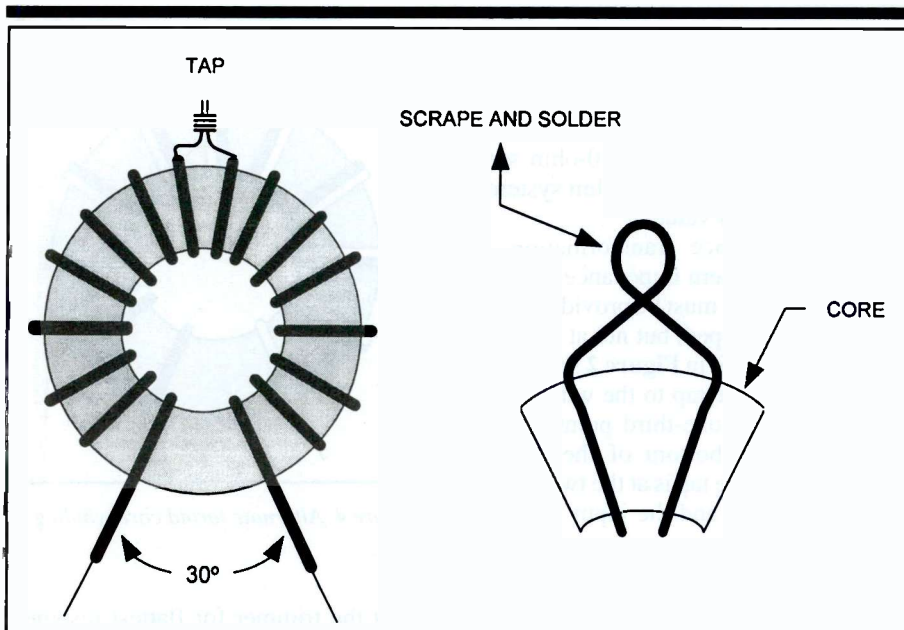


Figure 3. Toroid core winding method.

enough to 16.67 ohms for practical purposes. If you hand-select 51-ohm resistors, you will find it easy to obtain a small collection of 50-ohm values. After all, the tolerance on 5 percent resistors is ± 2.55 ohms, so the actual values will fall between 48.45 ohms and 53.55 ohms. Of course, there is a point where the attempt becomes ridiculous; for instance, a 51-ohm resistor (which is a standard value) is a close enough match (1.02:1 VSWR) for practical purposes . . . and the resistors are easy to get.

Now for the downside. There's a -1-dB loss (power), or -2-dB loss voltage. Of course, this is not a lot, all things considered, but let's take a look at what it means in practical terms. Most receiver S-meters are calibrated 6-dB/S-units. Each S-unit is a subjective measure of the smallest change in volume that most people can perceive, given a standard 10-dB signal-to-noise ratio for comfortable listening.

In other words, for most "standard human ears," an S-unit (6-dB change) is about the smallest change that has practical significance. Doubling or halving the power causes a 3-dB change; quadrupling or quartering the power causes a 6-dB change. (In both cases, an increase is positive and a decrease is negative; i.e. -6 dB is a four-fold loss.) So where does a 1-dB loss (power) fit into the scheme? It is 5 dB less than a single S-unit and represents only a relatively small change.

Here is another perspective. When we are calculating system performances, the coaxial connectors are usually assigned about 0.5- to 1-dB loss, and at UHF the

coaxial cable has a much higher loss than the combiner/splitter.

Improving Performance

Now that we're finished talking about losses, let's take a look at an example of where this system can *improve* performance. Antenna polarization is a very important parameter. The polarization of a radio signal is the direction of the electrical field vector. A vertical antenna produces vertically polarized signals, while a horizontal antenna (such as a half wavelength dipole) produces horizontally polarized signals. Antennas being reciprocal, the same polarizations hold true for both receive and transmit. But if you cross-polarize (i.e., receive vertically polarized signals on a horizontally polarized antenna, or vice versa), then you will sustain a loss of -20 to -30 dB.

If everything is equal, then you can use a coaxial switch to select between a vertically polarized antenna and a horizontally polarized antenna. That works best if the incoming signal is truly either vertically or horizontally polarized. But in the HF region of the spectrum, skip signals tend to be mixed up as to polarization because of what happens to a signal as it passes through the ionosphere. It is likely to arrive at a polarization that contains a mixture of both. In that case, the combiner circuit of **Figure 1** will make it easy to connect both vertical and horizontal antennas to the same receiver.

For mixed polarization situations, where you are likely to see vertical, hor-

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izontal, or odd angle polarization, the best solution is to be able to select either a vertical or horizontal antenna, or the combined version.

Another Combiner/Splitter

Figure 2 shows a somewhat better form of combiner/splitter circuit. This circuit can be used from 500 KHz to over 1000 MHz if the proper transformers and capacitor are provided. In this discussion, let's concentrate on the high-frequency shortwave bands since they're the easiest form of combiner/splitter for most readers to actually build.

The power splitting function is performed by coil L2. This coil is center-tapped, with the input signal applied to the tap and the outputs taken from the ends. This transformer can be wound on either T-50-2 or T-50-6 toroidal cores for the HF bands, or a T-50-15 core for the AM/BCB and medium wave bands. Use

18 turns of #26 AWG wire for the HF bands and 22 turns for MW bands.

The resistor across the ends of L2 should be twice the system impedance. That means 100 ohms for 50-ohm systems, and 150 ohms for 75-ohm systems (both are standard values).

Some impedance transformation is needed if the system impedance is to be maintained, so L1 must be provided. This transformer is tapped, but not at the center. The inset detail in **Figure 2** shows the relationship of the tap to the winding: it is located at the one-third point on the winding. If the bottom of the coil is grounded, then the tap is at the two-thirds point (2N turns), and the input is at the top (N + 2N turns).

The capacitor typically has a value of 10 pF, although people with either a sweep generator or a CW RF signal generator — and a lot more patience than I've got — can optimize performance by replacing it with a 15-pF trimmer capacitor.

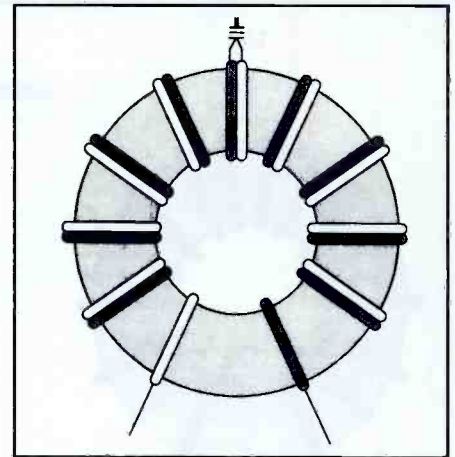


Figure 4. Alternate toroid core winding.

Adjust the trimmer for flattest response across the entire band.

It is important to use toroid core inductors for the combiner. The most useful core types are listed above, although for other applications other cores could also be used. **Figure 3** shows one way the cores can be wound. This is the linear winding approach, using a single coil of wire. The turns are wound until the point where the tap occurs.

At that point, one of two approaches is taken. You could end the first half of the winding and cut the wire. Adjacent to the tap, start the second half of the winding. Scrape the insulation off the ends at the tap, and then twist the two ends together to form the tap. Or you can loop the wire (see detail inset to **Figure 3**), and then continue the winding. The loop then becomes the tap. Scrape the insulation off the wire and solder it. Although the tap here is a center tap (which means L2), it also serves for L1 if you offset the tap a bit to the left or right. An alternate method for L2 is shown in **Figure 4**. This is superior to the other form for L2, but it is a little more difficult. Either wind the two wires together side-by-side, or twist them together before winding. Make a loop at the center-tap, and scrape it for soldering.

Conclusion

The power combiners/splitters shown in this column can be used for a variety of antenna, receiver, and test/measurement applications. Remember, your questions and comments are always welcome. Contact me either via E-mail at <carrjj@aol.com> or at *Popular Communications*, c/o "Antennas & Things," 25 Newbridge Road, Hicksville, NY 11801. ■

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Tuning-In (from page 4)

been on the planet for more than a few months. Who doesn't know someone who has either experienced the CB craze of the '70s, or uses CB to stay in touch on long trips, or uses CB while hunting, fishing, biking, or camping? And who doesn't compare CBers and truckers, who for the record, are one of the hardest working, least understood and appreciated groups of professionals around — despite the goings-on on Channel 19?

"CB, like our amateur service, has a lot going for it . . ."

Now also consider the many *hams* who use CB, either in their emergency comm vans, especially in areas typically hard-hit by hurricanes and tornados, when traveling our nation's interstates, or at home on their trusty base station when they want to be treated to a *different* kind of radio fun.

Sure, there are more wise guys on CB than anywhere else, but I'll take the few ounces of bad with the pounds of good. And, as a parting thought, consider this, please: Which radio service, for whatever reasons you want to believe, do you think will be around for our children's children to enjoy, long after other services have changed faces dozens of times? 10-4. ■

The Listening Post

BY GERRY L. DEXTER



WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

A New Costa Rican Station Takes To The Airwaves, Plus VOA At Rhodes, Greece, To Be Eliminated . . .

Radio 88 Estereo is a new one from Costa Rica (actually, it made a very brief appearance about a year and a half ago) operating on 6071, although it's assigned 6075. The 1.5-kW station relays a local FM outlet on 88.5 in Perez Zeledon. Send reception reports to Aoartado 827-8000, Perez Zeledon, Costa Rica. The shortwave schedule runs from 1000 to 0500. You can expect to have to fight a bit for this one due to CFRX on 6070.

A new Brazilian religious station is **Radio Nova Visao** in Santa Maria, on 9530. Some of its programs are produced by Trans World Radio. The operating schedule hasn't been determined, but you can try for them in mid to late afternoon, and perhaps into the early evening hours. The programming is assumed to be in Portuguese.

The latest relay site for **Adventist World Radio** is the Radio Netherlands facility in **Madagascar**. AWR is using a 7.5-kW communications transmitter, now modified for broadcasting. Catching it will be a tough job, though. It operates on 3215 from 0300 to 0330, so it's blocked by WWCR. The other usage, at 1530 to 1600 is not propagationally possible for North American reception. Eventually — probably quite soon — the power will be increased to 25 kW.

The still-new **Voz Cristiana** in Chile continues test broadcasts — of varying length, sometimes for more brief periods — using slightly variable 21550. The tests include Christian contemporary music and IDs in both Spanish and English. The signal is often very good.

The **Voice of America** relay at **Rhodes** (Greece) is not long for this world. It will be eliminated as soon as the transmissions it now carries can be picked up by other VOA outlets. As of this writing, your only remaining shots at hearing this one are from 0400 to 0600 on 9865 in Arabic, 1700 to 2100 in Arabic, and 2100 to 2200 in English on 6040.

Remember that we always welcome your informational input. Log reports

POLSKIE RADIO S.A.



PROGRAM V

POLISH RADIO WARSAW
English Language Service
P.O. Box 46
00-977 Warsaw
tel. (+48-22) 459 - 262
fax (+48-22) 444 -123

Warsaw,
April 21, 1993.

Ms Patricia Ziegner

Westford, Massachusetts 01395
U.S.A.

Tricia Ziegner in Massachusetts got this QSL letter from Polish Radio.

should be listed by country, double-spaced between items, and tagged with your last name and state abbreviation. Besides reports on what you're hearing, we always need info about station address changes or QSL policies. In addition, we especially need illustrative material, including photographs of shortwave stations or personalities, photos of you and your shack (or, if you're the shy type, of just your shack), spare/sample QSL cards, station brochures, schedules and any other informative or illustrative items you care to send. Thanks so much for your continued interest and support! It is very much appreciated!

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, 6 p.m. CST, 5 p.m. MST and 4 p.m. PST. Double capital letters are language abbreviations (FF = French, AA = Arabic, SS = Spanish, etc.). If no language abbreviation is included the broadcast is assumed to have been in English.

ALBANIA — Radio Tirana, 6217.29 at 0130. Off nominal 6220 and parallel to 7160. (Alexander, PA)

ALGERIA — Radio Algiers Int'l, 11715 at

2000 to 2100 in EE with news, commentary, local music, ID. Covered by VOA at 2059. **Parallel 16160** not bad. (Alexander, PA)

ARGENTINA — RAE, 11710 at 0246 in EE with music. (Alexander, PA)

AUSTRALIA — Radio Australia, 9500 at 1230 with ID, EE language class. 9580 at 1250 with talk show. (Northrup, MO) 9770 at 1602 with news from National Radio. (Miller, WA) 11880 at 0745 to 0800 close. **Parallel 13605**. (Alexander, PA)

AUSTRIA — Austria Radio Int'l, 9655 at 0233. (Miller, WA)

BRAZIL — Radio Nacional Amazonia, 11780 at 0154 in PP with Brazil pops. (Miller, WA) Radio Educacao Rural, Campo Grande, 4775 at 0251 in PP with pops. (Miller, WA) Radio Bandeirantes, 0215 with PP ballads/pops, ID, PP announcements, commercials. Covered by Vatican at 0229. **Parallel to 6090 and 11925**. (Alexander, PA) 11925 in PP at 2324. (Miller, WA) Radio Anhanguera, Goiania, 11830 in PP at 2248. QRM from BBC. (Miller, WA)

BULGARIA — Radio Bulgaria, 11720 at 0136 in FF with folk music. (Miller, WA)

CANADA — Radio Canada Int'l, 9640 heard at 1225 in EE and 9650 at 1225 in FF. (Northrup, MO)

CHILE — Voz Cristiana, 21549.95 at 0000 to 0045. Excellent signal with contemporary Christian music in SS. SS IDs at 0001 and

0034. Gone at 0100 recheck. (Alexander, PA)
25551 at 2040. (Miller, WA)

CHINA — Central People's Broadcasting Station, 6125 at 1617 with instrumental music. (Foss, AK)

COLOMBIA — Caracol Colombia, 5077 in SS at 0249 with news and music. (Miller, WA)

COSTA RICA — RFPI, 15049 USB at 0141. (Miller, WA) Adventist World Radio, 9725 with "Wavescan" DX program at 0019. (Taylor, PA) 1215 in SS. (Northrup, MO)

CUBA — Radio Havana Cuba, 9550 in SS at 1225. (Northrup, MO) 18000 (3rd harmonic) at 2150 in SS, stronger than 2nd harmonic on 12000 and fundamental on 6000. (Alexander, PA)

CZECH REPUBLIC — Radio Prague on new 9435 at 0320; //7345. (Paszkiwicz, WI)

DENMARK — Radio Denmark, 15340 via Norway heard at 1655 close, in Danish. (Miller, WA)

ECUADOR — HCJB, 9745 at 0157. (Taylor, PA) 21455 SSB at 1800 to 1900 and 0000 to 0010 fade. (Silvi, OH)

ENGLAND — BBC, 6110 at 2354, 6175 (via Canada) at 0002, 9515 (via Canada) at 1434, 9590 (via Delano) at 0012 and 17840 (via Antigua) at 1450. (Taylor, PA) 9515 at 1225. (Northrup, MO) 12095 at 1944. (Foss, AK) Radio Asia Canada via Great Britain, 11845 at 2300 with subcontinental music, announcements, ID. Parallel to 15165. (Paszkiwicz, WI) (Apparently the British relays were aired only very briefly — Editor.)

FINLAND — Radio Finland Int'l, 15410 in Finnish at 1453. (Miller, WA)

FRANCE — Radio France Int'l, 9575 via Japan at 1536 in FF. (Miller, WA)

FRENCH GUIANA — Swiss Radio Int'l relay, 9905 at 0459 with ID "This is Swiss Radio International from Bern." (Foss, AK)

GERMANY — Sunrise Radio, 5850 at 0703 to 0730 plus with "Sunrise Radio News" then "Breakfast Show" with multi-lingual IDs. This station is programmed in England and aimed at Asians living in the UK. (Editor) Radio Free Europe via Lampertheim, 9660 at 0516. (Miller, WA) Deutsche Welle, 6170 via Sri Lanka at 1634. (Foss, AK) 6185 (via Antigua) at 0521. 13750 in GG at 1500. (Taylor, PA) 9655 at 1542 in GG via Sri Lanka. (Miller, WA)

GUAM — Trans World Radio/KTWR, 9430 at 1512 in unidentified language. (Miller, WA)

GUINEA — Radiodiffusion Nationale/Radio Guinee, 7125 at 0650 in FF with talk, ID, hi-life music. Parallel 9650 which was mixing with Spain from their 0657 sign-on. (Alexander, PA)

GUATEMALA — Radio Cultural, 3300, in SS heard at 1135 with pop requests. (Miller, WA) Radio Coatan, San Sebastian, 4780 in Quechua at 1137. (Miller, WA)

GUYANA — Voice of Guyana/GBC, 3289.84 at 0100 with EE DJ, local pops, GBC ID. Ex-5950. Also at 0700 with BBC programming. 5950.03 at 0800 after WYFR sign-off at 0800. Local religious music, some Hindi vocals, ID, EE talk. (Alexander, PA)

WEST COAST RADIO IRELAND

the irish short wave radio service
Claremorris, Co. Mayo, Ireland.

Alas! we are temporarily off the air but we hope to return on a more permanent basis later this year.

1/4/98

Dear Radio Friend,

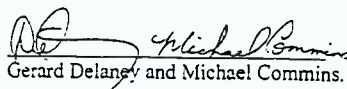
Thank you very much for your nice letter acknowledging reception of the programmes of West Coast Radio, Ireland Company (WCRI). We appreciate your efforts to sit down and compile a reception report and also your comments about the contents of our programmes.

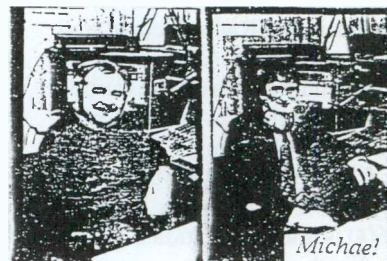
WCRI is being run on a voluntary basis. It takes a lot of hard work and commitment to compile these special programmes each week. Clearly, we will have to secure the services of some major sponsor if we are to remain in a position to continue this service over the coming months.

Our many listeners in various parts of the world are very appreciative of our efforts to bring a flavour of this part of Ireland and the country in general to audiences around the globe. We are overwhelmed by the comments in many of the letters and some have even gone as far as describing the weekly programmes of WCRI as the "most entertaining shows on short-wave today."

We enclose a QSL card which we hope you will like. We hope you can stay in touch with us and with Ireland through these weekly programmes and we look forward to hearing from you again in the coming months.

Kind regards from Ireland,


Gerard Delaney and Michael Commins.



As noted on this QSL from West Coast Radio Ireland, they are temporarily off shortwave.

HAWAII — KWHR, 9495 heard at 1225. (Northrup, MO)

HUNGARY — Radio Budapest, 9580 at 0125. Broadcasts announced for 1900 on 7170, 2100 on 11700, and 0100 on 9580. 9840 heard at 0157. (Miller, WA)

ICELAND — Rikisutvarpid, 11402v (SSB) heard at 1930 with discussion in Icelandic. (Ziegner, MA)

INDIA — All India Radio, 6150 at 1622 in unidentified language. (Foss, AK) 10330 with news at 1518, 11620 at 1453, 15020 in unidentified language at 1450 and 15075 in Hindi at 1722. (Miller, WA)

INDONESIA — Radio Republik Indonesia, 11760 at 1557 in II with music IS and sign-off. (Miller, WA)

IRAN — Voice of the Islamic Republic of Iran (VOIRI), 15084 in Farsi at 1724. (Miller, WA)

IRAQ — Radio Iraq Int'l, on 11785 from 2030 to 2126 sign-off. Talk in unidentified language, Mideast music, into EE at 2103 with news, comment, ID. Abrupt off at 2126. Very strong but with poor, distorted audio. Also at 0300; into EE at 0315 to 0404 close. (Alexander, PA)

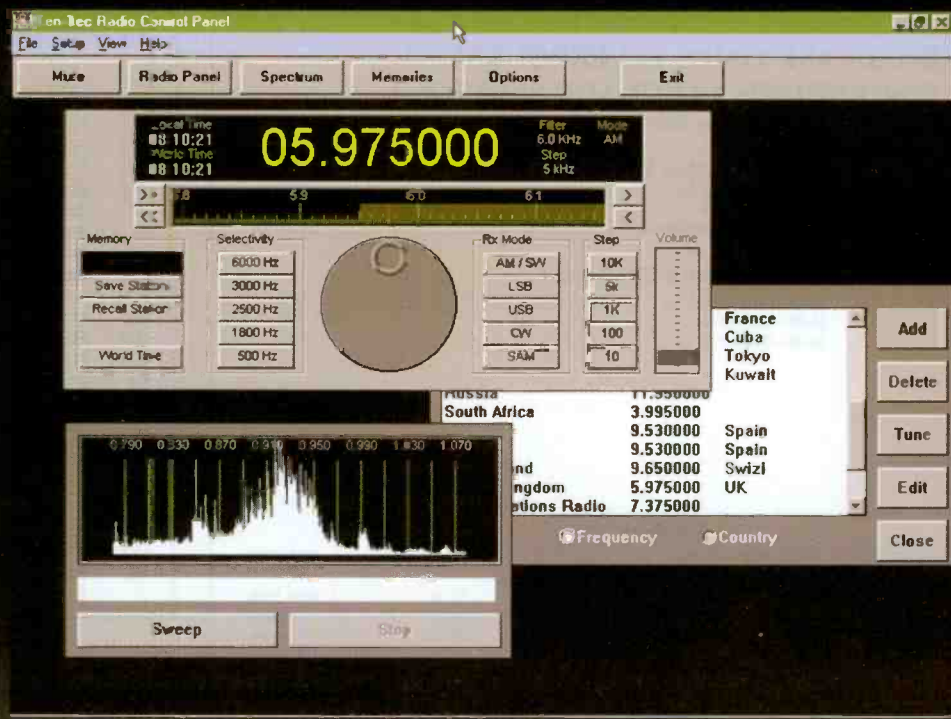
ISRAEL — Reshet Bet home service, 15615 in Hebrew at 0337. (Paszkiwicz, WI)

JAPAN — Radio Tampa, 9595 in JJ at 1225. (Northrup, MO) NHK-Radio Japan, 6120 (via Canada), at 1125. (Taylor, PA) 13660 at 0241 in PP. Site unknown. (Paszkiwicz, WI)

JORDAN — Radio Jordan, 11935 at 0000 in AA. (Ziegner, MA) 13630 at 1640 in AA. (Foss, AK)

KUWAIT — Radio Kuwait, 15110 in AA at 0747. (Miller, WA)

LEBANON — Voice of Hope, 11530 sent E-mail QSL from manager Gary Hull just hours



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Build in 25 hrs

1254.....\$195*

BROADCAST TIMES and FREQUENCIES FOR ENGLISH LANGUAGE SERVICE

(Beginning May 4, 1998)

Beijing Time	UTC	Local Standard Time	Metre Bands	KHz
North America (East Coast)				
11:00-12:00	03:00-04:00	23:00-24:00(E. S. T)	31	9690
12:00-13:00	04:00-05:00	00:00-01:00(E. S. T)	31.31	9560.9730
21:00-22:00	13:00-14:00	09:00-10:00(Washington D. C.)		# 1120 AM
# One-hour program is relayed by WUST or New World Radio				
North America (West Coast)				
11:00-12:00	03:00-04:00	20:00-21:00(P. S. T)	31	9690
12:00-13:00	04:00-05:00	21:00-22:00(P. S. T)	31.31	9560.9730
21:00-23:00	13:00-15:00	06:00-08:00(P. S. T)	41	7405

Abbreviations Used In Listening Post

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

Europe				
04:00-05:00	20:00-21:00	20:00-21:00(London)	43.30	6950.9920
		21:00-22:00(Central Europe)		
05:00-06:00	21:00-22:00	21:00-22:00(London)	43.30	6950.9920
06:00-07:00	22:00-23:00		30	9880
05:00-05:30	21:00-21:30	22:00-23:00(Central Europe)	75	3985
Southeast Asia				
20:00-21:00	12:00-13:00	19:00-20:00(Western Indonesia.Bangkok)	224.31.26	1341.9715.11660
		20:00-21:00(Singapore)	25	* 11980
		20:00-21:00(Ho Chi Minh City.Manila)		
		18:30-19:30(Rangoon)		
21:00-22:00	13:00-14:00	20:00-21:00(Western Indonesia.Bangkok)	224.26	1341.11660
		21:00-22:00(Singapore)	20.25	15180 * 11980
		21:00-22:00(Ho Chi Minh City.Manila)		
		19:30-20:30(Rangoon)		
South Asia				
22:00-23:00	14:00-15:00	20:30-21:30(Delhi.Colombo)	25.31	11825.9535
		19:00-20:00(Rawalpindi)	41.30	* 9700 * 7260
		20:00-21:00(Dacca)		
		19:00-20:40(Kathmandu)		
23:00-24:00	15:00-16:00	20:30-21:30(Delhi.Colombo)	42.31	7160.9785
		20:30-21:30(Rawalpindi)		
		20:00-21:00(Dacca)		
		19:40-20:40(Kathmandu)		
The South Pacific				
17:00-18:00	09:00-10:00	19:00-20:00(Aust. E. S. T)	30.31.26	* 9890.9785.11755
		21:00-22:00(N. Z. S. T)		
18:00-19:00	10:00-11:00	20:00-21:00(Aust. E. S. T)	30.31.26	* 9890.9785.11755
		22:00-23:00(N. Z. S. T)		
20:00-21:00	12:00-13:00		30.26.43.41	* 9945 * 11675.6950.7385
21:00-22:00	13:00-14:00		30.26.41	* 9945 * 11675.7385
East and South Africa				
00:00-01:00	16:00-17:00	18:00-19:00(Cape Town.Harare)	31.31	9565.9620
		19:00-20:00(Dar-es-Salaam)		
01:00-02:00	17:00-18:00	19:00-20:00(Cape Town.Harare)	25.31.41	11910.9570.7405
		20:00-21:00(Dar-es-Salaam)		
04:00-05:00	20:00-21:00		42.42	7170.7160
05:00-05:30	21:00-21:30		42.31.42	7170.9535.7180
West and North Africa				
01:00-02:00	17:00-18:00		31	* 9745
03:00-04:00	19:00-20:00	18:15-19:15(Monrovia)	26.32	11515.9440
		19:00-20:00(Accra.Freetown)	31.25	* 9600 * 11840
		20:00-21:00(Lagos)		
		21:00-22:40(Cairo)		
04:00-05:00	20:00-21:00	19:15-20:15(Monrovia)		
		20:00-21:00(Accra.Freetown)	25.42.32	* 11840.7170.9440
		21:00-22:00(Lagos)		
		22:40-23:40(Cairo)		
05:00-05:30	21:00-21:30		42	7170

* Testing Frequencies

Here's the current world schedule for China Radio International.

after I sent a report via E-mail. He mentioned they may seek at new 11-MHz frequency due to interference from Radio Free Asia (which was audible here in Ohio). (Silvi, OH)

LIBERIA — Radio Veritas, **5470** at 0634 with religious music and talk, news, IDs. (Alexander, PA)

LIBYA — Radio Jamahiriya, **15415** at 2031 in AA. (Miller, WA)

MEXICO — Radio Mexico Int'l, **9705** in SS at 0237. (Miller, WA)

NETHERLANDS — Radio Netherlands, **5930** (via Petropavlovsk, Russia) at 1338 in Dutch. (Miller, WA) **9715** (via Bonaire) at 1220 in SS. (Northrup, MO)

NICARAGUA — Radio Miskut, **5770** at 0055 to 0302 off. Suppressed carrier USB. Fair to very good with SS pops, local folk music, some U.S. pops, SS announcements by man and woman, commercials, SS talk. Off with national anthem. (Alexander, PA)

NIGERIA — Voice of Nigeria, **15120** at 2142 in EE with pop-rock. (Miller, WA)

NORTH KOREA — Central Broadcasting Station, Kanggye, **6100** heard at 1614 in KK. (Foss, AK)

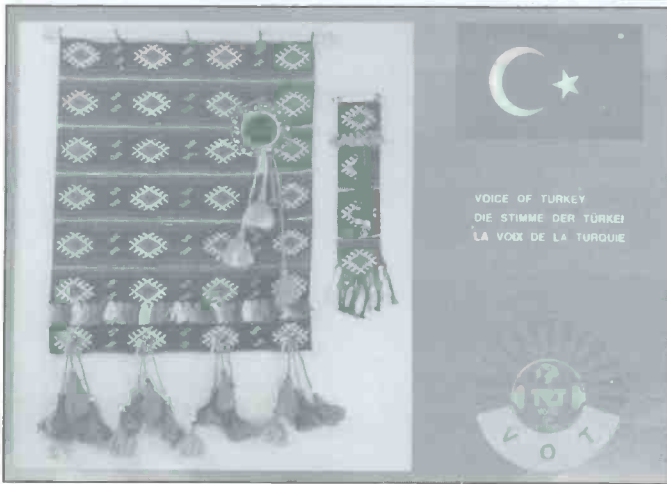
NORTHERN MARIANAS — KFBS, Saipan, **9465** at 1520 with religious broadcast in RR. (Miller, WA)

PAKISTAN — Radio Pakistan, **9790** at 1552 in possible Farsi; **15335** at 1341 in unidentified language and **15560** at 2036 in unidentified language. (Miller, WA)

PAPUA NEW GUINEA — NBC, Port Moresby, **4890** at 1309 in EE with pops. (Miller, WA)

PARAGUAY — Radio Nacional, **9735** at 0150 in SS. (Miller, WA)

PERU — Radio Ilucan, **5678** at 0055 to past 0220 with Peruvian folk music, SS announcements, ID at 0206, sign-off around 0235. (Alexander, PA) Radio Peru, **5637** at 0055 to 0205 close with Peruvian folk music, SS announcements, ID at 0124. Off with national anthem. (Alexander, PA) Radio Ondas del Rio



This Voice of Turkey QSL was received by C.C. Scott nine years ago.



You can't get this one any longer. VTVN — Radio Vietnam confirmed a report from Dr. Adrian Peterson back in 1974.

Mayo, **6811.6** at 0210 to 0238 sign-off. SS talks, ID. Off with anthem. (Alexander, PA) Radio Union, **6115** at 0443 in SS. (Miller, WA) **PHILIPPINES** — VOA relay, **15180** monitored at 1932 with sports interview. (Foss, AK) Radio Pilipinas, **11890** at 1928 with EE ID at 1929 and believe the Philippine national anthem. (Foss, AK) **15190** in Tagalog at 1733. (Miller, WA) Far East Broadcasting Company, **9405** at 1510 in CC. (Miller, WA) **11634.97** monitored at 1019 with EE religious program, ID, and short newscast. (Quaglieri, NY) Radio Veritas Asia, **9670**

monitored at 1545 in unidentified language. (Miller, WA) **PORTUGAL** — Radio Portugal Int'l, **11710** in PP at 0246. (Miller, WA) **RUSSIA** — Voice of Russia, **9845** at 1130 in Mongolian. (Ziegner, MA) **RWANDA** — Deutsche Welle relay, **17860** with news in GG at 1923. (Foss, AK) **SAUDI ARABIA** — BSKSA, **9775** in AA at 1606 and **15345** in AA at 1451. (Miller, WA) **SEYCHELLES** — Far East Broadcasting Association, **9440** at 1825 in Farsi with IS and sign-off at 1827; **11745** in VV at 1517 and

15445 in unidentified language at 1459. (Miller, WA) **SPAIN** — Radio Exterior de Espana, **9630** (via Costa Rica) heard at 1225 in SS. (Northrup, MO) **11815** (Costa Rica) at 1641 in SS. (Miller, WA) **SWEDEN** — IBRA Radio, **12020** (via Russia) at 1942 in FF. (Foss, AK) **SYRIA** — Radio Damascus, **12085** at 2237 in AA with music. Into SS at 2315. (Ziegner, MA) **TAIWAN** — Radio Taipei Int'l, **5950** at 0200. (Walleesen, IL) 0338. (Taylor, PA) Broadcasting Corporation of China, **9610.05**

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OSCILLOSCOPES Standard Series S-1325 25MHz \$325 S-1340 40MHz \$475 • 2 FREE probes with each scope! • TV Sync • 1mV Sensitivity • X-Y Operation • High Luminance 6" CRT	KIT CORNER over 100 kits available Model AR-2N6K 2 Meter / 6 Meter Amateur Radio Kit \$34.95 Model AK-200 Stereo Cassette Player Kit \$14.95 • Complete Schematic • Plus much, much more!!	Model M-1005K Low cost, 3 1/2 digit LCD, 16 ranges, transistor test, diode test, overload protection and pocket size \$19.95 Model TT-400K Telephone Line Analyzer Kit \$19.95

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UNA VOZ
DE AMISTAD
QUE
RECORRE
EL MUNDO

J. Muska of New Jersey got this QSL card for reception of Radio Habana last year.



Radio Japan

Here's one of about three zillion very attractive, colorful QSLs Radio Japan has issued over the years.

at 0958 in CC ending breezy talk program, time beep, theme music, ID by man, into news. (Quaglieri, NY)

TURKEY — Voice of Turkey, **9655** at 0303 with news. (Miller, WA)

UKRAINE — Radio Ukraine Int'l, **12040** (new) at 0056 ending EE broadcast with schedule and ID. Off at 0059. (Alexander, PA)

UNITED ARAB EMIRATES — UAE Radio, Abu Dhabi, **9770** at 1558; **11885** at 2206 and **15265** at 1736, all in AA. (Miller, WA) **13605** in AA at 1643. (Foss, AK)

VATICAN — Vatican Radio, **9605** at 0231 in FF and **15585** at 1503 in EE. (Miller, WA)

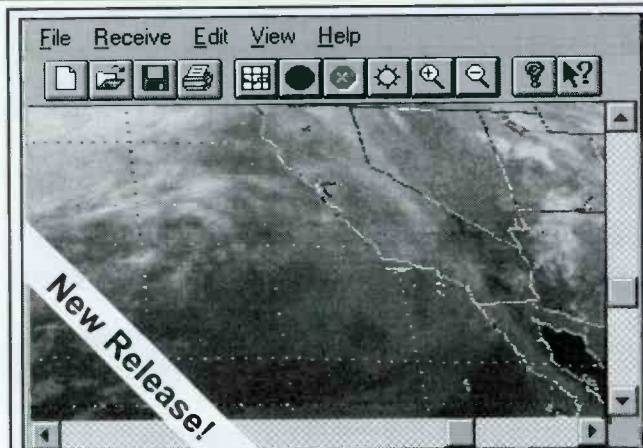
YUGOSLAVIA — Radio Yugoslavia, **7130** at 0430. // **6100** not heard. (Alexander, PA)

ZIMBABWE — Zimbabwe Broadcasting Corp. (presumed), **4828** at 0300 sign-on with choral anthem, vernacular/EE talk, African choral and folk music. Separate programming on **3306** (ex-3396) (Alexander, PA)

And that's the show for this time. On your feet now, to applaud the following

good folks who came through for us this time: Marty Foss, Talkeetna, AK; Brian Alexander, Mechanicsburg, PA; Elmer Wallesen, La Grange Park, IL; Tim Taylor, Erie, PA; Al Quaglieri, Albany, NY; Sheryl Paszkiewicz, Manitowoc, WI; Tricia Ziegner, Westbrook, MA; Lee Silvi, Mentor, OH; Mark Northrup, Gladstone, MO, and Mike Miller, Issaquah, WA. Thanks to each of you!

Until next month, good listening! ■



PC HF Facsimile 8.0 For Windows \$179.95

SSC's best selling Fax and Telex decoding system now runs under Windows. Connect our new Windows FSK demodulator between your PC and SSB to receive weather fax, NAVTEX, RTTY, Amtor, ASCII, Sitor, FEC and Morse code. Receive weather and radio telex while your PC runs other software. The product includes demodulator, software, manual, frequency list and broadcast schedule. SSC also makes modems and software to receive weather satellites and SSTV. Call or write for our complete radio products catalog. **Visa and Mastercard Welcome**

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We don't make SCANNERS or the ICOM IC-R8500 RECEIVER - We make them better -

DELTACOMM I-8500 Communication Manager for the ICOM IC-R8500 communication receiver. With speed as a design goal DELTACOMM's QUICK LOG function will log signal level, frequency, mode, date, time and optional Global Positioning System (GPS) coordinates at speeds in excess of 2400 channels per minute. Here are a few examples of the many advanced features DELTACOMM I-8500 has to offer.

- Load 40 channels of information including ALPHA NUMERICS into one of the R8500's memory banks in 3 seconds.
- Separate volume level, resume scan delay and maximum monitor delay plus 40 character information field for each scan channel.
- Priority channel operation samples at 2.5 second intervals.
- Multi-receiver control will hand off active frequency to next receiver on line. Able to control up to 125 ICOM receivers (optional).
- Traditional scanning is a thing of the past with our CYBERSCAN feature, used to track systems employing frequency hopping.
- Activity log function automatically records and calculates total spectrum usage time.
- Unique search operation stores all frequencies found active and then automatically skips those frequencies during the remaining search cycles. This feature eliminates redundant logging.

Visit our Internet Web Page or Phone/FAX us for program features, new product releases and pricing schedule. DELTACOMM is available for ICOM R9000, R7100, R7000, R71, R72, IC-735 (features vary with type of radio). Also check out our DELTATONE 2.0 repeater programmer.

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Delta Research



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Tap into secret Shortwave Signals

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



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

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

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

Eavesdrop on the World

Eavesdrop on the world's press agencies transmitting *unedited* late breaking news in English -- China News in Taiwan, 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 34 inch whip, 50 ft. coax. 3x2x4 in. 12 VDC or 110 VAC with

*\$129⁹⁵ MFJ-1024 MFJ-1312, \$12.95.

Indoor Active Antenna

MFJ-1020B

\$79⁹⁵

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, 6x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

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, \$12.95. 3 1/4 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 on 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.

No Matter What Warranty

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

Try it for 30 Days

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

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

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

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

MFJ-1214PC

\$149⁹⁵

Use your

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

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

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

Super Hi-Q Loop™ Antenna

The Super Hi-Q MFJ-1782

Loop™ is a \$289⁹⁵

professional quality

remotely tuned 10-30

MHz high-Q antenna.

It's very quiet and has a very narrow

bandwidth that reduces receiver over-

loading 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 pos. 2x3x4"

Mobile Scanner Ant.

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25-1300 MHz. Highest

gain on 406-512 and

108-174 MHz, 19 in.

Magnet mount. MFJ-

1824BB has BNC/UHF

plug; MFJ-1824BM has

Motorola plug.

MFJ Antenna Matcher

MFJ-959B

\$99⁹⁵

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

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

High-Gain Preselector

MFJ-1045C

\$69⁹⁵

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

Dual Tunable Audio Filter



MFJ-752C

\$99⁹⁵

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

Easy Up Antennas Book

How to build MFJ-38

and put up \$16⁹⁵

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

September 1998

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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	7125	Radio Guinee, Guinea	FF	0230	11710	Radio Portugal Int'l	PP
0000	6075	Caribbean Beacon, Anguilla		0230	9605	Vatican Radio	FF
0000	7935	China National Radio	CC	0300	4980	Ecos del Torbes, Venezuela	SS
0000	9810	Radio Budapest, Hungary		0300	9745	HCJB, Ecuador	
0000	9900	Radio Cairo, Egypt	AA	0300	3380	Malawi Broadcasting Corporation	
0000	6055	Radio Exterior de Espana, Spain via C. Rica	SS	0300	3300	Radio Cultural, Guatemala	SS
0000	11935	Radio Jordan	AA	0300	6000	Radio Havana Cuba	
0000	9705	Radio Mexico Int'l	SS	0300	9345	Radio Prague, Czech Republic	
0000	5770	Radio Miskut, Nicaragua	SS	0300	4835	Radio Tezulutlan, Guatemala	SS
0000	4649	Radio Santa Ana, Bolivia	SS	0300	6260	Voice of Greece	Greek/EE
0000	17820	Voice of America, via Philippines		0300	9655	Voice of Turkey	
0030	7465	Radio Denmark, via Norway	DD	0330	9820	Far East Broadcasting Assn., Seychelles	various langs.
0030	7345	Radio Prague, Czech Republic	SS/EE	0330	3210	Radio Exterior de Espana, Spain via C. Rica	SS
0030	6725	Radio Satelite, Peru	SSW	0330	11675	Radio Kuwait	AA
0030	12040	Radio Ukraine Int'l		0330	7500	Radic Moldova Int'l, via Romania	
0030	5950	Radio Vilnius, Lithuania, via Germany		0330	15615	Reshet Bet home service, Israel	HH
0050	6010	RAI, Italy		0330	7260	Voice of Vietman via Russia	
0100	5960	Deutsche Welle, Germany, via Canada		0330	4828	Zimbabwe Broadcasting Corporation	
0100	5012	Radio Cristal, Dominican Republic	SS; variable	0330	5500	Voice of the Tigray Revolution (clandestine)	Tigray
0100	11780	Radio Nacional do Amazonia, Brazil	PP	0400	9730	China Radio Int'l, via French Guiana	
0100	9737	Radio Nacional, Paraguay	SS	0400	11785	Radio Iraq Int'l	EE/AA
0100	5637	Radio Peru	SS	0400	4919	Radio Quito, Ecuador	SS
0100	6200	Radio Prague, Czech Republic		0400	6030	Radio Ukraine Int'l	
0100	7300	Radio Slovakia Int'l, Slovakia		0400	9905	Swiss Radio Int'l, via French Guiana	
0100	11710	RAE, Argentina		0400	7110	Voice of Ethiopia	Amharic
0100	15049	RFPI, Costa Rica		0400	6265	Zambia Nationala Broadcasting Corp	
0130	9580	Radio Budapest, Hungary		0430	6115	Radio Union, Peru	SS
0130	7160	Radio Tirana, Albania		0430	7130	Radio Yugoslavia	
0130	7145	Radio Ukraine Int'l		0430	7415	Voice of America, via Botswana	
0200	4940	Radio Amazonas, Venezuela	SS	0445	3290	Namibian Broadcasting Corp.	vernacular
0200	9645	Radio Bandeirantes, Brazil	PP	0500	5030	Adventist World Radio, Costa Rica	
0200	11720	Radio Bulgaria		0500	5077	Caracol, Colombia	SS
0200	9475	Radio Cairo, Egypt		0500	9675	Channel Africa	Saturdays
0200	4885	Radio Clube do Para, Brazil	PP	0500	6065	Christian Voice, Zambia	
0200	5018	Radio Horizonte, Peru	SS	0500	9830	Croatian Radio	various langs.
0200	6155	Radio Romania Int'l		0500	7645	Kol Israel	
0200	15170	Radio Tahiti	FF/TT	0500	7520	Radio Bulgaria	
0200	7450	Voice of Greece	GG/EE				
0230	9655	Radio Austria Int'l					
0230	4775	Radio Educacao Rural, Brazil	PP				

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0500	11900	Radio New Zealand		1330	5930	Radio Netherlands via Russia	DD
0500	4770	Radio Nigeria, Kaduna	vern/EE	1330	15335	Radio Pakistan	unk lang.
0500	4850	RTV Cameroon	FF	1330	15240	Radio Sweden	
0500	7255	Voice of Nigeria		1330	9840	Voice of Vietnam	//12020
0530	11900	Channel Africa		1400	11600	Far East Broadcasting Assn., Seychelles	
0600	5025	Radio Rebelde, Cuba	SS	1400	21645	Radio France Int'l	SS
0600	5047	RT Togolaise, Togo	FF	1400	13580	Radio Prague, Czech Republic	
0600	12005	RTV Tunisienne, Tunisia	AA	1400	15410	YLE Radio Finland	Finnish
0600	4800	XERTA, Mexico	SS, irregular	1430	15445	FEBA, Seychelles	unk lang.
0630	6015	Radio Austria Int'l, via Canada		1500	10330	All India Radio	Hindi
0630	4815	Radio Burkina, Burkina Faso	FF	1500	9405	FEBC, Philippines	CC
0630	11805	Radio Georgia, Georgia Rep.		1500	21455	HCJB, Ecuador	USB mode
0630	6165	Swiss Radio Int'l		1500	9465	KFBS, Saipan	RR
0700	6070	CFRX/CFRB, Canada		1500	21551	Radio Vision Cristina, Chile	EE/SS
0700	5100	Radio Liberia		1500	15265	UAE Radio, Dubai, UAE	
0700	11625	Radio Norway Int'l		1530	9575	Radio France Int'l, via Japan	FF
0700	4832	Radio Relej, Costa Rica	SS	1530	9525	Radio Veritas, Philippines	various langs.
0700	4783	RTV Maliene, Mali	FF	1600	9775	BSKSA, Saudi Arabia	AA
0700	5850	Sunrise Radio, via Germany		1600	9770	Radio Australia	
0800	5949	Guyana Broadcasting Corp.		1600	17620	Radio France Int'l, via French Guiana	FF
0800	5865	HCJB, Ecuador		1600	11570	Radio Pakistan	
0800	11880	Radio Australia		1600	13605	UAE Radio, Abu Dhabi	AA
0830	6155	Radio Austria Int'l		1630	15340	Radio Denmark, via Norway	DD
0900	4890	NBC, Papua New Guinea		1630	11815	Radio Exterior de Espana	SS
0900	9580	Radio Australia		1630	13675	UAE Radio. Dubai, UAE	
0900	6185	Radio Educacion, Mexico	SS/EE	1700	15084	VOIRI, Iran	Farsi
0930	11635	Far East Broadcasting Corp., Philippines		1730	15475	Africa Number One, Gabon	FF
0930	9700	Radio New Zealand		1730	11680	Radio Vlaanderen Int'l, Belgium	
0930	4875	Radio Roraima, Brazil	PP	1730	15570	Vatican Radio	
1000	9795	Radio New Zealand		1800	13780	All India Radio, Bangalore	
1000	6937	Yunan People's Bc Station, China	various langs.	1800	11990	Radio Kuwait	
1030	3280	La Voz del Napo, Ecuador	SS	1800	17670	Radio New Zealand	
1030	4934	Radio Tropical, Peru	SS	1800	9200	Republic of Sudan Radio	AA
1100	5055	Faro del Caribe, Costa Rica	SS	1800	11625	Vatican Radio	unk lang.
1100	11660	KCBS, North Korea	KK	1900	17830	BBC via Ascension	
1100	9385	KHBI, Saipan		1900	12095	BBC, England	
1100	6120	Radio Japan via Canada		1900	17860	Deutsche Welle, Germany, via Rwanda	GG
1100	3325	Radio Maya Barillas, Guatemala	vern	1900	17760	Radio Taipei Int'l	via WYFR
1100	3905	Radio New Ireland, PNG	Pidgin	1900	15120	Voice of Nigeria	various langs.
1100	11760	Radio Republik Indonesia	II	1930	12020	IBRA Radio, via Russia	FF
1100	9865	Radio Sweden		1930	11402	Icelandic National Broadcasting Service Icelandic	
1100	4887	Radio Vila Rica, Huancavelica, Peru	SS variable	2000	11715	Radio Algiers Int'l, Algeria	
1100	5020	Solomon Is. Broadcasting Corp.		2000	15160	Radio Algiers Int'l, Algeria	
1100	9535	Swiss Radio Int'l		2030	15415	Radio Jamahiriya, Libya	AA
1100	4900	Voice of the Strait, china	CC	2030	9770	UAE Radio. Dubai, UAE	
1130	18950	Radio Denmark, via Norway	Danish	2030	6285	Voice of Hope, via Georgia Republic	
1130	9845	Voice of Russia	Mongolian	2100	11935	Broadcasting Svc of Kingdom of Saudi Arabia	AA
1200	9515	BBC via Canada	GG	2100	12085	Radio Damascus, Syria	EE/AA
1200	9495	KWHR, Hawaii		2100	13630	Radio Japan/NHK	
1200	17890	Radio Exterior de Espana, Spain		2100	9855	Radio Kuwait	AA
1200	9715	Radio Nethelrands via Bonaire	SS	2130	7210	Belarussian Radio, Belarus	GG
1200	9595	Radio Tampa, Japan	JJ	2200	9950	All India Radio	
1230	9640	Radio Canada Int'l		2200	17555	KWHR, Hawaii	
1230	9810	Radio Thailand		2200	11830	Radio Anhanguera, Brazil	PP
1230	9885	Radio Thailand		2215	7105	Cyprus Broadcasting Corporation	weekends
1300	11705	Radio Japan/NHK	JJ	2300	9725	Adventist World Radio, Costa Rica	
1300	11815	Radio Polonia, Poland		2300	9755	Radio Canada Int'l	
1300	15125	Radio Republik Indonesia	II	2300	6135	Voice of Turkey	
1300	17745	Radio Romania Int'l		2330	6980	Radio For Peace Int'l, Costa Rica	
1300	11745	Radio Taipei Int'l	CC; via WYFR				
1330	11735	Radio Finland Int'l					
1330	11690	Radio Jordan					

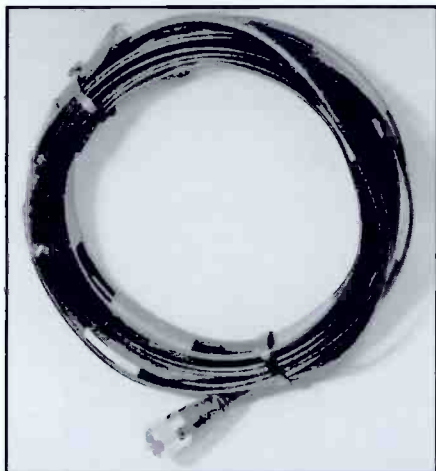
Product Parade

BY HAROLD ORT AND R.L. SLATTERY

REVIEW OF NEW, INTERESTING AND USEFUL PRODUCTS

New MFJ 6-meter J-Pole Antenna

This new omni-directional full-size halfwave antenna hangs just about anywhere. Constructed of 156 inches of 450-



Ohm ladder line and fitted with a short length of RG-58 coax with PL-259 connector, it rolls up quickly for travel anywhere. Hang this 6-meter antenna and explore the world of sporadic-E!

The new MFJ 6-meter J-Pole sells for \$24.95 and comes with MFJ's "No Matter What" one-year limited warranty. For more information or to place an order, call 800-647-1800 or FAX MFJ at 601-323-6551. Their Website is located at <<http://www.mfjenterprises.com>>.

C. Crane Company Announces "The Ultimate AM/FM Radio"

The company announces their new CCRadio, which has been specifically designed for talk radio, news, sports, and weather reception. The audio has been tailored for what they refer to as "a full rich sound of the human voice." And with



special circuitry for the AM band, they say this radio has "the best AM reception of any radio ever made."

More than 20 years of planning, engineering, and prototypes went into the development of this radio, which features full digital controls and a microprocessor, giving accurate tuning and memory storage of five stations on each band.

The radio also receives TV audio of channels 2 through 13, and with the built-

DEDICATED TO THE SCANNING AND SHORTWAVE ENTHUSIAST. WE'RE MORE THAN JUST SOFTWARE!

CAT-5000

SPECTRUM ANALYSIS ON YOUR PC

Only \$99.95 + S & H

With the addition of AOR's SDU-5000 Spectrum Analyzer and this NEW Windows Software any radio that has a 10.7MHz IF output will give you full computer controllable spectrum analysis. Plus, with the listed radios below, you can have a complete computerized control of receive frequency, direct frequency readout, and a spectrum bandwidth (variable from 500KHz to 10 MHz). Just use your mouse to "arm chair" the controls. Never touch the radio once the software is running.

Supports

- AR3000A, 5000
- R7000, R7100 ICOM
- Most ICOMs with 10.7MHz IF

Features

- Variable bandwidth, up to 10.7 MHz *
- Instant Readout of Frequency any place on the PC's Display.
- Instant change of center frequency with a simple mouse click. *
- Save Spectrum data to disk. Playback of Recorded Spectrum data from disk.
- Signal Averaging, PLUS our exclusive "VARI-COLOR" Analysis.
- Variable Peak Readout.
- THREE different graphical analysis modes.
- Download our demo for test drive.

Minimum Requirements • IBM PC 8 meg ram. • Windows 3.1 or later. • 8 meg Hard Drive

COPYCAT-PRO

The ONLY Commercially Available Computer Control Program for the Universal M-7000 & M-8000. Also, AEA's PK-232 and the MFJ-1278

COPY-CAT PRO FEATURES

- 32K incoming text buffer.
- Runs on any 640K PC-Compatible.
- Control BOTH you TNC and radio simultaneously!
- Multiple pop-up windows for HELP, frequency files, and text editor.
- Supports ALL SCANCAT files.
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Many radio amateurs and SWLs are puzzled! Just what are all those strange signals you can hear but not identify on the Short Wave Bands? A few of them such as CW, RTTY, Packet and Amtor you'll know - but what about the many other signals?

There are some well known CW/RTTY Decoders but then 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. CODE-3 is the most sophisticated decoder available for ANY amount of money.

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- ARQ-E/ARQ1000 Duplex Variant
- ARQ-N-ARQ1000 Duplex Variant
- ARQ-E3-CCIR519 Variant
- POL-ARQ 100 Baud
- Duplex ARQ
- TDM24/ARQ-M2/4-242
- TDM342/ARQ-M2/4
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The radio operates on four optional "D" cells or plugs into 110 Vac with the included AC cord.

Specifications (measurements at 1000 kHz): usable sensitivity, 43dBuV/M; maximum sensitivity, 23.5dBuV/M; image rejection, 48dB; selectivity, ±10 kHz greater than 70dB. Radio tunes in ±1-kHz steps.

Audio output power is 2 watts on AC. Total harmonic distortion 1.7 percent, and IF rejection is 58dB. The radio measures (HWD) 7" × 11" × 3" and weighs 7 lb.

Delivery on the new radio is expected by October 1. The new C. Crane Company CCRadio, sells for \$159.95 (which includes shipping to the 48 contiguous states) is available from C. Crane at 800-522-8863. The company tells *Pop Comm* readers they can take \$10 off the price if an order is placed by their first delivery.

You can also visit the C. Crane Company Website at <<http://ccrane.com>> or E-mail them at <ccraneco@aol.com>. They're located at 558-10th Street, Fortuna, CA 95540-2350. The company, which sells a multitude of radios, accessories, and high-tech lighting and security items, offers a 30-day satisfaction guarantee on all products, and they publish a new catalog annually.

K40 Electronics Offers One-Of-A-Kind Gold CB Antenna

To commemorate 20 years of providing drivers across the country with top-of-the-line, guaranteed products and services, K40 Electronics has created a special limited edition 20th Anniversary Gold Edition CB Antenna. The company news release says they've added "a generous layer of 24-karat gold to a limited run of K40 antennas." Production has been limited to 8,000 units.

The manufacturer's suggested retail of the Gold Edition antenna is \$199. For more information on this mobile antenna which features a quarter-turn quick-release theft deterrent, easy universal

mounting, and K40's five-year guarantee, contact K40 at 600 Tollgate Road, Elgin, IL 60123 or call them at 847-888-7200. Be sure to check out the K40 Website at <<http://www.k40.com>>.



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- By Number of hits per frequency in a "histograph".
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The Pirate's Den

FOCUS ON FREE RADIO BROADCASTING

Kenny Just Called, And WEAK Radio Heard In Arkansas

We've got another huge pile of logs this month! I'll get to as many as I can.

Free Hope Experience, 6955 sideband at 0322, talks about UFOs. Off 0359. (Dave Jeffery, NY)

Radio Kiddie, 6955 AM at 2229, TV show themes, Chipmunk music, off at 2248. (Jeffery)

Voice of the Pharaoh, 6995 sideband at 0353 with rock. Off 0419 with no address. (Jeffery)

K2000, 6955 SSB at 1344 with pirate radio talk, DX show parody, funny movie reviews. Off at 1426. (Jeffery)

Radio Three, 6955 SSB at 1630. Heard another time at 2316 to 2346. (Jeffery)

Radio Atlantica, 6955 SSB heard at 1806 with ID, talk, no address. Off 1823. (Jeffery)

Radio Metallica Worldwide, 6955 AM at 1826, "Secret Agent" theme, Blue Ridge address. off at 1909. (Jeffery)

WPN — World Parody Network, 6955 AM at 1909 sign on. Huntsville address. Off at 1944. (Jeffery)

WMPR, 6955 AM at 0108 with techno-pop. Another time at 2257. (Jeffery)

Radio Titanic Int'l, 6955 SSB at 2337 with items about the Titanic. (Jeffery)

WEAK Radio, 6955 USB at 0447 with IS and "testing." Sign on with "Old Roadhog" and "live" from the 2nd annual Hoedown Roundup Show in someplace known as Rainbow Valley. (Joey Gillihan, AR)

WKND, 6955 AM at 1334 with Dr. Ricoche; Blue Ridge address. (Tim Taylor, PA)

Anteater Radio, 6955 USB at 1701, Belfast address. (Taylor)

WLIS, 6955 USB at 1930 with 8th anniversary show. (Taylor)

WUNH, 6955 USB at 0000, various music numbers. Providence address, off at 0036. (Taylor)

WBIG, 6955 SSB, with "The big Guy" at 1632. Off around 1700. (Taylor)

KNDS, 6955 SSB, various talks, skits, fake commercials to 1746. (Taylor)

You probably haven't heard this pirate, based in Trinidad, West Indies. This was sent by an unknown party living there.

WBAT ("Whiskey-Beer-America-Texas") **6955 SSB** heard with testing to 0530. (Taylor)

Radio Kitty, 6955 AM at 2215. DJ with falsetto voice and LPs played at 45 rpm. (William T. Hassig, IL)

Radio Nonsense, 6955 USB at 0158, DJ Joe Mamma with fake ads and celebrity interviews. (Hassig)

WLIQ, 6955 LSB at 0215 with rock, mailbag. (Hassig)

KBLK, 6955 USB at 2305 with rap, phone call, "shortwave voice of Black oppression." Frequent use of offensive words. Relayed via Free Hope Experience. (Hassig) 2300 with racial/ethnic slur exchanges from simulated phone calls, offensive language, many obscene lyrics (Jennifer Ellis, RI)

WREC, 6955 USB at 2300 with heavy metal; relays of Titanic and another, unidentified station. (Hassig)

One Voice Radio, 6955 USB, 2025 with health topics such as anorexia and bulimia. (Hassig)

Radio Shishkabob, 6440 at 0257 with excerpts from Tequila, Nutcracker Suite, Charlie Brown. No address announced. (Coleen Coleman, WY)

Voice of Hell, 6955 USB at 0255 program of "Hell Hits" with Stan Lucifer. (Marina Pappas, SD)

Take It Easy Radio, 6955 USB heard at 0400 and 0409 with two, five-minute broadcasts; "Desperado" repeating station ID. (Pappas)

WORD, 6955 USB at 0059 "broadcasting the Civilian Nationalist Information Report." Said they would be on weekly. (Pappas)

KORN, 6955 USB at 0222 with country music, comedy segments, many IDs, asking for requests. (Pappas)

WLIQ, 6955 USB at 0057 with "Worn Out Record Show." (Pappas) Jerry Riggad Radio, 6954.8 USB at 0109 to 0114 close. (Daniel Jackson, FL)

WMER (or WNER) 6955 at 1604 with "Dance Party." (Tom Delfratte, PA)

WRYT, 6955 at 1335 claiming 50 kW, Belfast address, "send picture of your wife." (Delfratte)

Rocket Radio, 6955 SSB at 2230 commercial for Oldsmobile Rocket 88, oldies with Tiger Man. P.O. Box 56127, Ventura, CA, 93005. (Delfratte)

Voice of Anarchy, 6955 at 0025 with polkas. (Delfratte)

Steady Breeze (or blues) Radio, 6955 at 1445 with Sonny Bono, Tiny Tim, Betty Boop. (Deflatte, PA)

Reefer Madness Radio, 6955 SSB at 2210. (Delfratte)

FHX, 6955 at 1808. Wants to remain anonymous, but considering a mail drop. (Glen Sadowski, NJ)

Deliverance Radio, 6955 USB at 0312. (Silvi, OH)

Radio Beaver, 6955 USB, at 2159. Grated version. (Silvi)

Radio City relay, 6955 USB at 0002. Wupperatall drop. (Silvi)

Area 51 — Gatekeeper, 6955 USB at 2015. (Silvi)

Radio Azteca, 6955 USB heard at 2324. (Silvi)

Mystery Radio, 6955 USB at 2333. "If you don't like us, push the button." (Silvi)

Deliverance Radio, 6955 USB at 0130 signing on and off a few times. (Silvi)

Yamaha Keyboard Music, 6955 USB at 0214 discussing playing on a Yamaha keyboard. (Silvi)

Southern Music Radio, 6955 USB at 0328. (Silvi)

Voice of Free India, 6955 USB at 0203. (Silvi)

Radio Kenny, 6955 USB at 2220, reports to ACE. (Silvi)

The Fine Is Right, 6955 USB at 2254 with game show format on FCC pirate fines. (Silvi)

CSIC, 6955 USB at 0342, Road Kill Café bit. (Jerry Coatsworth, ON)

Argosy Magazine, 6955 USB at 1656

with War of the Worlds. (Coatsworth)
Altered States Radio, 6955 USB at 2004. (Coatsworth)

XEROX, 6954.8 USB at 0203 with Bart Sambo. (Coatsworth)

Thanks for the superb support ladies and gents! Keep them coming and I'll have more for you next month. ■



World's Most Powerful CB and Amateur Mobile Antenna*

Lockheed Corp. Test Shows
**Wilson 1000 CB Antenna Has
58% More Gain Than The
K40 Antenna (on channel 40).**

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

**Guaranteed To Transmit and Receive
Farther Than Any Other Mobile
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New Design

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

Why Wilson 1000 Performs Better

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

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

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.

The Best You Can Buy

So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel; the whip is tapered 177 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

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

We have completed relative gain measurements of your model 1000 antenna using the K40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below:

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

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Trunk Lip Mount.....69⁹⁵ Wilson 2000 Trucker.....59⁹⁵
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The Old CB Shack

BY DON PATRICK

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Transforming The EICO 772

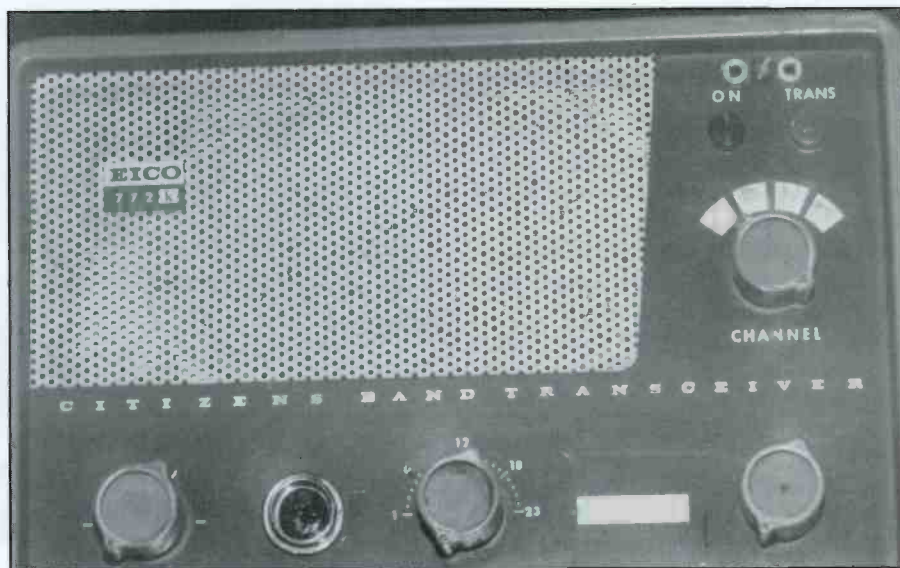
It was big, heavy, and bulky, but popular. It was the EICO (Electronic Instrument Component) 772 CB radio and was introduced in late 1962.

Keep in mind that, in 1962, most CB radios were tube-type and only had a few features. Things that we take for granted today were not always available then, and few radios had very many of the "extras," let alone all of them. I am referring to "extras" such as push-to-talk microphone, a dual-voltage power supply, multi-channel transmit and receive, automatic noise limiter, and last but not least, a squelch circuit.

Admittedly, the PTT mic and squelch had become fairly standard, but a lot of sets still used by CBers didn't have these features. Some top-of-the-line units, such as the Johnson Messenger I, the Polycomm, Sonar, Utica, and others had all the features listed above and more, but the EICO 772 still got its market share. Why? The answer is very simple: price! The top units listed above all sold for \$175 to \$350 each, while the EICO sold for just under \$100, as I recall. This was at a time when the average take-home pay was less than \$100 a week.

If EICO used good quality components, had many of the desired features and performed reliably, how were they able to cut the price in half? It was because they left out a very expensive cost of manufacturing: labor. *You* built the unit. When you consider that there were a lot of people who bought used sets with few, if any features, plus the many who also wanted a CB unit, but couldn't afford a \$200 radio, there was a large market for a build-it-yourself radio. Also, you had the pride of using something that you'd built from scratch.

There were a number of manufacturers that offered "kit" radios, but the market was dominated by two: Heath Company and EICO. EICO made a lot of kit products, but specialized in test equipment. I started my business in 1958 with mostly EICO test equipment that I built, some of which is still in use today. I had a oscilloscope, an audio signal tracer, a capaci-



The EICO 772 CB was a big, heavy, and bulky rig, but was very popular.

tor tester and more. Their products were always easy to build, with good instructions. I found them to be a good value. But the introduction of the transistor, IC, printed circuit boards, and automated parts inversion, spelled the end for many of the kit manufacturers.

The EICO 771 (6-volt and 117-volt) and the 772 (12-volt and 117-volt) gave you PTT, squelch, dual power supplies, and multi-channel capability. On transmit, you had room inside the set for any four of the 23 channels. On receive, you had a crystal socket *inside* the unit for any one channel, and then tunable for all 23 channels. With the channel selector switch in position #1, all the way counter-clockwise, the unit was set to receive on the crystal-control channel. With the selector switch in position 2, 3, or 4, you transmitted on whatever was plugged into that crystal socket, and received wherever the tunable receiver was adjusted.

The 772 was a natural for field modifications, and it was legal to make them. Radios manufactured at that time did not require FCC type acceptance as long as the modification did not result in off-frequency operations. You could change the

channel selector however you wished. Most of these units were changed to provide for more transmit channels by "remoting" one of the transmit crystal sockets through the front panel. As you can see in the photo, a crystal socket has been added just above the two function lights. Then a pair of stiff, solid wires ran from the new "external" socket down to, and plugged into, one of the regular internal crystal sockets. You could now plug in a crystal *outside* the set, which was the same as putting it in that internal socket. Which of the four sockets you connected to depended on whether you were going to use crystal, or tunable receive to use in that external socket.

If you were going to use crystal-controlled receive with this new transmit socket, but ran the unit with the case on, the receive crystal socket also had to be modified. This was done by reversing the socket so that the crystal plugged in from the bottom, instead of the top, of the chassis. Then a small access hole was made in the case so that the receive crystal could be plugged in from the bottom without removing the case. To do this, the receive crystal socket was mounted on a

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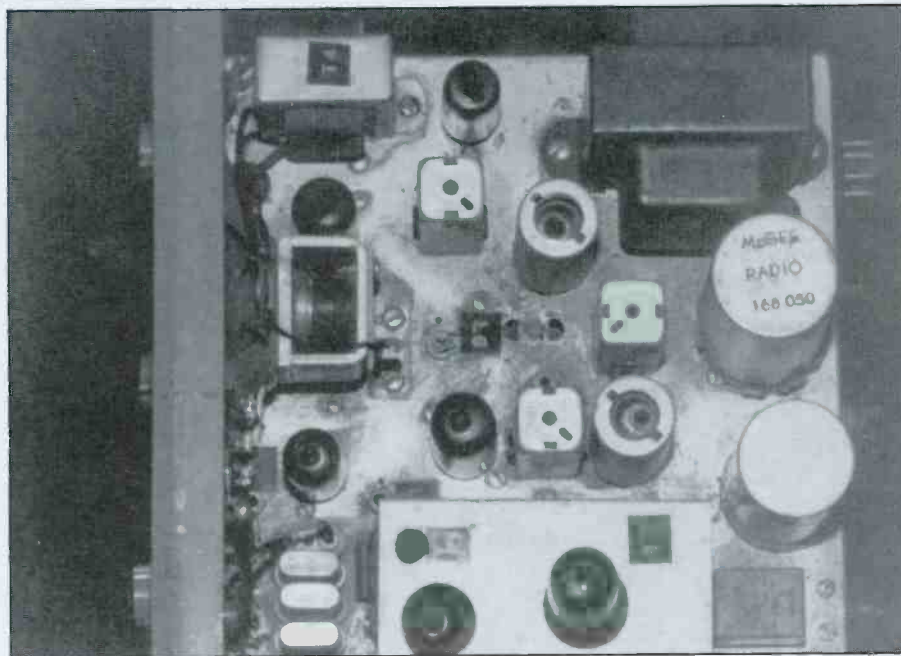
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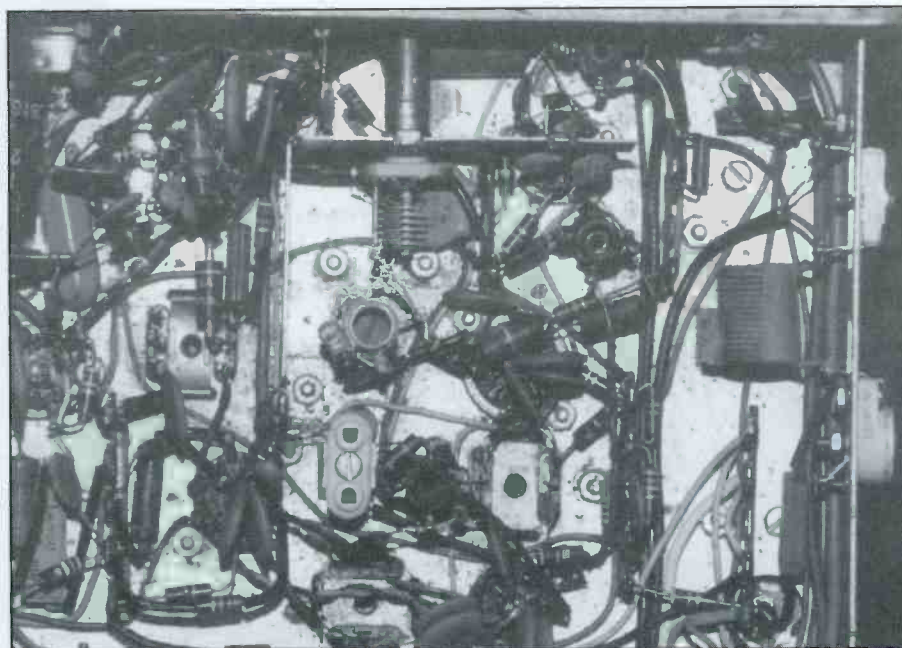
On the inside, you had room for any four of the 23 channels.

small standoff bracket. As you can see in the photo, the crystal socket has been so-modified, but, when I checked the case, an access hole had not been provided. We can only suppose that the owner decided to use the tunable receive with this remote transmit socket. That's what I would have done, as it works just as well, costs less because half as many crystals are needed, and is less trouble to use.

The EICO 772 used in this month's article came from Kevin Horn. We purchased

it to add to our collection, and I thank him for the good deal.

Changing the subject for just a minute, *Popular Communications* Editor, Harold Ort, is just about to get his Johnson Messenger I back in mint condition. I think Harold got it from the Midnight Auto Salvage. All jokes aside, all we need is final tune-up and he'll have a classic radio ready to hit the airwaves. It is always pleasing to hear an old unit operating with all of its original authority. It's



The crystal socket on this 772 has been modified allowing the operator to use tunable receive with the remote transmit socket.

kind of like when you rebuild the engine of an antique car and first start it up.

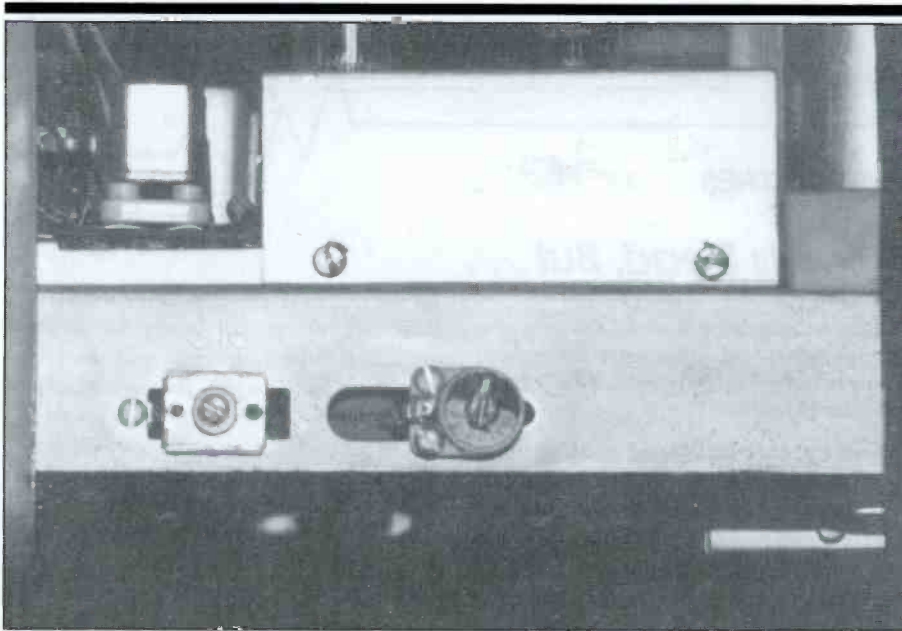
Rebuilding the 772

If you are rebuilding an EICO 772, what you end with and how hard the road was to get there is determined to a great extent by the quality of the original assembly. Many of the units were brought to us for tune-up and alignment after assembly, and the quality varied considerably from factory quality, to something a gorilla with a propane torch put together. If you are going to purchase one at a garage sale, take the time to open it up and see if the workmanship is reasonable. Some readers have told us that they save all our articles, so if they purchase a unit at the flea market, they will have a guide to rebuilding the rig.

As with any unit, first we examined it for any obvious problems. Then we cleaned it with careful use of air and Windex™. Next we checked the tubes, and replaced all that didn't meet our level of performance. Before applying power, we checked the fuse to insure that it was the proper size. At this point it would be helpful to insure that the proper tube is in the proper socket. A full set of service information can be obtained from Sam's for about \$25. Sam's alignment required a signal generator. EICO provided two ways to align the unit, with and without a generator. If you send me an SASE, I will send you a copy of their instructions, but be sure to tell me what you want. You need pages 11 and 12 of their book.

I am not going to cover the minor problems we found in this unit because your problems, if any, will be different. If you are not good at troubleshooting, you may need outside help at this point. It depends on your level of skill, and the test equipment you have available. Remember, this is not a transistorized unit, but a tube unit with some dangerous voltages present on the bottom side of the chassis. Unless you wish to glow in the dark, be careful where you put your fingers, or get the help of a qualified person.

EICO, unlike any other kit manufacturer that we know of, wanted you to have a legal unit. Therefore, they pre-assembled the transmitter stages, so all you had to do was adjust the radio to your antenna. While we think about it, let us mention that 1/4 inch jack on the rear of the chassis, next to the SO-239 antenna connector. That is NOT an external speaker jack. It is provided to measure the plate current of the transmitter's final amplifier. You connect



With the 772, the transmitter stages were pre-assembled by EICO, so all you had to do was adjust the radio to your antenna.

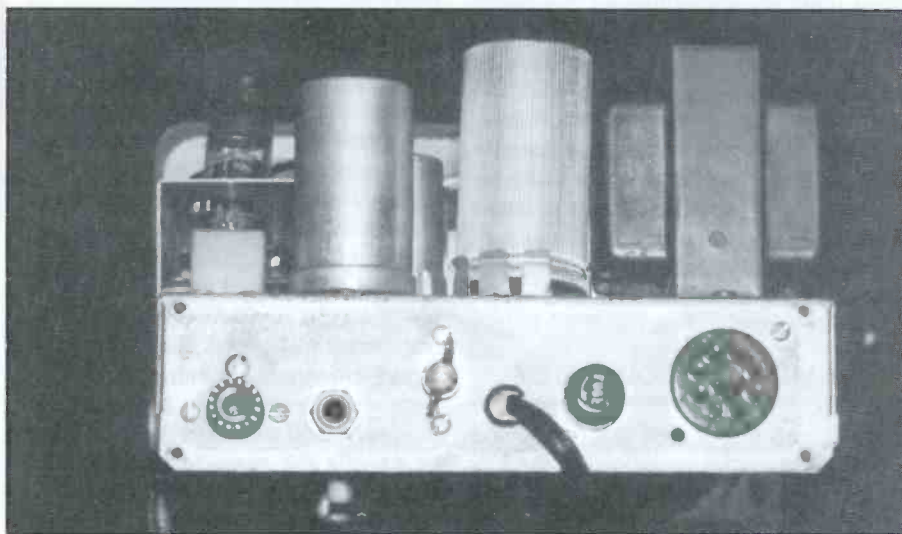
a millimeter across its terminal and adjust for about 27MA current.

Readers' Questions

Previously, our main problem with reader questions was the lack of an SASE sent along. Many of you, once you realized why you had not received an answer, wrote back a second time and included the envelope. I'm glad you gave me a second chance. Mail your questions to Don Patrick, 3701 Old Jenny Lind, Ft. Smith, AR 72901. Now we have a new problem. Quite a few of you are using E-mail for your questions. That's great, except be sure that your address is correct. We just

use the "reply" to answer you and we've had some that were rejected due to "addressee unknown." If we were entering your address, I would assume that we had it wrong, but using "reply" ensures we don't goof up. I had one question last month about the Johnson Messenger 125 units from a reader named Robert which was rejected as "addressee unknown." So, if Robert will send his question again, but with a correct address, we will try to answer him. If you are going to use E-mail, send your questions to me at <Oldestimer@AOL.com>.

Until next time, this is the Oldestimer saying thanks for your letters and questions, 73. ■



The hole on the back of the unit is NOT an external speaker jack; it's provided to measure plate current of the transmitter's final amplifier.

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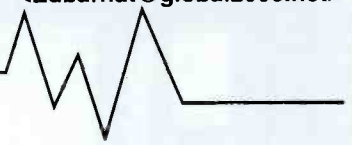
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CB Scene

27-MHZ COMMUNICATIONS ACTIVITIES

BY ED BARNAT

<Edbarnat@global2000.net>



S. 608 Is Dead, But . . .

For some time now we have been watching a pair of bills working their way through Congress that would allow local authorities to enforce a limited number of FCC regulations that pertain to CB radio. Wisconsin Senator Russell D. Feingold introduced the original bill, titled S. 608, in April 1997. By the following October, a similar bill, H.R. 2612, was introduced in the House by Michigan Congressman Vernon J. Ehlers. Neither bill generated much interest, nor attracted many sponsors. It seemed, for a while anyway, that they both bills might die in committee.

All that has changed. S. 608 has gained a new lease on life. It has been attached as an amendment to Senate bill S. 1618. The original goal of S. 1618, introduced on February 9, 1998, by Senator John McCain of Arizona, was to curtail "slamming," the irritating practice some telephone companies have of switching your long distance service to a different provider without your permission.

By the end of May, S. 1618 had acquired three amendments. One requires truth in billing procedures for telecommunications carriers. The second modifies the exception to the prohibition on the interception of wire, oral, or electronic communications to require that all parties to communications with health insurance providers consent to their interception. The third was S. 608, which authorizes the enforcement by state and local governments of certain Federal Communications Commission regulations regarding the use of citizens band radio equipment. On May 12, 1998, S. 1618 was passed, as amended, by a vote of 99-0 and sent to the House of Representatives where similar legislation (H.R. 2612 and H.R. 3888) is pending.

Why Worry?

As John from South Carolina put it,

We think, that as written, these laws will be subject to abuse. Many operators here are expressing fears about our local police enforcing CB regulations. One of them (police) was heard to say that they could hardly wait to get

the go-ahead because it would not only give them some new radio equipment, but most of all, more operating funds from all the revenue generated by fines.

The impetus and stated goal of these laws is an admirable one: to reduce interference to home electronic entertainment equipment caused by CB radio. In other words, RFI (radio frequency interference) and TVI (television interference) to stereos, VCRs, telephones, and the like (not CB radios). Although interference between CB stations is specifically avoided, the CB community knows that legislation like this is long overdue. For the most part we welcome and encourage the concept.

The problem is that while these laws are aimed at reducing radio interference, they do not specifically mention that. Instead, they target the possession of unauthorized equipment. While it's true that most of the operators causing interference possess and run unauthorized equipment, most owners of unauthorized equipment are not causing interference. Confused? Read on, please.

Baring any unforeseen problems, these bills could become law by the time Congress adjourns for the year on October 9, 1998. If passed as written, it may not be very long before anyone displaying anything remotely resembling a CB antenna might expect to find the police knocking on their door or to be pulled over for "a little inspection." When all is said and done, most of the people that these laws will subject to prosecution may actually be the best operators on CB. These are the very people who are *least* likely to cause RFI. It could be that while these laws purport to target the bad guys, they could actually be aimed directly at YOU!

Why Should You Care?

How, you might well ask, could the most praiseworthy members of the CB community become the primary targets of these new laws? Simply because on CB, the best of the best are most likely either sidebanders and/or Freebanders.

Both are extremely likely to possess unauthorized equipment, and therefore would be easy targets for unscrupulous authorities. Furthermore, since they represent such a large percentage of CB owners, random inspections of CB stations will produce large numbers of violators. For the uninitiated to understand who Sidebanders and Freebanders are and why they run unauthorized equipment, it is necessary to know a little history of their cultures and radio technology.

Like your car radio, CB has two modes of operation. Your car radio has AM and FM; CB has AM and sideband (SSB). Sideband uses narrower slices of radio frequency more efficiently than AM. That makes sideband less likely to cause interference, and gives it greater range. This, however, also makes the ability to fine-tune sideband radios rather critical and a little tricky.

Sidebanders may be more akin to amateur operators than classic CBers. They pride themselves on their superior equipment, style, and technique. A sidebander is what a CBer often grows into when they tire of the nonsense and aggravation of classic CB. Sidebanders operate within the legal 40 channels. Mostly, they confine their activities to channels 16 and 36 through 40. They do that so they won't interfere with AM operators.

Early sideband radios (before the opening of channels 24 through 40) allowed you to fine-tune the transmitter and receiver simultaneously. Whatever frequency you tuned your receiver to, the transmitter frequency would follow. So, everyone engaged in a particular conversation could all tune the exact same frequency.

When the FCC authorized the new 40 channel radios, they mandated that only the receiver could be fine-tuned. The transmitter had to be locked. This caused a problem whenever more than two stations tried to engage in a conversation. Seldom would all of them be transmitting on exactly the same frequency. Therefore, participants had to continually fine-tune their receivers as the conversation passed from one station to another. This proved to be very frustrating and incon-

venient. So it soon became common practice for sidebanders to get their clarifiers "clipped" or "unlocked" allowing, once again, the simultaneous fine-tuning of transmitter and receiver. Sanity returned, as everyone on the channel could be working the exact same frequency. Unfortunately, it also means that most serious sideband operators are running unauthorized equipment, and are therefore targets of new laws.

When 40 channel radios were introduced, most manufactures thought there was a pretty good chance that the FCC would one day expand CB by another 50 or 60 channels. Most radios, especially sideband radios, have the circuitry that, with very little modification, allow them to reach those extra channels. To nobody's surprise, before very long, sidebanders started finding activity above channel 40 and the Freeband was born.

Over the years, the Freeband has become a truly international phenomenon. It is where most of CBs best and most responsible operators have grown. They have gone there to escape the very problems that make H.R. 2612 and S. 608 necessary. Again, by definition, because their radios can access frequencies outside the legal CB band, they appear to be the main targets of the proposed law, whether or not they are causing interference. Again, most of them don't.

About Freebanders

Why do so many Sidebanders become Freebanders? To help explain, here is an excerpt from a recent note from Ed in Toronto Canada, a typical Freebander. "I have been exposed to shortwave radio since 1938 when I used to sit with my uncle (an amateur) listening to CQ, CQ. Once he even spoke to Haiti. About eight or 10 years ago I bought a 40 channel CB radio and shortly found out about the problems on 11 meters (CB) so I sold it and bought a 2950 (European import model CB capable of getting to the Freeband frequencies). It took me in to a very exciting new world of DXing (long range) when the "skip" was in. My 25-watt (most problem operators run hundreds of watts) mobile took me to Italy, France, Germany, and all over the UK and even Australia . . ."

Obviously, this fellow is having a good time. Most of his fellow sideband/Freeband counterparts are too! They aren't hurting anyone. There appear to be no other active users on these frequencies.



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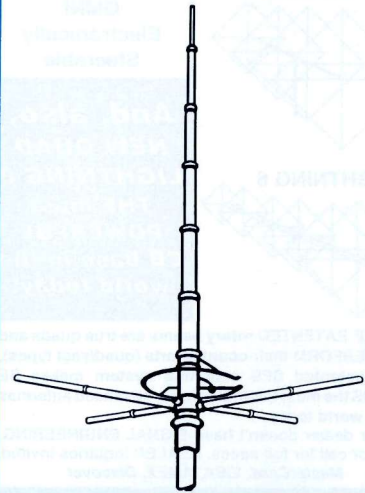
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If Freebanders are causing interference, most of them would bend over backwards to resolve the problem. They aren't the people who are causing the problems, but they are the ones most likely to be punished by the new laws.

OK. I can hear all the operators who claim to run strictly legitimate stations saying, "But Ed, these people are breaking the law!" That is true. What is also true is that there are very few operators who, in one way or another, comply with all of the laws, all of the time. While the current effort only authorizes local enforcement of the unauthorized equipment sections of FCC regulations, is it unreasonable to foresee a time when all regulations will be included? The ulti-

mate solution, of course, would be to change FCC regulations — to bring the rules up to date and more in line with actual practices and procedures. In other words, change the regulations to legitimize real life sideband and Freeband on-air operations.

That would mean expanding the CB service (or creating a new radio service) on the frequencies between the upper end of the current CB and the lower end of the 10 meter amateur bands. Allow SSB, FM and digital modes of communications. Allow tunable transmitters and increase maximum transmitter power to 50 watts P.E.P. (Peak Envelope Power).

Impossible, you say? Not at all! Highly unlikely, no doubt, but not impossible!

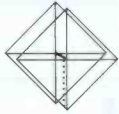
How Widespread Has The "Freeband" Become?

If you'd like to get some idea of just how widespread and sophisticated the Freeband has become, check out some of these Web sites and related links.

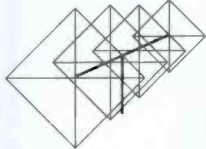
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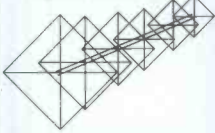
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Look at the range of frequencies, power and operating modes afforded the amateur radio service, which, by the way, has managed to get themselves exempt from the provisions of the new laws. What makes them so special? Are there more of them than their are of us? No, we outnumber them many times over. Are they better operators? Some are, but they have their share of bad apples. Does amateur radio provide more service to the community? Not necessarily. An argument can be made that CB provides more services directly to more people more often. No, their main asset can be summed up in one word, ORGANIZATION!

As S. 608 slipped from the Senate to the House, my own efforts to get the bill modified shifted from Senator Feingold's office to Congressman Ehlers'. There, I have been in contact with Cameron Wilson. So far, I believe, our conversations have been mutually educational. Mr. Wilson admits that he knows next to nothing about CB radio, other than hearing many of his boss' constituents complain about it. I pointed out, as I have in this column, how and why the proposed legislation misses the mark. He somewhat agreed, and said that there still might be time to affect some changes, and that he

would give it a little more thought.

It also appears that aside from someone representing truckers, ours may have been the only rational conversation he had on the subject. Yes, he may have heard from several folks on both sides of the argument but... And perhaps, that is why he asked if there was any national organization that might be able to plead our case. I had to admit that, while there were several organizations with national membership, none had the knowledge, interest, or resources to rise to the cause. The question of whether or not we can affect the outcome of H.R. 2612 might be a moot point. It could well have become law by the time you read this. The larger issue is, can we, as a hobby and service, pull ourselves together enough to present some kind of unified front to handle other issues that are bound to come up in the future? It is painfully obvious that present organizations are not up to the task. Any volunteers?

Well, that's it from here. Thanks for writing me here at *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801, or via the Internet where my address is <edbarnat@global2000.net>. And as always, if you can, catch me on the radio! 73, Ed.

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TRUNKING, TIPS, TECHNIQUES, AND MODS

Bank On It!

A good way to start a debate in scanner crowds is to bring up the subject of banks and how best to organize them. There are probably as many variations on the basic methods as there are scanner enthusiasts, but there are some basics we can cover to get you thinking about what would work best for you. I apologize in advance if I left out your favorite method, but they only give me so much space. In our weekly scanner conference on AOL (every Thursday night 9 to 11 p.m. EST), we've had some lively discussions on this very subject.

Service Or Geography?

Most of the methods I have seen come down to separating the channels by the type of service that uses them — police, fire, medical, ham, etc. — or by area. Put all the “south” frequencies in one bank; “north” in another, etc. Frankly, I hadn't really given it a whole lot of thought until I started messing with computer control systems, and it became possible to reorganize banks quickly and easily.

I had always been pretty much a “service” fan. I'd put all of the county police channels in one bank, city in another, state and outlying areas in another. Then there was a bank for fire, and then it depended on the radio as to how much room I had to put together any others. This method works quite well if you're interested in a particular department or section of scanning, or if you seldom listen to a particular service, but want to have them handy when something does happen (assuming, of course, that you have open banks to store them in). This method also works well for scanning from a fixed location, say, mostly at home.

The primary disadvantage of this method comes to light when you get into an active environment. If you have a busy police department with several channels, it's entirely possible that your scanner can be held up for quite some time plowing its way through, stopping here and there as it goes. Perhaps some of the channels are not of much interest, but if they are grouped



With all the frequency information available to us these days, filling up banks isn't a problem, but organizing them in a way that helps your scanning is another challenge.

together by service, you'll probably have them active. It's also possible that you'll get tied up on some major event in the police bank and miss some other event in another bank. Of course, there's no complete cure for this, but you can mitigate the damages a bit by planning. And another radio doesn't hurt either. Eventually, if there's enough traffic, you'll either have to give up listening to some channels or add another radio just to have a chance of hearing what's happening.

Trunktracker™ radios have made this quite apparent. Of course, Trunktracker receivers from Uniden and RadioShack can only listen to one trunked bank at a time. If you want to listen to conventional traffic at the same time, you must have another radio. Of course, there are going to be lots of complaints and dissatisfaction regarding this, but while it would be nice to only have to carry one radio while mobile, there are some good reasons it works this way. The first is from a technical standpoint: the radio would have to

re-acquire the data channel every time it re-entered the trunked bank, and you'd lose several seconds while this took place. New products on the horizon may eliminate this concern, but for now, there's no way around it.

The other reason that I've come to appreciate it is that with any sized trunking system, the volume of traffic on that system pretty much precludes using the radio for any serious scanning outside the system. Ours is tied up full-time with just dispatch channels. Even if you don't listen to all the districts, the radio stays pretty busy with dispatch, tac channels, car-to-car, etc. I really don't believe that you would hear much outside the trunked system even if it were possible, and our trunked system isn't all that large compared to some cities.

Geographically Speaking

The other popular method of organizing is by area. Organize all the south-side



Finally! A use for those cup holders that won't hold drinks! Mobile scanning presents its own challenges in putting together a bank plan. And the addition of the TrunkTracker™ almost necessitates two radios ← unless your entire town is on the trunk system — ours is not.

The BC-9000 is unique among base scanners in that it has 20 banks of 25 channels available. This helps you organize your scanning a bit better, but it does take some planning to make it all work!



stuff in one bank; all of the north in another. This means that probably some channels will have to be duplicated, like mutual aid and point-to-point channels that are in use no matter where you are. Things like fire dispatch and medical services may also not follow clean geographic lines and have to be duplicated as well. This seems like a waste of channels.

Well, back in the old days of four- and 16-channel scanners, I would have agreed. Of course, most of the four and 16-channel radios didn't have banks anyway, so the point was moot. However, with today's 200, 400, and even 1,000-channel radios, some duplication becomes a little more tolerable, and even makes some sense at times.

Another case in point: our county is divided into four precincts. Each of the precincts has its own dispatch channel. There's a detective channel, a car-to-car channel, and an emergency channel that are shared county-wide. As I mentioned earlier, I used to keep all of the police channels in one bank and scan them all full-time.

The problem is that in the car, particularly with a handheld, if you're up in the north precinct, you can't hear much of

what's going on in the south one — it's simply too far away to get anything but static. The older I get, the less tolerance I have for static. I have a theory that this has something to do with the static my wife generates, but I haven't been able to come up with any scientific proof.

In addition, there are several municipalities within the county — somewhere around 80 — some of which have their own police departments, and some that do not. Some of the municipalities which have their own departments also have their own dispatch, but some contract it out to other departments, or even to the county. The county has an additional two channels dedicated just to these municipalities: one for north side stuff and one for the west group. So, in addition to listening to the county precinct you're in, you also have to follow these municipal channels, and there may be a bunch.

So I got a bright idea: Why not give each precinct a bank? It could include the precinct channel, any municipalities in that precinct that I care to listen to, the fire dispatch channels that cover that area, and the shared channels that I want to listen to most of the time. In addition, I created a bank of all fire, one for air stuff

(when I'm near the airport at lunch time) and one or two left over for experimental stuff or special events.

This works like a charm. I simply switch banks on and off the same way I previously used channels, but now, I'm not missing all the action on other frequencies in the area. The trade-off is that there is a lot of duplication in my scanner, and there are several banks with very few channels in use. Oh well . . .

Event Scanning

A friend of mine is a nut for special events. Hmmm . . . come to think about it, even if he didn't like special events, I'd be half right! Anyway, he groups many of his scanner banks by event. He has a handful of channels that he likes to listen to all the time, and he dedicates one or two banks in one of his scanners to that, mostly grouped by geography. It's mostly local stuff that he's interested in tracking. The rest of the banks in his radios are dedicated to one type or another of special events scanning, some of which border on services.

There's a bank for severe weather events. Whenever severe weather threat-

Banks You Might Consider

Here's a "by no means complete" list of ideas to get you started.

Service

Police
Fire
Medical
Media
Aviation
Military
Ham
Business
Malls
Casinos
Unknown or experimental
Schools
Railroads
Buses/taxis
All-the-time stuff
Mutual aid/shared frequencies
Maritime, lake, river

Geographic

City
County
Local
North, South, East, West
Out-of-state
Your city
Neighboring city
Precinct or district

Special Banks

Airport problems
Parade/fair
Rail accident
Major vehicle accident
River/lake/ocean incident
Industrial incident
VIP visit
Jail or prison incident
Major media event
Sports event
Severe weather
Natural disaster
Major fire
Riot or other civil disturbance
Concert or theater event

ens, he simply flips this bank on, giving immediate him access to the highway department, weather observation channels, and ham radio frequencies that are used for storm spotting and other weather-related operations.

You might challenge this type of thinking. Consider an event that is likely to occur in your area. What would happen, say, if the President came to your town? OK, so if you live in the District of Columbia, this won't be very challenging, but if you live somewhere else, think about it. What kind of frequencies might be active because of a VIP visit? Would the person receive Secret Service protection? Their comms are mostly encrypted, so you can't listen to them, but activity on those channels might tip you off that something was about to happen.

Would your local police have a role? Sometimes they're used to provide traffic control and other assistance. What frequencies might they use? How about medical or fire services? News coverage? You can fill up a bank pretty quickly with good possibilities.

Now, depending on where you live, you might have to wait a long time to see just how good your guesses were. But once it happens, it can be quite a lot of fun and will get you in on the action just a bit earlier. And if you have more than one radio and can dedicate a bank to channels you don't need very often, it can be quite a lot of fun to plan. Even if you can't spare a bank, you can think about the frequencies and write them down somewhere. That way, you'll have the planning done if you hear something's happening and you can reprogram the scanner quickly. You do have a list of the frequencies that are normally in your scanner, don't you?

And what would happen if a factory, school, or other major facility near you had a major "event"? This could be a celebration of some sort or a disaster situation. What frequencies would be in use? What outside agencies might be called in? If you're located within listening distance of any large facility, chances are that they use radio during their day-to-day operations, most of which are probably very

boring. But if something happens, having those handy might get you information that you wouldn't have until the news at eleven. In the event of a major disaster, such as a chemical spill, that could be very good information to have in advance. Hopefully, you'll never get to test your theory, but it's a good idea to plan. And maybe there'll be a smaller event or drill so you can test your approach.

What Do You Use?

As you can see, there's no one right answer to this question. It depends a lot on the kinds of events you're likely to see in your area, as well as how much you want to listen to. There's a balancing act between scanning so much that you can't really follow anything, and listening only to one channel so you follow all that traffic but miss everything else.

One revelation from a recent AOL conference on this topic is that a lot of people are using multiple radios to overcome some of the limitations of capacity versus time to scan through the list.

I've also discovered that my mobile needs are completely unrelated to what I listen to at home. I've solved the mobile problem with the geographic method. At home, I'm still working on a geographic/event system that works, but I'm getting there.

Your Input Needed

"ScanTech" is your column. If you'd like to see a particular scanning topic covered, or have pictures you think we'd like to see, send them in. We're also looking for trunked system info in YOUR town or area. Send information to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. You can also E-mail me at <Armadillo1@aol.com> for a quicker reply. ■

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CIRCLE 76 ON READER SERVICE CARD

Product Spotlight

POP'COMM REVIEWS PRODUCTS OF INTEREST

TEN-TEC's 1254 Communications Receiver

By Peter Bertini

I've been around long enough to see stalwarts such as Hallicrafters and National felled in the face of foreign competition. I fondly remember other companies named Heathkit, Eico, Lafayette, and Knight. They supplied electronic kits for almost anything you could imagine, from stereos, TVs, and shortwave receivers, to test gear and ham transceivers. Sigh. While those kit out-fitters are now only memories, the special magic of equipment made with your own hands still remains.

TEN-TEC, Inc. has been around for 25 years and has become the primary American manufacturer of world-class amateur HF transceivers. Perhaps this is due to the legendary loyalty of TEN-TEC owners. More recently TEN-TEC has entered the electronic kit market with offerings from their T-KIT division. The newest — and most ambitious — entry so far is the T-KIT model 1254 shortwave receiver kit. When the 1254 was announced last fall, I knew it was something I had to experience first hand.

The 1254 Receiver

The 1254 receiver covers from 100 kHz to 30 MHz. Measuring a mere 2.25" x 6.5" x 6.5", it has to be the smallest communications receiver I have seen. The housing is a rugged clamshell steel enclosure with an internal aluminum chassis and a custom-molded front panel. It's coated in a handsome black finish with contrasting white lettering.

The receiver is an up-conversion design, with a first IF at 45 MHz and the second and final IF at 455 kHz. A single 4-kHz Murata ceramic filter is used for both AM and SSB modes. Tuning is in 5-kHz steps on AM and 2.5 kHz steps in the SSB/CW position. A "clarifier," or fine-tune control allows for precise tuning of SSB or CW signals. For rapid tuning a "speed" tuning rate of 100-kHz steps is selected via a front panel button.



The TEN-TEC 1254 receiver.

LED front panel indicators show the mode and tuning rate.

The frequency display is provided by a six-digit green LED display. Frequency is displayed to 100 Hz. There are three linear controls: a volume control, clarifier, and larger main-tuning knob.

Memories

The receiver powers up on the frequency and mode it was last used on. Fifteen memory channels are provided.

The MW button permits you to store the current frequency and mode to any one of the 15 memory channels. Also, note that pressing MW brings you to the most recently accessed memory location. Hitting MW again will store the frequency in that location, or, if desired, the main tuning may be used to select an alternative memory location for storage.

The V/M button toggles the tuning between the VFO and the memory channels. In the memory tune mode, the main tuning dial selects the desired memory

channel. Once tuning stops, the display reverts from the channel number to the actual stored frequency after a one-second delay. Also, while in the V/M memory tune mode, the tuning mode LED indicator is off (this is the decimal point to the right of the last frequency display digit). Recalled memory frequencies are not tunable.

AM Operation

I must admit, I had some reservations about a receiver that tunes in 5-kHz steps in the AM mode. I hooked up a 100-foot longwire to the receiver and tuned to the crowded 49- and 41-meter shortwave bands. It was early evening, and signals were strong and abundant. I was impressed to see that each tuning step usually produced a new shortwave station, loud and clear, and free of adjacent channel interference. Since it was almost like having "channelized tuning," I hardly noticed that no signal strength meter was present. The 4-kHz Murata filter did an

excellent job, and I noted no serious overload problems.

SSB/CW

For SSB operation, the BFO signal is placed in the center of the AM filter pass-band. Again, I had some serious doubts about performance. This scheme offers no adjacent sideband selectivity. First, I tried tuning in some CW signals on the 30-meter ham band (10.1 MHz). Several eastern European countries were quickly logged. The beat note was pure and clean, and the AGC action good.

This was followed by a few hours of monitoring aircraft weather on SSB, and also some ham CW and SSB activity on 75, 40, and 20 meters. While certainly not in the same league as a receiver equipped with 2.1 sideband filters, the little TEN-TEC did a credible job. Juggling the main tuning and clarifier to exactly tune into an SSB signal takes some practice, but the same limitations were noted in our review of the Lowe SRX-100 last year. One advantage over the Lowe: in SSB, the frequency displayed on the 1254 is accurate with the clarifier at center tune.

Display Noise

One small problem: the multiplexed display scheme generates a lot of RF garbage throughout the receiver's tuning range. Using an indoor antenna near the receiver can cause problems! Keep indoor active or wire antennas at least 15 feet from the receiver to avoid hearing display birdies.

Overall Impressions

Being a \$195 receiver, the 1254 has the same limitations as other receivers I have evaluated in this price class. It would be rather unfair to compare it directly against higher-end products.

The 1254 is exactly what I expect TEN-TEC intended it to be: a good quality, extremely portable and versatile SW receiver that is fun to use. It is well worth the asking price.

Power is supplied by a 12-Vdc wall-plug power supply (included), so mobile operation is also possible. It is tiny enough to be packed in a suitcase for travel, or taken along on camping trips.

The only "option" available for this receiver is the mobile/under-shelf mounting bracket. This bracket is normally supplied with the VHF radio trans-



Opening the small box yielded this large assortment of components!

ceiver kits made by T-KIT; but they share the same cabinet design. The bracket also makes a nifty table stand for the receiver, since no tilt bail is included. At present, the bracket is only available from the parts department, not via the 800 sales-line. The T-KIT 1260 transceiver's mobile mounting bracket and screws are the same.

I like my 1254. For the past two weeks it has been a pleasant diversion and company while I am working at my computer. Indeed, it is now permanently mount-

ed under my FRG-9600 VHF receiver. I hope that TEN-TEC is considering adding a high-end SWL receiver to their product line.

Technical Overview

The front end of the 1254 receiver is two J310 fets in a balanced mixer. There is no RF amplifier, nor is one needed. The 1254 receiver is very sensitive. Out-of-band RF filtering is provided to limit the RF input

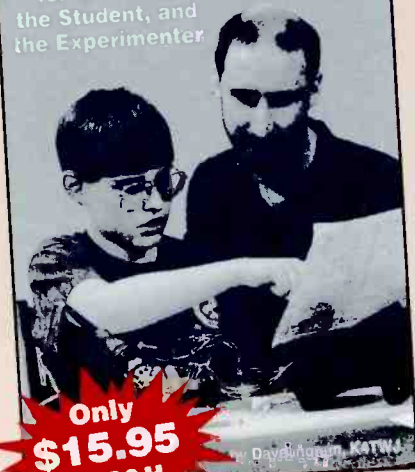


Several hours into construction, and the PC board begins to take shape!

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for signals in the 100-kHz to 30-MHz range. No other preselection is included. The first LO is provided by a single-stage synthesizer with an VCO running from 45 to 75 MHz. PIC microprocessor technology is used for tuning, synthesizer, and display control. VCO loop filtering is rather elaborate and above average. A 45-MHz crystal roofing filter is used in the first IF. The second LO is a crystal oscillator; the crystal is warped by the clarifier control for fine tuning.

The second mixer is a quad diode ring using 1N4148 silicon diodes. The 455-kHz filter is a good quality Murata 4-kHz BW ceramic filter. Two Motorola MC1350 ICs are used in the 455-kHz IF stages. The SSB detector is a NE612 doubly-balanced IC mixer using a ceramic resonator for the BFO. The overall design is conservative and reflects current design trends.

Building The 1254

If you want a 1254 in your listening post, you're going to have to build one. It is only offered in kit form. Unfortunately, the kit is recommended only for experienced builders. There are over 200 resistors and capacitors, 10 ICs, 26 transistors, and 16 diodes in this kit. I haven't bothered adding up the coils, chokes, and other components. That's a lot of soldering small components on a PC board with high parts density. You might consider one of the simpler T-KIT receivers as practice and a prelude before attempting this receiver.

You will need a good soldering iron — one that has a grounded tip designed for work with static sensitive components. I advise using a high-temperature tip slightly larger than needed. This gives better thermal mass, and allows one to quickly heat the work and do the soldering. A hotter iron also ensures that the solder and work is heated enough so that the solder flows into the work rather than puddling on the surface. I use a 700-degree tip on a Weller solder station. Keep a damp sponge handy for wiping the solder iron tip. A pair of flush cutting side cutters are needed, along with the usual assortment of screwdrivers and other small hand tools.

Getting Started

Before doing anything else, read the manual. Find the Addendum sheets and mark all changes in the manual immedi-

ately! Everything you need to know is in the manual. Do not skip steps. Before acting on a step, read one or two steps ahead first. I strongly suggest presorting all of the components.

Make sure all of the parts are there, as you may find a few extra of some values — you can't imagine the sickening feeling of having "extra" parts left over on a supposedly "finished" kit until it happens to you. Are they really "extra," or was a step missed?

A big problem area for me was reading the choke color codes. These little beasts have a sea-blue body, making the color codes extremely hard to read. Reds looked like violet, whites looked grey. Be very, very careful when sorting the choke values! I confess to having at least three chokes in the wrong places.

Do not rush construction. The manual states 25 hours for construction. There are no awards given for beating that estimate. Building this receiver should be as much fun as using the finished product. I limited myself to a maximum of one hour for any one sitting. This permitted me to finish each stage in a leisurely fashion, and gave me time to double- and triple-check my work. When I tried rushing, I found myself prone to making mistakes.

If you have any questions, reread the manual, look a few steps ahead and see if that helps. Don't be embarrassed to call the factory for help if you can't resolve a nagging question on your own. Or ask a more experienced friend for help or to double-check your work.

One nice feature of most T-KITS is that as each stage is finished, you can power up the kit and check your progress. A minimum of test equipment is needed — a voltmeter is needed for the final VCO alignment. Internal signals are used for many of the tests. The 1254 offers several such progress tests as major subsections of the receiver are completed. Unfortunately, while Progress Test 4B should have allowed me to hear multiplexer noise in the product detector, I detected nothing. A call to the factory technician didn't help. After a few hours of rechecking my work, I concluded that I had no errors and continued. Other than that one small glitch, the receiver worked when completed.

The TEN-TEC 1254 communications receiver is available directly from TEN-TEC, Inc., at 1185 Dolly Parton Parkway, Sevierville, Tennessee 37862. For more information, call TEN-TEC at 423-453-7172 or you can E-mail them at <sales@tentec.com> or visit their Website at <<http://www.tentec.com>>.

FirstRate For Drake's R8, R8A, And R8B Receivers

By Harold Ort, Editor

There was a time when I wouldn't use a computer for anything except word processing and accessing the Internet. And that was only because my original stand-alone word processor only had enough memory to store 25 or 30 pages of typewritten copy, clearly not enough for any writer. But times change, and I now enjoy the computer and all it has to offer, especially when it comes to radio related software and control. Take for example the recently upgraded FirstRate 3.12 program that makes the Drake family of great receivers even more versatile.

Computer gurus Mark Chalkley and Doug Harvey developed and wrote the first FirstRate program back in 1986, which was one of the first really good, intuitive programs on the market for radio enthusiasts with the Drake R8. The new version of FirstRate combines a huge English-language shortwave station database from TRS Consultants with full receiver control functions for Drake's R8, R8A and R8B receivers. These top-of-the-line receivers, married with FirstRate give radio enthusiasts the combination of a first rate rig and truly first rate software.

About FirstRate

Installing the program on your system is a piece of cake. Insert the 3.5-inch disk, choose "run" from the Windows™ menu, hit enter, and let the computer do the rest. You'll need to buy and connect a cable from an unused serial port to the rear of the receiver, and then possibly click-on "preferences" in the FirstRate program to ensure your receiver is checked and the correct serial port is enabled. Beyond that, it's all done for you automatically. Time to sit back and enjoy the benefits of computer control!

If you own a Drake R8, R8A or R8B receiver and a computer, this is the program you need to make your radio sing like a canary! Most folks will perhaps use the many pre-programmed logs (record) from zillions of countries, clicking-on and automatically tuning the receiver to that frequency, complete with mode, bandwidth, noise blanker on/off, and other user-selectable receiver functions.

OK, let's face it, shortwave stations change frequencies and broadcast times

as frequently as you change your socks, so being able to change the pre-programmed listings and add your own record would be a great asset. You can even import data from other sources or exchange files with other FirstRate users.

Let's take a look at how to add a new record to the program. It's as easy as 1-2-3. Here's what you do: At the top of the screen, click-on "Edit" and arrow down to "Add Record." Press "Enter" or double-click. Then using the tab key to reach each successive field, type in the appropriate data. Everything's provided from country name, station name, signal quality, frequency time on/off and days of the week. You can even add a few lines of personal notes if you wish. Receiver functions will then be displayed automatically when you call up that station and tell the FirstRate program to tune in Radio Bulgaria, for example.

For me, the beauty of this software is its searching ability. You can search for the country or station of your choice, find all stations on the air at the current time or a specified time, or find stations on a particular frequency. Or you can have the program alphabetically display "all" records, including those you've personally added to the program, along with your receiver functions.

Actual Operation

One of the best features of the FirstRate program is its ability, in the manual mode, to allow you to use the pop-up menus on the screen to change the receiver's settings; the program temporarily connects to the receiver, changes your settings, refreshes all other radio settings on the computer screen, then disconnects from the receiver. Also, by clicking on the R8 icon you can refresh the computer display, or select a record by clicking on it and moving it using the up/down arrow keys on your keyboard. Press the enter key and the FirstRate program will temporarily connect to the receiver, set your frequency from the record, refresh the settings and then disconnect from the receiver.

The FirstRate program comes with two separate and distinct databases: shortwave and broadcast band. After starting the program you're offered the choice of either of these databases. Simply double-

click on the appropriate file and the program loads it for your immediate use. Only because of a quirk with my computer, it took a few phone calls and E-mails to Mark before I was able to activate my computer's comm port and use the program. I'd try repeatedly to change my R8B's settings and was prompted "R8 Not Responding." If this happens to you, it's likely because the receiver isn't turned on, your comm port is either defective or disabled or perhaps (don't think this can't happen, because it does!) your cable isn't connected to either the radio or computer. But believe me, the first time you click on a record and it instantly changes your receiver's settings and the desired station jumps at you, you'll fall in love with the program!

The FirstRate program isn't just about adding records and controlling your Drake receiver. Not only can your computer take full control of the receiver in the VFO, Memory and Database mode, but you can also scan all (or selected) records.

Still not satisfied? Check out the Pushbutton mode which is much like the Database mode, except that a series of buttons are displayed on the screen instead of a list. You'll see one button for each station. So for example if the Voice of Russia is shown at your prescribed time as having eight frequencies active, there will be a Voice of Russia button; each subsequent press will cycle you through each of the eight frequencies. You can even cycle through the stations in reverse order.

This truly professional-operating program doesn't muddle you down with multiple keypresses to accomplish a function. Using your keyboard's Function keys you'll get instant results with a single keypress. For example, if you want to add a record to the database, hit F7. Want to change the preferences, hit F10.

Now, as if the 1,000 memories on my R8B isn't enough, with FirstRate I can "Save To File" from the Memory menu, which lets me save the receiver's memory settings to a disk file on the computer and restore them later. It's a great backup, and way of having several files with different frequencies that can be loaded at your convenience. Like the FirstRate manual says, "It is a way of expanding the number of effective memories the R8 has."

How I Got Started

Congratulations To Dave Laida of Arizona!



We just couldn't resist using this photo of Dave's stepdaughters, Hye Yon and Hye Lim Yi, at their home-built station.

Popular Communications invites you to submit, in about 150 words, how you got started in the communications hobby. Entries should be typewritten, or otherwise easily readable. If possible, your photo (no Polaroids, please) should be included.

Each month, we'll select one entry and publish it here. Submit your entry only once; we'll keep it on file. All submissions become the property of *Popular Communications*, and none will be acknowledged or returned. Entries will be selected taking into consideration the story they relate, and if it is especially interesting, unusual, or even humorous. We reserve the right to edit all submitted material for length, 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*, 25 Newbridge Road, Hicksville, NY 11801 or E-mail your entry to <popularcom@aol.com>, letting us know if you're sending photos.

Our September Winner

Pop'Comm reader Dave Laida of Sierra Vista, Arizona, is a microwave radio communications engineer. He says it was an article in the January 1997 *Smithsonian Muse* magazine that got him and his Korean stepdaughters interested in shortwave listening. He says, "We bought an MFJ regenerative shortwave receiver kit and the 1997 *World Radio TV Handbook* from advertisers in *Popular Communications*. Then I constructed a 55-foot outdoor single-wire antenna and grounding system. I also built a low-pass active filter to attenuate audio noise. Our friend Rob Steele donated a pair of amplified speakers.

Our interests are focused on international broadcast programming. We regularly listen to the British Broadcasting Corporation, Swiss Radio International, The Voice of Free China, and Voice of Russia. We have yet to hear Radio Korea International, so it has become our "rare DX" to chase."

Congratulations, Dave, for being chosen as our September "How I Got Started" winner. And a special "hello" to Hye Yon and Hye Lim Yi. Enjoy the free one-year gift subscription to *Pop'Comm*! ■

Additional Neat Features

Like I said earlier, there's more to this program than a large database that you can manipulate. How many times have you wished you had a handy world map displaying the gray-line? To find out what parts of the world are in light and darkness, simply click-on "Special" at the top of the FirstRate screen. If you've checked "Auto" in the preferences, it will display the gray-line for the current time, and update every minute. You can also enter a specific date and time for which you want to see a gray-line map. Want to find out when your QTH and Papua New Guinea will be in darkness? Do that by using the scroll bar to find when the gray-line will be in a certain position.

Similarly, you can view the Lowest Usable Frequency (LUF) and Maximum Usable Frequency (MUF) between two points on the globe at any time of day. Interested in sunspots? The LUF/MUF screen will plot graphs with specific variables based on your location in latitude and longitude along with the sunspot number (which you can, of course, modify). The program comes complete with sunspot predictions well into Cycle 23, through the year 2006.

Getting The FirstRate Program

Of course I haven't covered *every* aspect of this extremely versatile and user-friendly software, but if you get the impression it will open up a whole new world for you and your Drake R8, 8A, or 8B receiver, you're absolutely correct. I've used the R8 and R8B with the FirstRate program, and it certainly does live up to its name! These already-top-notch receivers are enhanced to the max with FirstRate!

Get this great program and you'll wonder how you ever got along without it in the first place. *Not* having FirstRate would be like having a luxury car and not wanting electric windows.

If you've got additional questions, contact Mark via E-mail at <mark.chalkley@ibm.net> or U.S. mail at Spectrum Systems, P.O. Box 1177, Saluda, VA 23149-1177. It's only \$99 with \$5 shipping in the U.S. (\$10 shipping foreign addresses). Please specify your receiver brand and model and computer operating system (Mac or Windows) when ordering by calling 800-296-2178. ■

Broadcast DXing

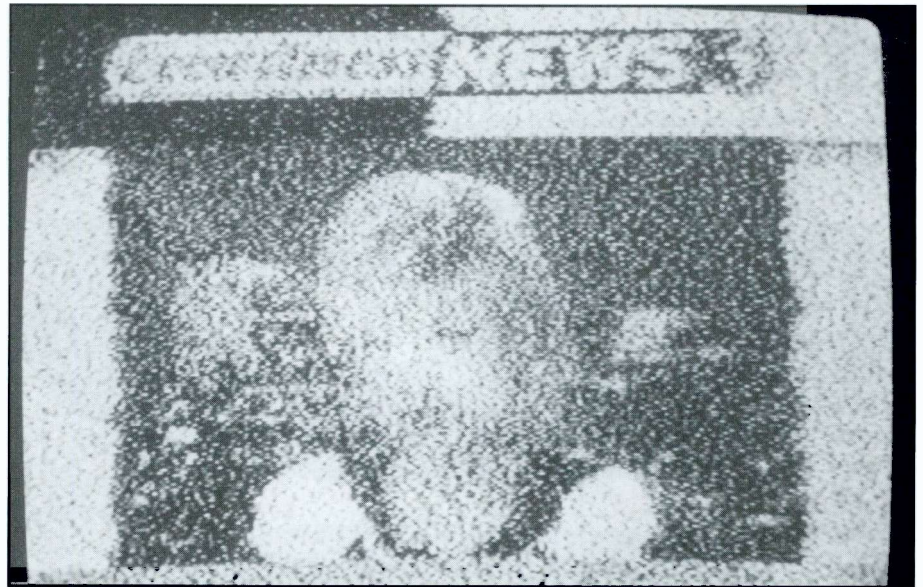
DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Intro To FM/TV DXing

The warm weather months, when extended daylight and thunderstorm static hinder AM reception, are prime time for FM and TV DXing. There are two primary modes of propagation for FM and TV DX: *E-skip* and tropospheric. *E-skip* can occur at any time, although late afternoon through sunset often provides the best openings. TV channels 2 and 3 are most likely to be affected by *E-skip*. However, less stable sporadic *E-skip* openings can occur at higher VHF frequencies, typically affecting up to channel 6 and the low end of the FM band. Openings can last anywhere from just a few minutes to a number of hours. And openings will often be from a particular direction or region at a distance of 600 to 1,500 miles. For example, WAVE Louisville, Kentucky; KYTV Springfield, Missouri; and WLBT Shreveport, Louisiana, may appear in one opening on channel 3. But there will be other times when an opening will shift around, resulting in reception of WPBT Miami, and Televisa from Mexico on channel 2 within a few minutes of each other. Transcontinental and transoceanic reception at distances of more than 2,000 miles are rare, but do occur.

Tropospheric DX is typically associated with weather fronts or temperature changes. Reception distances are generally within 1,000 miles. Early morning tropo is common on FM and VHF, as the sun rises and heats the air, producing regular reception of stations within 500 miles throughout the year. As battle zones between tropical and dry air masses or opposing winds develop in the late spring and summer, tropo reception heats up on UHF, ducting signals well beyond normal coverage areas.

Sophisticated equipment is not required to get started with FM and TV DXing. Most televisions will handle DX. Some FM receivers are susceptible to overload and images from strong locals, but the FM reception on most AM/SW DX receivers will do the job. A directional outdoor antenna on a rotor will improve your chances, especially for



Tropo DX reception of WFSB, Channel 3 in Hartford, Connecticut.

tropo DXing, or when trying to null a local station. However, when conditions are right, an indoor antenna or portable receiver's telescopic whip will suffice. Mountaintops and seashore locations will result in different, and perhaps unusual, reception under any conditions. The use of pocket televisions allows for remote-site TV DXing. *Discover DXing!* by John Zondlo includes an excellent introduction to FM and TV DXing for beginners (available from Universal Radio). *The FM Atlas* by Bruce Elving is an excellent reference, providing maps and listings for the U.S., Canada, and Mexico. Visit *Ultimate TV's Website* at <www.ultimatetv.com> for complete listings of TV stations including mailing addresses and Web page links.

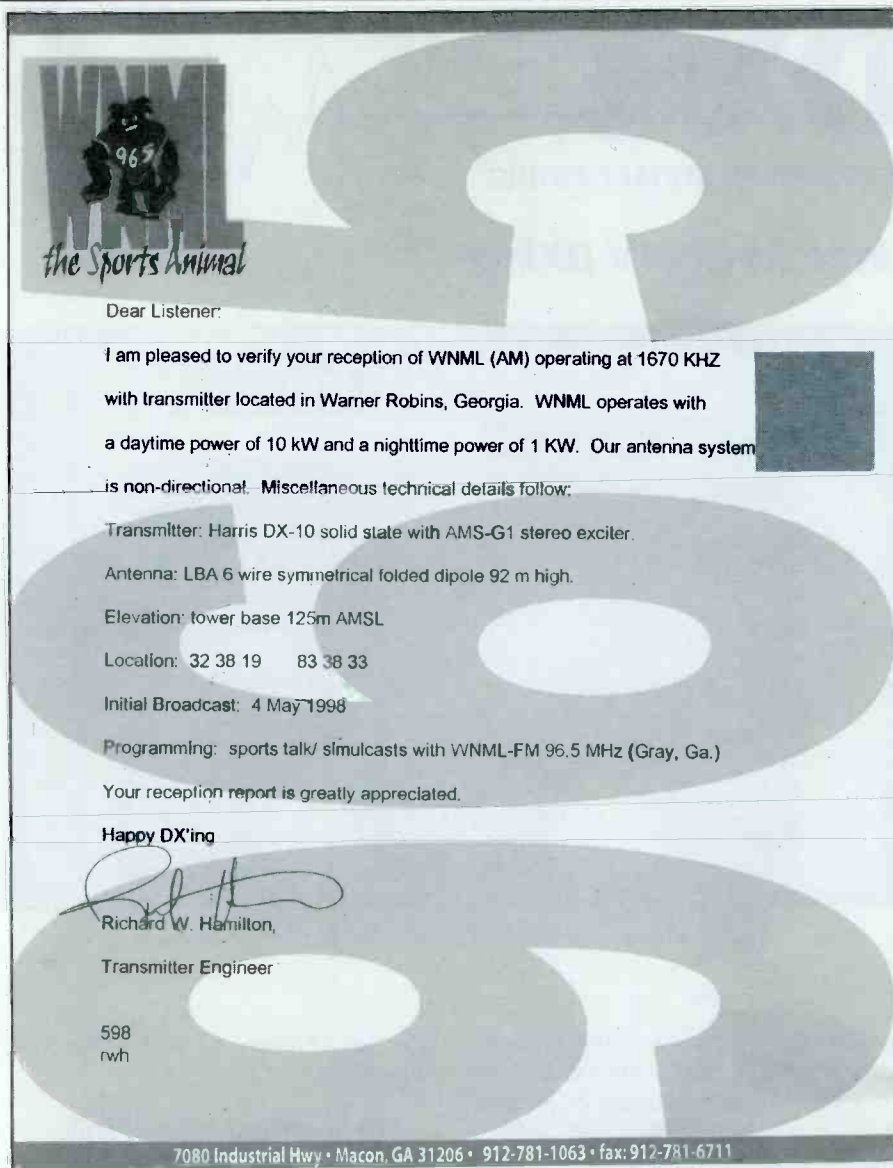
To further enhance your enjoyment, consider joining a club. The Worldwide TV-FM DX Association is the major organization dedicated to FM and TV DXing in North America (P.O. Box 501, Somersville, CT 06072). The Ontario DX Association also provides excellent coverage of FM and TV DXing along with SW, amateur, utility, and AM radio (P.O.

Box 161, Station A, Willowdale ON, M2N 5S8).

Broadcast News/Talk

WorldSpace and Baygen have teamed up to bring the Baylis generator to digital radio. Although the wind-up spring technology used in the Baygen Freeplay will not provide enough power for the WorldSpace digital radio, Baygen has been working on a more powerful version for laptop computer applications. Alternatives to spring-energy storage, including chemical storage are being investigated. WorldSpace is launching three satellites: AfriStar, AsiaStar, and AmeriStar in 1999 which will each broadcast 80 channels that can be received directly by the WorldSpace portable digital receiver.

Paxon Communications officially launches "America's seventh network," the Paxnet Television Network, on August 31. The new network will carry family and Christian programming, including *Touched By An Angel* and the Worship network. Paxnet will be broadcast mostly by UHF stations across the



WNML QSL letter signed by Richard W. Hamilton, Transmitter Engineer.

U.S. While local cable TV providers are not required to carry all satellite networks, there is what's known as a "must-carry" rule which requires cable companies to carry local TV stations. But with the huge number of satellite and local broadcasters already on cable, some providers just don't have room for more without bumping an existing service. This is resulting in some challenges to the must-carry rule.

TV Guide magazine is also experiencing difficulty keeping up with the proliferation of television networks and stations. The cost of maintaining schedule information is becoming prohibitive, such that the elimination of local listings is being considered. Broadcasters and networks would have to include their own listings or schedules in advertisements. Construction of 100-kW WHRR

Dennysville-Calais, Maine, at 102.9 has been approved. The station will serve eastern Maine and southwestern New Brunswick. WBUR Boston is now simulcasting on WRNI (ex-WRCP) Providence, Rhode Island, at 1290, bringing NPR to the Ocean State.

WLTW Lite FM 106.7 is holding the lead in the New York City ratings race, followed by Spanish-language WSKQ Mega 97.9 and WQHT Hot 97.1, with WINS 1010 the first AM station at number nine overall. However, Howard Stern holds the lead during morning drive on WXRK 92.3, followed by WSKQ, and all-news WINS in third.

X-Band Files

After experiencing a number of setbacks, WTDY has finally started broad-

casting on 1670, with the 1480 call letters changed to WTDI. The address for reception reports is Mr. Glen Gardner, P.O. Box 2058, Madison, WI 53701. WJDM Elizabeth, New Jersey, has changed calls to WBAH and is broadcasting "Radio Unica" network programs in Spanish.

KSOS Utah at 800 is moving to 1660. Colorado's KAYK at 1690 and KQXI at 1550 have been sold to Radio Disney, and have changed formats accordingly. KKSO Des Moines, Iowa, at 1390 has changed its format to business news, carrying BNN network programs, with construction of KBGG at 1700 in progress. KSMH (Sacramento's Most Holy) Auburn, California, is expected to sign on this fall at 1620, with Catholic programming. The station is actually licensed to KAH1, but leased to a religious broadcast organization for five years, before taking ownership.

QSL Information

710 KDIS Los Angeles, CA, received in eight days for taped report. Assistant CE mentioned that my report was a surprise as they have no more than 25 mv/m at two miles to the north to protect KIRO. Signed by Mike Worrall, Assistant CE. Address: 3321 La Cienega Blvd., Los Angeles, CA 90016. (Martin)

729 R. Sport, Whangarei, New Zealand, received letter in 18 days for taped report, signed by John Howson, GM. Address: P.O. Box 3526, 54 Cook Street, Auckland, New Zealand. New Zealand QSL #94. (Martin)

770 KNWX Seattle, WA, QSL card and letter received in eight days from John W. Price, Assistant Engineer. Card is for both KIRO and KNWX. Address: Entercom, 1820 Eastlake Avenue, East Seattle, WA 98102-3711. If you've been trying to QSL the station, John Price has answered all the old reports he could find back to 1993! (Martin)

1150 KXTA Los Angeles, CA, received letter with transmitter information in eight days for taped report, signed Mike Callaghan, CE KXTA/KIIS-FM. Address: 3400 Riverside Drive #800, Burbank, CA 91505. MW QSL #2481. (Martin)

1650 KGXL Costa Mesa, CA, received nice QSL card in 180 days for taped report. Address: KGIL/KGXL, 1500 Cotner Avenue, Los Angeles, CA 90025. (Martin)

1670 WNML Warner Robins, GA, partial data letter received in seven days

(Conti), in 15 days for taped report (Martin), signed Richard W. Hamilton, Transmitter Engineer. Address: 7080 Industrial Highway, Macon, GA 31206.

1690 KAYK Arvada, CO, received two PD QSL letters in six days for taped report, signed Julia Newton, Traffic Manager. Address: 730 West Hampden #300, Englewood, CO 80110-2121. (Martin)

Loggings

This month's selected loggings are brought to you by Mark Connelly from a mini-DXpedition in Ogunquit, Maine, Patrick Martin in Oregon who reports a new station signing on, Ronald Slate in southern California, and yours truly in New Hampshire during a couple of brief late-night TV DX openings.

Mark Connelly DXed with a phased broadband loop with the MFJ-1024 whip for cardioid reception, and a Drake R8A receiver from his car at the beach. Ronald Slate uses a Sangean 818CS with a 100-foot sloper and a 500-foot mini-Beverage terminated by 470 ohms and a ground rod. In addition, Ron passes on these tips: "When using a radio with a digital frequency readout (like the Sangean 818CS), if there's more than one station being heard on a particular frequency, try tuning 1 kHz off frequency. Sometimes one station will be clearer 1 kHz up or down the dial. I've used this trick in trying to ID KNSL, KFNX, KFSN, KFNT, and what may have been KFNN, all on 1510. I sometimes find using less RF gain also helps. One more tip: when using an antenna tuner, peak the tuner on the frequency you're trying to listen to, and then ever so little, detune the antenna tuner up or down from the desired frequency. Again that may help when there's more than one station on the frequency."

Ron's detuning tips bring to mind exalted carrier selectable sideband (ECSS) operation, a technique that can be used on receivers with single sideband modes to reduce interference from adjacent stations. A combination of selecting either upper or lower sideband, various bandwidths, and detuning, will often bring a signal to the surface of a crowded frequency. This method works well on receivers like the Drake R8A/B, where the filtering is loose enough to allow for discernible audio from an AM signal in the sideband modes. Some receivers like Japan Radio's NRD-535D provide an ECSS reception mode. Receivers with selectable sideband synchronous detection operate in a similar manner.

If the synchronous detection is not selectable, such as in the Sony ICF-2010, it can be forced to one side or the other by tuning slightly off frequency. Now this month's logs. All times are UTC.

550 KUZZ Bakersfield, CA with country music, IDs as "KUZZ AM and FM, 107.5 FM." (Slate)

560 KBLU Yuma, AZ IDed as "560 the news/talk station with the Michael Regan Show in the morning." (Slate)

660 KZTU Junction City, OR noted with a very strong signal here 140 miles away, parallel KPAM-860. (Martin)

711 RTM Laayoune, Western Sahara monitored at 0052 with talk in Arabic, through tough T-storm static/QRN. (Connelly)

765 Dakar, Senegal at 0049 with male

Arabic vocal, over fast sub-audible het that was presumably from Switzerland underneath. (Connelly)

770 WABC New York, NY IDed as "WABC 770, the home of the Art Bell Show." (Slate)

890 TIS San Diego, CA with information about Cabrillo National Monument, IDs sounded like "KTV-792 The Radio Information Station." (Slate)

1107 RNE5 Spain, synchronized stations at 0036 with two men in Spanish; loud! (Connelly)

1134 HRT Zadar, Croatia at 0035 initially dominating the channel with a Slavic folk vocal, then it faded under Spain. (Connelly)

1160 KSL Salt Lake City, UT with country music, news, talk, and truckers info, IDed as "1160, a BonnieVille

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The Paxnet Television Network

WPXH	44 Birmingham, AL (ex-WNAL)	KVPX	59 Las Vegas, NV
new	61 Mobile, AL	WPXB	60 Merrimack, NH (ex-WGOT)
KPPX	51 Phoenix, AZ	KAPX	14 Albuquerque, NM
KBPX	13 Flagstaff, AZ	WPXN	31 New York, NY
KYPX	42 Little Rock, AR	WUPX	51 Buffalo, NY
KPXN	30 Los Angeles, CA (ex-KZKI)	WYPX	55 Albany, NY
KSPX	29 Sacramento, CA (ex-KCMY)	WAUP	56 Syracuse, NY
KPXF	61 Fresno, CA (ex-KKAG)	new	51 Rochester, NY
KPXC	59 Denver, CO (ex-KUBD)	WRPX	47 Raleigh, NC
WHPX	26 New London, CT	WFPX	62 Fayetteville, NC
WHCT	18 Hartford, CT	WGFX	16 Greensboro, NC (ex-WAAP)
WPXW	66 Washington, DC (ex-WTKK)	new	38 Greenville/New Bern, NC
WPXJ	54 Jacksonville, FL	WVPX	23 Cleveland, OH
WOPX	56 Orlando, FL (ex-WIRB)	WLWG	62 Columbus, OH
WXPX	66 Tampa, FL (ex-WFCT)	WDPX	26 Dayton, OH (ex-WTJC)
WPXP	67 West Palm Beach, FL	KOPX	62 Oklahoma City, OK
WPXM	35 Miami, FL (ex-WCTD)	KTPX	44 Tulsa, OK
WPXA	14 Atlanta, GA (ex-WTLK)	KBSP	22 Portland, OR
WNGM	34 Athens, GA	WPPX	61 Philadelphia, PA (ex-WTGI)
KPXO	66 Honolulu, HI	WPCB	40 Pittsburgh, PA
WCFC	38 Chicago, IL	WQPX	64 Wilkes-Barre/Scranton, PA
WFHL	23 Springfield, IL	WJPX	24 San Juan, PR
WIIB	63 Indianapolis, IN	WPXQ	69 Providence, RI
KXPR	48 Cedar Rapids, IA	WNPX	28 Nashville, TN
new	67 Davenport, IA	WFBI	50 Memphis, TN
new	39 Des Moines, IA	WPXK	54 Knoxville, TN
WPXL	49 New Orleans, LA (ex-WCCL)	KPXD	68 Dallas, TX (ex-KINZ)
new	21 Shreveport, LA	new	30 Odessa, TX
new	23 Portland, ME	new	26 San Antonio, TX
WBPX	46 Boston, MA	KUPX	30 Salt Lake City, UT
WPXD	31 Detroit, MI	WPXV	49 Norfolk, VA (ex-WJCB)
WZPX	43 Grand Rapids, MI	WPXR	38 Roanoke, VA
KPXM	41 Minneapolis, MN (ex-KXLI)	KWPX	33 Seattle, WA (ex-KBGE)
new	51 Jackson, MS	new	34 Spokane, WA
WPXS	13 St. Louis, MO	WKPX	29 Charleston/Huntington, WV
KPXE	50 Kansas City, MO (ex-KYFC)	WPXE	55 Milwaukee, WI (ex-WHKE)
		WPXG	14 Green Bay, WI

Station." (Slate)

1422 Algiers, Algeria at 0012 with Arabic-style violins, poor at first, then the carrier got strong but the audio was still at a low level. (Connelly)

1512 BSKSA Jeddah, Saudi Arabia at 0116 with male Koranic a cappella vocal; excellent signal about equal to WNRB-1510 Boston! The huge strength of this so late in the DX season really surprised me. The 0100-0130 UTC slot seems to be the optimum time for Middle East propagation during spring and summer. (Connelly)

1548 VOA Kuwait City, Kuwait at 0117 with VOA program in English to fair peaks, well over the British stations. It was close to dawn on the Kuwait end of the path. (Connelly)

1550 Tindouf, Algeria heard at 2332 with string instrument and singing in a Berber tribal style, huge signal, way over

a U.S. station that had a baseball game. This was definitely the loudest pre-sunset TA. (Connelly)

1620 KYIZ pop music, comedy music, and talk, IDed as "KYIZ-1620, KBIZ-1520, the home of the Z twins." (Slate)

1690 KAYK Arvada, CO in what must have been a test of 1690 with religious music on a tape loop, then talk/preaching, followed by an open carrier. Later IDed as "KQXI 1550 AM Radio" and "1550 Kingdom Radio, Arvada/Denver." (Slate) Seems now it's Radio Disney!

Ch. 3 KTBS Shreveport, LA E-skip heard at 0310, local news with report on jobs. (Conti)

Ch. 3 KYTV Springfield, MO E-skip at 0312, KY3 local news, ad for Ozarkland John Deere. (Conti)

Ch. 3 WFSB Hartford, CT tropo at 0310, Eyewitness News Night Beat local

news. (Conti)

Ch. 3 WLBT Jackson, MS E-skip at 0325, local news with sports report, mentioning "here on WLBT." (Conti)

Ch. 8 WTNH New Haven, CT tropo monitored at 0320, Newschannel 8 local news. (Conti)

Ch. 55 WLNY Melville, NY tropo heard at 0345, classic Star Trek, "NY55" ID. (Conti)

Ch. 59 WBNE New Haven, CT tropo at 0355, end of All In The Family, visual ID. (Conti)

Ch. 69 WPXQ Providence, RI tropo monitored at 0310, Worship network program parallel local Paxnet channel 60 WPXB. (Conti)

Thanks to these fine contributors: Mark Connelly, John Ebeling, Bob Gilbert, Pat Griffith, Gary Jackson, Patrick Martin, Judith Pryor (WorldSpace), and Ronald Slate. Until next month, 73.

Applied for Permits to Construct New FM Stations

AK	Kasilof	91.5 MHz	
CA	Hornbrook	90.5 MHz	
CA	Point Reyes Sta.	90.5 MHz	180 watts
CA	Laytonville	90.1 MHz	130 watts
CO	Brush	90.3 MHz	5 kW
CO	Durango	88.5 MHz	
CO	Fort Collins	89.7 MHz	6.5 kW
CO	Loveland	89.7 MHz	60 kW
CO	Sidney	91.3 MHz	1.5 kW
DE	Harrington	88.7 MHz	
FL	Key West	89.1 MHz	
FL	Key West	90.1 MHz	
GA	Jasper	88.3 MHz	
GA	Thomson	89.9 MHz	
HI	Pahala	90.5 MHz	
IA	Cascade	88.9 MHz	
IA	Marshalltown	88.7 MHz	250 watts
IA	Mitchellville	88.9 MHz	
ID	Rathdrum	90.3 MHz	
IL	Peoria	90.7 MHz	
IN	Greenwood	89.7 MHz	2 kW
IN	Lowell	89.1 MHz	1.5 kW
IN	Michigan City	88.5 MHz	1 kW
IN	Valparaiso	91.1 MHz	150 watts
KS	Bronson	88.3 MHz	1 kW
KS	Elwood	89.7 MHz	2.6 kW
KS	Humboldt	94.3 MHz	
LA	Bunkie	89.5 MHz	1 kW
MA	Nantucket	89.5 MHz	
MD	Denton	88.7 MHz	
MD	Massey	88.7 MHz	
MI	East Tawas	90.9 MHz	
MI	Lake Orion	90.3 MHz	
MI	Rose Twp.	90.9 MHz	5 kW
MN	Alexandria	89.5 MHz	
MO	Brookline	102.1 MHz	
MO	Farmington	88.9 MHz	
MO	Garden City	105.3 MHz	
MT	Butte	88.3 MHz	1 kW
MT	Great Falls	91.5 MHz	
MT	Great Falls	91.9 MHz	
MT	Missoula	88.1 MHz	
MT	Missoula	88.3 MHz	
NC	Elizabeth City	88.3 MHz	
NC	Hickory	89.1 MHz	
ND	Bismarck	91.9 MHz	
NE	Hastings	91.7 MHz	500 watts
NE	Hubbard	88.1 MHz	2.8 kW
NE	Ponca	88.1 MHz	
NM	Fruitland	91.7 MHz	3 kW
NV	Mesquite	91.7 MHz	3 kW
OH	Newark	89.3 MHz	6 kW
OH	Norwalk	90.7 MHz	2 kW
OK	Pocola	88.1 MHz	26 kW
OR	Bend	90.5 MHz	400 watts
OR	Coos Bay	90.5 MHz	
OR	Emigrant Vly.	90.5 MHz	
OR	Florence	91.7 MHz	
OR	Roseburg	90.5 MHz	MHz
OR	Salem	90.3 MHz	
PA	Coatesville	89.3 MHz	280 watts
PA	Middletown	88.7 MHz	3.1 kW
PA	Ohiopyle	89.1 MHz	160 watts

PA	Shenandoah	91.5 MHz	
PA	Youngsville	88.5 MHz	100 watts
RI	Coventry	91.5 MHz	
SC	Dillon	90.5 MHz	
SD	Rapid City	90.3 MHz	250 watts
SD	Flandreau	107.9 MHz	
TN	Brownsville	88.3 MHz	500 watts
TX	Fannett	90.5 MHz	20 kW
TX	Freer	90.7 MHz	20 kW
TX	Plainview	88.5 MHz	3 kW
TX	Weatherford	88.5 MHz	6 kW
VA	Belle Haven	90.1 MHz	
VA	Cape Charles	89.1 MHz	
VA	Chase City	90.1 MHz	
VA	Eastville	89.1 MHz	
VA	Heathsville	89.1 MHz	
WI	Random Lake	91.3 MHz	2.6 kW
WI	Richland Ctr.	89.3 MHz	
WY	Cheyenne	89.7 MHz	100 kW
WY	Orchard Vly.	89.7 MHz	80 kW

Granted Permits to Construct New FM Stations

AR	Des Arc	91.7 MHz	100 kW
AR	Mountain Home	88.7 MHz	
CO	Grand Junction	100.7 MHz	
GA	Talking Rock	100.1 MHz	3.53 kW
IA	Castana	107.5 MHz	
ID	McCall	98.3 MHz	100 kW
MI	Gladstone	105.5 MHz	
MN	Pilager	95.9 MHz	6 kW
MO	La Monte	97.1 MHz	8 kW
MT	Baker	100.5 MHz	
NY	Calverton	105.3 MHz	
OK	Magnum	97.7 MHz	
PA	West Chester	91.7 MHz	100 watts
SD	Aberdeen	106.7 MHz	100 kW
TX	Callisburg	91.9 MHz	
VI	Frederiksted	98.5 MHz	
WI	Algoma	104.1 MHz	
WI	Forestville	102.1 MHz	
WY	Buffalo	90.5 MHz	
WY	Midwest	107.9 MHz	

Cancelled

KAAM	Madison, SD	91.1 MHz	230 watts
KSKR	Whitefish, MT	1450 kHz	
KWHN-FM	Haynesville, LA	105.5 MHz	
WALP	Corinth, KS	90.5 MHz	
WJTA	Kosciusko, MS	91.7 MHz	
WVTH	Goodman, KS	89.5 MHz	

Requesting AM Facility Changes

KKXL	Grand Forks, ND	1440 kHz	Seeks power change
WNTT	Tazewell, TN	1250 kHz	Seeks changed hours

Changed AM Facilities

KWTX	Waco, TX	1230 kHz	Reduced power
WGLB	Port Washington, WI	1560 kHz	Changed community & power
WKBO	Harrisburg, PA	1230 kHz	Reduced power

Requesting Changed FM Frequency

KKOL-FM Hampton, AR 106.5 MHz
 WKTO Edgewater, FL 88.7 MHz Seeks move to 88.9 MHz

Changed FM Frequency

KFIX Plainville, KS 96.7 MHz Moved to 96.6 MHz

New AM Call Letters Issued

KBDB Sparks, NV
 KBDF Brigham City, UT
 WAZG Myrtle Beach, SC
 WAZI Sussex, WI
 WAZJ Atlanta, GA

Pending AM Call Letter Changes

New	Old	
WCOW	WKLJ	Sparta, WI
WOMN	WOTS	Kissimmee, FL
WRNI	WRCP	Providence, RI

Changed AM Call Letters

KAAN	KIRK	Bethany, MO
KFXX	KKSN	Vancouver, WA
KKSN	KFXX	Oregon City, OR
KMSL	KNSE	Ontario, CA
KVCU	KBCO	Boulder, CO
KXXT	KLDZ	Santa Barbara, CA
WBHR	WVAL	Sauk Rapids, WI
WCHR	WTTM	Trenton, NJ
WDYZ	WHIM	West Warwick, RI
WIVR	WNGO	Mayfield, KY
WJWK	WJPY	Seaford, DE
WKDY	WMMZ	Spartanburg, SC
WMDM	WAZC	Lexington Park, MD
WSTK	WLAS	Jacksonville, NC
WTEM	WWRC	Washington, DC
WTTM	WAXK	Princeton, NJ
WVAL	WBHR	Sauk Rapids, WI
WWJY	WNLC	New London, CT
WWRC	WTEM	Bethesda, MD

New FM Call Letters Issued

KBAP	King City, CA
KBDA	Great Bend, KS
KBDC	Mason City, IA
KBDD	Winfield, KS
KBDE	Gatesville, TX
KBDH	San Ardo, CA
KBTA-FM	Batesville, AR
KCSH	Ellensburg, WA
KDTL	Dermott, AR
KHJP	Leone, AS
KHJS	Pago Pago, AS
KIRK	Macon, MO

KVRN	Marvell, AR
KZDY	Cawker City, KS
WAZD	Savannah, TN
WBBI	Endwell, NY
WKXX	Pine Hill, AL
WLWJ	Masontown, PA
WTBB	Gadsden, AL
WXXP	Calverton, NY

Changed FM Call Letters

New	Old	
KBEV-FM	KDBM-FM	Dillon, MT
KBZG	KRIM	Payson, AZ
KFEB	KAVY	Campbell, MO
KHTE	KKYK-FM	Lonoke, AR
KXTT	KUGN-FM	Eugene, OR
KLCA	KRZQ-FM	Tahoe City, CA
KMMG	KBFG	Santa Fe, NM
KOES	KTFW	Stamford, TX
KOOK-FM	KIDX	Billings, MT
KPRH	KASZ	Montrose, CO
KQJZ	KLZX-FM	Grover City, CA
KRKR	KNET-FM	Lincoln, NE
KRZQ-FM	KIRK	Sparks, NV
KTFW	KCLE-FM	Glen Rose, TX
KTKY	KZTX	Refugio, TX
KUUU	KBCO	Brigham City, UT
KXXL	KANG	Sun Valley, NV
KYOR	KYOR-FM	Yucca Valley, CA
KZRQ	KQMO	Ash Grove, MO
KZYQ	KDTL	Lake Vlg., AR
WAFM	WCRQ-FM	Arab, AL
WAZU	WAZU-FM	Circleville, OH
WBLO	WLUX	Charlestown, IN
WBVS	WKBM	Coal City, IL
WCHR-FM	WCHR	Manahawkin, NJ
WEGH	WKOK-FM	Northumberland, PA
WESK	WXST	Loudon, TN
WEXP	WADT	Brandon, VT
WFGF	WYRX	Lima, OH
WFNC-FM	WJSK	Lumberton, NC
WGBG	WSUX	Seaford, DE
WHKB	WAAH	Houghton, MI
WIVR-FM	WBLN	Mayfield, KY
WLTB	WGRG	Owego, NY
WMKO	WAWM	Marco, FL
WMWX	WKZS	Auburn, ME
WNJO	WCHR	Trenton, NJ
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WTOP-FM	WUPP	Warrenton, VA
WUPP	WTOP-FM	Warrenton, VA
WVXA	WMLQ	Rogers City, MI
WWSN	WFGA	Waycross, GA
WYLY	WMMA	Lebanon, OH

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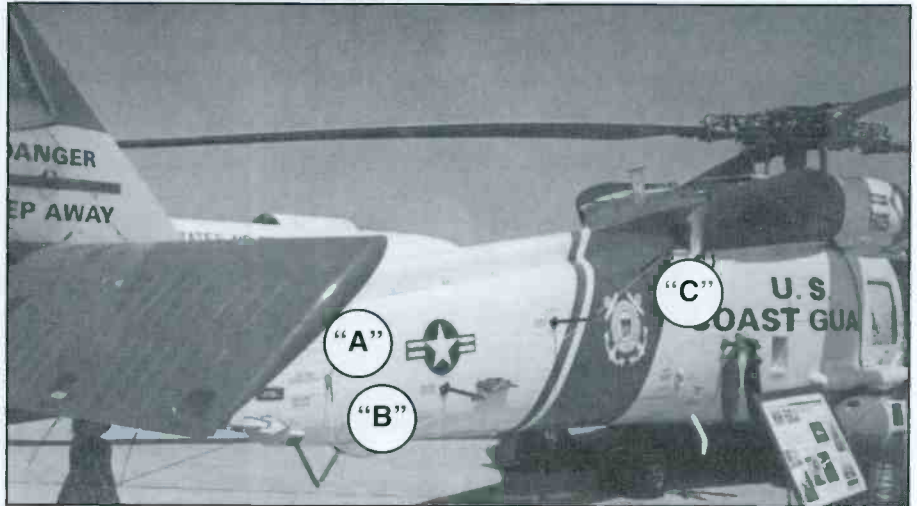
YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

ARIA — Advanced Range Instrumentation Aircraft

Often mistaken as "Orion," the call-sign ARIA — pronounced "Ah-RYE-ah," which stands for Advanced Range Instrumentation Aircraft, is an Air Force aircraft that records telemetry from space vehicles, such as the space shuttle and ballistic missiles. Often misidentified or unidentified, the ARIA birds have the ability to acquire, track, record, and retransmit telemetry signals, primarily in the S-band (2,200 to 2,400 MHz) from practically anywhere in the world. Normally, the telemetry data is obtained in locations like broad ocean areas and remote land areas, which are outside the coverage of ground stations. During orbital missions, ARIA shadows the path of spacecraft for about 2,000 miles, recording about 9,200 feet of magnetic tape, which equals 15 minutes of data. Selected portions of the data may be retransmitted in real-time, via UHF satellite, to enable the launching agency to monitor system performance.

The ARIA deploys throughout the world, often operating in remote regions, to obtain telemetry data from orbital and re-entry vehicles as well as air-to-air and cruise missile tests. This includes support of tests conducted at Cape Canaveral AFS (Eastern Test Range), Vandenberg AFB (Western Test Range), Hill AFB, Eglin AFB, and from ships and submarines. When bird-dogging air-to-air and cruise missile launches, these flights last longer than most, sometimes requiring five hours of continuous airborne tracking. If a missile accidentally veers off course or otherwise malfunctions, mission commanders can steer the device by remote control with an on-board joystick. For re-entry missions, ARIA traces space vehicles during the last three minutes of flight, from the edge of space to impact. Two EC-18s are equipped with high-speed still and motion picture cameras capable of infrared and spectral photography, which aids in determining vehicle survivability.

ARIA aircraft have a sagging or droopy nose as its most distinguishing feature,



A USCGC HH-60 6025 was on display at the Andrews DoD Open House. Follow the route of the HF antenna from points "A" through "C."

earning it the nicknames "Droop Snoot" and "Snoopy Nose." The "beak" is actually a 10-foot radome housing a seven-foot steerable dish antenna. This antenna subsystem currently has the capability to receive and track telemetry signals primarily in the S-band frequency range from 2,200 to 2,400 MHz, and the C-band frequency range from 4,150 to 4,250 MHz. With additional modifications to this subsystem, ARIA can receive and record L-band and P-band frequencies.

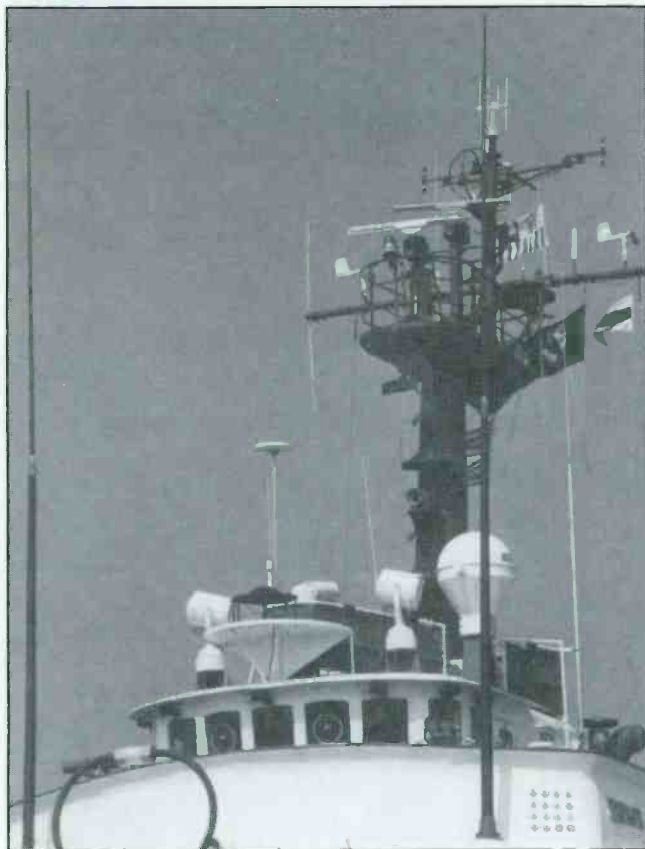
The ARIA also has a probe antenna on each wingtip and a trailing wire antenna on the bottom of the fuselage (EC-135E only) used for high frequency (HF) radio transmission and reception. Three receiver/transmitter sets comprise the system for HF mission communications. Two separate full-duplex links (three over water using the trailing wire antenna) may be used at one time. This system is separate from the flight crew HF radios.

Further external modifications include antennas for data retransmission via UHF satellite. A 200-watt UHF satellite terminal permits voice and data retransmission through a 1000-watt UHF satellite terminal. Flight crew communications include two UHF, two VHF, and two HF radios

for aircraft operations. The UHF radios are accessible by the mission crew for mission operations. New 1000-watt HF SSB radios are currently being installed on all aircraft allowing for greater ease of operation and maintenance. Inmarsat has also been installed on one ARIA adding clear voice and low bandwidth data communications via the Inmarsat satellite. Voice communications provide a link between the deployed aircraft and the ARIA Operations Control Center (AOCC or "ARIA Control") at Edwards AFB for flight-following and mission updates during aircraft deployments. Data retransmission to the launch agency via satellite allows instantaneous analysis of critical events on board the spacecraft. The ARIA also uses the FLTSAT (Navy Fleet Satellites), LEASAT (Leased Satellites), LES (Lincoln Experimental Satellites), and UFO (UHF Follow-On Satellites) satellite systems during satellite voice communications and data retransmission.

History

In the early 1960s, the National Aeronautics and Space Administration



Ralph Craig took this photo of the impressive collection of antennas on the mast of USCGC Reliance. (WMEC-615) ←

The drooped nose of the EC-18 contains a steerable radar dish. (USAF Photo) ↓



(NASA) realized that the lunar missions of the Apollo program would require a worldwide network of tracking and telemetry stations, many positioned in remote regions of the world. The Department of Defense (DoD) was also faced with similar considerations for its unmanned orbital and ballistic missile re-entry test programs. Since land stations are obviously limited by geographical constraints, and instrumentation ships cannot be moved quickly enough to cover different positions during the same mission, it soon became evident that large gaps in coverage would occur. To fill these gaps, a new concept in tracking stations was developed: a high-speed aircraft containing the necessary instrumentation to assure spacecraft acquisition, tracking, and telemetry data recording. The same aircraft could provide coverage needed for NASA's manned space flight operations, as well as events of interest to the DoD, such as orbital or ballistic missile re-entry tests. The airborne station concept became a reality in what was known originally as the Apollo/Range Instrumentation Aircraft (A/RIA). This "highly mobile" station was to operate worldwide, to receive and transmit astronaut voices, and to record telemetry information from both the Apollo spacecraft and other NASA and DoD unmanned

space vehicles. To implement the concept, NASA and DoD jointly funded the modification of eight C-135 jet transport/cargo aircraft. The A/RIA, designated EC-135N, became operational in January 1968, as part of the Apollo program that placed a man on the moon in 1969. During these lunar missions, ARIA's job was to receive, record, and retransmit the telemetry data and voice communications between astronauts and Houston control. When NASA halted the Apollo program in December 1972, ARIA had a hand in helping 12 astronauts set foot on the surface of the moon. The crew of ARIA Four was the first to make contact with the astronauts of the ill-fated Apollo 13 after they re-entered the Earth's atmosphere, a little known fact director Ron Howard left out of his movie, according to the USAF.

The Air Force Eastern Test Range (AFETR) was selected to operate and maintain the system in support of the test and evaluation (T&E) community. The initial fleet of ARIAs, and eight EC-135Ns were based at Patrick Air Force Base, Florida. In December 1975, after seven years of operation by the Eastern Test Range, the ARIA (now re-designated Advanced Range Instrumentation Aircraft following completion of the Apollo program) were transferred to the

4950th Test Wing, Wright-Patterson AFB, Ohio. There, the ARIA fleet underwent numerous conversions, including re-engineering of the EC-135N ARIA to the EC-135E and the acquisition and conversion of used Boeing 707 commercial airliners in 1982. The Air Force bought eight used Boeing 707-320Cs from American Airlines, modifying the jets to the ARIA configuration and dubbing them EC-18Bs. The EC-18B, which is larger than the EC-135N, carries a bigger payload and operates on shorter runways.

ARIA moved again in 1994, relocating to Edwards AFB, California, in the Mojave Desert's Antelope Valley. The 452nd Flight Test Squadron, 412th Test Wing, presently manages the airborne telemetry aircraft, four EC-135Es and three EC-18s — the current ARIA fleet.

ARIA Frequencies

The ARIAs can be predicted to be aloft supporting shuttle launches on the East Coast of the U.S. and missile launches from the West Coast. ARIAs frequently make use of duplex frequencies. So if you can hear one part of the transmission, it's a good idea to hunt for another frequency. Here are some previously logged ARIA frequencies to check (kHz in USB): 3029 (duplex with 6889), 3162,

4486, 4760, 5120, 5145.5 (duplex on 7706.5), 5700, 5822, 5837, 6750, 6820, 6871, 6889 (duplex on 3029), 7705, 7706.5 (duplex on 5145.5), 7929, 9022, 9215, 10272, 10352 (duplex with 11104), 10510, 10660, 10780 (Cape Radio primary), 10804, 11104 (duplex with 10352, 11621 and 13878), 11205, 11414, 11621 (duplex on 11104, 13878), 12107 (duplex with 13787), 13218, 13787 (duplex with 12107), 13878 (duplex with 11104 /11621), 13900 (duplex on 15793), 14432, 14937 (duplex on 17560), 15560, 15793 (duplex with 13900), 16246, 17554, 17560 (duplex with 14937).

Recently, I had the pleasure of attending the Andrews AFB, Maryland, DoD Open House and meeting with several folks. Tim Tyler, Dave Wilson, and Lyn Kennedy were among those I've known for some time who were in attendance. It was nice to meet Russ Plante there also. I owe Russ a cup of coffee (at least — hi!) next time for all his help. Unfortunately, I missed my meet-up time for Tim Braun due to being in a very long line to see SAM 26000 before it was taken to the Air Force Museum in Dayton for retirement. I'm still in line — hi! I met other nice folks and had a great time overall.

While there, we spoke to the crew of an EF-111 and learned that the last flight of the EF-111 was to take place on June 19th from the 429th Electronic Combat Squadron's home base of Cannon AFB, New Mexico to the Aerospace Maintenance & Regeneration Center at Davis-Monthan AFB, Arizona (aka "the boneyard"). The regular F-111s have long ago been retired by the USAF. So, by the time you read this, the last "Raven" flight will have taken place, leaving (I believe) only the Royal Australian Air Force flying the 'vark. All in all, a great time.

Digital News

Eddy Waters, Australia, reports having found UAI3, Nakhodka Radio, Russia, sending baudot RTTY messages in Russian on 6407.0 kHz at different times, all 50/170. Eddy has not seen RTTY on this frequency before.

Dave Wright (TX) reports logging LOV3, the Argentine Navy Base Naval Almirante Berisso, Tierra Del Fuego, Argentina on 8318.0 kHz at 0100 also in baudot RTTY, 100/170. They were sending five-figure-grouped messages.

Reader Mail

Al Bauernschmidt, N3KPJ (PA) checks

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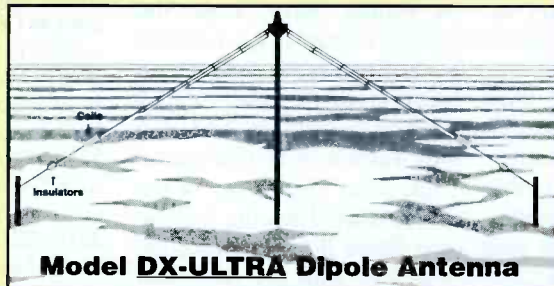
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in with some first time logs this month, using a Kenwood TS-440S and an AR-8000 for his primary monitoring setup. His antennas are a Butternut vertical and a 50-foot random wire. Future plans are to add a Drake R8B before the end of this year. Al enjoys monitoring the USCG.

Also checking in for the first time with logs this month are "RC" from McAllen, Texas, and Simon Denneen from the Gold Coast, Queensland, Australia. Welcome!

Ralph Craig sent in several photos of the USCGC *Reliance* (WMEC-615) when she was homeported out of New Castle, NH. The cutter was later moved to Portsmouth, VA.

Joe Olig gives us a status on the red painting of USCG icebreakers. Joe noted a report that indicates painting of the Great Lakes-based USCGC *Mackinaw* (WAGB-83) started the end of May and should be finished by now.

Bob Montgomery, logging editor for *The Lowdown*, the official club publication of the Longwave Club of America, and Steve Ratzlaff, also a member of LWCA, each wrote concerning the log of VTX3 on 18.2 kHz and the ID of this station as the Indian Navy, from the Vijayanarayanam transmit site, near the Tuticorin Naval Base in the southern tip of India. Steve started hearing VTX3 from Oregon last November, and also heard it from Tucson over Christmas. Another DXer, John Lauermen, in the Seattle area, also started hearing it about the same time Steve did. He wrote the FCC concerning it, with no reply until recently, when they gave him the city it was located in and the coordinates, same as reported here. Bob says that the LWCA was able to independently confirm in June the same identity for the station.

Steve also sent in these IDs for Jon Van Kay's unidentified LF beacons in the June issue: 305 PEE, AK, Talkeetna 250W, only one listed near that freq in AK; 314 SPY, AK, St. Paul Island (Pribilof Islands) 1 kW; 356 HHM AK, Kotzebue 1 kW; 382 JNR AK, Unalakleet 1 kW; 390 HBT AK, Sand Point 1 kW; 153/171/180/234/243 are all Russian LWBC stations at several places in Russia, with 250-1000 kW power. SPY and HBT, plus several other Alaskan beacons, and all the Russian LWBC's are heard on the West coast during the winter Steve reports. Thanks guys.

While I was at it, I snagged a sample copy of *The Lowdown*. It's a very worthwhile publication for those of you interested in LF and VLF reception. The Longwave Club of America was orga-

nized in January of 1974 to promote both DXing and experimenting on frequencies below 550 kHz and activity on the 1750 meter band. Membership dues are \$18.00 a year in the United States, \$20 a year in Canada and Mexico, and \$26 a year for overseas members. These rates include a copy of *The Lowdown*. If you're interested in learning more about the Longwave Club of America, write Bill Oliver at 45 Wildflower Rd., Levittown, PA 19057 or by E-mail at <boliver@blackboard.com>. You can visit the official LWCA homepage at <<http://www.anarc.org/lwca/>>.

Now, on with this month's show.

UTE Logging's SSB/CW/DIGITAL

418: OXZ, Lyngby Radio, Denmark at 2052 in CW w/ID & nav wngs (in EE). (HOOD)

445: VID, Darwin radio, Australia at 1110 in CW, clear signal w/wx info. (EW)

1710: SDJ, Stockholm Radio, Sweden at 0748 in USB wx forecasts (in EE). (HOOD)

2477: SJPB, M/V United Star at 2327 in ARQ w/situation report. (AB)

2526.5: XU7CA, TKH Lidiya at 1930 in RTTY 50/170 msg to "Radio St Peterburg Alteks" from Km Kiselev via UHP5. (HOOD)

2804.8: CCS, Chilean Navy, Santiago, Chile at 0820 in RTTY 100/850 w/5L. (IJ)

2965: Unid stn Rptng only "UT" in CW at 1710 w/heavy QRM from Bangkok Volmet in USB on same freq. (TY)

3150: PCD, Mossad, ISR at 2300 in CW w/PCD txm. (AB) Same, hrd in USB at 2030, also noted on 4270 kHz. (TY)

3216: ZKDC, Deep Cove Outdoor Education center, New Zealand at 0730 in USB w/2 OMs on their evening sked, they specialize in taking school children on outdoor pursuits, tramping & cruises in the Fiordland National Park & Sounds. (IJ)

3261: Cuba? CW net heard very briefly at 1100. (AWH)

3354: ZKCT, Civil Defence, Palmerston North, New Zealand at 2110 in USB w/rdocs on secondary CH#GOLF. Some stations were having comms problems on their primary 5 MHz channel re earthquake appeared to have knocked some of their Codan HF radios out of alignment. (IJ)

3371.5: Unid stn 4XML Rptng "V BFR7 DE 4XML" in powerful CW at 1820, poss from mainland China. (TY)

3470: Stavanger Rescue, Norway at 1057 in USB in rdo ck w/Kinloss Rescue. (AG)

3737: UIW, Kaliningrad Radio at 2209 in CW w/msg to UAUJ: BATM Porfiriy Chanchibadze. (HOOD)

4028: Cuban YL/SS w/5F msg in AM heard at 0517. (TS)

4045: VK42 working VK35 at 1057 in USB w/general chatter. (SD)

4055: VJC, RFDS Broken Hill, NSW, Australia at 0825 in USB, YL w/wx forecasts & road reports. (IJ)

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)

4119: Whiskey Bravo November 6510 c/g Whiskey Lima Oscar at 2350 in USB, no joy. (RC) (*WBN6510 is the Crowley Maritime Tug Sentinel, WLO is the maritime coastal station Mobile Radio. The coastal stn would have been on 4411 — Ed.*)

4165: YL/EE, MIW2, Mossad, Israel, hrd in USB at 2015. Also noted on 6745 kHz. (TY)

4197: UTAH, TKH STK-1231 at 0830 w/CW msg from Km Linkevich to AMISCO, Tallinn via UCW4. (HOOD)

4222: XSN, Ningbo Radio at 1805 w/CW ID & QRU. (HOOD)

4228.5: VIM, Melbourne radio, Australia at 1237 in cw w/freq information. (EW)

4263.3: ZLO, Waiouru radio, New Zealand heard at 1243 in cw w/noisy over-modulated signal. (EW)

4343: RKLM, Arkhangelsk Radio at 2214 w/CW ID (to "4LY"). (HOOD)

4360: Abnormal Mossad transmission hrd in USB at 2045, YL/EE Rptg "Sierra Yankee November Two" for more than 30 mins, also noted on 5629. Another day normal SYN2 hrd at same time. (TY)

4387: WOO, AT&T Coastal Stn New Jersey at 0200 in USB w/computer voice, WOO traffic list. (RC)

4419: Australian tuna fishermen at 1007 in USB talking about the fish's afternoon feeding habits using remarkably colorful language. (SD)

4445: ZMH31, Russell Radio, New Zealand at 0650 in USB w/check-ins from various boats around the South Pacific for posn reports, etc. also giving out wx forecasts. (IJ)

4460: FTJ Mossad, ISR heard at 2300 in AM //2626 kHz. (AB)

4480: SS/YL w/5F in computer voice in AM at 0330, at 0346 ends w/what sounds like "hello" 3 times, lots of QRN. (*If there was a pause between the second & third "hello," then it was probably "final, final...final," if the spacing was even, it was probably "zero...zero...zero" — Ed.*)

4483: VZX, Penta COMSTAT w/afternoon coastal sked at 0645 in USB w/VZX receiving posn reports from vessels including Allena, Anitra V, nothing hrd from Diversion & Jasmine, Manutai, Miriama, Rosenkavalier,

Samakan, Telofer, Van Diemen, Wild Swan, Billy Boy II, & Rainer Christina. (SD)
4495: At 2335 in USB, OM/SS "esparar esparar copio" over & over, no joy. Then "is anyone alive out there" followed by "a lunes siete a media, adios." (RC)
4503: Unid "time station" at 2215 in CW, transmits time in four digits (UTC+4). Moved from 4073 kHz. (AB)
4666: Bodo aero (Norway) heard at 2010 in USB clg Sabre 33, adv still poor, QSY 6544 kHz. (AG)
4708: Unid stn YTDL Rptng "V 8IDZ DE YTDL" in powerful CW at 1645. Another day this stn heard on 8013 kHz at 0925. Poss from mainland China. (TY)
4739: BUCK wkg "Red Claw 08" in USB at 0201. USN exercise net. (TS)
4765.4: Cape Radio at 1200 in USB w/usual warbly carrier here, indicating voice net freq is 4766.4, though no tfc heard there (day after launch). Another one w/carrier on 4706.4, so voice freq 4707.4. (AWH)
4770: Cuban Atencion stn at 1134 w/"962 03" old call-up. (AWH)
4891: Mexican Military, Navy? at 1103 in CW, XCWB clg XBRF1, responded. (AWH)
5090: Telecom, Suva, Fiji at 0625 in USB, OM adv he would put through the collect call. Happened to look up the latest 1998 Fijian Telephone book & it lists 30 Outpost stations which use HF Radio Telephone links. (IJ)
5110: VJN, RFDS Cairns Base, w/recorded message heard at 0733 in USB also attempts by Australian OM 4RO Mobile to contact base but badly QRMed by strong ANDVT comms. (SD)
5206: CONTROL, Royal Navy training net at 0720 in USB w/KA, KN, etc. (AB)
5257: Cuba, Vocoder, 1323-1330*, Russian-mode scrambled audio in USB w/SS test counts, 100 baud key data stream alongside. At 1325 clear "oye oye," key stream still running, then alternating between clear & scrambled. (AWH)
5382: DEFIANT GRAY, unid USN static tactical ship callsign, at 1510 in USB w/MOTHER HEN, PANTHER, PREDATOR, TANGO CHARLIE, GRINCH & EAGLE CLEARANCE, others, here for four days w/tfc re sensors, calibrations, over-flying a/c, etc. Believed related to Rolling Airframe Missile (RAM) Block-1 upgrade "fleet firing" phase of testing reported in *Navy News*. (Ed.)
5383: ZKCT, Civil Defence Palmerston North, New Zealand at 2105 in USB w/weekly check-ins to the net on CH# Foxtrot. Many stations made comments about the previous days earthquake. (IJ)
5455: VKS737, Adelaide Base at 0814 in USB w/evening sked. (SD)
5637: Cuban Babblar heard at 2242 idle in USB. (AWH)
5643: Sydney clg Cult 1 & 2 (self-IDed as F-111s) at 0740 in USB, adv to remain outside control zone until cleared to Amberley & to contact Brisbane Center on 126.5 approaching 150M from Brisbane. (SD)
5651: USCG CommSta New Orleans at 1324 in USB w/kg unid vsl (inaudible), "talk to you

again in four hours" & off. (AWH)
5673: Beijing Volmet, China, YL w/flying wx in EE at 1110 in over-modulated USB, also noted on 3458 kHz. (TY)
5680: PC145 at 1047 clg Glucksburg Rescue (D). Kinloss Rescue (G) at 1127 w/kg Swedish Coast Guard 583 enrt to Kinloss for visit. Glucksburg Rescue at 1105 w/kg DRNN (D). Air Force 276 at 1144 w/kg Sweden Air Rescue (S). Bodo (NOR) at 2009 w/kg Sabre 33, req QSY 4666 kHz. 3IM94 at 1359 clg Kinloss, Puma helo w/4 POB enrt from EGOV to EGAA eta 1540z, rqst radio watch, is over Irish Sea. Rescue 115 at 1525 clg Malin Head Radio (IRL). Coastguard Rescue Mike Uniform at 1158 adv Kinloss Rescue that "Target is T4" (dead). India Zero 113 (I) at 1425 in r/check w/Kinloss (believed to be an Italian Navy Atlantic!). Sabre 42 at 2100 in r/check w/Stavanger Rescue (NOR). Stavanger Rescue at 2129 w/kg Tromsø in nn. SHF 486 at 2151 clg Kinloss for r/watch, adv was a Chinook helo w/15 pob a/b 2 hrs between Great Glen & Ben Nevis. (SHF = Support Helicopter Force). RAFAIR 7475 at 1112 asking for r/watch from Kinloss, was airborne from Bruggen (D) enrt to Wattisham, 8 POB. Koksidge Rescue (BEL) at 1253 in r/check w/Belgian Air Force 94. All in USB. (AG)
5696: At 0158 RESCUE 1503 w/pp re found source of ELT on Czech fishing vsl DOMINO, 43 ft fishing vsl, contacted DOMINO on Ch.16, after hard time communicating problem to Domino, ELT was turned off, continued search showed no further ELT activity in area. Due to no other satellite pass for five hrs, 1503 ordered to RTB. At 0208 pp by CAMSLANT w/AACC ATLANTIC AIR COMMAND CENTER adv 1503 IFE of 757 a/c at 41-34N/056-23W, lost an engine, enrt St. Johns, req 1503 head St. Johns from their posn. At 0210 another pp w/AACC, adv 757 c/s Leisure 208, has 33 POB, lost #1 Engine. QSY 5717, contact Halifax military. All in USB. (RM)
5712.4: At 1430 USS Boone w/Cape Radio in USB for radio check in preparation for the launch of the Shuttle Discovery. Prior to this they were on 10780 discussing when the USS Boone would be providing Cape Radio w/wx forecast. (AB2)
5717: At 0215, CG 1503 in USB w/Halifax Military confirming w/ARTCC relevant info re Leisure 208, pp w/ARTCC confirmed that they are in pursuit of a/c. At 0243 Halifax adv a/c is 40 miles from Gander & 1503 can release, as there is a rescue squadron in Gander that can takeoff. (RM)
5745: SESEF Mayport, FL at 1157 in USB w/kg USS Ennis Hinson, heard at buoy offshore Mayport. (AWH)
5841: At 1831 93 ALPHA w/posn report for PANTHER. (MF)
5865: Cuban voice net at 1215 incl CLX91, CLX900, passing wx reports, fair. (AWH)
6215: 3DP, Suva Radio w/MARSAR call at 1103 in USB re an overdue 28-ft boat bound for Lova-Lova. (SD)
6224: Taupo Maritime (NZ) at 2115 in USB w/wx reports, warnings. (SD)

6303.5: UAWF, Vetluga (AG-1361) at 1806 in RTTY 50/170 msg to Alesund from Km Yunitsyn via RKLM (is ex EVZC). (HOOD)
6316.5: KHF, Guam w/ARQ Ready-Signal, signing CW at 1130. Also now on 8420 12629 16869 19687. (FH)
6322: ZSC, Capetown Radio at 2119 in ARQ, idle w/marker. (HOOD)
6330: XSG, Shanghai radio, China at 1109 in CW w/station marker. (EW)
6343: WLO, Mobile Radio, AI in FEC w/msg to ship re a damaged pump. (TS)
6550: Coast Guard 01 at 1113 in USB w/CG Center, freq change due to interference by pirates. (AB)
6589.9: Cuban voice net in USB, telco fed audio w/hum, SS/YL w/ test counts. Another one on 6979.9. Same audio switching between both freqs, so same source evidently. (AWH)
6604: New York Volmet at 0100 in USB w/aviation wx for Cincinnati. (RC)
6676: Calcutta Volmet, India, OM opr w/flying wx in EE at 1737 in USB. (TY)
6683: SAM 300 w/kg Andrews VIP for pp to Gander Meteo at 0500 in USB. (JJ)
6706: GUYW, HMS Guernsey, at 0945 in USB w/Hotel 19. (AB)
6849: Christian Radio Missionary Fellowship Station, Papua, New Guinea at 0750 in USB, YL w/list of items for sale. Items included Inkjet printer, computer monitor, roller blades, speakers & an electric screwdriver. (IJ)
6868: "Bored Man," Cuba at 1406 in USB w/"R290" msg // 4106. (AWH)
6900: Russian Man, RUS at 2000 in AM w/Id 122 + 5FG. (AB)
7305: JMH2, Tokyo meteo, Japan at 0821 in FAX 120/576 w/wx map. (EW)
7445: YL/EE, SYN2 Mossad, Israel, hrd in USB at 1545 being heavily QRMed by Thai/BC (V.of Asia) on the same freq. Also noted on 5629, 8641 kHz. (TY)
7465: VJN, Royal Flying Doctor Service, Cairns QLD, Australia monitored at 0900 in USB w/recorded msg "when clg the RFDS operator please use your emergency alarm call button." (IJ)
7535: NSBJ, USS Ponce (LPD-15) at 1250 w/kg SESEF Norfolk w/start of HF testing URT-23 #2. At 1515, NKZI, USS Pensacola (LSD-38) w/kg SESEF w/HF testing. (Ed.)
7677: HBD20, MFA Berne, Switzerland at 0655 in ARQ w/5Lgs. (IJ)
7726: Spanish Lady V2 numbers station at 0538 in USB in progress. (SD)
8016: At 1858 WAR-46 MOBILE, (JCS Mobile Command Center) clg NIGHTWATCH 01 for a radio-check in USB. No response. At 1859, WAR-46 MOBILE contacted WAR-46 & asked them to contact NW 01 to ask if they copied WAR-46 MOBILE. NW01 adv they did, so WAR-46 called NIGHTWATCH 01 again, & both stations had each other fair/readable. (TT) (A rare catch — Ed.)
8027.6: ALPHA-3-TANGO clg Coast Guard Group St. Petersburg at 0305 in USB. (JJ)
8117: BMB, Taipei, Taiwan, w/V & CW mkr in powerful CW at 1000. (TY)

8195: QUITO (aka CENTRAL) unid marine stn in Ecuador, at 1218 in USB wkg ENRIQUE 2, ops report. (AWH)

8211.7: Unid Tunisian Naval Station at 0430 in ARQ w/"Secret" marked msg #332. (IJ)

8240: NIIW, USCGC Willow (WLB-202) at 2251 in USB wkg NMN, CAMSLANT (on 8764.0) for posn. 32N/63W. (Ed.)

8285: P3UB6, M/V Matheos at 1744 in USB wkg Bern Radio for pp. (HOOD)

8318: LOV3, Argentine Navy, Naval Almirante Berisso, Tierra Del Fuego, Argentina w/DE LOV3, then into 5LG msg at 0100 in RTTY 100/139. (DW)

8341: RTMS *Boris Derevyanko*, unk callsign, monitored at 1840 in RTTY 50/170 w/crew TGs to Odessa addresses, vsl was nr Las Palmas, with msg hdrs for Ilychovsk but probably wkg UTQ which was QSX 8341 at this time. (HOOD)

8416.5: NMC, USCG CAMSPAC Point Reyes, CA in FEC at 0434 w/wx brdcast. (TS)

8423: UFL, Vladivostok radio, Russia at 1053 in CW w/ID marker. (EW)

8424: CBV, Valparaiso Radio in ARQ w/Ready-Signal, signing CW heard at 0145, new. (FH)

8429.5: IDR4 Rome //several IGJ stations 75/850, channel availability data 0200. (FH)

8432.5: UFN, Novorossiysk Radio, Russia at 1636 in ARQ w/msg to UNZN, TKH Novokubansk for Km Gribanov (ITU now UAJL but used old c/s). (HOOD)

8450: SAA, Karlskrona Radio, at 2051 in CW w/CQ marker. (AB)

8459: NOJ, USCG Kodiak, Alaska at 1035 in FAX 120/576 good wx map. (EW)

8465: YL/EE, MIW2, Mossad, Israel, hrd in USB at 1615. (TY)

8478: FUF, French Navy Fort de France, Martinique at 0818 in RTTY 75/850 w/R.Y. SG, line count. (EW)

8530: UJE, Nizhny Novgorod Radio, Russia at 1340 w/CW msgs from Samara to ULFR, TK Neferudovoz 54M. (HOOD)

8713: VZX, Penta Radio, Gosford NSW, Australia at 0635 in USB w/NAV Warnings about a sunken fishing vessel, debris in the vicinity & the crew of four were rescued. (IJ)

8722: BVA, Taipei radio, Taiwan at 1057 in USB "this is BVA, BVA" then in Chinese language. (EW)

8734: SVN42, Athens Radio, GRC at 2344 in USB w/voice mirror. (AB)

8740: OXZ, Lyngby Radio, DNK ay 0921 in USB, YL ann ID in Danish & EE. (HOOD)

8743: SVN44, Athens Radio, GRC at 2339 in USB w/voice mirror. (AB)

8752: SPC, Gdynia Radio, POL monitored at 1902 in USB, YL w/ann "listening 8228 ch 812." (HOOD)

8797: UTQ, Kiev Radio, UKR at 1855 in USB YL op giving ID. (HOOD)

8828: Auckland volmet, New Zealand at 1050 w/wx. At 1046 Hong Kong volmet. (EW)

8879: Bombay Aeradio, India, OM opr wkg various a/c in USB at 1625. (TY)

8900: Cuban Babbler at 1257 in SS/OM "uno uno" repeatedly. (AWH) **8903:** Port Moresby



I tried to borrow the 6025 for "HF testing" but the crew was too alert . . .

Air, Papua, New Guinea w/AUSSIE 309 at 0640 in USB, had no joy contacting control on VHF. (IJ) Naha Aeradio, Okinawa, Japan, YL opr wkg various a/c in USB at 1056. (TY)

8942: Singapore radio, Singapore at 1204 in USB clg Malaysian 264 re posn report. (EW)

8968: REACH 4670 at 1912 in USB clg Lajes, no joy. (MF)

8971: PELICAN 711 DELTA at 1746 req 1 BRAVO ALPHA switch green. (MF) At 1237 "Any station this net, this is TSC Brunswick" no answer, & on next several tries, TSC Brunswick used callsign C3R. (TT) Both in USB mode.

8974: Caribbean SAR net at 1116 in USB w/various callsigns including USNS *Capable* (Stalwart Class surveillance ship T-AGOS 16), PLUTO 01 (Norwegian Navy P3C Orion), RCC CURACAO, CALVEZ & PROVIDENCIA in air/sea search for Ocinella whose last posn was given by PLUTO 01 as 12.55N 071.22W drifting 282 degrees at 1.2kts. Finally located by CAPABLE at 1310 UTC. (SD)

8978.4: HABITAT, COMPATWING TEN, NAS Whidbey Island, Wa. at 0103 in USB wkg Uniform 2 Zulu. (Ed.)

8983: CAMSLANT wkg 6024 w/req for flt ops at 2356 in USB. (RC)

9017: Air Force 2 wkg Andrews VIP at 0215 in USB. (JJ)

9031: ARCHITECT (RAF) at 0700 in USB w/wx info. (SD)

9042: SVR, Cuba "Fast CW" spook at 1221 w/5FGs 2x. (AWH)

9120: SAM 202 w/DV-3 plus 2, inbound Europe, wkg Andrews VIP for pp's into Monaco, Liechtenstein, & Ireland at 0645 in USB. (JJ)

9185: HEP9, Kantonspolizei Zuerich, SUI at 2041 in CW w/VVVV marker. (AB)

9212: French Forces, F, REGTRANS or similar at 2345 on in ARQ-E 184.5/400 (new baud, ex-72), at 0002 missed ckt ID but caught text "ZIC UAF021 ZID UFA~~~". Left decoder on and caught clear CdV at 0637 from RFFXCFA on ckt UAF. (AWH)

9238: SS/YL V2 numbers station 0600 UTC USB in progress. (SD)

9263: YL/EE, Cherry Ripe nbr stn hrd in powerful USB at 1100. Also noted on 13866, 14469 kHz. (TY)

9320: SAM 201 w/DV-2 at 0330 in USB, departed Lajes 0315z, wkg Andrews VIP for pp to SAM Command re: windshield cracked, diverting back to Lajes. (IFE talked about, but was not declared.) Currently looking into the possibility of transferring the DV onto SAM 681 which is due in at Lajes 0540z. (JJ)

9340: RCH72, Tashkent meteo, Russia tuned at 0805 FAX 120/576 w/very poor/noisy signal. (EW)

9436: to 9438.2, GXQ London VF 50/170 channels, strong signals at 2145. (FH)

10090: Tashkent Volmet, Uzbekistan, YL opr w/avian wx in heavily accented EE at 0940 in USB. (TY)

10225: Unid U.S. military training stn in ASCII 75/170 and CW sending 4F, 5F, 5L & 6L grp msgs. //16303.6 kHz. (TS)

10362.3: RFTJD, French Forces, Libreville, GAB at 2205 in ARQ-E 48/850 w/Controle de Voie on C.I. "JDF." (Ed.)

10960.7: RFFVA, F at 2220 in ARQ-M2 200/400, didn't see ckt ID but almost certainly FDx to Sarajevo, seemed //13479.7, fair but difficult in QRN, all 5LG tfc ch A. (AWH)

11039: DDH9 Hamburg Meteo, Germany in RTTY 50/400 at 2055 w/GG wx, then RYs, on 147.3 11039, 14467.3, DDH48, DDH9, DDH8. (FH)

11053: PACAF 01 wkg Andrews VIP for pp to Eielson AFB at 0007 in USB (also on 8026.0 and 11220.0). (JJ)

11054: UIW7, Kaliningrad in 50/170 RTTY RY's at 1345. (FH)

11059: SPAR 65, w/DV — General Clark, inbound Jackson Hole, WY wkg Andrews VIP at 2116 in USB. (JJ)

11084: COYOTE (Kirtland AFB) wkg SHADOW 21 at 2005 in USB. (JJ)

11110.7: RFLI, French Forces Fort de France, Martinique at 2307 in ARQ-E3 192/425 idling only. (EW)

11162.5: RS-ARQ 228/170, thought to be, can't read here, quite strong, on & off operation Monitored 2100-2200. (FH)

11167.5: Presumed NATO Exercise MONTI & ESCABEAU 2 at 0540 in USB w/posn Reports, Target, Fire Rounds, High Explosive & mentioned a location Porto something. (IJ)

11175: SOONR 85, C-130, at 1844 wkg Andrews w/pp re had to shut an engine down. At 1620 CODY 620, C-141, WPAFB 445AW 356AS wkg Andrews w/pp to on-base extension 5205. (AS) At 1931 MacDill w/pp for DARK 42 to RAYMOND 37. (MF) At 1658 NIGHTHAWK 10 clg MAINSAIL for a radio check. No joy. At 1701 NT4W w/pp to DSN

942-4065 via MacDill Global. NT4W adv "Control," aka 8BN, that NT4W was Spare Group 3 at 1700Z. At 1458 BOLEN 99 w/pp via Andrews GHFS to SHADOW Ops about the status of their diplomatic clearance — Ops had no word on it yet. (TT) All in USB.

11184: Presumed Japanese Naval Stn at 0730 in USB OM in EE & JJ w/wx forecasts. (IJ)

11202: CAMSLANT at 1839 in USB clg CG6024, no joy. (MF)

11220: CASEY 01 at 0044 in USB wkg Andrews VIP re: 0530z ETA Keflavik, 0730z ETA Shannon, and 1230z ETA Moscow. (JJ)

11226: EXECUTIVE-1-FOXTROT (SAM 683 w/Hillary Clinton) & DV-2 (Senator B. Boxer) plus 7, at 2027 in USB wkg Andrews VIP re: 2320z ETA Moffett Field. (JJ)

11235: Aussie 269 clg Air Force Darwin at 2324 in USB w/rdo ck & req for TAF for WRSJ. (SD)

11317: MFA Pyongyang N.Korea monitored at 2115 in RTTY 50/1000 w/romanized Korean Msgs. (IJ)

11387: Singapore volmet, Singapore at 1050 w/wx info. (EW) Bangkok Volmet, Thailand, w/flying wx in EE at 0940. (TY) Both in USB.

11396: Den Pasar radio, Indonesia at 1053 wkg a/c w/posn report. At 1137 Ujang Pandang, Indonesia clg Garuda flight, secondary 6556 kHz. Both in USB. (EW)

11524.5: Presumed NATO Exercise ESCABEAU 1 at 0545 in USB w/rdo cks, Firing Point, Target Location etc. (IJ)

11545: Lincolnshire Poacher stn at 2100 in USB, 09582 then 5F. (CT)

12056: Cherry Ripe stn at 1200 in USB, too weak to copy ID. (AB)

12140: HWN Paris, w/150/850 RYs to FAAA at 2100. (FH)

12175: HMF42 Pyongyang in 50/255 EE nx, ends at 1300. (FH)

12190.2: RFVI Reunion at 1230 in ARQ-E3 100/400 CdV ckt VII. (AWH)

12353: Moloko 2 wkg Pacific Flyer heard at 0705 in USB w/discussion about sailing plans. (SD)

12442: UDXK, TKH Inzhener Certkov in CW heard at 1116 w/ETA for Istanbul via unknown station (vsl owned by Tuapse Port Authority). (HOOD)

12584: VIP, Perth Radio (Global) at 1617 w/ARQ ID marker. (HOOD)

12599.5: UAT, Moscow Radio, RUS at 2102 in ARQ w/unid vsl, CW marker. (AB) Same at 1350 w/mailbox status rpt to ESDX: Vilsandi (gen cargo vsl of Estonian Shipping Co). Same 0855 ARQ status rpt to XU7HJ: Soyana (ex UARQ). (HOOD)

12603.5: SVS, Athens Radio, Greece, frequently Rptng only "DE SVS" in powerful CW at 1600. Being heavily QRMed by Lincolnshire Poacher nbr stn (12603 kHz). Another day same stn hrd at same time, also QRMed by LP. (TY)

12682.5: PKE, Amboina radio, Indonesia at 0857 w/CW clear signal, after moving RTTY out of the way, CW marker. (EW)

13022: SPB, Szaecin Radio in ARQ tuned at 1330. (FH)

13241: SPAR 65, w/DV — General Clark pp

to San Antonio TX via Andrews VIP at 2105 in USB. (JJ)

13270: New York Volmet at 0330 in USB w/aviation wx for Chicago, Milwaukee, Minneapolis, Detroit, Boston. (RC)

13282: Auckland volmet, New Zealand at 1122 in USB w/volmet wx. (EW)

13419: Cuban CW cut # stn w/msgs heard at 1825. (TS)

13560: BMB, Taipei, Taiwan, in CW at 1830 w/wx. (TS)

13580: HMF36 Pyongyang in 50/250 RTTY w/KCNA nx in EE & APA reminiscences in EE, Tune-in at 1240, "QRX" at 1349. Carrier was on, but no more. (FH)

13750: New Star stn heard at 1200 in AM w/usual sign-on routine w/CC/YL & flute/orch. mx. Sounds like machine-generated sign-on ann (numbers "spliced" in between "generic" parts of opening ann), into 4FG 2x tfc. (AWH)

14000: Frank Young Peter numbers station, E15, at 1400 in USB. (AB)

14487: Lincolnshire Poacher at 1300 in USB w/86847, then 5F. (CT)

14577: YL/EE, the CIA counting stn hrd in AM at 1600. Unable to find parallel freq. (TY)

14614: Unid School of the Air (Australia) at 0016 in USB w/YL conducting grammar lesson. (SD)

14692.5: JMJ3, Tokyo meteo, Japan at 0827 in 120/576 FAX wx map. (EW)

14728.3: PMO?, Bulgarian Embassy, Washington, monitored at 1736 wkg LZC3 RTTY 75/500 rptng "PMO ZAN PSE ZAL 15678 RYRYRYRY," although the other station never showed up there, then at 1749 switched msg to "PMO ZAN PSE ZAL NORMAL 13932 RYRYRYRY." Is this to or from PMO? (AWH)

14817.5: JPA, INTERPOL Tokyo, Japan at 0555 in ARQ w/encryption. (IJ)

14975: RFGW, Paris in FEC-A 192/380 5LG msg to Embassy at 1400. (FH)

15088: Rescue 1503 at 2119 in USB wkg CAMSLANT Chesapeake reporting IFE: battery overtemp alarm. Adv they will need emerg personnel/equip standing-by when they land. Posn about 1 hr. out from Cay South Bank (?). (JJ)

15388: New Star Broadcasting, Taiwan, hrd in powerful AM at 1400. CC/YL w/4FG's, ea X 2. Similar transmission hrd on 8300, 8375, 9725, 11430, 13750 kHz at this time. (TY)

15898: RFGW Paris in FEC-A 192/400 to Embassy after BBBB 5LG msg (1050 groups) at 1350, then to RFFXHO Sarajevo w/2 msgs FF from P06 Paris. (FH)

16025: BAF9, Beijing radio, China at 0943 in 120/576 FAX w/weak wx map. (EW)

16690: EQKM, M/V Noor at 1016 msg via SAB login 26034 EQKM. At 1127 LADC4, Canarian Reefer w/ETA for Agadir via SAB login 70471 LASK. (HOOD)

16821: VRX, Hong Kong radio, China at 0920 w/CW station marker. (EW)

16869: KHF, Guam w/ARQ Ready-Signal, signing CW at 2030. Is also on 6316.5 8420 12629 19687. (FH)

16955: YLQ, Riga Radio at 1514 in FEC

w/"CQ DE YLQ PAVESTE F1B 442/4335/6341.5/12671.5/17181 ARQ 2460/8432/16955 KHZ" and RYs. (HOOD)

17050.4: ASK, Karachi Radio, Pakistan, w/V mkr rn CW at 0940. (TY)

17090: UAI, Nakhodka Radio, Russia at 2225 in CW w/VVV DE UA13 QSX 16802. (IJ)

17172.4: 9MG, Penang Radio, Malaysia at 0702 in CW w/station marker. (EW)

17239.7: PKX, Jakarta Radio, Indonesia, w/CQ mkr in CW at 1330. (TY)

17925: San Francisco Air w/VIPER 17 (self IDed as a C12) at 0150 in USB w/pp to Hickam Metro. Viper 17 said he was inbound Hickam from Wake IS. (IJ)

18258.5: HBD20, Berne in ARQ to 60 named Swiss Embassies at 1355. (FH)

18678: CW says "QSY 20802" which we do and find it is CLP8 Conakry who just moved CW & RTTY at 1438. (FH)

18801.6: JKT, MFA Jakarta, Indonesia at 0245 in RTTY 50/170 w/items on Indonesian lang, passport information, etc. (EW)

18888.5: UDEN, TKH Sergo Zakariadzje at 1507 in ARQ w/admin from Km Afanasev to UFN. (HOOD)

19131: FLINT 912 at 1910 reports to ATLAS they're enrt SUNDANCE 100. At 1912 FLINT 710 passing ops report to ATLAS. At 1924 ATLAS req ETA from FLINT 930. All in USB. (MF)

20048: "C" Channel marker, Russian Navy, Moscow, RUS at 0929 in CW. (AB)

20326.7: RFVI, French Forces, Reunion, St Denis at 0512 in ARQ-E3 100/425 w/msg to RFFVIT, RFFINDI, encrypted, BBBB then 5L grps. (EW)

20803.3: CLP8, Conakry in 50/500 RTTY msgs in SS & 5LG's to CLP-1 Havana at 1445, (moved from near 18678 at 1440). (FH)

21866: YL/EE, Cherry Ripe nbr stn hrd in powerful USB at 0100. Also noted on 15624, 19884 kHz. (TY)

22382: NRV, USCG, Apra Harbour, Guam, w/Sitor CW ID at 1140. (TY)

22407.5: UAT: Moscow Radio at 1523 in ARQ w/idler marker. (HOOD)

22576: JNA, Japanese Maritime Safety Agency, Tokyo, Japan, w/CQ mkr in CW at 1255. (TY)

22610.5: CLA, Havana Radio, Cuba at 1526 in CW w/ID/marker. (HOOD)

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The Ham Column

BY KIRK KLEINSCHMIDT, NTØZ

GETTING STARTED AS A RADIO AMATEUR

Buy Your Next Rig Over The Phone

Other differences aside, there are two kinds of hams in this world: those who live near amateur radio equipment dealers and those who don't. It's not *that* simple, of course, but if you live six hours from the nearest radio store, you might be inclined to agree! The Lucky Ones have easy access to all the new gear with all the new bells and whistles. And they can banter endlessly with staffers, raking in equipment tips, inside information, and radio goodwill. Dealers know that local buyers can become repeat customers. And repeat customers aren't always concerned with finding the lowest prices. In a tight market, intangibles count.

If you're out in the boonies, however, a round trip to the nearest radio store may take a day or more. No matter how good the service, "buying local" isn't always an option. The Local Guys probably don't offer the lowest prices, either. And let's face it — in these financially trying times, price can be important.

Whatever your reasons, buying your next rig over the telephone from a far-away dealer may be your best — or only — option. Yet, pouring over a stack of magazine ads, dialing a series of 800 numbers and paying by credit card isn't everyone's cup of tea.

This month's column is about dialing for dollars . . . yours! Here are a few tips on making your telephone purchase a successful one.

Do Your Homework

Before purchasing that rig over the telephone, you have some homework ahead of you. Even if the nearest radio store is miles away, try to check out the gear you're interested in at hamfests, swapmeets, brochures, and your friends' shacks. Check out product reviews and related columns in amateur radio magazines. If you have access, search the Internet for information and "hands-on"

user comments about the rig(s) you're considering. Every little bit helps.

After you've narrowed down your equipment choices, it's time to research potential dealers. Price, policies, and procedures may make a difference in your situation. Some dealers take equipment trade-ins, some offer generous return policies, and some accept certain credit cards that others don't.

After you've assembled a list of dealers from magazine ads (or whatever other sources you have available), call each one and ask about prices, trade-ins, service, shipping, etc. — everything that's important to you. Keep notes, or you'll get things mixed up.

Making price inquiries on the dealer's 800 number is perfectly OK, but asking technical questions isn't. Use the regular number for non-sales-related inquiries. If the sales person seems rushed, rude, bored, or otherwise unfriendly, consider moving on.

Trading in your old gear may be challenging. Some dealers welcome most reasonable trades, while others are interested only in late model radios (or don't accept trades at all). If you can fund your purchase in its entirety, consider selling your rig yourself. You'll probably get more money for it.

Shipping charges should be fairly similar among dealers. Some dealers, however, "leverage" their low equipment prices with higher-than-necessary shipping charges. If it seems that someone's charging an arm and a leg for transportation, be extra careful!

Smart Shopping

When you've talked to a sufficient number of dealers and put together a clear picture of the prices and services available, be sure to consider the following before finalizing the deal:

☞ *Clarify the details.* Before signing



on the dotted line, make sure you and the sales rep agree upon the make, model, price, included parts and accessories, sales tax, shipping fee, warranties, and return policies. Have the sales rep repeat everything back to you, or have a copy of the deal faxed to you before making your purchase. Doing so will minimize your risks and maximize your chances of getting exactly what you want at the agreed-upon price.

☞ *Cables and accessories.* Make sure you understand exactly which cables, brackets, adapters and accessories are included before finalizing the deal.

☞ *Return policies.* In the computer industry, 30-day return policies are standard. With amateur radio products, however, return policies typically range from none to two weeks. Make sure you're happy with whatever policy your dealer has in place.

☞ *Restocking fees.* If you decide to take advantage of your dealer's return policy by returning your newly purchased rig within the specified period, you'll likely be charged a restocking fee since the equipment can't be resold as

new. Restocking fees can range from none to 20 percent of the purchase price. Although there is no standard for restocking fees, be sure you're comfortable with yours before you buy.

☛ **Tech support.** Be sure you know exactly who will perform warranty service and repairs should your new rig need service. Will the dealer's in-house techs perform the service, or will the unit have to be sent back to the factory? If your rig is dead on arrival, will you receive a new radio, or will you have to wait months while "major surgery" takes place? Remember, it isn't always about saving a couple of dollars; consider service after the sale is made.

☛ **Credit cards only.** If at all possible, purchase big ticket items, such as computers and transceivers, with a credit card. Don't use checks or cash. Credit cards are your only real protection against fraud or wayward vendors. Most credit card issuers allow users 60 days to challenge a "deal gone bad."

☛ **30 days or bust.** Anything purchased over the telephone or through the mail must be shipped to you within 30 days of the date originally agreed upon. If the vendor can't deliver — whatever the reason — you must be notified. Even if you agree to the shipping delay, you reserve the right to cancel your order at any time, even after consenting to the delayed delivery schedule.

☛ **Happy trails.** Be prepared for anything by keeping an accurate paper trail of all correspondence, receipts, warranties, invoices, etc. As soon as trouble rears its ugly head, put everything in writing, including statements made during phone conversations, and send a copy to the vendor. When talking to sales reps and technicians, be sure to write down names, times, and a summary of the conversation.

In addition to doing a little homework and being prepared before you buy, don't forget to ask your fellow ham club members about their mail-order purchasing experiences. Once you've found the best deal — and dealer — for your needs, you can make your purchase with confidence.

Do you have a topic you'd like to see covered in "The Ham Column"? Send your suggestions, QSL cards and letters to me at "The Ham Column" c/o *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801. ■

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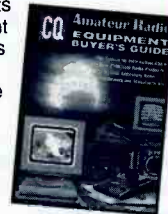
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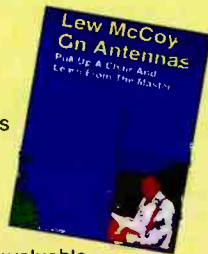
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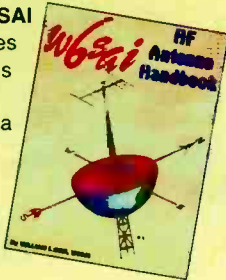


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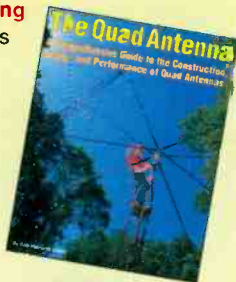


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The Loose Connection

BY BILL PRICE, N3AVY

RADIO COMMUNICATIONS HUMOR

Lights Out

It was the best of times; it was the worst of times. I'm talking about my time in the Coast Guard as a Radioman. Today, I remember the best of times. My grey cells are selective and help me forget the worst of times.

I had never played practical jokes before I went into the service. I just wasn't very good at it. I finally got the hang of practical jokes, though, after spending some time at sea. We filled the hands of countless sleeping sailors with shaving cream, then tickled their noses to simulate a fly walking across the old honker. Just like on TV, every one of them whapped that shaving cream right into their own face. It was beautiful — sort of like ballet, only funnier.

I had been on the ship for a while before I realized that we had a radio beacon. It transmitted our ship's call sign, NICC, somewhere in the top half of the 400 kc band. When I was home on liberty, I remembered seeing a small fluorescent light tube taped to a 102-inch whip on the back of a '65 Mustang. The thing lit up each time the CBER transmitted. I filed that bit of information away for future use.

A bunch of us were sunning ourselves on the fantail in the second week of a five-week patrol. The *Mackinac* was one of the few cutters to have teak decks — wonderfully warm, and soft enough to sleep on in the Caribbean. Another radioman pointed up to some antenna wires running from the fantail to the mast. "Those are the beacon antennas," he said. "They run right down here to the fantail." "That's pretty close to where the people hang out," I said. Isn't that dangerous?"

"Naaah — it's not close enough to worry about."

"Oh, OK," I said, remembering the fluorescent light on the CB whip. "Can you key the beacon transmitter manually?" I asked him.

"Yeah. Why?"

"Just wanna have some fun," I said. I put the idea aside for a while, then worked it into a plan.

We had one particular bosun's mate who was a good sailor, but dumber than dirt when it came to anything outside his

job. During our last R&R in Port-Au-Prince, we had him so scared of voodoo that he never left the ship.

"Hey, Johnson! Ever hear of Zen-meditation?" I asked.

"Yeah, that's what those mystics do. Levitation 'n stuff. Weird."

"Naaah, it's not that weird," I said. "I do it. I'm starting to understand some of it. I'll soon be ready to light a light with no electricity."

"Get out! That's bull! Nobody can do that. It's a trick, those bulbs have batteries built inside them."

"Well, I'm ready to try," I said. "You wanna watch?"

"You ain't gonna light no light bulb," he said. "Not a real one."

My partners were in place. "Tell you what. Walk in there to the DC shop and ask Pileggi if you can take one of the fluorescent tubes out of his ceiling. Tell him you'll bring it back."

"OK," Johnson said, I watched him ask for the four-foot tube, and sat in the Lotus position at the rail — as close as I could get to the beacon antenna. I pretended to mediate and held the lamp over my head, my arms extended to each end. I looked at my partner and nodded ever so slightly. The light flickered. He told partner No. 3 on the phone. I did not look up.

"Hey! It went! It really flickered!" Johnson said.

"Damn," I said. I'm trying to make it stay on," I said. I'll try again. Another nod, my partner instructed our third assistant, and the light came on solid — stayed on for about 10 seconds, then flickered and went off. The look in Johnson's eyes told me I'd succeeded.

"That's amazing," he said. "Can you do it again?"

"Oh, I'm drained. I can't stand up. Help me up?" I asked.

"Sure. Sure," he said. I made no effort to raise myself and let him lift me to a standing position. "I never knew how much energy that takes," I said.

"Only 40 watts," he said. "That's what it says here."

"Took a lot more than 40 watts outta me," I said. Can you help me down to the berthing area?"

"Yeah. Lean here while I give this tube back," he said.

He returned the tube, and came back to get me. I let a lot of my weight hang on him as he helped me to my rack. "Thanks," I told him. "Don't mention that to anyone. I don't think I'm gonna try it again," I said. He agreed. I told him I thought my keys had fallen off my belt clip, and asked if he'd go look on the fantail for them before they fall over the side. He would. As soon as he left the compartment I jumped up and ran to a hidden vantage point. Pileggi was waiting on the fantail with the same fluorescent tube in his hands. Nothing was happening. "Don't try that, Pileggi," Johnson said. "It's bad. Drained Price. He's down in his rack now, and he don't look well."

"It's a lot easier for me," Pileggi said. "All I gotta do is *think* about the light lighting, and lift my right foot off the deck." With that, he lifted his right foot an inch or so off the deck, and the light lit instantly, remaining on till he put his foot back down again. "Here, you try," Pileggi said, holding the tube out to Johnson. Johnson refused, but eventually decided to try it. He lifted his right foot. Nothing.

"Which hand do you write with?" Pileggi asked.

"Left."

"That's the trouble. Lift your left foot." He did. The light flickered and went off. "Think harder," Pileggi said. Johnson probably put every one of his grey cells into play — there was pain on his face. He lifted his left foot and the light lit smartly, this time staying on till he put his foot down again. He repeated the process about 10 times, successfully.

"Hey, think I could have this tube?" he asked Pileggi.

"Sure. I'll get another one," Pileggi told him.

Johnson walked off, holding the tube carefully. He never mentioned the incident again, but always had a sort of respect for me after that day — perhaps a little fear — fear that I might point a hexing finger at him and turn him into a toad. We decommissioned the *Mackinac* soon after that, and we all went our ways. I wonder if he ever found out. ■



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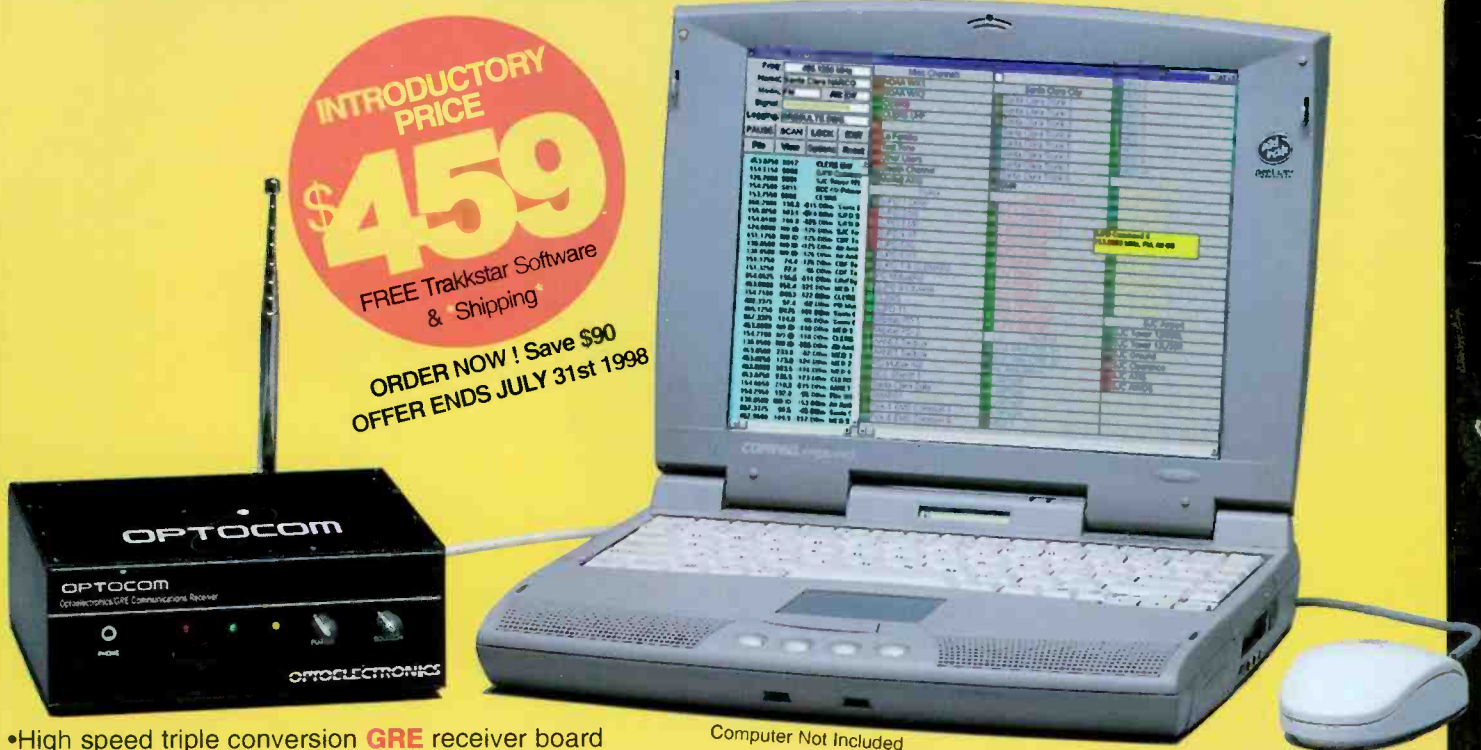
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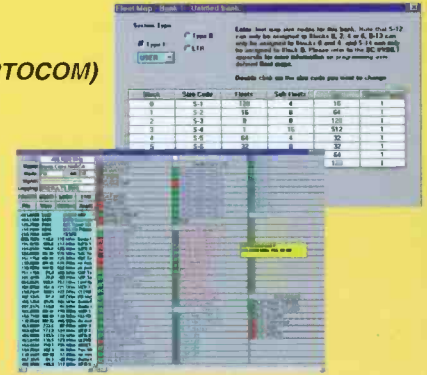
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