Radio–Homeland Security–Computers & Radio–Family & Hobby Comms

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POPULAR COMMUNICATIONS

OCTOBER 2004

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Summer Was A Radio Scorcher— But Wait, There's More...

Sun-Drenched Costa del Sol's Onda Cero International Radio, p. 6

Scanning The Skies, p. 14

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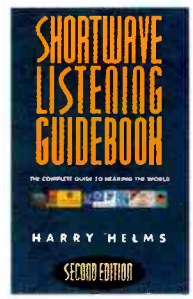

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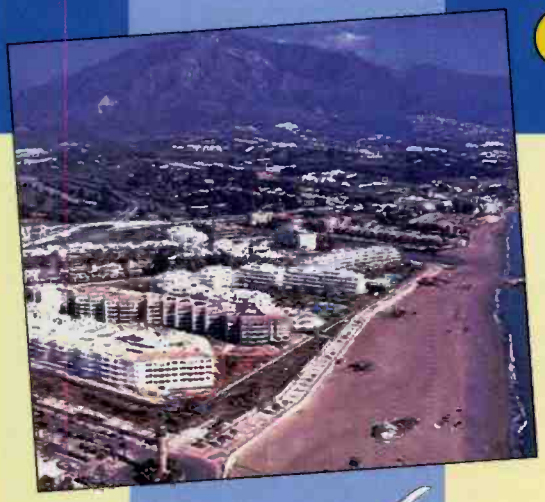

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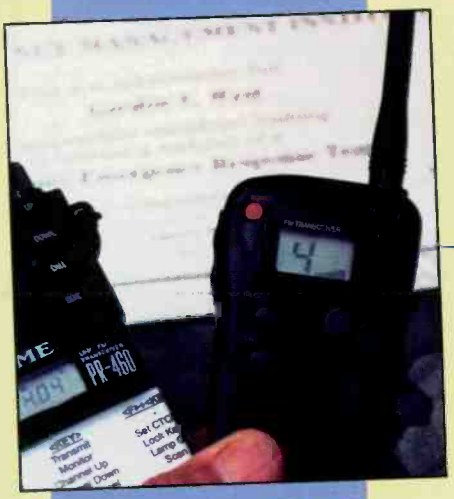

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On The Cover

Scanner enthusiasts and hams alike were treated to outstanding long-distance signals this summer. Despite the decline of Solar Cycle 23 there will still be periods of strong solar activity. Be sure to read Tomas Hood's "The Propagation Corner" on page 20 for the latest solar forecasts to learn how you can get the most out of the radio hobby. (Photo courtesy SOTTO)

Visit us on the Web: www.popular-communications.com

by Harold Ort, N2RLL, SSB-596

Uncle Sam Losing His Voice—And Credibility?

For reasons only really known behind closed doors (but I suspect it has something to do with $$, politics, and Iraq), our own Voice of America is being transformed by the presidentially appointed Broadcasting Board of Governors. Those are the folks who essentially run the VOA and decide its future—or lack thereof.

No question about it, the world has indeed changed these past three or four years; at least 500 staffers at the VOA think the *VOA*'s world has changed for the worse. In 2002 the VOA's Arabic-language news service was replaced with Radio Sawa, a music and entertainment-oriented program for young Iraqis, and this year the Board started a TV network called Al Hurra, hoping it will compete with the Middle East's al-Jazeera.

Is it possible that once again we're putting an American face on how the rest of the world should get its information? Trust me. Few Arabic-speaking folks are hooked on low-carb diets, or watch Jerry Springer on TV. Television, while a very powerful medium, is also a very costly medium. There's no question about the fact that we need to reach out to young folks in these countries, but sometimes the tried and proven VOA way is the best way; in the final analysis it's words and diplomacy—news and information—not just Radio Sawa's music and Al Hurra's TV programming—that wins hearts and minds.

I've only seen segments of al-Jazeera—the same anti-American trash and biased programming they spew forth that most of you have seen on CNN or the national TV networks. I'm not impressed and would imagine you aren't either. But would you be impressed by al-Jazeera setting up shop in the USA broadcasting to you and your family? I don't think so.

For the sake of the dollars at stake here one would hope our government's Al Hurra TV venture succeeds. Truthfully though, I really don't fully understand the true need for Al Hurra. The Board also doesn't fully explain it other than to say it's designed to appeal to a larger and younger Middle East audience. Fact is, VOA can do it for a heck of a lot less money.

When it comes time for additional funding and thus, continued operation of the TV stations, I suppose because there's no Nielsen ratings for our government's overseas TV ventures, we'll never really know if it's hitting the intended target with the desired PR effect. After all, when was the last time you and I were able to count on the good—or not so good—word of your nearest politician or the Broadcasting Board of Governors for straight talk?

It's been widely reported that over a third of the VOA's staff is livid about the Board's new ventures and has signed a petition asking Congress to investigate the Board's decisions. But chances are, unfortunately, it'll go nowhere. Why? It's political, and oops, we're at war. Remembering what we've said right here about the War On Terror; many things are happening and projects are getting "approved" now that wouldn't have been dreamt of in the past—all operating without much public oversight and behind closed doors. VOA staffers have said they'd welcome *a public* discussion of the Board's decision, but so far that hasn't happened—and you can bet that it won't.

How we do business—and are viewed by other countries—is much of our problem just as it is for other countries. We don't live in a vacuum. Of course you simply cannot please everyone, and there'll always be some radical group with bombs ready to teach us their lesson. But what's clear to me but apparently isn't clear to the Board for some reason, is that ending English-language VOA radio programming to Eastern and Central European nations in favor of a major focus on the Middle East isn't very smart. But it's what we do time and again; today the threat is terrorism and Middle Eastern countries, some years ago it was Communism and Eastern Europe.

I realize federal funding is a major issue here, and that perhaps—just perhaps—the Board would like to have these additional media outlets in *addition* to keeping VOA's radio services—but with all the extra billions (some $25-35 billion depending on whom you ask) beyond the initial $87 billion that was to be used for Iraq over a five-year period that supposedly ran dry a year into the conflict, one would think broadcasting would be a piece of the money pie. If it wasn't, somebody goofed bigtime. Certainly Iraq is a major Hurra TV target.

It's interesting that at a time when getting the word out, the Board is choosing to get the music out. They've been convinced that kids do like music. But in case the Board has been napping the past few years, young folks also like to hear about the world beyond their borders; what's shaping world events, politics and religion. American kids might be awestruck by Britney Spears' belly button and the latest news about Michael Jackson's plight, but I suspect in the Islamic world things are a bit different.

The Board incorrectly states that fewer people are getting news and views via radio. Once again, they're out to lunch; even in North America where one might assume—key word, assume—every household is connected to the Internet and has a high-speed cable or DSL connection to the world, cable TV and satellite radio, fact is that's not the fact. I believe the Broadcasting Board of Governors is buying into the "the rest of the world is just another America waiting to take blossom." And that, my friends, is partly why we're in the state of affairs we're in, plain and simple.

The VOA has been—and should continue to be—our world voice with news, commentary, entertainment and comprehensive in-depth reporting and analysis. It's what the world has come to expect—and need from America during this time of crisis and into the next century. ■

Each month, we select representative reader letters for "Our Readers Speak Out" 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 "Our Readers Speak Out." 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.

BPL QRM: Who Speaks For HF Commercial Stations?

Dear Editor:

I read with much interest the BPL article by Rich Arland in the July issue. I am the author of a small piece in the July issue Utility Radio section. I was a Merchant Marine Radio Officer in my youth and it is in this comms area that I find the likely PBL QRM disturbing.

The main Radio Telephone Distress and Safety frequency 2182 kHz is within the proposed BPL spectrum. GMDSS (Global Maritime Distress and Safety System) also uses frequencies in this band for Distress and Safety Alerts. Outside of satellite coverage, (and yes, there are such areas) GMDSS depends on HF as the only medium for Distress Alerts.

Surely as guardians of the radio spectrum, the FCC should think about this. Your Coast Guard service responds to maritime emergencies that are alerted by calls made in the BPL proposed spectrum. Have they no input? There are still HF commercial stations that still listen on HF for commercial traffic. Do they have nothing to say?

David Hopcroft
England

Too Political?

Dear Editor:

There's been a lot of talk lately among scanner users, especially on the Internet, about radio hobbyists camped out near airports, at the end of runways on private property, at rail yards, and other potentially sensitive places listening to radio comms. What are your thoughts, because I think it's important for people to know we don't mean any harm? Also, as a longtime *Pop'Comm* reader, I agree with Dr. Kaluszka's letter in the July issue. I read an article somewhere Online about a group of soldiers who had written to a newspaper asking for donated radios and batteries because their Army unit in Iraq couldn't communicate. Like you observed, it's outrageous and I also applaud you for taking a stand on this issue. Thank you for caring about America!

Carl Humphrey
Chicago, IL

Dear Carl,

Thank you for your continued support of *Pop'Comm* and our troops wherever they are. Well, this topic of on-scene monitoring is really nothing new and goes back to basic common sense issues, but given our country's current mindset; be careful what you do or how you do it because you might give the appearance of someone up to no good. You and I and other thinking people know with absolute certainty that just because we're still smarting from 9/11 and – unfortunately – still trying to figure out how to best deal with whatever threat it is we're supposed to be dealing with, that if you've got a few antennas sprouting from your vehicle and a couple of radios on your belt you *do* look different than most other Americans. Trouble is this is still America and it's legal to listen to radio communications, but we've just got to use our smarts when doing so. Chances are, though, while the understandably nervous and somewhat over-zealous agencies are watching us enjoy our hobby as we've done for decades, they'll miss the one weasel slip through the cracks with a cell phone and hands-free earpiece that blending in to the crowd. Oops, I suppose we've gone down the proverbial political road again, but we are Americans, and this is all about our radio hobby and YOUR rights to listen, isn't it?

A New World

Dear Editor:

I read with great interest your "Who's Watching The Barn Door?" in the July *Pop'Comm* and realize what you said I haven't heard anywhere else. I too am weary of the government's strange behavior recently. I think they'd rather we didn't listen to our radios, especially the military and government activity, but I remember what Tommy Kneitel said a while back – if you don't want me to hear the signals, then keep them off my roof. (Or something along those lines). The problem today is that too many of us are falling for the so-called party line and have grown accustomed to, as you've said recently, "business as usual" that it's sometimes difficult for people to distinguish the difference between truth and fiction. If the past few years were made into a movie, I doubt it would be believed, but as they say, truth is sometimes stranger than fiction – or something like that.

Thank you,
John Lattimore, Esq.

Dear John,

Keep listening to those radios and keep the dialogue going; remember: radio in all its forms is one of the best tools we have to distinguish baloney from what your gut tells you is common sense and right for your country!

POPULAR COMMUNICATIONS

EDITORIAL STAFF

Harold Ort, N2RLL, SSB-596, Editor
(E-mail: Popularcom@aol.com)
Tom Kneitel, K2AES/SSB-13, Senior Editor
Edith Lennon, Managing Editor
Richard S. Moseson, W2VU, Online Coordinator
(E-mail: w2vu@popular-communications.com)

CONTRIBUTING EDITORS

Rich Arland, K7SZ, Homeland Security
Peter J. Bertini, K1ZJH, Restoration/Electronics
Randy Adams, NT8N, AM/FM Broadcasts
Joseph Cooper, Computer Assisted Radio
Gerry L. Dexter, Shortwave Broadcast
Steve Douglass, Utility Communications
Bill Hoefer, KBØULJ, Aviation Communications
Shannon Huniwell, Classic Radio
Kirk Kleinschmidt, NTØZ, Amateur Radio
Tomas Hood, NW7US, Propagation
Bill Price, N3AVY, Humor/Communications
Laura Quarantiello, Legislative Affairs
Ken Reiss, Technical/Scanning
Bob Sturtevant, radio Trivia
Gordon West, WB6NOA, Radio Resources

BUSINESS STAFF

Richard A. Ross, K2MGA, Publisher
Arnold Sposato,N2IQO, Advertising Manager
Emily Leary, Sales Assistant
Sal Del Grosso, Accounting Manager
Ann Marie DeMeo, Accounting Department
Catherine Ross, Circulation Manager
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PRODUCTION STAFF

Elizabeth Ryan, Art Director
Barbara McGowan, Associate Art Director
Dorothy Kehrwieder, Production Manager
Emily Leary, Assistant Production Manager
Hal Keith, Technical Illustrator
Larry Mulvehill, WB2ZPI, Photographer

A publication of

CQ Communications, Inc.
25 Newbridge Road
Hicksville, NY 11801-2953 USA

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by Harold Ort, N2RLL, Editor, and D. Prabakaran

South Korea Halts DMZ Propaganda Broadcasts

South Korea is set to end propaganda broadcasts that have gone on for 42 years along the demilitarized zone near North Korea. The *Korea Times* reports that the South Korean radio program, Voice of Liberty, which has been aired for decades along the border with North Korea, made its farewell broadcast on June 12. The sign-off came just hours before North and South Korea exchanged radio communications in their first test of an inter-Korean military hotline since the end of the 1950-53 Korean War.

Parliamentary Inquiry Urges Boost For Radio Australia

A parliamentary inquiry into Australia's relationship with Indonesia is urging increased funding for Radio Australia so it can resume full-scale shortwave broadcasting to Indonesia. Seven years ago, federal budget cuts resulted in the controversial closure of the Darwin shortwave site, forcing Radio Australia to stop broadcasts to Indonesia and downgrade coverage to other parts of Asia. The transmitters were later sold, and the site leased to the Christian evangelical broadcaster Voice International. Radio Australia now leases 10 hours a day of airtime from Voice International, which says that it has the capacity to offer much more airtime at competitive rates. Radio Australia says that in the 1970s and '80s, its Indonesian audience was estimated at 20 million, and is now down to about 5.4 million.

LeSEA Announces Purchase Of Shortwave Radio Station WSHB

LeSEA Broadcasting has announced their purchase of the Christian Science Publishing Society's shortwave station WSHB, located in Cypress Creek, South Carolina. WSHB is considered to be one of the premier shortwave facilities in the world. Their signal covers South America, Central America, the Caribbean, North America, Europe, the Middle East, most of Africa, and Australasia. WSHB will provide World Harvest Radio with a potential daily listening audience of millions.

WSHB will join the existing World Harvest Radio family of stations consisting of five shortwave stations called Angels covering South America, Central America, North America, Asia, Australia, and Africa. Two of the stations, Angel One covering Central and South America and Angel Two covering Europe and Western Russia, will be added to WSHB's signal. WSHB was completed in 1989 and consists of two 250,000-watt transmitters on a 380-acre tract of land. The addition of WSHB is a giant leap for World Harvest Radio adding millions of people around the world under the scope of LeSEA Broadcasting.

Fox News On WorldSpace Platform

Even before Fox could enter the Indian market through the direct-to-home (DTH) television platform, it's there on satellite radio, WorldSpace. Fox News, a wholly-owned subsidiary of Rupert Murdoch's News Corporation, is available in the country as a 24-hour channel on WorldSpace. But, WorldSpace sources said "it's only a test run now." A decision on the commercial launch would be taken soon by the company headquarters in Washington DC, an official said.

In a recent announcement, WorldSpace Satellite Radio Vice-president of Global Content, William Sabatini had said that Fox News channel would be available to international subscribers of WorldSpace. A household name in the U.S., Fox News on satellite radio caters to the American expats and military personnel around the world. Fox News reaches 45 countries on cable and satellite TV. Currently there are around 30 channels on the WorldSpace platform.

Will Radio Finland's Shortwave Broadcasts End?

Radio Finland, the external service of the Finnish Broadcasting Company (YLE), may decide to close down its service on the shortwave and mediumwave bands. This would leave external service programming available only via satellite and on the Internet. The aim would be to cut expenses. Currently distribution costs for Radio Finland total 3.4 million Euros annually. The YLE Administrative Council is expected to decide the fate of Finland's shortwave later this year.

China Builds New-Generation Satellite Broadcasting System

China's new-generation broadcasting satellite system will be put into operation in 2006, according to Chinese satellite communications officials. Sources with China Satellite Communications Corp. (China Satcom) said two satellites for radio and television broadcasting will be launched before the end of 2006, including one made by the Chinese and one manufactured by Alcatel Space. China Satcom and Alcatel have signed a contract to design and produce a new-generation communications satellite, Chinasat 9, according to the sources. Chinasat 9, which is scheduled to be launched in late 2006 atop a Long March 3B carrier rocket, will enable 97 percent of Chinese residents to receive satellite broadcasting signals with the help of a small antenna.

The Chinese-made satellite capable of offering various communications and television broadcasting services will be launched in mid-2005. The two satellites, both with a designed service life of 15 years, will form the new-generation broadcasting system.

Clandestine IBC-TAMIL Reporter Killed In Sri Lanka

Mr. Aiyathurai Nadesan, a leading Tamil journalist and IBC-TAMIL reporter in Sri Lanka, was shot dead by unidentified gunmen as he was going to work on a motorbike near his house. The assailants came in a motorbike in front and fired at him, police said. His home is in the high security zone of the Sri Lanka army's 233 Brigade Headquarters and is in the vicinity of the well defended camps of four Tamil paramilitary groups and military intelligence. The Batticaloa Police launched an immediate investigation into the killing.,

Radio Netherlands Wins Gold Again!

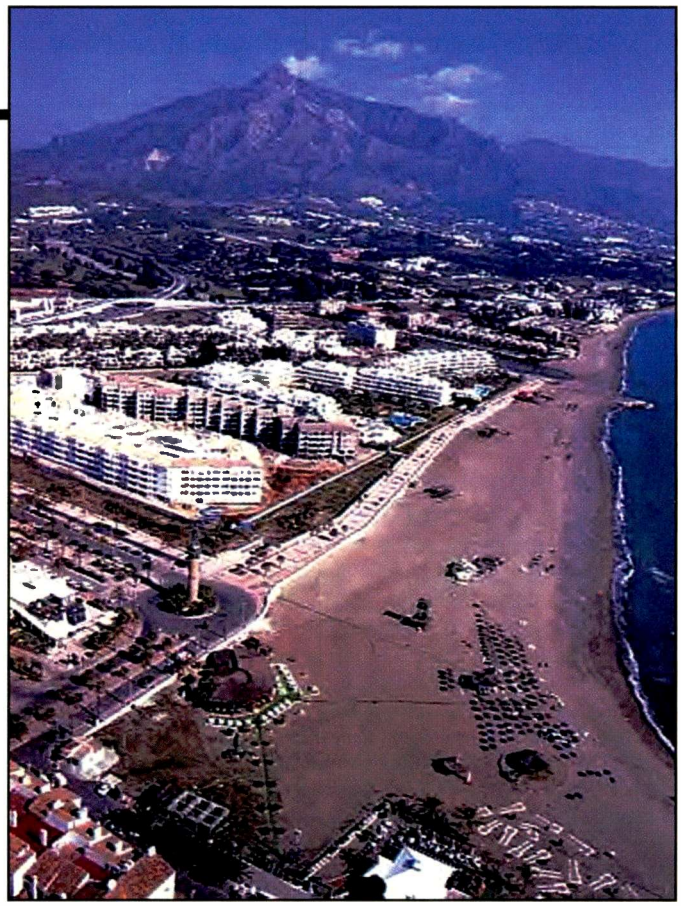
Radio Netherlands has again won gold at the annual radio competition, The New York Festivals. The English and Latin-American language services won a total of six prizes: two first and two third prizes, plus two finalists for English productions and a first and second prize for Latin-American programs. The winners were announced recently in New York.

The competition recognizes "The World's Best Work" in radio programming and promotion. More than 1,000 entries from over 30 countries were judged by panels of radio experts from stations and companies throughout the world for their production values, organization, and presentation of information, creativity and use of the medium.■

A Special Look Inside Onda Cero International Radio

Marbella Calling From Spain's Costa del Sol—Playground Of The Rich And Famous!

By Susan Dale Macaulay



Aerial view of Spain's glorious Costa del Sol.

There can't be many people whose walk to work takes them along the promenade of one of the most popular destinations in Europe—Marbella, Spain. I hurry along the palm-punctuated Paseo at dawn, out of place among the few joggers and street sweepers and turn right up a lush little river valley, into one of the most exclusive parts of town. Spotless white apartment blocks seem to slip out towards the sea like great, elegant liners. A maid might be outside dusting a balcony, a black cat might dart across a palatial patio, but otherwise all is hushed, motionless.

Begonia is cleaning the marble hall of the building where I work. She knows I struggle to find the right key, balancing my briefcase and coffee every time, but she cannot find it within her weary bones to walk the three meters over to the front door to let me in. So having sympathetically avoided her freshly mopped floor for the last couple of weeks, I now walk right over it. Because it suits me. Es así. That's how it is in Spain.

Although a little fountain plays in the splendid marble atrium of our building, the opulence does not continue behind the front door of the radio station, scene of concentrated chaos, and I meltdown in the maelstrom for the next six hours.

"We are on the air between 9:30 and 10 a.m., in a program which includes national, regional and local news, sports, financial reports and weather."

The station, Onda Cero International Radio, is shabby, stinks of stale tobacco, has pillars in all the wrong places, an endlessly spewing fax machine, huffy computers, hardly any phone lines, not a single pen—and I love it. I'm there at dawn to start work on "Buenos Dias," the only English language program of Spanish news for the 800,000 ex-patriates. We are on the air between 9:30 and 10 a.m., in a program which includes national, regional and local news, sports, financial reports, and weather. The station considers this its flagship program. Some bits get wired in via the Net. The financial report gets faxed in, at the very last moment usually, necessitating a lot of running up and down the corridor during ad breaks. Sometimes it doesn't arrive at all. The rest of the news we translate from the Spanish press, as many stories as we can. I say we, there are two of us, and sometimes only one. Things often go horribly wrong, and if you can't think on your feet, you're dead meat, as they say.

The morning DJ, Ian, drives the desk for us, which means he has technical control of the program. The only trouble is that he sees news as an unwelcome and uninteresting interruption to his own show, and often wanders off to the balcony to do his exercises as we read. I catch him out of the corner of my eye doing elegant pliés on the railing and wonder if he has heard me say, "And finally...," his cue to play some ads or another sting. During sports he usually has his electric razor out and his face is all stretched and puckered as he shaves.

Susan Macaulay tells us that despite the usual radio chaos, the station has won the equivalent of an Oscar in Spain—a Premios Onda—for the best local radio station in the whole country, singled out for it's efforts to integrate the foreign community into Spain. She says her boss returned from the ceremony with . . . "he coveted trophy, a rather ugly depiction of Mercury, the winged messenger and symbol of communication." She said, "The big chiefs in Madrid decided this was the green light to open another Onda Cero International on the Costa Blanca, based in Altea on 94.6 FM. More OCIs are planned for the future, reaching parts of Spain with high concentrations of foreigners, like the Balearics and the Canaries. But Marbella is to remain the mothership, and I'm rather proud of that."

Sometimes he disappears out of the studio altogether and we are left in embarrassing silence. Dead air! A cardinal sin, but no one ever complains.

"There is always a sense of miracle at 10 o'clock as we leave the studio. We got through it once again and without knowing quite how."

There is always a sense of miracle at 10 o'clock as we leave the studio. We got through it once again and without knowing quite how. On rare occasions there is time to pop down for a quick coffee to the café downstairs where we can sit in gentle sunshine, sipping "sombras" (hot milk with just a hint of coffee) or even treating ourselves to breakfast—hot toasted rolls topped with olive oil and tomato. But usually there's no time for anything so civilized.

I have a one-hour live show every weekday between 1:00 and 2:00 p.m., and it's a talk show. And that means guests—and finding interesting, articulate, available guests. Preferably three of them, every day. The radio station has no researchers and no budget. I usually spend the next three hours on the telephone, drumming up guests to come in—when I can get a line. If someone's on the 'Net in our office, no one else can get a line. I rush into other people's offices (we broadcast alongside Spanish colleagues operating on a different frequency) and if they're on the Net, too, no one can get a line. Very few phones permit international calls. And the station's phones seem permanently engaged to listeners, sponsors, or guests who desperately want to speak to us.

Sometimes the frustration drives me to the point of spontaneous combustion, but it turns out that this situation is dramatically better than the one which prevailed for a while, when you could only dial within Marbella and certainly not to mobiles. The irony is that we're owned by Telefonica, Spain's BT.

So how do you fill a program with exciting guests every day under these conditions? Well, the word miracle is not out of place. Things happen. You call someone and discover they're away, but the house-sitter answers the phone. In despair and as a kind of joke, you ask him if he'd like to appear on your program. "Yes," he says immediately. "Who are you then?"

"Ah, Radio Days. If you're coming to the Costa del Sol for a vacation, be sure to get in touch. You could be on my show."

you say. "I'm the UK's only commercial lie detector," he replies. Bingo. What a scoop. What stories he told!

This Monday I had only one somewhat unreliable guest for the show a poodle-clipper to the stars. She had good stories, but could she hold up for a whole hour? The panic began to rise, when with 20 minutes to go a young lady materialized in the office, saying she was a voice-over artist looking for work.

Within seconds she was nabbed for my show, and proved another great guest, switching accents, mimicking animals, and telling stories of sultry porn voice-overs she'd been asked to do. One company had asked her to do a scene with two women and a man in which she had to play all the parts in a kinky three-way conversation with herself.

Then there was yesterday, when the guests failed to show up and a pre-recorded interview faded irretrievably into the ether as I was playing it out on air, leaving me with nothing. Absolutely nothing, except a load of ads, of course. So what do you do? You grab a bunch of CDs from the shelf behind you and start to wither. Finally two gentlemen appeared in the corridor outside the studio. "Hold on, listeners," I shrieked. "The guests are here, lets take a break and we'll be back with our long-awaited interview with BMW about a new product they chose to launch right here in Marbella!" I flung off my headphones and rushed to wring the gentlemen's hands as I shoved them into the studio. "Thank God you're here," I shouted. "Which one of you is Reinhart?" They both stared terrified at me. "Reinhart!" I shrilled. "You know, the person you are fielding to do the interview!" More blank stares. Then a timid few words from the least frightened one. "Ve vont to speak to Claus," he said. Claus, my Danish colleague, suddenly materialized in the studio behind me. What on earth did I think I was I doing, grabbing his guests like that! (The Scandies, as we call them, go on air immediately after my show.)

Ah, Radio Days. If you're coming to the Costa del Sol for a vacation, be sure to get in touch. You could be on my show. Seriously! ■

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- Alarm and 1-90 minute sleep timer
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Mike's Tips: Mobile Radio Installation 101

A Former North Carolina Police Officer Shows Us The Radio Gear Inside His Toyota!

By Michael Byer, AF4AY

Like many radio enthusiasts, when I'm out and about, I want to take my radios with me, so I've done just that in my Toyota 4-Runner. I became interested in communications while attending Basic Law Enforcement Training in Asheville, North Carolina, in 1995. I was hooked after sitting through the communications portion of the class. I became absorbed in radio and wanted to know all about it. I studied every night and quickly earned my Extra Class ham ticket. I wanted more and took on the challenge of the GROL (General

This is the overall view of the radio equipment in the daytime. Note the flush mounting (in the dash) of the PRO-2067 scanner. The three transceivers have the control heads remote mounted and the XM is remote mount as well. I had to use a piece of soft metal strap (similar to plumber's strap) mounting of the spectra microphone.

Here's the Larsen NMO 2/70 for the Yaesu FT-7100M and a Larsen NMO-40 that I have for the scanner (I usually monitor NCSHP which is on 42 MHz lowband). I have several antennas that can be interchanged if I am concentrating on 800-MHz trunking. And, finally, my front license plate shows WCU (Western Carolina University Alumni; Master of Public Affairs, class of 2002).

This photo shows the rear NMO-27 antenna that I use for 10 meters. The mount is a Diamond brand. The receiver hitch I made from several parts and I can interchange "Hamstick" HF antennas for whatever band I choose. Both of these antennas go to the Yaesu FT-900 and I use an MFJ selector switch to select my antenna. My callsign, AF4AY, is also my license plate registration. And, of course, I display several WCU and UNCA Alumni stickers on the vehicle.

This photo shows the same radios as the day interior photo—it's just to show you the different lighting at night.

Here's Mike standing at the rear of his vehicle.

> ***"Frankly, I cannot get enough of radio and everything it can do—it's also the lifeline for police and fire personnel."***

Radiotelephone Operators License) commercial license. After studying for six months I passed it the first go around. I have been involved with ham radio ever since and worked for a commercial two-way radio company for a while (Piedmont Communications, Inc., in Wilmington, North Carolina).

Practical Advice

In my mobile installation, as shown in the photos, I've replaced the Motorola VHF Maratrac with a Motorola VHF Spectra. Otherwise, the vehicle contains the following communications equipment: a RadioShack PRO-2067 multi-trunking scanner (flush mount in the dash), a Yaesu FT-7100M dual-band ham transceiver, a Yaesu FT-900 HF ham transceiver, a Motorola Spectra A7 50-watt commercial band VHF 128-channel transceiver that has full 2-meter capabilities and, finally, a Pioneer XM satellite receiver unit connected to a Kenwood CD stereo. I have about 40 to 50 or so man-hours and about $3,000 invested in my radios, antennas, cabling and connections.

My personal tips for folks are to make sure you have good grounding (for both radios and antennas; an MFJ 259 tuner is my best friend for antenna work). Make sure when mounting a control head to check for shifter clearance and other obstructions. Remember that you are driving first and playing radio second, so keep the microphones, control head viewing, and speakers clearly visible. Give your vehicle a clean look. Take pride in your installation, and do not shortcut on wiring, connectors and fused leads.

Frankly, I cannot get enough of radio and everything it can do—it's also the lifeline for police and fire personnel.

My other hobbies include running, bicycling, and going to the gym. I believe in keeping my mind as well as my body in top shape. When disaster strikes or the need for ham assistance arises, those in distress need people who can go the distance and I make sure I am ready for it. I make sure my vehicle is ready as well. I hope to see and talk with my fellow hams in the western North Carolina area soon. I monitor 146.52 simplex and the 145.190 and 146.760 repeaters.

I'd be interested in hearing from you about your mobile radio installation. Please write to me at *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801. ■

VOA Scheduled To End Many English Broadcasts This Year

Just In Time For The Upcoming Elections—"World's Greatest Festival Of Democracy"—In-Depth VOA Reporting Declines Drastically!

By Alan Heil, Jr.

To shortwave listeners and DXers: If you've had trouble receiving high quality broadcasts by VOA in English lately, you haven't experienced anything yet. According to the *World-TV Radio Handbook*, the Voice of America (VOA) has reduced its frequencies worldwide in English by about a third between 1999 and 2004. This trend will accelerate this year, according to management announcements to the VOA staff. By the Fall time change, VOA on-air hours in English will have declined from 24/7 (last October) to just 14 hours a day of highly regionalized programming.

Barring a reversal or modification of this decision, the consequences for listeners who follow America will be dire. As a source of world and U.S. news, VOA will then "go dark" 10 hours daily during the climactic days of the U.S. presidential campaign. This is doubly perplexing because since VOA went on the air in 1942, it has covered every national election campaign, reflecting what has been hailed as "the world's greatest festival of democracy."

A respected international broadcast authority at Radio Netherlands has put it succinctly. Andy Sennitt says if VOA continues to cut its transmissions in English—the most used global language in business and on the Internet—the Voice's flagship program VOA News Now will have to be re-titled VOA News Now and Then.

In early April, the Broadcasting Board of Governors (BBG), which oversees the Voice, ordered the cessation of all broadcasting in English to Central and South America, and two years ago reduced its English transmissions to even the strategically important Middle East. This was to make room for Radio Sawa, a new Board-inspired 24/7 service in Arabic.

The BBG claims Sawa, with its heavy emphasis on pop music and entertainment style programming aimed at youth, has amassed record audiences of 70 percent or more of adults listening in some Arab countries. However, observers say fast-paced, FM-oriented Sawa (which means "together" in Arabic) contains much less news and information than the long-established VOA Arabic service which it replaces. Britney Spears is in; live in-depth reportage so valued over a half century by listeners to VOA Arabic is out.

The BBG, citing the need to cut costs, also abolished 10 VOA languages to Central and Eastern Europe earlier this year: Estonian, Latvian, Lithuanian, Polish, Hungarian, Czech, Slovak, Bulgarian, Romanian and Slovene. This, the BBG said, was to enable VOA and other U.S.-funded overseas networks to concentrate on the Arab and Islamic worlds. All the while, it introduced new entertainment-oriented formats in Persian and Urdu, spoken in Pakistan, and downplayed or abolished the VOA brand name in those languages. And last February, the Board launched Al Hurra TV, a 24/7 satellite-delivered television network which is costing $102 million in its first year of operations, a little less than a fifth of the entire U.S. international broadcasting budget.

The Need To Convey News In Depth To The World

The 800-pound gorilla in all these changes is the sustained need for America to convey news in depth, content of quality, and adequate HF transmissions in an uncertain world. What should we want to say to Muslim moderates, and how should we say it? Are entertainment and mass audiences the answer? What about the age-old VOA winning formula of news, features and music fare, or "full service" programming?

To what extent will the programming of tomorrow serve U.S. interests in a time of terrorist threats and instability? Influential non-American English speakers (around a billion people worldwide) look to our taxpayer-supported overseas broadcasts for that service. So do U.S. citizens abroad.

Example: 24/7 access to VOA English shortwave was indispensable to American listeners overseas who were evacuated in past emergency situations, mostly in the Middle East and South Asia. If VOA is dark when Embassy wardens need to use this vehicle to assemble evacuation convoys, it truly can be a matter of life and death for our countrymen abroad. Ask around 800 Americans evacuated from Iraq and Kuwait overland a few weeks before the 1991 Gulf war erupted.

The 21st Century technical demands of international broadcasting are daunting. It's true, as the Board has said, that hard choices have to be made. VOA earlier this year inaugurated a multimedia News Center (radio, TV and the Internet). It encompasses five radio studios, an intake center, and three television studios. VOA programs are downlinked to more than 1,200 FM radio and TV outlets around the world today, and its Internet sites in more than 40 languages receive millions of hits each week. The BBC World Service has confronted budget cuts and its English service went dark to the Americas three years ago.

Yet, as incomprehensible as it may seem in this digital high-tech age, about half the world's people have yet to make their first telephone call. Experts such as Simon Spanswick, CEO of the Association for International Broadcasting in London, notes that one out of seven listeners in the world have yet to gain access to global radio transmissions. It's essential to retain the vital shortwave base, and retain it on enough frequencies to be easily tuned in the event of a crisis. And to keep that base healthy and strong, a full-service window of facts, ideas and opinions for a curious but troubled planet.

Editor's Note: Alan L. Heil, Jr., is a former deputy director of the Voice of America and author of Voice of America: A History *(Columbia University Press, 2003).*

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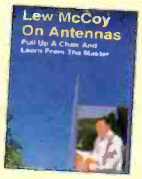

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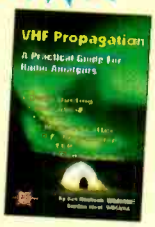

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by Ken Reiss, radioken@earthlink.net

Aviation Action Is Closer Than You Might Think! Here's What To Listen For

Aviation scanning, or more particularly "Air Band" scanning, is a one of those areas that people either love or get bored with quickly. Aviation enthusiasts tend to also be military enthusiasts since a lot of the aviation traffic is military, if you live anywhere near a base. You'll find a lot of crossover, but not always.

Anyway, if you're new to this type of scanning and want to get your feet wet, you'll need a scanner that covers the band you're interested in. The aviation band for civil aircraft runs from 108 to 137 (108 to 117 is used for navigation aids, so there isn't much traffic of interest in that range). The military uses 225 to 400 MHz. All air traffic is AM mode, so your scanner will need this mode as well if you want to listen in. Any scanner that includes an "air band" will also have the AM covered, but unfortunately, only scanners toward the high end of the market will cover the military bands.

With the recent security concerns, the days of sitting at the airport on an observation lot or at the end of the fence are probably over, or at least you must approach with caution. If you're sitting in a parked car someplace close to the airport it's almost certain that security will be by in short order. Don't push them—they have enough to worry about. But it turns out that you can hear quite a bit of what's going on without even being close to an airport, and you can hear the ground controllers several *miles* away too.

What's To Hear?

Aviation monitoring is in many ways like public safety monitoring. Hours and hours of dull routine transmissions interspersed with real-world high drama and excitement. You might actually find more excitement in the public safety area, if that's what you're after. After all, the aviation industry works very hard to keep the excitement factor down to a bare minimum, and if you're a passenger on one of those flights you'll no doubt appreciate their efforts.

The aviation monitor can listen to a wide variety of enroute communications, though. Some listeners even go so far as to track flights on a regular basis, and if you're lucky enough to live near a major airport you can follow them all the way into or out of the airport on a trip. Many shortwave enthusiasts enjoy monitoring the overseas flights as they come across the ocean and then transition to the VHF air band as they get closer to land once again.

Aviation is one of the very few services that looks like it's going to be on HF for a long time to come. There are discussions of satellite-based services replacing the HF networks, but no immediate plans that I'm aware of have been finalized. No doubt it will eventually switch over, but it will probably be a number of years after oceanic flights switch that domestic traffic follows suit.

One of my favorite aviation band receivers also doubles as a shortwave receiver...or is that the other way around? I travel with this radio frequently, and if a fast check of the air band reveals a nearby airport, it's likely to stay tuned to the airband.

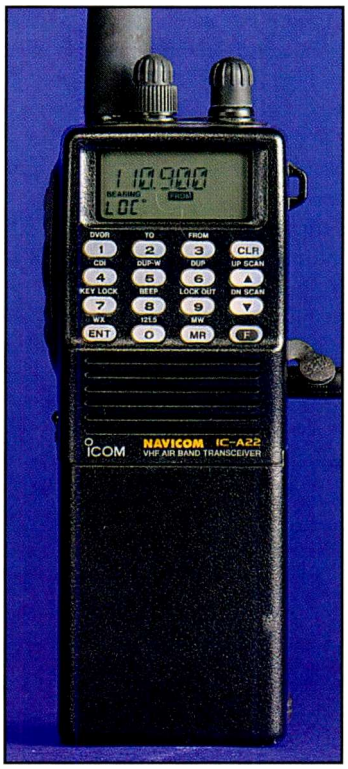
Air traffic controllers and pilots alike are trained to make all communications routine. Sometimes they break out of that training, though, and it can make for some of the best listening on the air band; often it's quite humorous. And sometimes pilots try to minimize time on the radio and can leave out certain key words, leaving monitors a bit puzzled to say the least.

Another area that gets a bit confusing to the beginner is the expression of altitudes. Near the airport on takeoff or landing, and at lower altitudes, the height is given as feet above sea level. For instance, "Climb and maintain 4000" means clearance is given to four thousand feet, although the pilot is likely to shorten the readback of that to "Roger...climbing for 4."

At these altitudes, and in close proximity to the ground and airport, the local barometric pressure is set on the altimeter to give as accurate readings as possible. You'll quite often hear a controller read off the altimeter setting with a landing instruction, just to give the pilot a last chance to set it as accurately as possible, "American 470 cleared to land runway 22, altimeter 29.98."

At 18,000 feet, however, something weird happens. The altitudes become "Flight levels," at which point the altimeter is set to 29.92 (standard), and everyone uses that regardless of the actual air pressure at a particular location. You can then travel long distances without having to worry about resetting the altimeter, and since everyone will be using the same number, the readings will be off by the same amount for any given area. What gets confusing here is that the flight levels drop the last two zeros, so 18,000 becomes flight level 180.

Controlled airspace extends to flight level 600 (60,000 feet). There's an old joke about an SR-71 spy plane calling the controller and requesting flight level 700. The controller thinks



For more serious aviation work, this is an air band transceiver. They're available in many pilot shops and include a more professional grade receiver. It's intended to be used as an emergency radio in small planes, or by ground crews. Of course, you should never transmit on any frequency for which you are not licensed...the safety of a lot of people is at stake with the air band.

about that for a second and then replies "If you can get up there, you can have it since there isn't anything else that high." And the pilot replies "roger, descending to 700." It's all relative.

ATIS: One Of The First Places A Pilot Tunes

You can tune there, too. ATIS, the Automated Terminal Information Service, is a repeating broadcast that includes information about what runways are active, what the current weather is, and what altimeter settings are. There's also information about airport operations or things happening nearby that might be of interest or concern to all pilots operating in the area.

The first broadcast of the day is called "Alpha" and then as it's updated, the ID is changed so that everyone, particularly the pilots and ground crew, knows that the information you have is the stuff that's current. They simply step through the International Civil Aviation Organization phonetic alphabet (see "The ICAO Phonetic Alphabet") each time it's changed and start over if they run out. You'll sometimes hear a pilot call "with Bravo" and the controller will reply that "Charlie is current." They'll send the pilot back to the ATIS frequency to get the updated information. If weather is unchanging, it might be alpha all day. In bad weather, or rapidly changing conditions, it can change every few minutes. I've never heard it happen, but presumably, if they reach Zulu they would just start over, as Alpha would be 26 versions and at least a few hours old by then.

Sometimes, depending on the airport, the broadcast also includes frequency information for contacting ground or approach controllers. If not, this information is readily available in many publications, on the Internet, or just by searching for a few minutes. In fact, ATIS is one of the first things I look for when I'm in a new area because the transmitter is always on. If I can hear an ATIS broadcast, I can probably hear the tower, too. It doesn't take long to find active frequencies in your area and at least get a feel for the type of activity that particular frequency is being used for.

Readily Available Info

One of the key differences between aviation scanning and public safety scanning is that the information is so widely available. You can simply go visit your nearest pilot supply shop and come out with charts and books of all sorts that list frequency and usage information. Much is also available on the Internet, and sometimes you can even find pilots who will give you old or outdated charts. They're not legal to use for navigation any more, but they don't change frequencies that often. Visit a nearby pilot shop or flight training center and tell them what you're looking for and why. If they don't have any, I'll bet you could talk someone into holding some for you the next time they expire for the price of a cup of coffee. They're a wealth of information and you'll learn a bit about chart reading in the process.

Types Of Traffic

Let's take a quick look at the types of traffic you'll hear on a typical scan through the band. We've already covered ATIS, so now let's look at ground control and then tower and flight comms. Ground control is responsible for the movements of the aircraft on the ground to and from the runways and terminals. Sometimes, the ground controller can have a worse traffic jam than the air controllers, and you just can't pull an L-1011 off to the side and let a 767 pass.

Some of the larger airports also have a "ramp" controller. This controller will have responsibility for the immediate area around the gates and getting planes in and out of the "ramp." So the ramp controller might be the first person a plane actually talks to before it starts moving.

Often, also at larger airports, you'll find a frequency used for "Clearance Delivery." At smaller airports, the ground controller handles this function, too, but as the ground controller gets busier at a larger airport there isn't time to read lengthy clearances back and forth. Initial clearances often have many restrictions on them to help the plane and air traffic control steer clear of potential hazards with other traffic.

Clearance delivery will have the official clearance for the plane from Air

Frequency Of The Month!

Each month we ask our readers to let us know what they're hearing on our "Frequency Of The Month." Give it a listen and report your findings to me here at "ScanTech." We'll pick a name at random from the entries we receive and give the lucky winner a free one-year gift subscription, or extension, to *Pop'Comm.*

In keeping with our aviation theme, let's give **118.3** a try. If you don't hear anything there, check out then entire 118.0 to 119.0 range. Most airports that have a tower operate in this range. You might have to leave your scanner on it for a little while, but you should hear some radio traffic there sooner or later. Let me know what you're hearing, and we'll enter you into the drawing for a one-year subscription or extension.

You can reach me at radioken@earthlink.net via e-mail, or at Ken Reiss, 9051 Watson Rd. #309. St. Louis, MO 63126 via more traditional methods.

This classic receiver was one of the earlier ones to feature a real scanner with air capabilities in a portable. The PRO-23 designation was re-used in the 80's on a programmable scanner.

Traffic Control based on their expectations. You might hear something like this: "ATC clears American 554 to Houston as filed. Climb and maintain 5000 feet, expect higher five minutes after departure." American 554 has filed a flight plan to Houston (or is a regularly scheduled flight, in which case they might have gotten their clearance from flight ops before they even get into the plane, if nothing's irregular). However, for some reason—usually other planes that will be in the way—this clearance has been restricted to an altitude of 5000 feet, and they are telling him to expect a higher altitude five minutes after departure. If all goes well, the new clearance will come before he hits 5000 feet and the passengers will never know it was restricted. But the pilot cannot climb above that altitude until he receives further authorization enroute to do so.

After clearance delivery, ramp and/or ground control will provide instructions to get to the runway. At a major airport this can be very entertaining listening if they're busy, or if weather is causing an unusual number of planes to be on the ground at the same time. Otherwise it's pretty routine stuff.

The ground controller will get the plane out to the runway, but just short of it. At that time they will switch to the tower frequency. Tower controls the runway and all the airspace around the airport, but only out to a distance of five miles. After that, departure takes over.

Departure and approach can be on the same frequency if there isn't too much traffic in the area, or they may be segregated. There may even be more than one departure and approach frequency in use at an airport if there's lots of traffic. All traffic from the south will use one frequency, all traffic from the north will use another. If you listen to the tower, he'll tell the planes what frequency to contact departure on, and if you listen for a while, you may hear a couple of frequencies. If you listen long enough, you may also hear them give the approach frequency for some reason, so finding the frequencies shouldn't take long once you get started. Sometimes that's half the fun!

Once at a certain altitude or a certain distance from the airport, that departure controller will hand the plane off to an enroute controller. These are high altitude controllers that work in one of the 20 air route traffic control centers across the country. Don't be alarmed if there isn't an ARTCC (Air Route Traffic Control Center) in your neighborhood. They use remote transmitters all over the place to keep in touch with planes for a long distance. And even if you can't hear the ground, you can hear the planes for a very long way.

As the plane progresses on its flight, it will get passed from one controller to the next along the way. Sometimes it's even the same person monitoring both "sectors," but the frequency has to change to keep in contact with a nearby ground station. As the plane approaches its destination, the ARTCC will begin clearing the plane to lower and lower altitudes, and eventually hand it off to an approach controller, who will hand it off to a tower, who will hand it off to ground, who will hand it off to the ramp once it has landed. You get the idea.

The ICAO Phonetic Alphabet

Sometimes this is also used by public safety agencies so it might not be new to you. However, most public safety agencies use the APCO (Association of Public Safety Communications Officers) alphabet, which uses different words. On air frequencies you'll often hear taxiways referred to by these names when planes are given taxi instructions.

Letter	ICAO	APCO
A	Alpha	Adam
B	Bravo	Boy
C	Charlie	Charles
D	Delta	David
E	Echo	Edward
F	Foxtrot	Frank
G	Golf	George
H	Hotel	Henry
I	India	Ida
J	Juliet	John
K	Kilo	King
L	Lima	Lincoln
M	Mike	Mary
N	November	Nora
O	Oscar	Ocean
P	Papa	Paul
Q	Quebec*	Queen
R	Romeo	Robert
S	Sierra	Sam
T	Tango	Tom
U	Uniform	Union
V	Victor	Victor**
W	Whiskey	William
X	X-Ray	X-Ray***
Y	Yankee	Young
Z	Zulu	Zebra

* Pronounced Kay-bek
** How many words with V are there?
*** Worse than V!

Air Frequencies Of General Interest

Some frequencies in the airband are nationwide. Put these in your scanner if anything interests you, and let us know what you're hearing!

108–118: Navigation aids. You won't hear much voice down here (except for some automated weather and "talk-through systems," where a remote flight service station transmits through a navigation aid's transmitter. For the most part, you can leave these *out* of your scanner.

121.5: The universal emergency frequency; 243.0 is the military equivalent. Not much traffic here, but what traffic is there is very important.

122.0: Flight Watch. Enroute weather and information for mostly private aircraft.

122.8: Unicom. Used at many smaller uncontrolled airports for pilots to talk and coordinate.

122.9: Unicom frequency.

123.0: Unicom in some areas, sometimes used by helicopter operations.

123.025: Helicopter operations.

123.45: Plane-to-plane (a sometimes very informal chat channel)

126.2: Military towers. Many military installations have restricted airspace around them and need a way to communicate with civilian aircraft. This frequency is used quite often for this purpose.

Air Route Traffic Control Centers (ARTCC)

ARTCCs handle planes at altitude as they travel between airports and cris-cross the country. Don't worry if there isn't one right in your backyard, you are still likely to hear one of these remote transmitter sites in your area.

Albuquerque
Atlanta
Boston
Chicago
Cleveland
Denver
Fort Worth
Houston
Indianapolis
Jacksonville
Kansas City
Los Angeles
Memphis
Miami
Minneapolis
New York
Oakland
Salt Lake City
Seattle
Washington (D.C.)

In addition to all the controller traffic, you'll also find company dispatch frequencies in the air band. Here's where a pilot can talk back to the mechanic or scheduling people for information or problems in flight. There are several in-flight weather frequencies, including 122.0, the nationwide "Flight Watch" channel. On this frequency, all across the country, you can hear weather reports and information passed.

There are also the Unicom (uncontrolled airports) frequencies to listen for. These are used at smaller airports (those that don't have a tower) as community "advisory" frequencies. The frequency 122.8 is the most common, and a plane taking off will advise its intentions just in case someone else is landing. You'll also hear a bit of chit-chat between planes.

You'll find interesting comms on 123.025, which is used nationwide for helicopter operations. There are lots of others, but these will get you started.

It's A Ground-Based Sport!

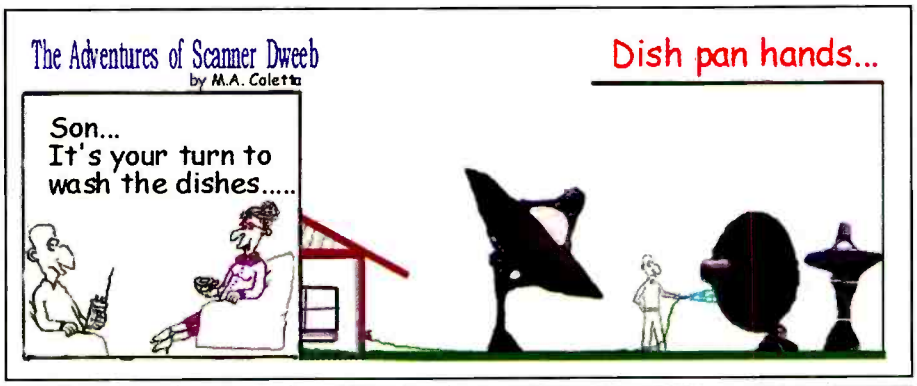
Frequently I get asked about listening while on the plane. The bottom line on this is: don't! First of all, it is against the rules on all carriers after 9/11. Some airlines used to allow it once airborne, but not any longer. There is a chance that your receiver's circuitry could generate enough of a signal to cause interference or reduced performance in aviation radios on the plane. It can happen! In most cases, other systems on the plane could be used to replace the one that was being interfered with, so it's probably unlikely that it would cause a catastrophic problem, but it would be something for the crew to worry about, and they really don't need that. They're busy enough without scrambling for backup plans!

Safety considerations aside, it really doesn't work very well anyway. You're in a nice high spot, so the altitude of your receiver is great, but you're also in an aluminum can! Very little radio energy comes through the window, which is about the only way it can get there.

So why do the *aircraft* systems work so well? This is one time where the answer really is blowing in the wind! (Sorry, I just couldn't resist that one.) Remember the plane's communications systems work because all their antennas are outside "in the breeze."

Try The Friendly Skies

So have a listen! Check out the air band in your area. You might be surprised at just how active it is, even if you're not close to a major airport. Sometimes small airports actually generate more traffic, and sometimes more excitement, because the pilots are in training or don't fly as a profession. Sometimes just listening to an ARTCC relay can be interesting to see what's passing overhead. And you can hear planes for a very long way even if the ground isn't audible. Check it out! You, too, may become an aviation scanner enthusiast! ■



by Laura Quarantiello, lauraq@cts.com

Capitol Hill And FCC Actions Affecting Communications

NOAA/Homeland Security Agreement

NOAA and the U.S. Department of Homeland Security have signed an agreement that allows Homeland Security to send all-hazards alerts and warnings directly through the NOAA All-Hazards Network, supplementing existing alert and warning resources and serving as an additional delivery mechanism for sending life-saving information nationally, regionally, or locally. FEMA will continue to manage the Emergency Alert System.

NOAA all hazards broadcasts can be received by special inexpensive radios. Today, most NOAA "weather radios," as they've come to be known, can also be easily user-programmed to receive only alerts for specific areas, thereby giving users emergency warnings tailored to their listening area.

FCC Experimental Actions

The FCC's Experimental Licensing Branch has granted several experimental applications, including the following:

AT&T Corporation has been granted a license to operate experimental BPL power line testing at 1.705 to 80 MHz, in Menlo Park, CA; Florham Park (Morris), NJ; Middletown (Monmouth), NJ; Miami (Dade), FL.

Boeing will be testing in the 30- to 18000-MHz range for F/A-18 aircraft in Mesa (Maricopa), AZ. Cessna will test aircraft radios for interference with GPS equipment at 121 and 131 MHz. Lockheed Martin will operate on 123.158 MHz and 123.3333 MHz for testing aviation radios at fixed and mobile sites in Marietta (Cobb), GA; Greenville (Greenville), SC; Fort Worth (Tarrant), TX; Palmdale (Los Angeles), CA. Rockwell Collins will test new military telecommunications technology at 476 to 482, 488 to 494, and 752 to 794 MHz, in Richardson, TX.

Automatic Power, Inc., will test maritime navigation equipment in the 156.025- to 162.0125-MHz band at fixed sites in Houston (Harris), TX; Galveston, TX; State of Louisiana and Gulf of Mexico.

The State of California has been issued an experimental license to operate on 401.7895 MHz for use of a GOES/DCS Satellite data collection system for fire weather forecasting and for prediction of water runoff and stream monitoring in Oroville, CA.

Guidant Corporation will perform product testing between 868.7 and 870 MHz at mobile locations at Charles River Laboratories, River Valley Farms, WI.

Neighborhood Activists Fight New Antennas

The proliferation of wireless antennas is causing concern for some neighborhood activists. They argue the possibility of adverse health effects is enough to stop more antennas from going up and to keep them away from schools, hospitals, and other areas that the elderly and children frequent.

In San Francisco alone, there are 2,400 licensed wireless antennas. Cingular has proposed an antenna in one San Francisco neighborhood to provide better reception. Activists fighting the antenna say Cingular already has significant coverage. Lauren Garner, Cingular's regional public relations manager, said, "...Studies have not shown that ground-level exposure to levels of RF from antennas is hazardous to human health."

FCC Set To Auction Spectrum In January 2005

The United States federal government says it is planning a wireless spectrum auction in January. The auction is expected to bring billions of dollars into the U.S. Treasury. The FCC will auction more than 2,400 megahertz of spectrum in the 1.9-gigahertz range. The spectrum includes licenses previously held by NextWave Telecom, according to the *Wall Street Journal*. Licenses will be available in Los Angeles, San Diego, Seattle, Denver, and St. Louis, among other areas.

18-GHz Petition Denied

A Petition for Reconsideration from the Independent MultiFamily Communications Council (IMCC) has been denied by the FCC. The petition sought reconsideration of, and requested immediate relief from, the 18-GHz Second Order on Reconsideration. In that Order, the Commission altered the 18-GHz band plan by reallocating the 18.3 to 18.58-GHz band on a primary basis for fixed-satellite service (FSS), and adopting provisions to ensure the orderly migration and timely reimbursement of terrestrial fixed service (FS) incumbents in the 18.3- to 18.58-GHz band.

Bad Boys!

The FCC has issued a Forfeiture Order in the amount of $3,200 to New York Radio Service, licensee of private land mobile radio station WPTM988, for willful and repeated violation of Section 1.903(a) of the Commission's Rules. The violation involves NYRS's operation of radio transmitting equipment at an unauthorized location.

DirecTV will be fined $87,500 for repositioning a satellite to an unauthorized orbit. Though the company asked the FCC for permission to move the satellite, employees began repositioning the satellite the next day, without waiting for commission approval. DirecTV wanted to move its bird from a super-synchronous storage orbit, 30 kilometers above the geostationary orbit, to a Canadian-assigned orbital location. The company started moving the satellite then stopped to meet with commission staff. It then asked for and received permission to move the bird again to reduce the risk of hitting another satellite. In setting the amount of the forfeiture, the Commission stated that strict adherence to the rules governing satellite positioning is critical to minimizing the risk of collisions between satellites. ■

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by Tomas Hood, NW7US, pc-prop-man@hfradio.org

Summer's Sporadic-*E* Season Was Hot!

The summer's sporadic-*E* (*Es*) season offered a lot of excitement and activity. Reports of record-breaking VHF *Es* propagation indicate that this year's summer *Es* was the best in years. Morris Sorensen in Winnipeg, Manitoba, Canada, reported on the AMFMTVDX e-mail reflector (see http://mailman.qth.net/mailman/listinfo/amfmtvdx) that there was "a monster FM skip opening" in June, where he noted the *Es* maximum usable frequency (MUF) was up to at least 107.9 MHz. He logged 12 new stations and three new states, as far away as Louisiana, Arkansas, Texas, Mississippi, Oklahoma, and Missouri, all with a DX-392 with a whip antenna!

Michael Procop, in Bedford, Ohio, near Cleveland, reported exceptional *Es* DX, from Montana to South Carolina to Nova Scotia, Canada, in July. Some of these DXers observed multiple-hop *Es*, as well as tropospheric ducting enhanced with *Es* propagation.

Es has the characteristics of many stations from many regions, the location of signals shifting around from one part of the country to another. Tropospheric ducting, on the other hand, would be limited to a very specific area, and other DX stations would not be heard.

Amateur VHF DXers reported that 50, 144, and even 222 MHz *Es* activity during the summer was some of the best seen since the 1960s. Fabulous openings on 6 meters between the U.S. and the Caribbean and Europe kept VHF DXers busy. Ron, WZ1V, in Bristol, Connecticut, reported a "mind boggling 144- and 222-MHz *Es* opening" on July 6, 2004. He worked well over 100 *Es* contacts on 144 MHz. On 222 MHz he worked with K5SW for a distance of 1,274 miles. Dave, K3KEL, in Benton, Pennsylvania, reported that "It probably was the strongest most enduring *Es* I've heard in 44 years on 2 meters."

Dedicated amateur radio operators like Allard, PE1NWL (http://www.gooddx.net/), and Volker, DF5AI (http://www.df5ai.net/) have speculated that there might be a longitudinal variation in *Es* activity. In 2003, Europeans enjoyed a spectacular *Es* season with many openings on 144 MHz, while North American *Es* was rare and dismal. This year, however, things were rather slow in Europe on 144 MHz, while in July the North American *Es* provided DX even on 222 MHz.

I made a prediction in the Spring issue of *CQ VHF* magazine, based on weather patterns, that this year's North American *Es* season could be better than last year's. It seems to have been

The Ap Index And Understanding Propagation Terminology

The Ap index, or Planetary A index, is a 24-hour averaging of the Planetary K index. The Planetary K index is an averaging of worldwide readings of Earth's geomagnetic field. High indices (Kp > 5 or Ap > 20) mean stormy conditions with an active geomagnetic field. The more active, the more unstable propagation is, with possible periods of total propagation fade-out. Especially around the higher latitudes and especially at the Polar Regions, where the geomagnetic field is weak, propagation may disappear completely. Extreme high indices may result in aurora propagation, with strongly degraded long distance propagation at all latitudes. Low indices result in relatively good propagation, especially noticeable around the higher latitudes, when transpolar paths may open up. Maximum K-index is 9, and the A-index can exceed well over 100 during very severe storm conditions, with no maximum.

Classification of A-indices is as follows:

A0–A7 = quiet	A30–A49 = minor storm
A8–A15 = unsettled	A50–A99 = major storm
A16–A29 = active	A100–A400 = severe storm

Solar Flux (SFI): This flux number is obtained from the amount of radiation on the 10.7-cm band (2800 MHz). It is closely related to the amount of ultraviolet radiation, which is needed to create the ionosphere. Solar Flux readings are more descriptive of daily conditions than the Sunspot Number. The higher the Solar Flux (and, therefore, the higher the Sunspot Number), the stronger the ionosphere becomes, supporting refraction of higher frequencies.

Ionosphere: A collection of ionized particles and electrons in the uppermost portion of the Earth's atmosphere, which is formed by the interaction of the solar wind with the very thin air particles that have escaped Earth's gravity. These ions are responsible for the reflection or bending of radio waves occurring between certain critical frequencies, with these critical frequencies varying with the degree of ionization. As a result, radio waves having frequencies higher than the Lowest Usable Frequency (LUF) but lower than the Maximum Usable Frequency (MUF) are propagated over large distances.

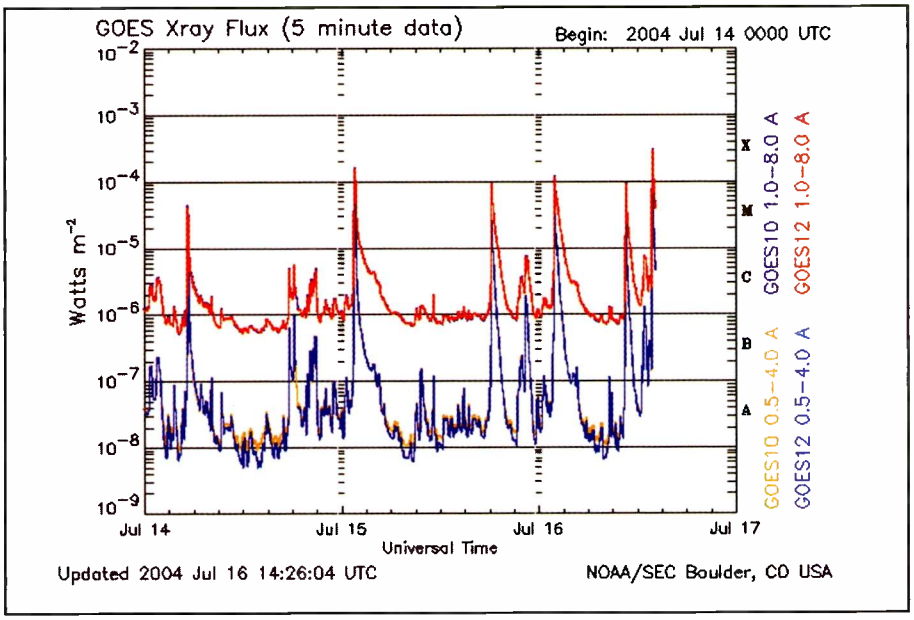
Sunspot Number (SSN): Sunspots are magnetic regions on the Sun with magnetic field strengths thousands of times stronger than the Earth's magnetic field. Sunspots appear as dark spots on the surface of the Sun. Temperatures in the dark centers of sunspots drop to about 3700° K (compared to 5700° K for the surrounding photosphere). This difference in temperatures makes the spots appear darker than elsewhere. Sunspots typically last for several days, although very large ones may last for several weeks. They are seen to rotate around the sun, since they are on the surface, and the sun rotates fully every 27.5 days.

Sunspots usually occur in a group, with two sets of spots. One set will have positive or north magnetic field while the other set will have negative or south magnetic field. The field is strongest in the darker parts of the sunspots (called the "umbra"). The field is weaker and more horizontal in the lighter part (the "penumbra").

Galileo made the first European observations of sunspots in 1610. The Chinese and many other early civilizations have records of sunspots. Daily observations were started at the Zurich Observatory in 1749; continuous observations were begun in 1849.

The sunspot number is calculated by first counting the number of sunspot groups and then the number of individual sunspots. The "sunspot number" is then given by the sum of the number of individual sunspots and 10 times the number of groups. Since most sunspot groups have, on average, about 10 spots, this formula for counting sunspots gives reliable numbers even when the observing conditions are less than ideal and small spots are hard to see. Monthly averages (updated monthly) of the sunspot numbers show that the number of sunspots visible on the sun waxes and wanes with an approximate 11-year cycle.

For more information, see http://prop.hfradio.org.



The Sunspot group NOAA 10649 (649) produced a series of strong flares. Here we see a series of X-class flares, one right after the other. This produced short-term shortwave radio fade-outs, but did not have any significant coronal mass ejections associated with any of the flares.

an accurate forecast. I'll be exploring this year's *Es* activity in relationship with the last few years and will share some thoughts on this in an upcoming edition. Your reports would be great, so drop me a letter or an e-mail.

The Sun Is Still Active During The Decline Of Cycle 23

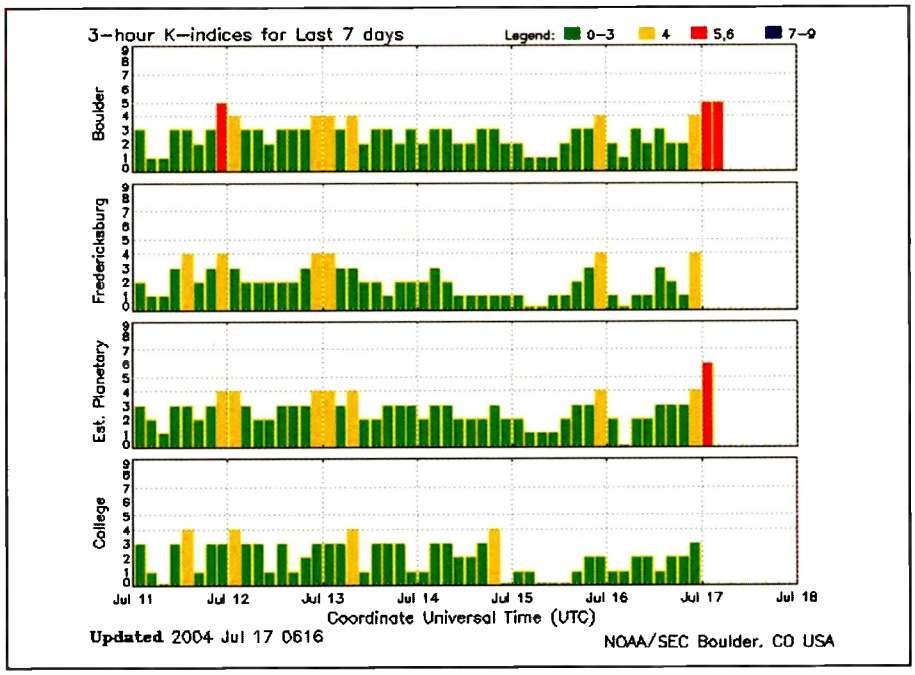
There have been some very active, yet short, periods of solar activity that breathed some life into the HF radio propagation during the summer months. For instance, during July we saw some strong solar activity with 10.7-centimeter flux readings over 170, and sunspot counts above 165. These daily readings were not typical for most of the year, though. We had even seen a couple of days with zero sunspots in January 2004. The smoothed averages do show a steady, and rather quick, decline from the Solar Cycle maximum. But don't despair, as these short bursts of solar activity will reappear from time to time. Of course, with these bursts of activity, we have to put up with X-ray flares. In July, for instance, there were a few turbulent days when we had back-to-back X-class and M-class flares (see "Solar Flare Categorization And Ranking").

On July 16, 2004, there was an X3-class X-ray flare. This was the fifth X-class flare in about a two-day period. This flare measured X3.6, the strongest of the five. There were more flares, mostly in the M-class range, following on its heels.

Active Region 649 (as numbered by NOAA, 10649) was the source of this flaring activity. Some think it is unusual to see these flares so late in the Solar Cycle, since we are so far down the slope toward the cycle minimum. Yet, because the sun's energy is changing and the activity of the sun is decreasing, the complex internal solar magnetic structures are "unfolding" and spinning off, away from the sun. As this happens, we can see some violent activity. This sunspot, 649, had a complex magnetic structure, known as a "magnetic delta," where opposite polarity sunspot umbrae are located within a single penumbra. (An umbrae is the dark core or cores in a sunspot. Some sunspots also have a linear bright and dark redials extending outward away from the ubrae, called penumbra.) This particular type of magnetic configuration supports unusually high magnetic gradients as well as strong levels of magnetic shear.

When we see strong atmospheric pressure gradients in Earth's atmosphere, combined with changes in wind direction with height (wind shear), we typically see the formation of tornadoes. This is the same sort of thing that is happening on the sun. Strong magnetic gradients along with strong magnetic shear with the complex twisting produce powerful magnetic explosions.

These flares cause nearly immediate disruption of HF ionospheric radio communications. The stronger the X-ray



A glancing blow from a coronal mass ejection from one of the first X-ray flares in July caused a bit of geomagnetic storminess. This can be seen in the rise of the K index readings. One of these graphs indicate the Planetary K (Kp) index. Note how it peaked at 6 during the first reporting period on July 17, 2004. This rise in geomagnetic activity causes the ionosphere to lose its energy, recombining much like it would during the hours of darkness. This lowers the maximum usable frequency by a percentage from normal.

Optimum Working Frequencies (MHz) - For October 2004 - Flux = 85, SSN = 27 - Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	20	18	15	13	12	11	11	10	10	10	9	9	9	12	17	20	21	22	22	23	23	23	22	21
NORTHERN SOUTH AMERICA	28	26	23	19	17	16	15	15	14	13	13	13	12	12	21	24	26	27	28	29	30	30	30	29
CENTRAL SOUTH AMERICA	27	25	21	18	16	16	15	14	14	13	13	13	12	15	23	25	26	27	28	29	29	29	29	29
SOUTHERN SOUTH AMERICA	29	28	26	21	20	18	17	16	15	14	14	13	13	13	18	24	26	28	29	30	30	31	31	30
WESTERN EUROPE	9	9	9	9	8	8	8	8	9	9	8	8	8	11	14	16	17	17	16	15	14	11	10	9
EASTERN EUROPE	8	8	8	8	8	10	9	9	9	9	8	8	8	8	13	13	13	13	12	11	10	9	9	9
EASTERN NORTH AMERICA	22	20	15	13	12	12	11	11	11	11	10	10	10	16	20	22	23	24	25	25	25	25	24	23
CENTRAL NORTH AMERICA	13	12	11	7	7	7	6	6	6	6	6	6	6	6	9	11	12	13	13	14	14	14	14	13
WESTERN NORTH AMERICA	7	7	6	5	4	3	3	3	3	3	3	3	3	3	3	5	6	7	7	7	7	7	7	7
SOUTHERN NORTH AMERICA	21	20	18	13	12	12	11	11	10	10	10	10	9	9	16	19	21	22	23	23	23	23	23	22
NORTHERN AFRICA	9	9	9	9	8	8	8	9	9	9	8	8	8	12	15	17	18	18	17	15	11	10	10	10
CENTRAL AFRICA	12	12	11	10	10	9	9	9	9	9	8	8	8	12	15	16	17	18	18	16	15	14	13	13
SOUTH AFRICA	19	18	13	12	12	11	11	11	10	10	10	10	10	16	19	21	22	23	23	24	24	23	23	21
MIDDLE EAST	9	9	8	8	8	9	9	9	9	9	8	8	8	8	13	15	16	15	11	10	10	9	9	9
JAPAN	19	19	18	18	16	14	11	10	10	9	9	9	9	8	8	8	9	8	8	8	13	16	18	19
CENTRAL ASIA	19	19	18	17	16	14	11	10	10	9	9	9	9	8	8	8	10	11	11	11	11	10	18	19
INDIA	13	13	13	13	12	10	9	9	9	9	8	8	8	8	8	8	8	10	11	11	12	12	12	13
THAILAND	19	18	18	17	16	13	10	10	10	9	9	9	9	8	8	8	11	13	13	12	12	11	11	15
AUSTRALIA	25	26	27	27	24	20	17	16	15	14	14	13	13	13	12	12	16	16	15	14	17	19	22	24
CHINA	18	18	18	17	15	13	10	10	9	9	9	9	9	8	8	8	9	9	9	8	8	8	13	16
SOUTH PACIFIC	29	30	29	27	24	20	19	17	16	15	15	14	14	13	13	12	15	15	17	20	23	25	27	28

UTC TO/FROM US MIDWEST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	22	20	17	16	15	14	13	12	12	11	11	11	13	19	22	24	25	26	26	26	26	26	25	24
NORTHERN SOUTH AMERICA	25	23	21	19	17	16	15	14	14	13	12	12	12	17	20	22	24	25	26	27	28	28	28	27
CENTRAL SOUTH AMERICA	27	23	21	19	18	17	16	15	14	14	13	13	16	22	24	25	26	27	28	29	29	29	29	29
SOUTHERN SOUTH AMERICA	29	27	24	22	20	19	17	16	15	15	14	13	13	18	23	25	27	28	29	30	30	30	31	30
WESTERN EUROPE	9	9	9	9	8	8	8	8	8	8	8	8	14	16	17	18	18	18	17	16	15	12	10	10
EASTERN EUROPE	9	9	8	8	8	8	9	9	9	8	8	8	12	15	16	15	15	15	14	13	11	9	9	9
EASTERN NORTH AMERICA	15	13	10	9	9	8	8	8	8	8	7	7	8	14	16	17	18	18	18	18	18	18	17	16
CENTRAL NORTH AMERICA	7	7	5	4	4	4	4	3	3	3	3	3	3	5	7	7	8	8	8	8	8	8	8	8
WESTERN NORTH AMERICA	13	12	11	8	7	7	7	6	6	6	6	6	6	6	9	11	12	13	14	14	14	14	14	13
SOUTHERN NORTH AMERICA	15	13	11	10	9	8	8	8	7	7	7	7	7	9	13	14	15	16	16	17	17	16	16	16
NORTHERN AFRICA	11	11	10	10	9	9	9	9	9	8	8	8	15	17	18	19	19	20	20	20	14	13	12	12
CENTRAL AFRICA	13	11	10	10	9	9	9	9	9	8	8	8	15	17	18	19	19	20	20	18	16	15	14	13
SOUTH AFRICA	20	17	16	15	14	14	13	13	13	12	12	12	22	25	27	29	30	30	30	29	28	25	23	21
MIDDLE EAST	9	9	8	8	8	9	9	9	9	8	8	8	14	16	17	18	18	16	12	11	10	10	9	9
JAPAN	18	18	16	15	11	10	10	9	9	9	9	9	8	8	8	9	9	8	8	8	13	16	18	19
CENTRAL ASIA	18	17	16	14	11	10	10	9	9	9	9	8	8	8	9	12	11	11	11	11	10	10	18	19
INDIA	12	13	13	10	10	9	9	9	9	8	8	8	8	12	14	13	12	10	9	9	9	8	8	8
THAILAND	18	17	15	13	10	10	9	9	9	9	9	8	8	8	12	15	14	13	12	12	11	11	11	14
AUSTRALIA	25	27	26	23	17	16	15	15	14	13	13	13	12	12	12	17	16	15	15	14	17	20	22	24
CHINA	17	17	15	13	10	10	9	9	9	9	9	8	8	8	10	9	9	9	9	8	8	8	11	15
SOUTH PACIFIC	30	29	27	23	20	19	17	16	15	15	14	14	13	13	14	16	15	15	19	22	24	26	27	29

UTC TO/FROM US EAST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	18	16	14	13	12	12	11	10	10	9	9	9	13	16	18	20	21	21	21	22	21	21	20	19
NORTHERN SOUTH AMERICA	23	21	19	18	16	15	14	13	12	12	11	11	14	17	19	21	22	23	24	25	25	25	25	24
CENTRAL SOUTH AMERICA	26	24	22	20	19	17	16	15	15	14	13	16	20	22	24	25	26	27	28	29	29	29	29	28
SOUTHERN SOUTH AMERICA	28	26	24	22	20	19	17	16	15	15	14	13	18	22	24	26	27	28	29	30	30	30	30	30
WESTERN EUROPE	9	9	8	8	8	8	8	8	8	8	11	15	16	17	18	18	18	18	17	16	15	12	10	9
EASTERN EUROPE	9	9	8	8	8	8	8	8	8	8	8	14	16	17	17	17	17	16	15	14	12	10	9	9
EASTERN NORTH AMERICA	7	5	5	4	4	4	4	4	3	3	3	3	6	7	8	8	9	9	9	9	9	9	8	8
CENTRAL NORTH AMERICA	16	13	10	10	9	9	8	8	8	8	8	8	10	15	17	18	19	19	19	19	19	19	18	17
WESTERN NORTH AMERICA	22	20	15	13	12	12	11	11	11	11	10	10	10	16	20	22	24	24	25	25	25	25	24	23
SOUTHERN NORTH AMERICA	18	15	13	12	11	11	10	10	9	9	9	8	9	15	17	19	20	20	21	21	21	20	20	19
NORTHERN AFRICA	12	12	11	11	11	10	10	10	10	10	16	20	22	24	25	25	25	24	23	21	17	14	13	13
CENTRAL AFRICA	13	12	12	11	11	11	11	10	10	10	16	20	22	24	25	25	25	24	23	20	18	17	15	14
SOUTH AFRICA	20	18	17	16	15	14	14	14	13	13	15	22	26	28	29	30	30	30	30	29	28	25	23	21
MIDDLE EAST	11	10	10	9	9	9	9	9	8	8	12	16	18	19	20	20	20	20	17	13	13	12	12	11
JAPAN	16	14	11	10	10	9	9	9	9	9	8	8	8	9	9	9	9	9	8	8	10	15	17	18
CENTRAL ASIA	16	13	10	10	10	9	9	9	9	8	8	8	12	13	12	12	11	11	11	11	10	10	16	17
INDIA	8	8	8	10	9	9	9	9	8	8	8	12	13	13	13	13	12	12	12	11	11	9	9	8
THAILAND	14	11	10	10	9	9	9	9	8	8	8	9	15	16	16	15	14	13	13	12	12	11	11	11
AUSTRALIA	26	25	20	18	17	16	15	14	14	13	13	13	12	18	19	17	16	15	15	14	18	20	23	24
CHINA	15	11	10	10	9	9	9	9	9	8	8	8	11	10	10	9	9	9	9	9	8	8	8	14
SOUTH PACIFIC	29	26	23	21	20	18	17	16	15	14	14	13	13	18	17	16	15	17	21	24	26	27	29	30

flare, the higher the frequencies that are absorbed. X-class flares are in the strongest flare category. (Flares are classified by their intensity, the lowest category being A, followed by categories B, C, M, and finally, X.)

X-class flares can cause the absorption of radio signal energy well past 20 MHz. Minor solar flares (C-class) will not affect frequencies much beyond 5 MHz. The X-rays from these events penetrate into the lower ionosphere and cause the ionosphere's *D* layer, which acts like a sponge that soaks up radio signals, to become more energized. The more ionized the *D* layer, the higher the frequencies that are absorbed, and the stronger the absorption of the lower frequencies. Thus, radio signals from distant locations that travel through a flare-enhanced ionosphere are absorbed and become inaudible. These fade-outs last only minutes for minor flares, to maybe an hour or so for the largest flares. Once the flare is exhausted, the X-ray radiation fades and the ionosphere recovers to its normal level of ionization.

Some flares, as they punch through the sun's corona (a layer of the sun's atmosphere), can cause a cloud of coronal plasma to explode away from the sun into interplanetary space. These clouds are called coronal mass ejections (CMEs). If a CME is directed toward the Earth, it can cause a lot of havoc. CMEs take anywhere from two to three days to arrive at Earth, unlike the eight-minute arrival time of X-ray radiation from a flare. When they hit our magnetosphere, we could see the geomagnetic activity turn stormy, which will cause longer-term degradation of HF propagation, as well as trigger auroral conditions. Geomagnetic activity has the affect of lowering the ionization of the various ionospheric layers, which brings down the MUF over a given signal path. This lowering is much like what happens at night, when the ultraviolet radiation of the sun is blocked and the ionosphere settles down. The stronger and longer the geomagnetic storm, the more depressed the ionospheric propagation becomes.

When X-ray flares occur they can cause short-term HF and even MW radio fade-outs on the sunlit side of Earth. If there are CMEs associated with these flares, we could see a period of poor propagation on MW and HF. At the same time, however, the stronger the geomagnetic activity, the more likely some VHF activity via aurora, especially right now dur-

Solar Flare Categorization And Ranking

Flares are categorized by assigning a letter followed by a number, which tells us the specific intensity of the flare. X-ray flare intensity is measured in units of power per area or Watts per meters squared. Each letter (A, B, C, M, or X) represents a certain numeric value and the numbers following the letter in the flare classification multiply that value. The numeric values of the letter classes are:

A = 1.0x10E-8 (W m-2)
B = 1.0x10E-7 (W m-2)
C = 1.0x10E-6 (W m-2)
M = 1.0x10E-5 (W m-2)
X = 1.0x10E-4 (W m-2)

(The "W m-2" means Watts per square meter)

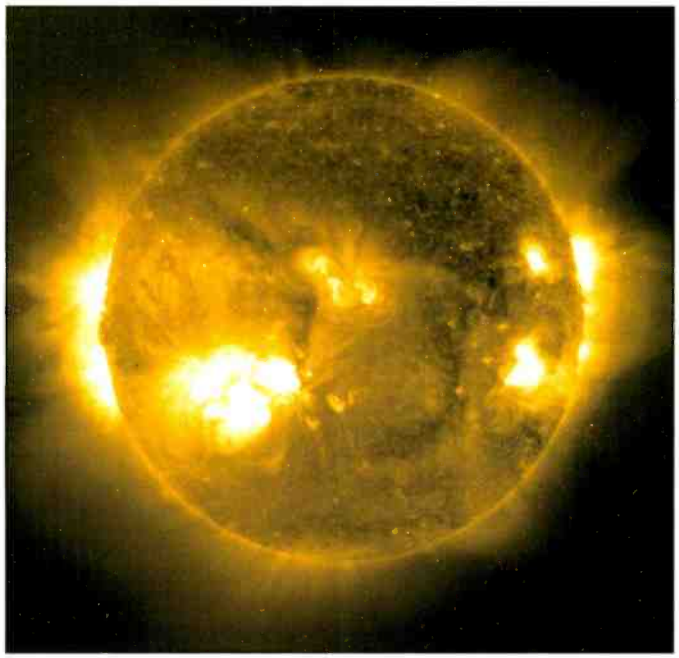
To determine the exact intensity of the flare you multiply the number in the x-ray classification of that flare by the value of its class listed above. For example, the historical flare of November 4, 2003, that was finally determined to be an X28 flare had an intensity of at least 28.0x10E-4 Watts per square meter. That is big! The sensors became saturated at X17.4, and for the next 11 minutes stayed pegged.

Notable X-Ray Flare Activity

Ranking	Day/Month/Year	X-Ray Class
1	04/11/03	X28
2	02/04/01	X20.0
	16/08/89	X20.0
3	28/10/03	X17.2
4	06/03/89	X15.0
	11/07/78	X15.0
5	15/04/01	X14.4
6	24/04/84	X13.0
	19/10/89	X13.0
7	15/12/82	X12.9
8	06/06/82	X12.0
	01/06/91	X12.0
	04/06/91	X12.0
	06/06/91	X12.0
	11/06/91	X12.0
	15/06/91	X12.0
9	17/12/82	X10.1
	20/05/84	X10.1
10	29/10/03	X10
	25/01/91	X10.0
	09/06/91	X10.0
11	09/07/82	X9.8
	29/09/89	X9.8
12	22/03/91	X9.4
	06/11/97	X9.4
13	24/05/90	X9.3
14	06/11/80	X9.0
	02/11/92	X9.0

M- And X-class Flares From Sunspot Region 64

DAY	XRAY	July 15	X1.6	July 17	M2.5
July 12	M1.6	July 16	X1.1	July 17	M2.0
July 13	M2.9	July 16	X1.3	July 17	M1.1
July 13	M1.1	July 16	X3.6	July 18	M2.0
July 14	M1.0	July 16	M1.2	July 18	M1.5
July 15	X1.8	July 17	X1.0	July 18	M1.9



This July 16, 2004 Extreme ultraviolet Imaging Telescope (EIT) image shows an active sun. The flares of July 16 came from sunspot group 649, located on the lower left section of the sun, where you see three bright regions closely spaced together.

This is a highly filtered image of the sun that shows one of the X-class flares of June 16, 2004, from sunspot 649.

ing the Autumnal Equinox season. This is one of the times during the year when Aurora is most likely.

Current Solar Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for June 2004 is 43, up a point from May's 42 and up four points from April's 39, but still down from March's 49. The 12-month running smoothed sunspot number centered on December 2003 is 55, down a bit from November's 57. The lowest daily sunspot value during June 2004 was recorded on June 12, with a count of 18. The highest daily sunspot count for June was 87 on June 21. The high and low for June were higher than the high and low for May 2004. A smoothed sunspot count of 27 is expected for October 2004.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 100 for June 2004, the same as for May. The 12-month smoothed 10.7-centimeter flux centered on December 2003 is 119, three points below November. The predicted smoothed 10.7-centimeter solar flux for October 2004 is about 85, give or take about 17 points.

The observed monthly mean planetary A-Index (Ap) for June 2004 is 9, the same as for May. The summer geomagnetic activity up until the time of final editing of this month's column has been reasonably calm, with long periods of Ap lower than 10. The 12-month smoothed Ap index centered on December 2003 is 19, one point down from November. Expect the overall geomagnetic activity to be quiet during most days in October, with only occasional days of possibly strong geomagnetic activity.

Autumn Conditions

As the weather begins to turn and the summer fades to autumn, many of us will be heading to more indoor activities, hopefully one of them being radio—and also hopefully propagation will be good throughout the autumn and winter months. We've just passed the Autumnal Equinox, so DX between the temperate regions of the Northern and Southern Hemispheres is typical on all shortwave bands. Expect a vast improvement on the higher frequencies (22 meters up through 11 meters), with more frequent short-path openings through mid-October between North America and South America, the South Pacific, South Asia, and southern Africa. The strongest openings will occur for a few hours after sunrise and during the sunset hours. Many international shortwave broadcast stations will soon change from their summer schedule to a winter schedule, taking advantage of this change in propagation.

Long-path openings also improve during the equinoctial periods. A variety of paths are opening up on 31 and 22 meters. Expect a path from southern Asia around sunset, daily morning openings from southern Asia and the Middle East, expanding to Africa. Also look for signals from the Indian Ocean region long-path over the North Pole. Afternoons will fill with South Pacific long-path, and then extend to Russia and Europe. Look for possible long-path openings on 31, 41, 49, 60, and 75 meters for an hour or so before sunrise and just before sunset.

The winter DX season is slowly approaching, making for exciting DX conditions. While the weather is still fair, tighten hardware on your antenna system, check coax cables, and fine-tune your radio station. Get ready to reap the DX.

HF Propagation

Signals below 120 meters are still hard to hear, with seasonal static blocking the weak signals. This will start to decrease as we move into winter. Expect a few DX openings during the hours of darkness and into the sunrise period. Look for openings from Europe and the south if you are listening in the east-

ern half of the United States, and from the south, the Far East, Australasia, and the South Pacific if you are in the western half of the country. The best propagation aid is a set of sunrise and sunset curves, since DX signals tend to peak when it is local sunrise at the easterly end of the path in question. A good Internet website featuring a grayline map display is found at http://www.fourmilab.to/earthview/. Follow the link, "map of the Earth" showing the day and night regions.

Seventy-five through 120 meters are coming alive in late October. Expect long-range DX on the low bands, starting close in right after sunset, and extending farther as the night develops. Signals here should peak from Europe and from a generally easterly direction around midnight. DX paths will move farther west through the night. By morning, openings from Asia should be common. For openings in a generally western direction, expect a peak just after sunrise. The band should remain open from the south throughout most of the night. Propagation in this band is quite similar to that expected on 41 meters, except that signals will be somewhat weaker on average, noise levels will be a bit higher, and the period for band openings in a particular direction will be a bit shorter.

Forty-one meters should be the hottest DX band during the dark hours as the seasonal static levels are lower than they were during the summer. The band should be open first for European DX in the eastern United States during the late afternoon. Signals should increase in intensity as darkness approaches. During the hours of darkness, expect good DX openings from most areas of the world. Signals should peak from an easterly direction about midnight, and from a westerly direction just after sunrise. Excellent openings toward the south should be possible throughout most of the nighttime period.

Paths on 31 through 19 meters are becoming ever more reliable between North America and Europe in the morning, and between North America and Asia during the late afternoon hours. The strongest openings occur for a few hours after sunrise and during the sunset hours.

Thirty-one and 25 meters will often remain open into many areas late into the night and will open early in the morning, especially when part of the propagation path moves through sunlit regions. However, these bands are crowded and signals are usually very strong and steady. Twenty-five meters is expected to be an excellent band for medium distance (500 to 1,500 miles) reception during the daylight hours. Longer distance reception (up to 2,000 to 3,000 miles) should be possible for an hour or two after local sunrise, and again during the late afternoon and early evening. Thirty-one meters will provide medium distance daytime reception ranging between 400 and 1,200 miles.

Twenty-two through 19 meters compete with 16 for the best daytime DX band during October. They will open for DX just before sunrise and should remain open from all directions throughout the day, with a peak in the afternoon. Nighttime conditions will favor openings from the south and tropical areas. Since the Southern Hemisphere has long daylight hours, DX paths on these bands from stations in the south will be common.

Sixteen through 13 meters will be open occasionally during October if the 10.7-centimeter flux levels reach above 120 and stay there for a few days, but this is not going to happen often. Paths from Europe and the South Pacific, as well as from Asia, at least during days of higher solar flux levels, are possible, especially on 16 meters. Look for best conditions from Europe and the northeast before noon and from the rest of the world during the afternoon hours. Reception from the South Pacific, Australia, New Zealand, and the Far East should be possible well into the early evening. When flux levels remain lower, these openings may be short-lived.

Aurora is still a possibility during October and somewhat in November, both due to the seasonal increase in geomagnetic storminess, and the typical spinning away of plasma from the weakened sun of a declining solar cycle. Those interested in long-range DX of VHF signals might be able to catch a few auroral openings during these two months.

Propagation On VHF And Above

It is still possible to catch some trans-equatorial (TE) propagation during October. TE favors regions located in a region that extends about 1,800 miles on both sides of the magnetic equator. It is necessary however to keep in mind that the magnetic equator is not the same as the geographic equator.

Moderate levels of TE propagation will allow stations in the southern states and parts of the Caribbean to work into the northern areas of South America during the late afternoon. During peak years of a solar cycle, October is one of the best months for TE activity, especially later in the month. Since we are in the middle of the decline from the current Solar Cycle's peak, these openings will be rarer than previous years, but some exciting openings might occur.

Look for TE openings after sunset, between 8 and 11 p.m., local time. TE is caused by a wrinkling in the ionosphere above the magnetic equator, which causes a double hop on the ionosphere from one side of the equator to the other, over the magnetic equator. Signals from 14 MHz up to 430 MHz can be propagated in this way.

Es activity is sparse during October in the northern Temperate Zone (where much of the U.S. is located). If an *Es* opening should occur and link with a TE opening toward the south, expect a possible opening into Argentina, or even into Australia and the South Pacific.

There is some possibility of extended tropospheric conditions during October because of the changing weather patterns. Higher VHF is the best frequency range to watch for this.

I'd Like To Hear From You!

You can join in with others in discussing space weather, propagation, and shortwave or VHF listening at http://hfradio.org/forums/. Be sure to check out the latest conditions, as well as the educational resources about propagation, which I have put together for you at http://prop.hfradio.org/. I also provide a WAP/WML resource for wireless devices. If you want the latest propagation information, like the solar flux, Ap reading, and so forth using a cellphone or other WAP device, check out http://wap.hfradio.org/, the wireless version of my propagation site.

I hope to hear from you soon with a letter or an e-mail. See you again next month! ■

by Joe Cooper, carm_popcomm@hotmail.com

Network Control Of Your Radio—Part III

This is the third of what will be a six-part series looking at controlling—and listening to—a compatible monitoring radio over a computer network. The network over which you perform this control can be anything from a simple home-based LAN (local area network) to the Internet.

As I outlined in past columns (July and August 2003), setting up a home-based LAN is quite simple and inexpensive, thanks to the availability of "plug-and-play" components that use software "wizards" (interactive instructions and prompts) to help you to set up and configure your hardware once it's installed. So, today it's very easy for someone with a basic understanding of computers to be able to undertake the project I've been describing over these past few columns. Even the additional software required to connect your monitoring radio to the network to either control it or "stream" (share) the sound is available at a very good price—free!

The most important thing is to plan carefully and take your time setting things up so you're in control of the process. As long as you do that, you'll maximize your chance of success.

Audio Streaming

This month we're going to look at audio streaming, the method used to send a digitized audio signal from a monitoring radio over a LAN. Streaming allows you to the hear the signal through a set of speakers attached to a computer attached to that LAN.

As with all digital audio, the analog sound produced by the monitoring radio is recorded when its audio output is attached to a computer sound card. The sound card "slices" the analog sound into digital samples, which can then be sent out onto the computer network where they can be delivered to other computers attached to it. If the attached computer has a soundcard operated by the proper software, those "slices" of the sampled digital sound can be put back together into an analog signal. Once that is done the analog signal can be heard as sound if a set of speakers or headphones are attached to the sound card.

The theory and practice of digital sound has been covered in earlier columns (see June and July 2002 for information on computer sound cards and October 2003 to January 2004 for digital audio theory and practice). What has not been covered is how to actually "stream" digital sound over a LAN. So now let's look at how you can allow one or more computers to listen to a monitoring radio by setting up a streaming audio server. While this may sound complicated, it's actually fairly straightforward to set up and the software is available for free on the Internet from several sources.

For those who have a home-based LAN and simply want to experiment with digital audio, I'm also including information on how to use Microsoft's NetMeeting software. This software allows for simple connections in a "peer-to-peer" network should you simply want to connect two or more computers over a LAN, with one computer being hooked up to the monitoring radio and the other(s) listening to the audio.

Getting Started

The foundation for this month's column is Bob Arnold, N2JEU's on-line radio control project. The system supports two dedicated radios (an ICOM R75 and Ten-Tec RX-320), that you can tune via his personal webpage (www.ralabs.com/webradio) from the LF bands up to 60 MHz. With Bob's permission I've been basing my outline on how to get started with a "peer-to-peer" network on his design. That's because of the relative simplicity of his approach and because you can get detailed information from his webpage if you want to set up your own small network-based controller. A special thanks to Bob for his assistance and cooperation in providing thoughts, ideas, and information so generously. He also welcomes your questions and comments via his e-mail address at arnoldr@radiolabs.com. Don't forget to tell him that I sent you.

In my last column I reviewed the basic computer system requirements you'll need for network-based computer control. You *don't* need an expensive or powerful computer system, or even the most up-to-date operating system. That's one of the nice things about undertaking a project like this: you can learn a lot about computers, networking, and computer programming without having to spend either a lot of time or money.

Also, if all you are planning on doing is listening to a monitoring radio rather than controlling it over the LAN, you can use any type of radio (or any sound source, for that matter) that you want. Simply hook up your radio's audio output to your computer's sound card (see June and July 2002 for details) and you're ready to go.

Before diving straight into setting up a streaming audio server, let's take a quick look at a simple starting point—the NetMeeting software. This will show you the basics of LAN-based audio. When setting up your software, first make certain

that the audio output from your monitoring radio is properly connected to your computer's sound card, or the software will simply not work. This is very important, so let's do a quick review.

Setting Up Your Soundcard

First connect the audio output of your radio to the microphone input of your computer's audio card. You must use the mic input (rather than the line-in plug) because NetMeeting *assumes* that you'll be using that input. If you use any other, such as line-in, it will not work.

The simplest and most desirable way to make the connection is to plug a compatible cable between the radio's line-out and the microphone input of your sound card. For example, use two male mini-phono plugs—generally stereo plugs as well—even though you will not be using a stereo signal.

You need to use line-out, rather than the speaker output, because line-out provides a constant audio output that is better suited for controlling the volume of your computer sound card. If you used your speaker-output from your radio you'd have to be constantly controlling the audio input setting on your soundcard. Also, you'll still want to be able to monitor the sound at the radio for tuning in a signal. That would not be possible if you used the speaker output (and, yes, you could use your line out to a speaker, but that would be rather self-defeating because you could not properly control the level of the audio to your speaker).

Another important reason for using the radio's line-out is because it is often electrically isolated from the radio through a built-in isolation transformer. This will prevent damaging current (or static or power line spikes) from getting into the sensitive computer circuitry.

For the same reason do not try to connect the audio to the computer by soldering a cable across the radio's speaker lugs (or some other variation of this same idea). If you *must* do this then use an inexpensive audio isolation transformer that you can purchase from an electronic supply store, such as RadioShack. Just follow the instructions provided with the isolation transformer and solder it into an audio cable that can then be attached to the radio's speaker.

Once you have properly connected the cables between the radio and the microphone socket of the computer's audio card, check the "audio properties" function of your computer. Generally this can be done by pointing at the speaker icon in the icon tray at the bottom of your Windows desktop and clicking on the right mouse button. Check whether the microphone input has the mute function checked (it should *not* be in order to function) and that the volume level is set properly. I mention this because in some cases you need to select the microphone function for it to operate.

If you don't see the speaker icon on the icon tray, go to your accessories folder (Start -> Programs -> Accessories -> Entertainment -> Volume Control) to run that function. Once you have set up the microphone in the volume control you can then use the NetMeeting program, which will be described next.

Basic Audio Over A Network

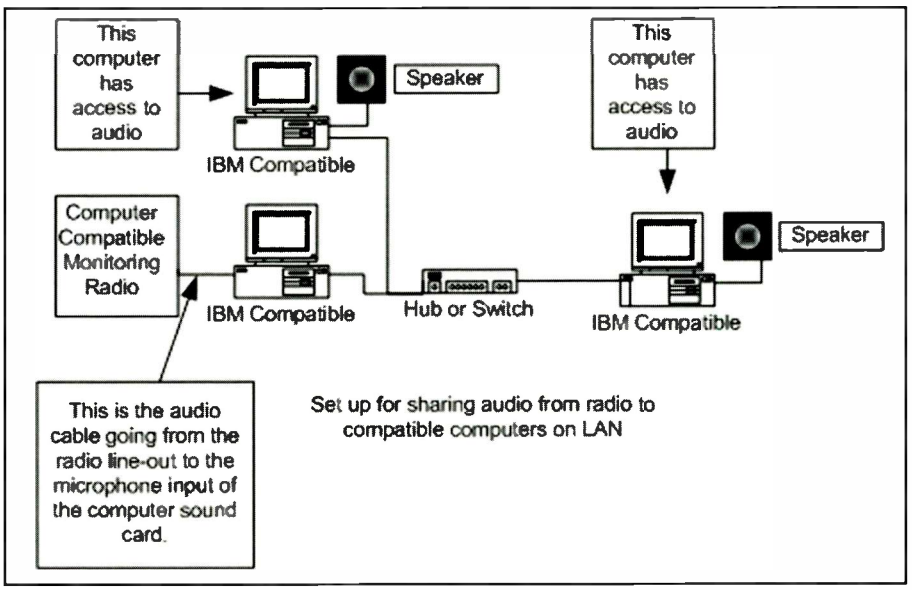
Microsoft's NetMeeting software has been available since Windows 98. When first introduced, it was a very exciting product because it supported both audio and video images, which could be used to communicate with people with the same software over a LAN or the Internet. NetMeeting also supported a host of other features, such as file transfer and a "white board" where people could draw. The primary function of this utility was to allow two people to hold a virtual meeting using a computer, which provided much of the same "face-to-face" interaction that would take place in a real meeting.

NetMeeting has since been replaced by Microsoft's MSN Messenger, which provides much better functionality for the average computer user as it is designed for today's high-speed Internet connections. However, for our purposes the original audio input and output offered by NetMeeting is still very useful.

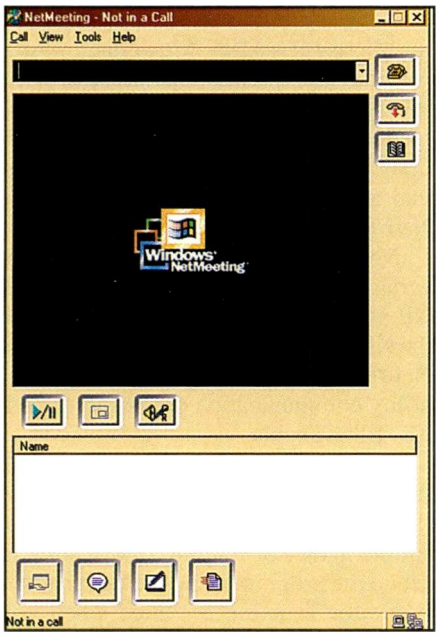
NetMeeting is available in all current versions of Windows, including 2000, XP, and ME. However, you will find with the XP and ME versions of Windows that NetMeeting is not listed with the other utility communication programs, though it's still available.

To begin the program, use the search function found in Windows Explorer to find it on your C: hard drive. It is then a simple matter of running NetMeeting to set up the program using the built in configuration function provided when you first start it up. Setup of NetMeeting is so simple because it uses a wizard, which helps you properly connect the computer's audio input from the radio in a set of easy-to-understand steps. You can also configure the audio output to speakers or headphones if you wish, though these are not actually used when the monitoring radio is hooked up. (One important option you are provided during the configuration process is the ability to set up a program icon for NetMeeting on your Windows desktop so that you can run the program later at anytime.)

Once you have set up NetMeeting, it is a simple matter to use your home LAN to transfer the audio of a compatible radio



With NetMeeting digital audio communications software you listen to a monitoring radio remotely over a LAN. Once you have set up and mastered this configuration you can begin to experiment connecting to the computer with the monitoring radio over the Internet.



The NetMeeting utility is very straight forward to operate. After having configured it on the computer where you have attached your monitoring radio, all you need to do is set the options to accept incoming "calls" automatically. See text for details.

to any computer in the LAN with a sound card connected to speakers or headphones. What is also interesting about this method is that it can be used on the Internet. You could tune up a compatible radio at home to a specific frequency and listen to it from any Internet-connected computer with a sound card. Remember, though, all this setup will allow you to do at this time is to listen to whatever signal the radio is tuned to. You cannot use this method to tune the radio, which I will explain in the next column.

Using NetMeeting To "Pipe" Sound

As mentioned previously, you first need to hook up the audio output from your monitoring radio to the audio input of your computer's sound card. Once you have done this you can start using the NetMeeting program. If you have an earlier version of the Windows operating system, you can find it by under Start>Programs>Accessories>Communication>NetMeeting. You then start the program by clicking once on the program icon. If you have a later version of Windows you'll need to click on the program icon on your desktop that was installed after you ran and configured the software for the first time.

When the software starts running you'll see the user interface for the program. You should note that it supports many different types of media, including audio, video, chat (text), and file transfer. You can learn about using all these features through the built-in help file, but at this time you should only be concerned with the audio features.

Before going into the actual technique of transferring sound from one computer to the next over a network, let's first look at how you're going to make a connection between two computers using windows NetMeeting.

As would be expected, you will need to have the NetMeeting program running on two computers. One computer is going to have the sound card connected to the radio's audio output; the other will need to have its sound card hooked up to either a set of speakers or headphones.

With both programs running, set up the computer that is attached to the radio first. Go to the pull-down menu item labeled "Call" and click on it. Among the menu items you will see is "Automatically Accept Calls." Click on it. If you open the "Call" pull-down menu again you will see that there is a checkmark beside the item you clicked on.

Turn on the radio and ensure that you're tuned to a frequency with some activity on it so that there's a strong audio signal present. Then go to the pull-down menu item labeled "Tools." Click on it and select the "Audio Tuning Wizard," which gives you a new pop-up window. Follow the instructions displayed, taking particular note of the audio output.

It's important to check the audio input to see if an audio signal is present; this will be shown as changing levels of audio volume on a sliding bar. Adjust your audio input levels using the controls provided so that you are not over-powering the person listening (and sending out a distorted audio signal).

If you followed the instructions properly the computer should be ready to send audio to another computer. At this point, go to the computer you want to use to listen to the radio. Take a look at the NetMeeting program running there and you will notice an icon in the upper right hand corner that looks like a telephone. If you click on this icon you will see a new pop-up active window called "Place A Call." There are two fields labeled To: and Using: that you will use to interconnect one or more computers.

In the To: field you will type in the network name of the computer that you want to connect to. In the Using: field you will click on the downward arrow and see three options: Automatic, Network, and Directory. Select Network and then click on the button labeled "Call."

You will see a new pop-up window indicating that the computer is trying to connect with the other one through the network. When the connection is made, you will be notified and the main screen will show the names of the two computers (the computer you are listening with and the one that you are connected to) that have connected to each other.

At this point you should also hear the sound of the radio playing over the speakers of the second computer. Now if you have a third (or more) computer on the network that has a soundcard, speakers, and NetMeeting installed and configured, you can also have that play the radio's sound by following the connection method outlined above.

One thing you should also make note of is that the sound you will hear using NetMeeting will not be high fidelity, though very acceptable for radio monitoring. This low fidelity is the result of the relatively early digital audio technology used to digitally sample the sound in this software program; it's been vastly improved upon in more current software packages.

Remember, too, that the process of sampling means taking digital "slices" of analog sound from the audio source and then re-assembling them back into analog to hear the sound again. Digitally sampled sound is not like analog sound, where you hear everything that has been recorded. Sampling is just what the name implies; the technique takes selected bits of the sound and converts them into digital data, rather than sending along all the information. While it does not produce the best-quality sound, sampling does keep the amount of data on a network down to a minimum.

There are audio streaming techniques that have been developed over the past few years that can be used to improve the quality of sampled sound. This is accomplished through processing methods such as data compression, which I discussed in earlier columns on audio recording (October 2003 to January 2004).

Now you can experiment with NetMeeting. Read the built-in help file in detail and you can try connecting to the computer attached to the monitoring radio by using a remote computer connected to the Internet. Obviously the computer attached to the monitoring

radio will also have to be connected to the Internet, preferably through a high-speed DSL or ISDN service.

While the delivery of audio using NetMeeting is good for a personal network, it's not that desirable if you're trying to connect to your computer over the Internet or if you want to share your monitoring radio's audio with other people. That's where the Streaming Audio Server is needed, which is what I'll be looking at next. I'll outline the actual techniques used in making a connection to the Internet and how to send control commands over a LAN and the Internet.

Setting Up An Audio Server

Streaming audio is a very efficient method of delivering audio from one computer to another over the Internet. Rather than using a special communications software package to transfer the digital audio information, the server sends it to another computer in the form of a file.

You're probably familiar with file downloading from one computer to another, where you have to wait until the entire file has been transferred before you can open it to either view the information contained in it or play it on your media player if it is sound or music. What a file server allows you to do is play the audio file *as* you are downloading it, rather than having to wait for the entire file to finish downloading.

The most common users of streaming audio are Internet radio stations. When you connect up to them, you can listen to one or more streaming audio channel that they may be playing. The two most popular file formats for streaming audio are RealAudio and Windows Media. I'll be introducing you to two file servers that you can download for free and will provide each of these file formats for your "listeners."

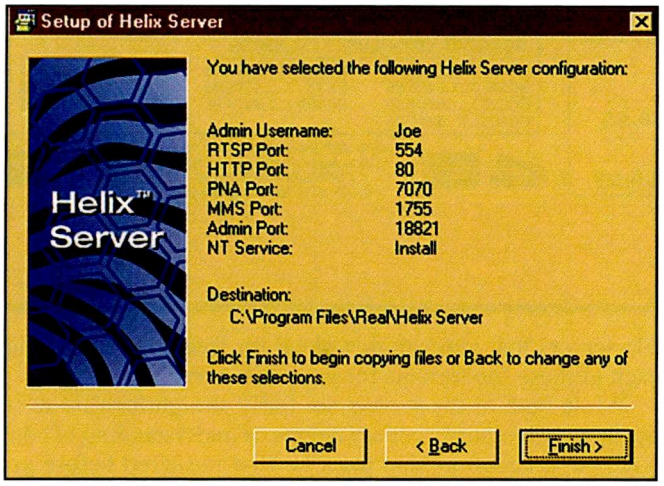
While both of the servers are fairly straightforward to set up, they still require a certain degree of understanding of computers and networks that must be first mastered before you can be successful. Also, I can only provide you with introductory information in this column, so you will have to go through the documentation provided by the authors of the software. Also remember that you'll need the proper computers, operating systems, and Internet connections as I outlined in last month's column.

There are two streaming audio servers mentioned on Bob's website: RealAudio Basic Server and SHOUTCast. However, SHOUTCast (www.shoutcast.com) seems to be unavailable at this time. The ones Bob mentions are, of course, not the only streaming audio servers available on the market today, but they are relatively easy to use and have good support and documentation.

The software Bob personally uses was provided by Real Audio and when he downloaded and installed it the program was called the Basic Server. It has since undergone some improvements and is now called Helix Server Basic. The primary purpose of this server is to allow people to evaluate the product or run a small operation, allowing a maximum of five streams (versus 100-plus in the commercial version) of connection. You will need to provide some personal information plus an e-mail address to get the software key needed to "turn on" the program after you have installed it.

There are also some limits to the operating system that you can use, as this is primarily a commercial product. When you

Setting up the Real Audio Streaming Audio server is very simple thanks to Set Up Wizard. Simply click on the "Next" button and follow the instructions. The installation is practically automatic as you really don't need to change the default settings.



This is the last screen you see during the installation of the streaming audio server. Don't worry about the details at this point, but do make note of the term "Port." Next month we'll look at what a port is in a network and how it is used to connect to a computer over a LAN.

make your selection, you will have multiple UNIX platforms to choose from, but only Windows NT and 2000 for Microsoft products.

Once you have installed the program (which is about 10 MB) you can refer to a fairly extensive range of help, including documentation and on-line technical support. To view the download page for the basic server, go to www.realnetworks.com/products/evalservers.html. You still need to convert the sound you provide to your soundcard into the Real Audio format for distribution over your server. That software package is called RealSystem Producer Basic and will cost you around $200. However, consider that a full commercial package of both a full-blown server and producer software will set you back about $5,000 or more.

Take some time to go over the documentation that Real Audio provides before diving into this technology and make sure that it's really a project that you want to undertake. Remember, the reason why you would want to do this is to be able to listen to and control your monitoring radio from a remote location over the Internet, or to allow others to do so.

Next month when I cover the control of your monitoring radio over a network I'll return to this topic with more the details about setting up the server and using the Producer to create the audio in Real Audio format.

Coming Up

Now that I've given you the basics on how to get started in sending digital audio over a LAN, next we'll look at how to control a compatible monitoring radio over that same LAN.

As I've mentioned, the command codes used to control such radios are relatively simple, so it does not require a complicated program to send the codes over a LAN. We're really over the hump as far as tackling complex topics.

We're going to build upon the knowledge we're acquiring so that when it comes time to look at DXTuners (www.dxtuners.com), started by Kelly Lindman as a subscription-based service for the radio monitoring community, you'll be prepared. That operation uses a special server that links the audio and tuning functions of many radios, located around the world, so they can be operated by and listened to through Kelly's webpage.

Again, it may all seem to be a bit complex now, but as you build your skills step by step it won't be long before it becomes fairly straightforward. The reward for developing these skills is being able listen to your radio from a variety of locations, whether different rooms in the house, in your back yard using a wireless network, at work or school, or even on the road in a hotel room anywhere in the world. This technology also allows countless people to participate in radio monitoring who would otherwise not be able to, such as those in retirement homes, hospitals, or who simply live in buildings that are too electrically noisy to allow for whip or active antennas.

Radio monitoring clubs can now initiate programs where club members can link their radios together to form complex monitoring systems, or be able to have a monitoring station at a remote location that is noise free and has an extensive "antenna farm" that most people cannot put up these days. The possibilities are limited only by your imagination, for as I've shown you, the actual costs are not that high.

Get In Touch

If you wish e-mail me with any questions, please use carm_popcomm@hotmail.com. As I mentioned before, I cannot answer general questions on computers, but will be more than happy to help you with any issues raised in the columns. You can also write to me at "Computer-Assisted Radio Monitoring," PMB 121-1623 Military Rd., Niagara Falls, NY 14304-1745.

I'm still interested in any pictures you may have of your own computer assisted monitoring station or stories about how you have built and run it. Don't worry about your writing, as I'm more than happy to help you by editing it.

Again, please take time to write a letter to one of our service people in Iraq offering them your thanks and support. Remember that you can send letters of general thanks and support by simply marking the envelope "Any service person—Iraq." It may take several months to get to someone, but I'm certain that it would make the day of whoever receives it. Don't forget to put a legitimate return address on the envelope, otherwise the letter will not be delivered due to security concerns. ■

By R.B. Sturtevant, KD7KTS

Q. *Is there ever any way to find out what kind of whiz-bang electronics the military is working on?*

A. Usually not, but Eglin Air Force Base, located in the Florida panhandle not far from Pensacola, has been an R&D base since Doolittle's Raiders learned to take off from carrier-sized spaces painted on the flight line. Much of the stuff developed for the Space Program, the Viet Nam War, and top secret projects started at Eglin. The Air Force has so many deniability projects that some in-the-know wags say "if the Air Force is not doing something they are not doing it at Eglin." Recently someone at Eglin was doing something top secret with radiowaves. The project's cover was blown when people all over the base had trouble with their garage door openers. Some folks were trapped because the door wouldn't open to let them out. We still don't know what the top secret project was all about, and we don't know its name. But we do know what frequencies to monitor.

Q. *Were any spy transmitters ever found in the U.S. during World War II? How much damage did they do?*

A. Before World War II actually broke out the FCC formed a Radio Intelligence Division. Working closely with the FBI, they swept the airwaves for any foreign agents trying to send messages to hostile powers by radio. In the wee hours of December 9, 1941, a half-dozen fixed monitor stations around the country picked up signals coming from the Washington D.C. area. Checks with the military and certain secret organizations revealed that they had nothing on that frequency or using the callsign VA. Mobile monitoring units began roaming the streets of the nation's Capitol. The station was quickly fixed as coming from the German Embassy. An antenna ran between two buildings in the Embassy compound. Shortwave transmitters in foreign embassies are illegal in the U.S. But in order to make an official complaint the transmitter's exact location would have to be determined. In a quick conference with the Potomac Electrical Power Co., the Radio Intelligence Division arranged to have the power to each building cut off separately for a short time when the illegal station went on the air. This was done and the exact location of VA was determined. The State Department, fearing for the safety of our own embassy staff still in Germany, simply leaked the fact that they knew about VA. The station never went on the air again. After the war, Wilhelm Hoettl, one of the German Area Intelligence Chiefs, was interrogated by the 3rd Army in June 1945. He said he was unable to establish a single radio connection in the United States or England. Several Japanese agents in America requested permission to set up transmitters, but Tokyo denied all requests. They must have been talking to the Germans.

Q. *Commercial use of the telegraph lasted until the '60s in America and Canada with Western Union and some railroads. Are the retired operators doing anything to commemorate that important part of communications history?*

A. They sure are. They have a club called the Morse Telegraph Club and they get together and chat over the telephone. No, they don't talk. They attach their keys to the telephone and send away, just like in the good old days. But I must warn you, they don't send in Continental or International Code like radio operators do. They send in American Morse just like old Samuel F. B. did. They've got a great website at http://members.tripod.com/morse_telegraph_club/ as well. They even have a program to help you learn American Morse. These purists don't think International is Morse Code.

Q. *During the Korean War there were so many troops coming from so many different countries. Did this cause any communications problems?*

A. Yes, but not all of the kind you might think. Republic of Korea troops often had trouble talking to each other because their commanders refused to use a common language. All Korean officers spoke Korean and Japanese; most of them spoke English. Speaking Chinese, however, was the sign of a highly educated person. Many commanders would write their messages in Chinese, which meant the message had to be translated for the radio operator to send it. The message, when received, had to be retranslated back into Chinese, because it was necessary to show that both commanders were educated men. ■

Looking Back . . .

Five years ago in *Pop'Comm*

We were a scant three months away from 2000 and our articles and focus turned to ensuring our radio equipment would run when the clocks turned to midnight, December 31. The two-channel, VHF-only TigerScan radio from Electra was *the* scanning receiver of the moment, and AOR had introduced its new AR16B pocket-sized handheld receiver. The Canadian Broadcasting Corporation (CBC) entered the history books as CBL, Toronto completed its transition from 740 AM to FM.

Ten years ago in *Pop'Comm*

Back in 1994 the R.L. Drake Company was touting its new R8 receiver, Optoelectronics had just released its new OptoScan 456 Computer Interface for the PRO-2005/6 scanner, Watkins-Johnson's new HF-1000 receiver that covered 5 to 30,000 kHz was out, and Yaesu was advertising its new FRG-100 receiver, which two years earlier was billed by the *World Radio TV Handbook* as "Best Receiver 1992." Bringing down Cuba's Fidel Castro was a high priority, with a multitude of radio stations beaming his way. Gerry Dexter's article, "The Anti-Castro Broadcasters" included a complete review of anti-Castro broadcasting as well as the latest RF aimed at Fidel.

Twenty years ago in *Pop'Comm*

Back in 1984 the enemy was the Soviet Union, and our coverage reflected that. The lead feature, "How To Monitor Soviet Mystery Ships," included info on spy ships, the Soviet Navy, and even fishing trawlers. A year after the Beirut embassy bombing in 1983 we were offering readers tons of information on hearing the one-time gem of the Middle East. Gerry Dexter's article, "Torn Fabric: Radio In Lebanon," included an excellent history of Lebanon and gave *Pop'Comm* readers the inside scoop on hearing everything from Radio Lebanon to High Adventure Ministries from this war-ravaged country. And if you wanted to build one, Heathkit was offering an "atomic" clock, the Heath GC-1000 Most Accurate Clock in kit form—for $249.95!

by Harold Ort, N2RLL, Editor

Grundig's YB 550PE Portable Receiver

Grundig—even to many folks who wouldn't be considered radio hobbyists—is certainly a known commodity in the radio world. Most probably associate Grundig with large, bulky receivers that have more knobs and switches than the Space Shuttle.

But the good news for anyone who doesn't have the room or budget for a larger radio, but has a real need for a very small receiver that covers AM/FM and shortwave with digital readout, is that Grundig is offering the YB 550PE, measuring 6-1/2 x 4-1/2 x 1-1/2 inches (HWD). Since receiving this small radio, which looks a lot like an old-fashioned transistor radio or portable audio cassette recorder/player, I haven't been able to put it down. Well, actually I did—on my desk, nightstand, and even in the living room by the reading lamp—and listened for hours.

Grundig's YB 550PE Basics

The YB 550PE is about the size of a small paperback. It's a solid-looking and feeling portable radio that sports 200 station memories, large digital frequency display in the LCD window, up/down pushbutton tuning, a rotary volume control, scan function, alarm, timer, and jacks for an external antenna and included ear buds. The telescoping antenna pulls up from the right side of the radio, extending to about 24 inches when fully deployed. It operates on three "AA" batteries (included) or separate power adapter (not included) and comes with a soft carrying pouch and basic shortwave listening guide, appropriately titled, *The Beginning Of A New Experience*. The guide includes tips, techniques, and frequencies to get you started listening to shortwave broadcasts. Of course, having *Popular Communications* at your side every month also helps!

There are 12 pushbuttons under the LCD window used for memory selection and entering a frequency into the 550PE. The circular on/off power button is clearly marked, so there's no fumbling in the dark to turn the radio on or off. The AM/FM or shortwave band selection is accomplished by pushing a very small button on the bottom front of the radio. Another small button below this one selects only shortwave, taking the user to any of 14 common international shortwave broadcast bands. Please note that this receiver will not tune military, aircraft, or other so-called "shortwave utility" frequencies. It's strictly a broadcast receiver and, in a nutshell, it does that quite well, indeed!

Performance

It's important to remember that this portable receiver isn't meant to be an audiophile's dream; it's simply a small radio that receives AM/FM and shortwave broadcasts with adequate audio quality. There is a side switch that allows you to switch between "music" and "news." For most of my listening I kept the switch on the "music" setting, which provides just a bit of extra depth to the small speaker's audio. Still, in the FM mode, while listening to music you must properly adjust the telescoping antenna, otherwise the radio's audio can be slightly raspy. Putting my hand on the receiver remedied the problem, but also plugging a short wire into the side-mounted antenna receptacle gave a much improved signal and any slight raspy sound disappeared. Then the audio was superb!

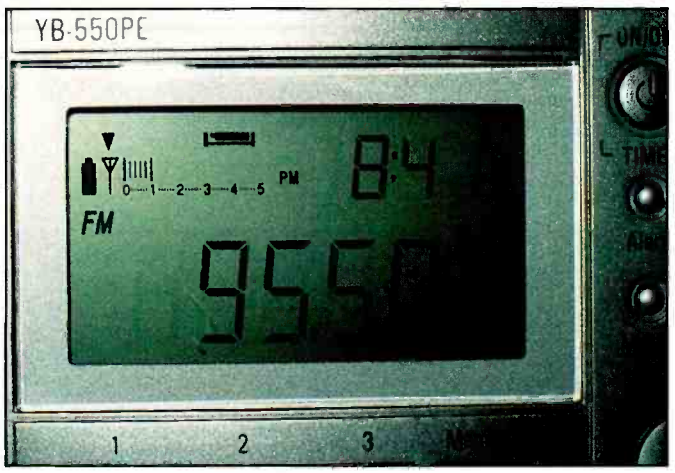
This is a lot of radio in a small package and reasonable price tag (only $99)! For example, a simple keypress of the "system set" button allows you to change a multitude of settings, including the FM frequency range from the U.S. standard 87-108 MHz to 76-108 MHz for traveling overseas. You can also set the tuning rate (the manual incorrectly says "tuning rating") from U.S. standard 10 kHz to foreign 9 kHz for AM reception.

I've programmed the YB 550PE with 200 frequencies, mostly shortwave and AM broadcast. You can enter frequencies in one of four ways: by using the keypad the frequency is directly entered into the radio and appears in the LCD display window; by using the up/down tuning buttons which moves you through frequencies in two ways, either lightning fast by holding the button down momentarily, or slowly by gently holding the button down and releasing it; and by using rotary fine-tuning control on the right side of the radio, which is particularly useful on shortwave to reduce or eliminate a nearby powerful station that's interfering with the station you're trying to hear.

Grundig's YB 550PE portable receiver is loaded with features and tunes AM/FM and shortwave broadcast.

Let's look briefly at the process of adding stations to the YP 550PE's memory. The radio stores 200 frequencies in eight "pages" of memory; each "page" holds 25 frequencies. Grundig uses the term "pages" much like scanner manufacturers have used "banks" for years. I like the fact that you can customize the "pages" from eight to four, five or 20. (Of course, the radio still holds 200 frequencies in memory, but arranging them on different memory "pages" can help you store stations to your liking. For example, you might want to have all European shortwave stations you've put into the radio's memory into one page of four pages; a total of 50 stations. It's a breeze to program once you've pushed the buttons a few times!

Reception of the usual powerhouse shortwave stations (BBC, VOA, Radio Havana, and others) was excellent, as expected. Nearby weaker stations I wanted to hear were somewhat difficult to separate from the powerhouse stations, but adjusting the telescoping whip antenna



The display window is large and easy to read, but for night viewing the internal light could be brighter.

and using the radio's "local/dx" switch helped a lot. Again, this little radio isn't a full-featured tabletop shortwave receiver with $1,000 selectivity, but I was pleasantly surprised at just how selective and sensitive it is for casual listening.

Nighttime AM broadcast band DX was easily heard with only the telescoping antenna. Attaching a 20-foot wire to the antenna receptacle produced a lot of signal overload, although several of the powerful AM stations here in the metro-New York area could be nulled enough to hear more distant stations.

A Few Last Words

A quick word about the LCD display; while the actual frequency readout is large and easily read in daylight or a well-lighted room, it's another story in a power failure or if you're using the 550PE at a campsite. The display is momentarily lighted at power-on, but only from the right side of the window. It's also not very bright. The good news is that you can keep the light on continuously by holding the snooze bar at the top of the radio for a few seconds. Of course, this devours precious battery power. It would be a big plus if Grundig had taken the display light situation a step further by having an additional—and brighter—bulb on both sides of the display. I'd imagine that to do this it would also make sense to have four "AA" batteries powering the radio instead of three. It's a minor criticism, but fact is, many folks use a small radio such as the 550PE during power failures and in dimly lit situations.

Audio quality is good to excellent. Turning the volume up nearly full throttle produced very little audio distortion. I found the 550PE's audio to be better than expected for a radio of its size. The capabilities and performance of this little marvel makes it well worth the cost for use as a travel radio or take-to-work receiver for those times when you want to hear more than your local DJs talking to themselves.

Whether you've got a larger Grundig as your main receiver or another full-size communications receiver on your desktop, you really owe it to yourself to check out the YB 550PE. Again, it costs only $99 and comes complete with a small plastic stand, plenty of neat features, and a one-year warranty.

For more information, contact Eton Corp., Grundig North America at 1015 Corporation Way, Palo Alto, CA 94303, phone 650-903-3866, or visit them on the Web at www.etoncorp.com. Please tell them you read about the Grundig YB 550PE in *Popular Communications*! ■

Popular Communications October 2004 Survey Questions

I'm interested in radio propagation and read "The Propagation Corner."
Yes 1
No 2
Sometimes 3

I find the propagation forecast in *Pop'Comm* to be:
Very helpful 4
Somewhat helpful 5
Not very helpful 6

Propagation and the science of solar forecasting:
Is very confusing but "The Propagation Corner" helps me understand it better. 7
Just doesn't interest me. 8
Has always been a difficult radio topic to understand, so I don't even bother trying to figure it out. 9

Most of my interest is on the following parts of the radio spectrum:
VHF 10
UHF 11
Both VHF & UHF 13
HF 14

When propagation is bad on one part of the spectrum, I:
Turn off the radio and do something else. 15
Go on the Internet. 16
Go to another band and experiment there. 17
Read Tomas Hood's column to learn more. 18

Radio propagation and solar conditions don't affect me that much because most of my radio activity is local amateur VHF:
Yes 19
No 20

Radio propagation and solar conditions don't affect me that much because most of my radio activity is local CB.
Yes 21
No 22

I regularly use the forecast in "The Propagation Corner" to plan my radio activity:
Yes 23
No 24
Sometimes 25

by Peter J. Bertini, radioconnection@juno.com

Restoring National's SW-54 Receiver

Vintage receiver restorations always generate positive comments for our readers. This month we'll be turning the reins over to guest columnist Ed Engelken, who'll be sharing his restoration of a National SW-54 receiver! Faithful readers will recall Ed's past contributions to our column, including a still popular (and becoming a classic!) article on restoring and modifying a basket case S-40 receiver in a similar column about four years ago. This is one of those projects we've been meaning to do, but never found the time to properly tackle. Ed's article might be the impetus for me, and hopefully others, to tackle restoring a similar classic that's been waiting in the wings for similar attention!

Here's Ed's story:

When National Radio introduced the SW-54 in 1951 it went up against strong competition (**Photo A**). At the time, Hallicrafters owned the low-priced communication receiver market with their S-38 series introduced in 1946. By 1951 Hallicrafters was up to the third version of the S-38, the S-38B. Both the SW-54 and the S-38B were entry-level receivers targeting the young SWL or prospective ham. The FCC had just introduced the Novice Class ham license and radio manufacturers were working hard to tap into this new market. Hallicrafters had entered the low-priced receiver market in the mid-1930s with their Sky Buddy receivers and continued after WW-II with the S-38 series. National Radio on the other hand, dropped their pre-war line of "SW" receivers (the SW-3, SW-4, and SW-5) and had nothing to compete in the low-price category until 1951. This late start obviously put the SW-54 at a disadvantage in the marketplace. The SW-54 was produced until 1958, but its sales never approached the level of the competing Hallicrafters S-38 models. Judging from numbers of SW-54s and the competing S-38B, C and D models seen on eBay, I would estimate that the S-38s outsold the SW-54 by a margin of 10 to 1 or more. That's a shame because the SW-54 is a better receiver in many respects.

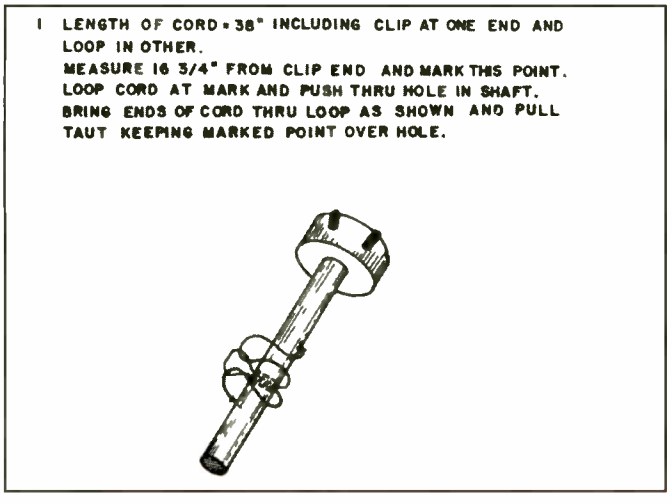


Figure 1. The diagram in the manual shows the dial cord looping through a hole in the tuning shaft preventing any slippage.

Photo A. The National SW-54 (left) went head-to-head with the Hallicrafters S-38B (right) in 1951.

Acquiring An SW-54

I had accumulated a number of National and Hallicrafters receivers over the years including four of the S-38 models, but I didn't have a SW-54 - a receiver I always admired. Finally, I decided to rectify that situation and began searching eBay for a restorable receiver. I was more interested in good cosmetics than electrical condition since I assumed any electrical problems could be solved with little difficulty. After all, the SW-54 is little more than an ordinary AA5 with shortwave bands added. After several bidding attempts, I managed to land a nice looking SW-54. I didn't pay much attention to the sentence in the description that read in part "...dial cord needs to be replaced and adjusted, dial just spins." When the radio arrived I discovered that there was much more to be done than replace and adjust the dial cord!

Fixing The Dial

Yes, the "dial just spins" but not because of a dial cord problem. The fiber tuning shaft was broken and the collar on the bandspread dial that secures it to the shaft was broken off (**Photo B**). So, even though the SW-54 had great cosmetics, it had a serious mechanical problem – just the kind of thing I hate dealing with! The SW-54 is a genuine "hot chassis" radio with one side of the line cord connected directly to the chassis when the radio is on and the other side of the line is connected to the chassis through the heater string. The tuning shaft was made of insulating material to prevent line voltage from appearing outside the cabinet. The volume control and bandswitch are insulated from the chassis for the same reason. Rather than use a fiber shaft, I chose to use a metal one and keep the radio safe by

Photo B. The original tuning shaft (bottom) was broken. The collar on the old shaft was broken off the center of the bandspread dial (top). The metal replacement tuning shaft is in the center.

rewiring the power switch and using a polarized power cord - more on this later.

I had already downloaded a copy of the SW-54 manual from the BAMA web site (http://bama.sbc.edu) and checked out the dial cord diagram before the SW-54 arrived. I was somewhat surprised to see that dial cord arrangement in my SW-54 was different from the setup shown in the manual.

The manual shows a uniform diameter tuning shaft with the dial cord passing through a small hole in the shaft and wound a specified number of turns on each side of the hole (**Figure 1**). The shaft in my SW-54 had a reduced diameter section with the dial cord simply wrapped 2-1/2 turns around the shaft.

The bandspread on the SW-54 is a mechanical one. The bandspread dial is in fact just a large knob that turns the same shaft that the main tuning knob turns. The relationship between the bandspread scale reading and the tuning capacitor position is dependent on the dial cord. If the dial cord slips on the shaft, then the relationship between the bandspread scale reading and the tuning capacitor position (and received frequency) will be lost. I assume that is why the dial stringing system shown in the manual was used. The dial cord can't slip if it is looped through the shaft. Obviously, someone at National decided at a later time that a simpler "2-1/2 turns around the shaft" would work OK. I decided to rig up the dial cord like the manual described, not the way it was in the radio. After going through the process of threading the dial cord as described in the manual I could see the problem. It took me at least 30 minutes to string the dial. I am sure that stringing the dial using the "2-1/2 turns around the shaft" could be done in half that time or less. National probably changed the dial cord stringing to speed up production, but at the expense of consistent bandspread dial calibration. I like the original system much better.

But, before the dial cord could be installed, the bandspread dial had to be attached to the new tuning shaft. A 1/16-inch hole was drilled in the replacement shaft at the location of the broken collar on the bandspread dial and a small brad was inserted in the hole. The dial was shimmed up to the proper position and leveled, then hot-melt glue was flowed around the brad (**Photo C**). This secured the bandspread dial to the shaft just like the original collar. The bandspread dial is designed so that the outer dial scale can be rotated on the dial hub. The glue must be applied only on the hub of the bandspread dial to avoid permanently bonding the movable dial scale to the hub. The final installation of the new tuning shaft and dial cord is shown in **Photo D**.

Photo C. The bandspread dial was attached to the new tuning shaft using hot-melt glue.

Completing The Restoration

The electrical condition of the SW-54 was excellent (**Photo E**). The only non-original part was the filter capacitor. The old filter had been replaced by a twist-lock style capacitor loosely mounted in the original mounting strap (right side of the chassis). The tubes were found to be good. Electrical restoration consisted of replacing the original paper and electrolytic capacitors including the twist-lock and checking the resistors. The

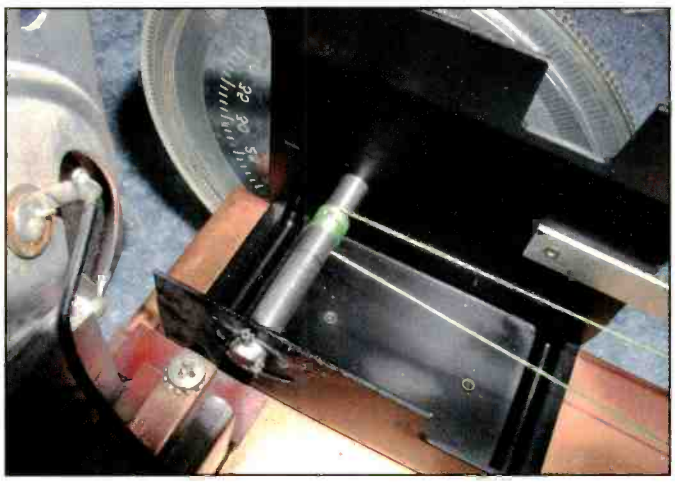


Photo D. The dial cord was strung according to the directions in the manual, not the way it was found in the receiver.

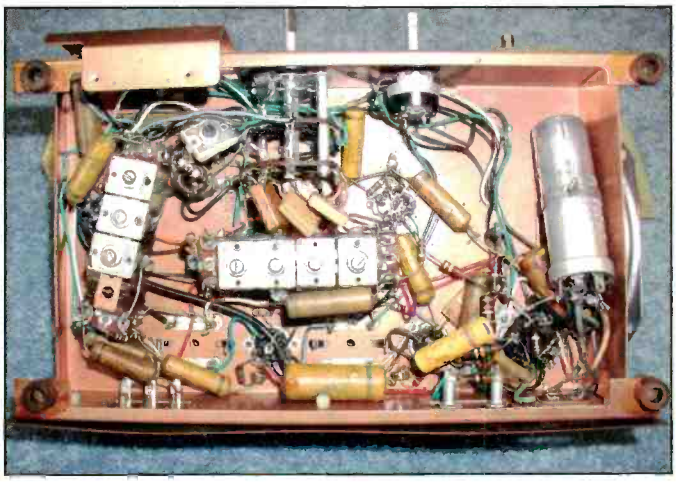


Photo E. The under side of the chassis was clean and revealed mostly original components.

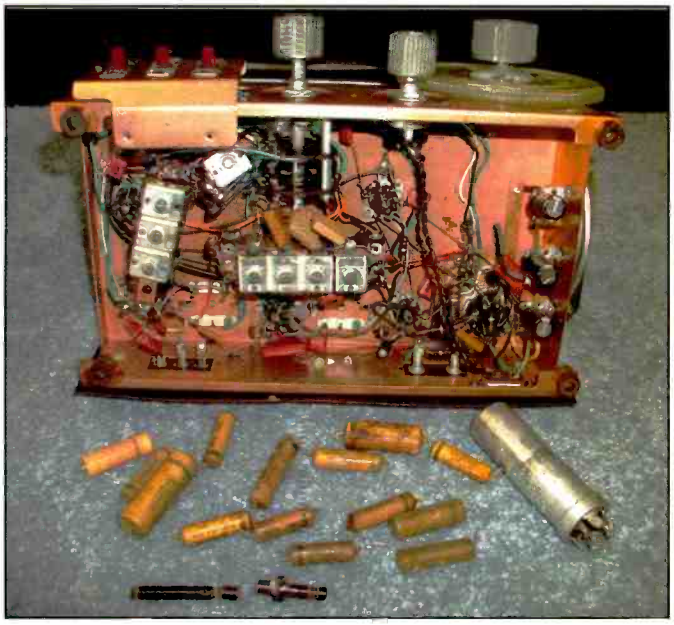


Photo F. All of the old paper and electrolytic capacitors were replaced.

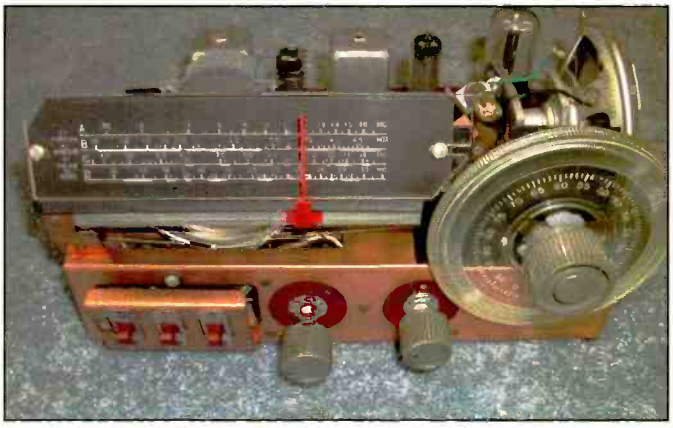


Photo G. The compact copper-plated chassis is a beauty.

Photo H. The restored National SW-54 is a cute little set. The Lucite dials are brightly illuminated with a single #47 lamp.

three-section twist-lock was replaced with individual units mounted on terminal strips (**Photo F**). After a complete electrical alignment and a few hours of burn-in time, the chassis was ready for installation in the cabinet (**Photo G**).

Safety Issues

Hot-chassis radios pose serious safety problems. This is particularly so in the case of hot-chassis sets in metal cabinets like the SW-54. No doubt, the safest solution would to be to use a three-wire cord and connect the green safety wire to the cabinet. Unfortunately, this detracts from the original look and style of the radio. The next-best solution is to use a polarized plug and re-wire the power supply so the "low" side of the AC line is always connected to the chassis and the "hot" side of the line is fed to the on/off switch. This procedure is discussed in detail in an article found at Phil's Old Radios web page (http://www.antiqueradio.org/safety.htm). This article is a must-read for anyone repairing or restoring AC/DC radios. Both the SW-54 and S-38B pictured in this article have been modified according to this procedure.

Taking A Test Drive

The real reward comes when it's time to kick back and listen to the just-repaired SW-54 (**Photo H**). It this case, I had a previously restored S-38B on the shelf and the temptation to compare these competitors was irresistible. I spent several evenings listening to AM broadcast and shortwave signals on the two receivers, switching the same antenna between them. Despite the SW-54's more modern and higher-gain miniature tube lineup, any differences in performance were hard to detect. The real difference was in the look and feel of the receivers. The smaller SW-54 with its well-lighted Lucite dials is a joy to use. The electrical bandspread of the S-38B is an improvement over the mechanical bandspread of the SW-54, but the styling and feel of the SW-54 makes it a winner. I have always been a Hallicrafters fan and own many more Hallicrafters than any other brand, but if it was 1951 again and I had to choose, I would pick the SW-54.

Final Thoughts

I mentioned earlier that the National SW-54 was designed to compete with the long-running S-38 models from Hallicrafters. Both receivers were competing for young, cash-strapped buyers that were new to radio. It was important for National to prove to the inexperienced buyer that the SW-54 was in every way equal to the established S-38B. For example, the S-38B has three small red switches on the front panel marked AM/CW, Speaker/Phones, and Receive/Standby. The National SW-54 also has three small red switches marked the exact same way! The SW-54 matches the S-38B switch-for-switch and knob-for-knob leaving no doubt that it is equal in all respects to the S-38B. Maybe it was this too-close copy of features that hurt sales. Perhaps sales would have been better if National had emphasized differences rather than similarities in the designs.

I'm sure Peter would like to hear about your SW-54; do you have this classic receiver? Have you taken steps to restore it to good, working condition? Drop Peter or me a note with photos at *Popular Communications*, "Wireless Connection", 25 Newbridge Road, Hicksville, NY 11801. ■

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

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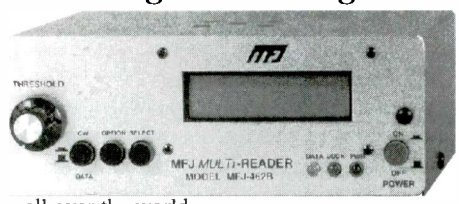

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MFJ-462B **$179.95**

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

Printer cable, **MFJ-5412**, $9.95.

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

High Performance Modem

MFJ's high performance *PhaseLockLoop*™ 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.

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It's easy to read -- the 2 line 16 character LCD display with contrast adjustment is mounted on a brushed aluminum 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. 5¼Wx2½Hx5¼D inches.

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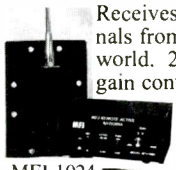
Try it for 30 Days

If you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping). Customer must retain dated proof-of-purchase direct from MFJ.

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-30 MHz.



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

MFJ-1024 **$139.95**

Indoor Active Antenna

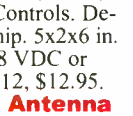
Rival outside long wires with this *tuned* indoor active antenna. *"World Radio TV Handbook"* says MFJ-1020C is a *"fine value... fair price... best offering to date... performs very well indeed."*

MFJ-1020C **$79.95**

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

Compact Active Antenna

Plug this *compact* MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world, 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, $12.95. 3⅛x1¼x4 in.



MFJ-1022 **$49.95**

Eliminate power line noise!

MFJ-1026 **$179.95**

Completely eliminate power line noise, lightning crashes and interference *before they get into your receiver!* Works on all modes -- SSB, AM, CW, FM, data -- and on all shortwave bands. Plugs between main external antenna and receiver. Built-in active antenna picks up power line noise and cancels undesirable noise from main antenna. Also makes excellent active antenna.

MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C **$99.95**

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

High-Gain Preselector

High-gain, high-Q receiver preseletor 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. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, $12.95.

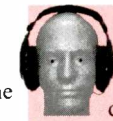
MFJ-1045C **$99.95**

Dual Tunable Audio Filter

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 inches.

MFJ-752C **$99.95**

MFJ Shortwave Headphones



MFJ-392B **$19.95** New!

Perfect for shortwave radio listening for all modes -- SSB, FM, AM, data and CW. Superb padded headband and *ear cushioned* design makes listening extremely comfortable as you listen to stations all over the world! High-performance driver unit reproduces enhanced communication sound. Weighs 8 ounces, 9 ft. cord. Handles 450 mW. Frequency response is 100-24,000 Hz.

High-Q Passive Preselector

High-Q passive LC preselector boosts your favorite stations while rejecting images, intermod and phantom signals. 1.5-30 MHz. Preselector bypass and receiver grounded positions. Tiny 2x3x4 in.

MFJ-956 **$49.95**

Super Passive Preselector

Improves any receiver! Suppresses strong out-of-band signals that cause intermod, blocking, cross modulation and phantom signals. Unique Hi-Q series tuned circuit adds super sharp front-end selectivity with excellent stopband attenuation and very low passband attenuation and very low passband loss. Air variable capacitor with vernier. 1.6-33 MHz.

MFJ-1046 **$99.95**

MFJ Shortwave Speaker

This MFJ *ClearTone*™ New! restores the broadcast quality sound of shortwave listening. Makes copying easier, enhances speech, improves intelligibility, reduces noise, static, hum. 3 in. speaker handles 8 Watts. 8 Ohm impedance. 6 foot cord.

MFJ-281 **$12.95**

MFJ All Band Doublet

102 ft. all band doublet covers .5 to 60 MHz. Super strong custom fiberglass center insulator provides stress relief for ladder line (100 ft.). Authentic *glazed ceramic* end insulators and heavy duty 14 gauge 7-strand copper wire.

MFJ-1777 **$49.95** Ship Code A

MFJ Antenna Switches

MFJ-1704 **$69.95**

MFJ-1702C **$24.95**

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. Good to 500 MHz. 60 dB isolation at 30 MHz. **MFJ-1702C** for 2 antennas.

Morse Code Reader

Place this pocket-sized MFJ Morse Code Reader near your receiver's speaker. Then watch CW turn into solid text messages on LCD. Eavesdrop on Morse Code QSOs from hams all over the world!

MFJ-461 **$79.95** New!

MFJ 24/12 Hour Station Clock

MFJ-108B, $19.95. Dual 24/12 hour clock. Read UTC/local time *at-a-glance*. High-contrast 5/8" LCD, brushed aluminum frame. Batteries included. 4½Wx1Dx2H inches.

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Your Monthly International Radio Map

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.

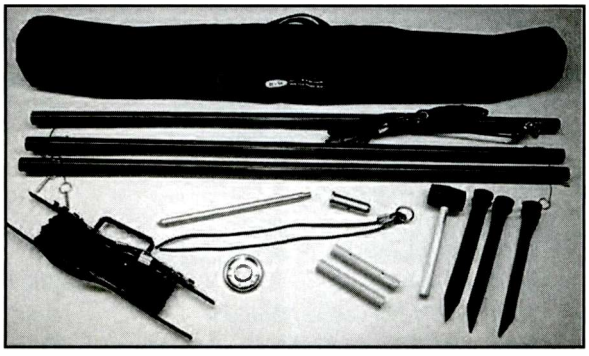
UTC	Freq.	Station/Country	Notes
0000	6190	Deutschlandfunk, Germany	GG
0000	11655	RDP Int., Portugal	PP
0000	4960	Radio Federacion, Ecuador	SS
0000	9575	Radio Medi-Un, Morocco	FF/AA
0030	11690	Radio Vilnius, Lithuania	
0030	9665	Voice of Russia, via Moldova	SS
0030	9605	Vatican Radio	PP
0030	9700	Radio Bulgaria	FF
0030	2390	Radio Huayacocotla, Mexico	SS
0030	5010	Radio Cristal Int., Dominican Republic	SS
0100	11655	Radio France Int., via Canada	SS
0100	9830	Voice of Russia	SS
0100	6536	Radio La Poderosa, Peru	SS
0100	15455	RFE/RL, via Thailand	unid
0100	9675	RAI Int., Italy	
0100	17795	Radio Australia	
0100	4810	XERTA, Mexico	SS
0100	5905	Radio Ukraine Int.	
0100	7115	VOA Relay, Sri Lanka	
0130	4915	Radio Anhanguera, Brazil	PP
0130	6115	Radio Tirana, Albania	
0200	9560	Radio Korea Int., S. Korea, via Canada	
0200	9835	Radio Budapest, Hungary	
0200	4052.5	Radio Verdad, Guatemala	SS
0200	5025	Radio Rebelde, Cuba	SS
0200	9580	China Radio International	
0200	9755	Radio Canada Int.	
0200	11710	RAE, Argentina	
0200	6010	Radio Sweden, via Canada	Swedish
0230	4996	Radio Andina, Peru	SS
0230	9895	Radio Netherlands Relay, Madagascar	SS
0230	9925	Voice of Croatia, via Germany	SS
0230	4939	Radio Amazonas, Venezuela	
0230	4895	Radio Bare, Brazil	PP
0230	7260	Radio Tirana, Albania	
0300	7365	Radio Marti, USA	SS
0300	11665	Sudan Radio Service, England	
0300	5010	RTV Malagasy, Madagascar	vern
0300	4976	Radio Uganda	
0300	4910	Radio Zambia	
0300	4965	Christian Voice, Zambia	
0300	6940	Radio Fana, Ethiopia	Amharic
0300	7110	Radio Ethiopia	Amharic
0300	7250	Trans World Radio, Swaziland	unid
0330	9460	Voice of Turkey	TT
0330	6030	CFVP, Calgary, Canada	
0330	4985	Radio Brazil Central, Brazil	PP
0330	5500	Voice of Peace & Democracy in Eritrea (cland)	vern
0400	7265	Sudwestrundfunk, Germany	GG
0400	9775	VOA Relay, Botswana	
0400	9875	Adventist World Radio via Austria	AA
0400	9965	Voice of Armenia	SS
0400	3240	HRMI, Honduras	SS
0400	4991	Radio Apinte, Surinam	EE/DD
0430	9580	Int. Radio of Serbia & Montenegro	
0500	6065	Radio Sweden	Swedish
0500	6185	Radio Educacion, Mexico	SS
0500	6085	Bayerischer Rundfunk, Germany	GG
0500	4950	Radio Nacional, Angola	PP
0500	4770	Radio Nigeria	
0500	4890	Radio France Int., via Gabon	FF
0600	4915	Ghana Broadcasting Corp.	
0600	4760	ELWA, Liberia	
0600	4835	RTV Malienne, Mali	FF
0600	7125	RT Guineenee, Guinea	FF
0645	9870	Trans World Radio, via Monaco	
0800	3291	Voice of Guyana	
0830	6350	ANN/AFRTS, Hawaii	USB
0830	3310	Radio Mosoj Chaski, Bolivia	SS/QQ
0900	4919	Radio Quito, Ecuador	SS
0900	4965	Radio Santa Monica, Peru	SS
0900	6035	La Voz del Guaviare, Colombia	SS
0900	6010	La Voz de su Conciencia, Colombia	SS
0900	3220	HCJB, Ecuador	QQ
0900	6040	Radio Clube Pranaense, Brazil	PP
0930	4747	Radio Huanta 2000, Peru	QQ
0930	17630	Africa Number One, Gabon	FF
0930	6070	Voz Cristiana, Chile	SS
0930	4753	Radio Educacao Rural, Brazil	PP
0930	6135	Radio Santa Cruz, Bolivia	SS
0930	6060	Radio Nacional, Argentina	SS
0930	9665	Radio Marumby, Brazil	PP
1000	13720	Radio Exterior de Espana	SS
1000	9885	Radio New Zealand Int.	
1000	3280	La Voz del Napo, Ecuador	SS
1000	9737	Radio Nacional, Paraguay	SS
1000	4870	La Voz del Upano, Ecuador	SS

UTC	Freq.	Station/Country	Notes
1000	13675	UAE Radio, Dubai, UAE	AA
1000	13730	Radio Austria Int.	GG
1000	13685	Voice International, Australia	
1000	4387	Radio Peace, Sudan	vern
1000	5925	Voice of Vietnam	
1030	7507	AFN/AFRTS, Puerto Rico	USB
1030	11920	RAI Int., Italy, via Singapore	II
1030	5637	Radio Peru	SS
1100	11580	Far East Broadcasting Co/KFBS, N. Marianas	CC
1100	11750	China Radio International	
1100	3385	Radio East New Britain, Papua New Guinea	
1100	5020	Solomon Is. Broadcasting Corp.	
1100	6348	Echo of Hope (cland)	Korean
1130	11755	YLE/Radio Finland	Finnish
1130	3205	Radio Sandaun, Papua New Guinea	
1200	15565	BBC, England	
1200	11760	Radio Havana Cuba	SS
1200	4980	Xingiang PBS, China	CC
1230	9930	KWHR, Hawaii	
1300	9740	BBC Relay, Singapore	
1300	11510	Radio Free Asia, via Kazakhstan	Khmer
1300	7295	Radio Malaysia	
1300	11590	China Music Jammer	
1300	15450	RT Tunisienne, Tunisia	AA
1300	11685	Radio Thailand	CC
1330	12010	Radio Australia, via Singapore	
1330	9520	Radio Veritas Asia, Philippines	unid
1330	11810	Radio Jordan	AA
1330	11680	Korean Central Broadcasting System, N. Korea	KK
1330	12070	Radio Netherlands, via Uzbekistan	unid
1330	11500	Voice of Russia via Tajikistan	Hindi
1330	11605	Radio Taiwan Int.	unid
1400	6150	MediaCorp Radio, Singapore	
1400	15150	Voice of Islamic Republic of Iran	AA
1400	9525	Voice of Indonesia	II
1400	15380	Adventist World Radio/KSDA, Guam	unid
1400	9705	Voice of Pujiang, China	CC
1400	9590	Radio Australia	
1430	15425	VOA Relay, Philippines	
1430	15760	Kol Israel	HH
1430	15350	Voice of Turkey	TT
1500	9335	Voice of Korea, North Korea	
1500	15745	Vatican Radio	II
1530	11650	Voice of Islamic Republic of Iran	
1530	17770	Channel Africa, South Africa	
1600	15210	Broadcasting Service of Kingdom of Saudi Arabia	AA
1600	11690	Radio Jordan	
1600	11570	Radio Pakistan	
1600	15325	Radio Canada Int., via England	RR
1600	15395	UAE Radio, Dubai	
1630	9430	FEBC, Philippines	CC
1700	15410	VOA Relay, Sao Tome	
1700	15120	Voice of Nigeria	
1700	17485	Radio Prague, Czech Republic	
1730	13710	Broadcasting Service of Kingdom of Saudi Arabia	AA
1730	15190	Radio Pilipinas, Philippines	Tagalog
1730	15215	Deutsche Welle Relay, Rwanda	GG
1800	15420	BBC via South Africa	
1800	17575	RDP Int., Portugal	PP
1800	15410	VOA Relay, Morocco	
1800	15400	BBC Relay, Ascension Is.	
1830	15380	Radio Romania Int.	
1900	12095	BBC Relay, Ascension Is.	
1900	13645	Swiss Radio International, via Germany	AA
1900	13605	All India Radio	
1900	12105	Voice of Greece	Greek
1900	13580	Radio Prague, Czech Republic	SS
1900	9780	Republic of Yemen Radio	AA
1915	17540	Kol Israel	
1930	12070	Voice of Russia	
1930	17895	VOA Relay, Botswana	
2000	17850	Radio Exterior de Espana, via Costa Rica	SS
2000	15505	Radio Kuwait	AA
2000	15345	RTV Marocaine, Morocco	AA
2000	11665	Radio Japan/NHK	JJ
2000	13610	Radio Damascus, Syria	
2000	15150	Voice of Indonesia	
2030	11635	Radio Jamahiriya, Libya, via France	AA
2030	11755	YLE/Radio Finland	Finnish
2030	15630	Voice of Greece	Greek
2030	11905	Radio Tashkent, Uzbekistan	
2030	11625	Vatican Radio	FF
2030	17705	Radio Nacional, Venezuela, via Cuba	SS
2030	17775	Caribbean Beacon, Anguilla	
2100	11920	Swiss Radio Int.	FF
2100	9855	Radio Kuwait	AA
2100	9950	All India Radio	
2100	9990	Radio Cairo, Egypt	AA
2100	11950	Radio Free Asia, via Northern Marianas	CC
2100	9915	BBC Relay, Cyprus	AA
2100	13830	Voice of Croatia	
2100	12010	Radio Sawa, USA, via Morocco	AA
2100	13855	AFN/AFRTS, Iceland	USB
2100	9745	Radio Sawa, USA, via Greece	AA
2100	11975	VOA Relay, Sao Tome	
2100	13800	Radio Bulgaria	SS
2100	9970	RTBF, Belgium	
2100	7450	Radio Makedonias, Greece	Greek
2130	9725	Radio Romania Int.	
2130	11715	All India Radio, Goa, India	
2200	15315	Radio Netherlands Relay, Bonaire, NWI	DD
2215	6180	Cyprus Broadcasting Corp.	Greek, wknds
2230	17800	Voice of Nigeria	
2230	7460	Radio Nacional del la RASD, Sp,. Sahara, Algeria	AA/SS
2300	11980	HCJB, Ecuador	GG
2300	4845	Radio Mauritanie, Mauritania	AA
2300	13865	INBS, Iceland	Icelandic
2300	17680	Voz Cristiana, Chile	SS
2300	11780	Radio Nacional Amazonia, Brazil	PP
2330	15275	Deutsche Welle Relay, Rwanda	GG
2330	5030	Radio Burkina, Burkina Faso	FF

by Harold Ort, N2RLL

FRP Composite Fiberglass Mast Kits

Barker & Williamson tells Pop'Comm they searched the world for a good tactical support for their antennas. Their news release says, "We couldn't find one, so we made our own! These mast kits were made with the soldier in mind - but they are also perfect for any government, EOC or emergency field use."



Barker & Williamson's new FRP composite fiberglass mast kit folds down to only four-feet and can be carried by one person.

Mast poles are made in four-foot sections. Tactical units are rapidly field assembled with a joiner, and pinned together. The pins are captivated to the poles with lanyards so they won't get lost. A locator pin is hammered into the ground to stabilize the bottom of the assembly and a guy ring is placed on top, and lines run down to ground stakes. The guy lines have easy to use tensioners and snap hooks.

The material used for the pole sections is a composite known as FRP - fiberglass reinforced plastic. Unlike cheap "fishing pole" material it is extremely lightweight, strong, and rigid. The color is throughout the material, so there's no chipping paint. Also, shock hazards are eliminated.

Other features include bottom locating pins turned from aircraft aluminum, and ground stakes made from thermoplastic, to avoid rust. All guys and lines utilize polyester, which won't stretch, rot, or degrade in UV.

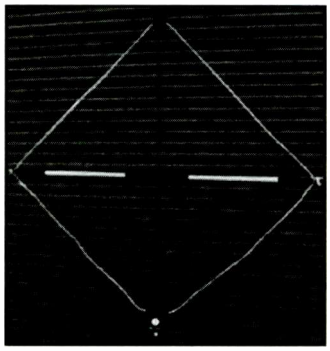
Barker & Williamson says one person can set up a 12-foot mast section in just five minutes. The 24-foot mast requires a minimum of two people. Complete tactical kits include the poles, pins, camo carry bag, hammer, preassembled guy lines - everything. Small and light, the entire pole kit breaks down to just four-feet in length, so they're easy to ship and carry. A complete 12-foot mast kit weighs just 10 pounds! The company tells us you'll get better radio performance than metal or carbon fiber poles. The poles are available in camouflage - forest green and sand colors.

For more information visit the company on the Web at http://www.bwantennas.com/pro/mast.pro.htm or e-mail them at custsrvc@bwantennas.com, phone 321-639-1510. Tell them *Pop'Comm* sent you!

AOR's WL500 Window Loop Antenna

Need radio reception while traveling or operating from a temporary or compromised monitoring location? If you're unable to erect a large, external antenna, read on. AOR's WL500 Loop Antenna covers 3.5 to 30 MHz, and folds down, fitting into a small bag.

AOR's WL500 Window Loop Antenna covers the shortwave listening spectrum from 3.5 to 30 MHz.



The loop is constructed of flexible twin cable braced by a center pole which splits into two sections so it can be easily stored. When set up the loop forms a diamond shape with an approximate diameter of 60 cm. There's a range switch mounted at the termination point (switching at 10 MHz).

A length of screened cable is supplied which is terminated in RCA phone plugs to connect the loop to the control box. The control unit provides preselection and amplification terminated in a BNC socket for connection to the receiver. AOR says, "Excellent strong signal characteristics are achieved . . ." The control unit can be powered from an internal 9V battery or external 12 Vdc power supply.

An optional ferrite bar antenna, that will improve operation below 3.5 MHz, detaches from the base unit; the resulting two packages are compact enough to easily fit into a small bag or bottom of a small case when traveling. For more information on the AOR WL500 Window Loop Antenna, contact AOR USA, Inc. at 20655 S. Western Avenue, Suite 112, Torrance, CA 90501 or phone 310-787-8615. Visit them on the Web at www.aorusa.com.

Uniden Introduces NASCAR® Licensed Scanners

Uniden America Corporation has announced a licensing agreement with The National Association for Stock Car Auto Racing (NASCAR). Under the three-year agreement, Uniden, a leading manufacturer of wireless consumer electronics, will distribute a line of its Bearcat scanners as co-branded NASCAR products. Uniden's initial NASCAR-branded scanners will be available in late 2004, with five models expected by early 2005, and more in subsequent years of the agreement. The Uniden scanners will carry the NASCAR logo and feature cutting-edge scanner technology.

The use of scanners at racing events allows fans to monitor two-way communications between the driver, crew chief, spotter and occasionally between two drivers, offering a behind-the-scenes feel and a better sense of the issues affecting a race. With this agreement, NASCAR fans will have a growing choice of scanners that provide the latest in technology and easy accessibility to relevant channels and frequencies to enhance their racing experience.

"Scanner usage at the race track is a growing phenomenon," said Al Silverberg, president of Uniden America. "As the leader in scanner technology, Uniden is thrilled to be the sole provider of NASCAR licensed scanners and to play a large role in enhancing the racing experience for 75 million loyal NASCAR fans."

Uniden's handheld scanners allow NASCAR fans to have the

mobility and ease-of-use they demand while watching a race. Uniden's NASCAR-branded handheld scanner offering will initially include:

• BC92XLT, available in late November 2004, features a one-touch weather alert and includes 200 channels in 10 banks;

• BC72XLT, available in early 2005, features a backlit display, 10 user-selectable search ranges and 100 channels in 10 banks;

• SportCat SC230, available in early 2005, provides more than 1000 channels and features a racetrack operating system, preprogrammed with NASCAR NEXTEL Cup Series and NASCAR Busch Series frequencies, making it easy for fans to listen to their favorite drivers and teams.

All of these new handheld scanners will be equipped with Uniden's new, exclusive Close Call [TM] RF Capture Technology. The Close Call technology enables users to zero in on nearby transmissions without the need for programming, even when the scanner is in other modes, scanning, searching or holding on a frequency. For example, if someone transmits within a few hundred feet (range depends on transmit power and other radio traffic in the area), the scanner immediately detects and tunes to the transmission, ideal for use at events when the frequency being used is unknown.

In addition to the new handheld units, two of Uniden's current base scanners, the BCT8 and BC350C, will be NASCAR-branded beginning in late 2004.

Uniden America Corporation, the North American subsidiary of Japan-based Uniden Corporation, manufactures and markets wireless consumer electronic products including cordless telephones, business telecommunications systems, scanners, FRS/GMRS radios, marine radios and other wireless personal communications products. Based in Fort Worth, Texas, Uniden sells its products through dealers and distributors throughout North, Central and South America. For information on Uniden's scanners, please contact Paul Opitz at popitz@uniden.com. Please tell Paul you read about it in *Pop'Comm*!

GN Netcom Introduces Incoming Digital Noise Reduction In Headset Amplifier

GN Netcom has just announced that its innovative GN 8210 digital headset amplifier – which finally addresses the problem of caller-originated background noise during phone calls – is available for purchase through GN Netcom's network of authorized specialty, catalog and online resellers.

"The GN 8210 digital headset amplifier digitizes and dramatically enhances audio from the caller – while deleting distracting background noises such as environmental sounds and cell phone interference," according to their news release.

While any phone users can take advantage of this technology, contact centers employees in particular - who increasingly handle calls originating from mobile phones – will, according to GN Netcom, " . . . experience dramatic productivity benefits from their usage of the GN 8210 digital headset amp. Less repetition will be needed, calls will be shorter, and the interaction between contact center agent and caller will be smoother and easier." The DSP chip in the GN 8210 enables a range of other features including automatic volume adjustment, unsurpassed acoustic protection and spike filtering, and customizable sound preferences.

While noise canceling headsets allow the user to be more clearly understood by the caller, the ability to reduce the background noise from the incoming caller previously has not existed. To solve this issue, the GN 8210 digitally monitors the incoming signal and is able to filter out system and background noise so that users experience crystal clear communication at all times. When paired with GN Netcom's noise canceling headsets, this is the first system that reduces noise on both the incoming and outgoing signal.

The GN 8210 is available for a MSRP of $140. For more information please visit GN Netcom online at www.gnnetcom.com. GN Netcom develops, manufactures and markets a broad portfolio of corded as well as wireless headsets and related products through its two market focused divisions: Contact Center & Office Division and Mobile Division. The Contact Center & Office Division, under the GN Netcom brand, provides solutions covering the hands-free communication needs of professionals working in contact centers and offices. The Mobile Division provides innovative hands-free solutions under the JABRA brand for users of mobile devices. For information about products please visit www.gnnetcom.com/usa. ■

by Gerry L. Dexter

New Religious Station On The Air From Papua New Guinea!

It seems the Earth is shifting under some of the big U.S. religious shortwave broadcasters these days. By the time you read this, KTBN (Trinity Broadcasting Network) in Salt Lake City may have closed down! Like Gene Scott's University Network, Trinity's programming is nothing more than an audio relay of its satellite-fed TV programs. Unlike Scott, it seems KTBN isn't drawing any response, so Trinity—as of early summer—was giving thought to pulling the plug on KTBN. Maybe they'll sell it to Gene Scott!

Herald Broadcasting (Christian Science) is no longer in the shortwave broadcasting business. Their WSHB, Cypress Creek, South Carolina, station has been sold to World Harvest International, operators of WHRI shortwave as well as several other stations. In an unexpected move, however, it seems World Harvest may be foregoing the use of WHRI in favor of its new South Carolina acquisition. They are announcing as "This is World Harvest Radio, broadcasting over WSHB in Cypress Creek, South Carolina," even on the frequencies assigned to WHRI. WHRI's "Angel" transmitters are off the air. The two 500-kW units in South Carolina are said to be operating at half power.

The new Catholic station in Papua New Guinea is now on the air. **Catholic Radio Network** in Vanimo is using **4960**, so far with less than its assigned 10 kW. The radiation pattern is essentially straight up so the normal coverage area is not large, nor is it intended to be. Still, they've been logged by some in the Eastern Time zone (where else?). If we were to inspect the inside of the receivers used by some of these ESTers we might discover bits of candle wax and traces of lamb's blood. And maybe a few chicken parts! It's pretty solid proof of our long-held suspicion that they conduct secret rituals in order to fool the propagation gods.

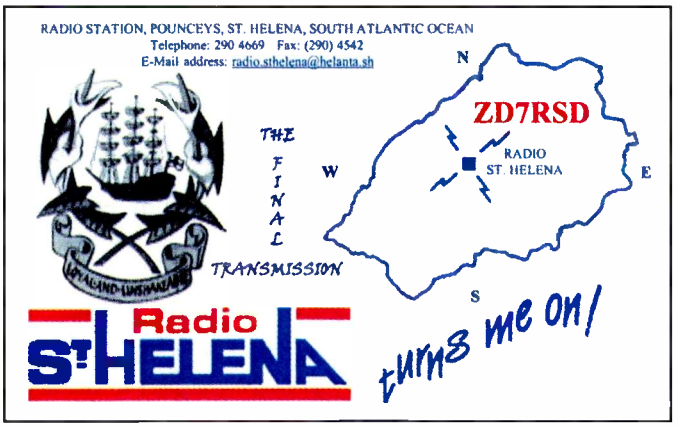
AFRTS News

Two new Armed Forces Radio And Television Service (AFRTS) frequencies have turned up recently: **4815** and **9980**, the first in local mornings, the other in local evenings. The sites haven't been determined as of this writing. Meantime Diego Garcia, the juiciest catch of the AFRTS shortwave group, is said to be inactive at the moment on both **4319** and **12579**.

Those **Coalition Maritime Forces** broadcasts we mentioned a time or two ago are going out under the name "Radio One." Some activity has been noted on **15500 USB** in the 1500 to 1700 time period. But it's not clear whether these transmissions are still coming from a low-power shipboard transmitter, as they were at the very beginning, or whether one or more Merlin transmitters in the UK now relay them, as their plans called for. The service has a website at www.rewardsforjustice.net.

More SW News From Around The World!

On the clandestine front, **Radio Free Syria** has begun broadcasts on Sundays from 1800 on **13650**. Produced by the Reform Party of Syria (RPS), they're aimed at eventually getting President Assad and his Ba'ath party out of power there. The goal is to expand the broadcasts to five hours per day. RPS says the broadcasts come from a secret location; Cypress has been mentioned as a possibility. The U.S. government is supposedly providing funding, but the station denies that. The group has a website at www.radiofreesyria.org, although you won't learn much of anything there about the broadcasts.



Five years after the final "test" broadcast of Radio St. Helena, some folks are receiving QSLs, including Rich D'Angelo (but not yours truly!)

In Honduras, **HRMI** (**3340** and **5010**) is inactive due to equipment problems. Meantime, **Radio Miskut**, Nicaragua (**5770**), which was having similar troubles, has now resumed operation. Unfortunately there's a U.S. religious station dominating 5770 in the evenings.

Radio Netherlands Media Network newsletter reports that people at **Radio Centrafrique** (**5035**) in the Central African Republic are becoming sick as a result of the terrible conditions in which they have to work. There's no air conditioning, temperatures are in the 80s, with 90 percent humidity. On top of that the ancient equipment is continually breaking down—and the staff hasn't been paid in months. The station director has warned that if things don't improve soon Radio Centrafrique may have to close down.

Good News/Bad News Department...The good: Way down the road you can look for **Radio Luxembourg** to resume regular shortwave broadcasting; The bad: it will be a DRM service for Europe so all that non-DRM receivers will hear is unidentifiable noise.

Remember, your shortwave broadcast station logs are always welcome. But please be sure to double or triple space them, list them by country, and include your last name and state abbreviation after each log. Also needed are spare QSLs you don't need returned, station schedules, brochures, pennants, photos, and anything else you think would be of interest. And we continue to wonder if there are any souls brave enough to send in a shack photo. Wouldn't you like to see your fellow reporters at their receivers? Who'll start the ball rolling?

Here are this month's logs. All times are in UTC. Double capital letters are language abbreviations (SS = Spanish, RR = Russian, AA = Arabic, etc.). If no language is specified the broadcast language is assumed to be in English (EE).

ALASKA—KNLS, **11765** with DX program at 0800. (Barton, AZ)

ALBANIA—Radio Tirana, **6115.5** at 0226 sign on with ID, music until full ID at 0230, with wrong starting times announced, then news, music. This station was off the air all the previous week. (D'Angelo, PA) **6115//7160** with ID at 0231 f/by news. (Burrow, WA) 7160 at 0247 with Albanian folk tunes. (Brossell, WI)

ANTIGUA—Deutsche Welle Relay, **9690** in GG at 0905. (DeGennaro, NY)

ARGENTINA—Radio Nacional, **6060** with news and commentary in SS at 0951. (DeGennaro, NY)

ARMENIA—Voice of Armenia, **9960** at 1946 with news, light jazz to close of English just before 2000. ID as "Public Radio of Armenia, the Voice of Armenia." E-mail address given but not the postal address. (D'Angelo, PA) Voice of Russia via Armenia, **9965** in SS at 0200. (Brossell, WI)

ASCENSION ISLAND—BBC Relay, **7160** opening at 0300. (D'Angelo, PA) **11855** in PP at 2045. (Brossell, WI)

AUSTRALIA—Radio Australia, **6020** at 1200, **9475** at 1135, **9560** at 1200. (Northrup, MO) 6020 at 1016, 9475 at 1138, **9580** at 1030 and **9710** at 1036. (DeGennaro, NY) 9475 in CC at 1300, 9580 at 1308, **//9590**. (Brossell, WI) 9580 at 1200. (Paradis, ME) **12010** via Singapore with Mandarin service at 1412. (Strawman, IA) **13630** at 0840 and **13685** at 0900. (Barton, AZ) **15240** at 0120. (Jeffery, NY)

AUSTRIA—Radio Austria Int., **9870** at 0128. (Charlton, ON) **13730** in GG at 0945. (DeGennaro, NY) **13775** via Canada at 1525. Into GG at 1530. (Barton, AZ)

BELGIUM—RTBF Int., **9970** in FF with classical music at 0850 and **21565** via Germany in FF at 1031. (DeGennaro, NY) Radio Vlaanderen Int., **11635** via Bonaire, with "Music From Flanders" at 2210. (Barton, AZ) 2250 in Flemish. (Charlton, ON)

BENIN—Radio Dif. Du Benin, **4870** in FF heard at 1003 but barely audible. (Jeffery, NY)

BOLIVIA—Radio San Miguel, Riberalta, **4904** with local music and anmts in SS at 0205. (Alexander, PA) Radio Panamericana, La Paz, **6105.5** with SS vocals at 0108 with mentions of Bolivia, La Paz, ID, and news. (Paszkiewicz, WI) Radio Mosoj Chaski, Cochabamba, **3310** in QQ at 0051. (DeGennaro, NY) Radio Santa Cruz, Santa Cruz, **6134.8** at 0857 with SS and local pops, ID at 0903. (Alexander, PA) 0946 with SS music and commercials. (DeGennaro, NY) 2354 with Latin vocals, SS man host, canned echo effect IDs. News on the hour. (D'Angelo, PA)

BOTSWANA—VOA Relay, **12080** in unid African language at 2050. (Brossell, WI)

BRAZIL—Radio Cultura Ondas Tropicais, Manaus, **4845** in PP at 0135. (DeGennaro, NY) Radio Pioneira, Teresina, **5015** with religious talks in PP at 0154. (DeGennaro, NY) Radio Educacao Rural, Tefe, **4925** at 0034 with man/woman in PP talk, group vocals, ID at 0055 with laser sound effect. (D'Angelo, PA) 0128 with PP talks, local music. (DeGennaro, NY) Radio Difusora Roraima, Boa Vista, **4875** with music and PP at 0132. (DeGennaro, NY) Radio Rio Mar, Manaus, **9695** with rapid-fire PP commercials and local PSAs at 1015. (DeGennaro, NY) Radio Nacional Amazonia, Brasilia, **6180** with PP call-in show at 0933. **11780** at 1052 with religious songs. (DeGennaro, NY) Radio Cultural Filadelphia, Foz do Iguacu, **6105** at 0005 with multiple IDs and frequency anmts in PP. Off at 0009. (D'Angelo, PA) Radio Clube Paranaense, Curitiba, **6040** in PP at 0032 with romantic songs and discussions. (D'Angelo, PA) Radio Brazil Central, Goiania, **4985** at 0148 with two anncrs in PP covering futbol. (DeGennaro, NY) Radio Educacao Rural, Campo Grande, **4754** with commercials and music at 0123. (DeGennaro, NY) Radio Aparecida, Aparecida, **9630** in PP with music and occasional commercials at 1021. (DeGennaro, NY) Radio Rural, Santarem, **4765** with PP talks, songs, commercials at 0912. (DeGennaro, NY) A Voz do Sao Francisco, Petrolina, **4945** at 0111 with futbol. (DeGennaro, NY) Radio Anhanguera, Goiania, **4915** with futbol at 0107. (DeGennaro, NY) Radio Brazil Central, Goiania, **11815** with religion in PP, songs, ID at 0014. (DeGennaro, NY)

Abbreviations Used In This Month's Column

//	—	Parallel frequency
ABC	—	Australian Broadcasting Corporation
AFRTS	—	Armed Forces Radio Television Service
AFN	—	Armed Forces Network
AIR	—	All India Radio
anncr	—	announcer
anmt(s)	—	announcement(s)
BSKSA	—	Broadcasting Service of the Kingdom of Saudi Arabia
CNR	—	China National Radio
GOS	—	General Overseas Service
ID	—	identification
Int'l	—	international
IS	—	interval signal
Lang	—	language
LSB	—	lower sideband mode
NBC	—	National Broadcasting Corporation
OA	—	Peru, Peruvian
PBS	—	People's Broadcasting Station
Pgm	—	program
RRI	—	Radio Republick Indonesia
sked	—	schedule
SIBC	—	Solomon Islands Broadcasting Corporation
TOH	—	Top of the Hour
unid.	—	unidentified
USB	—	upper sideband mode
vern	—	vernacular (any local dialect or language)
VOA	—	Voice of America
VOIRI	—	Voice of the Islamic Republic of Iran

BULGARIA—Radio Bulgaria, **9700//11700** at 2309 with ID, music, history of radio in Bulgaria. (Burrow, WA) 11700 at 2330 to 0000; 0200 with news and features. (Paradis, ME) **13600** at 2344, ID 2345. Also **15700** at 1153 on child abuse problems in Bulgaria. (DeGennaro, NY) 15700 in Bulgarian at 1310. (Brossell, WI) **17500** in possible Bulgarian at 1520. (Barton, AZ)

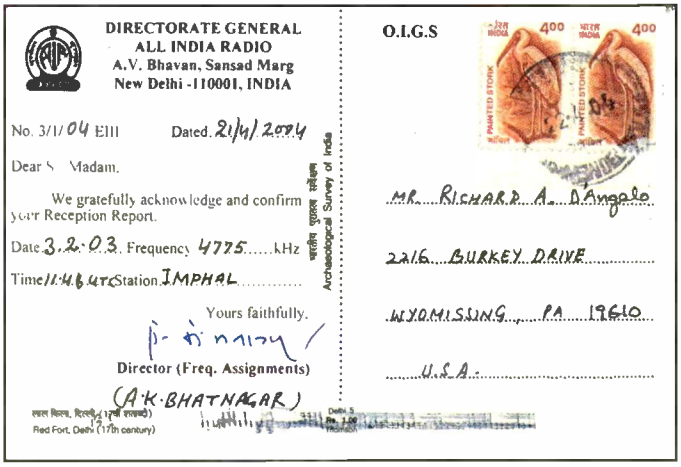
BURKINA FASO—RTV Burkina, **5030** at 0529 sign on with light instrumental music, FF anmts at 0530. Splatter from Gene Scott's broadcast. Also noted 2340 to 0000 without the QRM. (Alexander, PA)

CANADA—CFRX/CFRB, **6070** with call-ins, movie reviews at 0940. (DeGennaro, NY) CKZN, St. John's, **6160** at 0937 with talk on whales, weather report. (DeGennaro, NY) 0950 carrying Voice of Russia. (Barton, AZ) 1125. (Strawman, IA)

CHILE—Voz Cristiana, **5995** (*new?—gld*) at 0958 with SS religious message, ID at 1000. Also **6070** in SS at 0942, **6110** at 0933 and **11745** at 0056. (DeGennaro, NY) **17680** at 2000. (Barton, AZ)

CHINA—China Radio Int., **5990** via Cuba at 2345 and **6140** at 0117. (Charlton, ON) **6040** via Canada at 1017. (DeGennaro, NY) 1115. Also **11670//11940** at 1715, and. **11900** at 1700. (Barton, AZ) **6190//9560** (Canada) with news, ID at 0504. (Burrow, WA) **9440** in CC at 1135 and **11965** at 1335. (Northrup, MO) 11670 at 1844. (MacKenzie, CA) **13680** (*via Canada—gld*) with mailbag at 2300. (Linonis, PA) **15415** with news at 1208. (Jeffery, NY) Voice of the Strait, **11590** in CC at 1215. (Brossell, WI) Nei Menggu Channel One, **9520**, Hohhot, in CC at 1130. (Northrup, MO) China Music Jammer, **9355** at 1802, **//9540**, **11520**, **11700**, **11740**, and **11785**. (MacKenzie, CA)

CLANDESTINE—Radio Sawa, **13870** via Sri Lanka, in AA at 1519. (DeGennaro, NY) Voice of Peace and Democracy, **5500** to Eritrea, 0314 sign on with Horn of Africa music, into local language at 0317. //6350. (Alexander, PA) Radio Free Asia, via Tajikistan, **11520** in unid Asian language at 0140. (Brossell, WI) Voice of Biafra Int., **7380** via Meyerton, at 2108 with religious music, ID, prayer, talk about corruption, and suffering in Nigeria, segment in local language, EE news at 2151. This is Saturdays only. (Alexander, PA)



DIRECTORATE GENERAL
ALL INDIA RADIO
A.V. Bhavan, Sansad Marg
New Delhi -110001, INDIA

O.I.G.S

No. 3/1/04 EIII Dated. 21/4/2004

Dear Sir Madam,

We gratefully acknowledge and confirm your Reception Report.

Date 3.2.03. Frequency 4775 kHz

Time 11:46 UTC Station IMPHAL

Yours faithfully.

Director (Freq. Assignments)

(A.K.BHATNAGAR)

MR. RICHARD A. D'Angelo

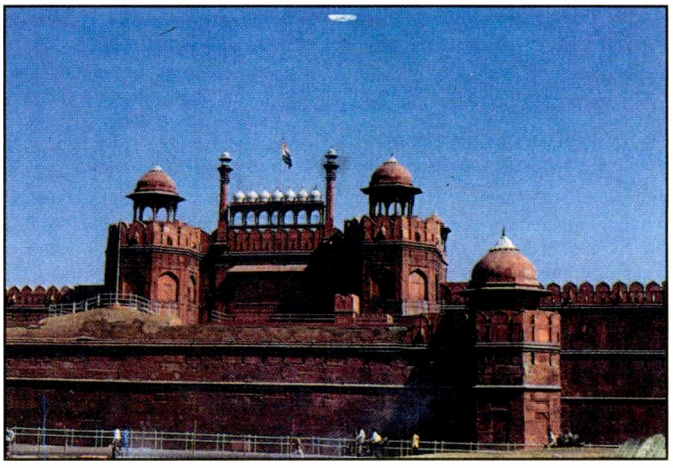
2216 BURKEY DRIVE

WYOMISSING, PA 19610

U.S.A.

Archaeological Survey of India

Red Fort, Delhi (17th century)



Two sides of an All India Radio QSL confirming reception of AIR-Imphal on 4775. (Thanks Rich D'Angelo, PA)

COLOMBIA—La Voz de tu Conciencia, Puerto Lleras, **6009.8** with SS religious talks heard at 0922. (DeGennaro, NY)

CROATIA—Voice of Croatia, **9925** via Germany, talks about new jobs and unemployment. (Charlton, ON) 0300 ending music, into presumed news. (Burrow, WA) 2326 in Croatian. Also **13830** direct, in Croatian at 0954. (DeGennaro, NY)

CUBA—Radio Havana Cuba, **9550** in SS at 1205, **11760** in SS at 1200, **11800** in SS at 1330, 15230 in SS at 1225. (Northrup, MO) 9820 in EE at 0021 and 11760 in EE at 2051. (Charlton, ON) 11800 in SS with news at 1201. Also 15230 in PP to Brazil at 2305. (DeGennaro, NY) Radio Rebelde, **5025** in SS at 1008. (DeGennaro, NY) **11655** with LA vocals at 1235. (Brossell, WI)

CYPRUS—Cyprus Broadcasting Corp., **9760** with Greek drama at 2242. (Paszkiewicz, WI) BBC Relay, **9410** at 0016. (Jeffery, NY) **9875** in an Asian language at 0252. (Brossell, WI)

CZECH REPUBLIC—Radio Prague, **6200** in SS at 0213, **11600** in SS at 2035 and **11615** in EE at 1036. (DeGennaro, NY) **7345** discussing Shakespeare at 0122. (Charlton, ON) **9415** at 2235 with talk, ID, e-mail, IS, and off at 2257. (Burrow, WA)

DENMARK—World Music Radio, **5815** at 0140 with pops. Poor but managed to catch an ID at 0153. Also at 0215 with U.S./Euro pops, "WMR" ID, e-mail address, multi-lingual IDs. Heard over several days. (Alexander, PA) 0222 with oldies, Eric Clapton, jingle ID. Some periodic splatter from WEWN-5825. (D'Angelo, PA)

ECUADOR—Radio El Buen Pastor, Saraguro, **4814** in QQ and SS at 0845. (DeGennaro, NY) La Voz del Napo, **3279.2** with SS talk and phone calls at 0845. (DeGennaro, NY) Radio Quito, **4919** in SS with Andean flutes at 1013. (DeGennaro, NY) La Voz del Upano, **4869.2** at 0956 sign on with Latin vocals, ID at 1001, anthem, formal ID at 1004, and frequency anmts. (D'Angelo, PA) HCJB, **12020** with religious programming in PP at 0000. (DeGennaro, NY)

EGYPT—Radio Cairo/Egyptian Radio, **9990** in FF at 2035. (Brossell, WI) 2206 in EE. Also **11725** in EE at 2342. (Charlton, ON) **11755** in SS at 0053 and **12050** in AA at 2354. (DeGennaro, NY) **11725** at 2312. (Burrow, WA) 0000 in EE and some AA. (Linonis, PA) **15375** at 2054 with local vocal, "Arabic By Radio." (D'Angelo, PA)

EL SALVADOR—Radio Imperial, **17834.8** at 1855 with SS talks, ballads. Off in mid-song at 2058. (Alexander, PA)

ENGLAND—BBC, **9685** heard at 1807, //**21600**. (MacKenzie, CA) **5565** to Eastern Europe at 1200. (DeGennaro, NY) Radio Ndeke Luka, via Wooferton, **15470** in FF at 1856 with ID at 1900, news. Off at 1930. (D'Angelo, PA) Leading The Way, **15495** via Rampisham, 1700 sign on in RR, later with EE translated into RR. (D'Angelo, PA)

EQUATORIAL GUINEA—Radio Nacional Malabo, **6250.2** at 2210 with local pops, SS talk, IDs. Off with national anthem. Difficult copy due to UTE QRM. (Alexander, PA) 2258 with vocal, SS talks, ID, and closing anmts. Carrier remained until 2309. (D'Angelo, PA)

FINLAND—YLE/Radio Finland, **11755** in Finnish at 0945. Also **15400** in Finnish at 1528. (DeGennaro, NY)

FRANCE—Radio France Int., **11600** via China in unid Asian language at 1235. (Brossell, WI) **9830** in SS at 1017 and **11845** in FF to West Africa at 1055. (DeGennaro, NY) **15605** with "Today in France" at 1723. (Charlton, ON) **17815** with news at 1200. (Jeffery, NY)

FRENCH GUIANA—Radio France Int., **21645** with sports in SS heard at 2108. (DeGennaro, NY)

GABON—Africa Number One, **17630** in FF at 1017. (DeGennaro, NY)

GERMANY—Deutsche Welle, **7105** in RR at 0113 and **15275** in unid language at 2010. (Jeffery, NY) **9545** at 0010 in GG. (Charlton, ON) IBRA Radio, via Julich, **15695** with EE ID at 1730 and into an African language. "Spotlight" in EE monitored at 1830. (Paszkiewicz, WI)

GHANA—GBC, **4915** with music at 2323. (DeGennaro, NY)

GREECE—Voice of Greece, **9420** with Greek talk, music at 2145. (Linonis, PA) 0219. Also **15630** in Greek at 2313. (DeGennaro, NY) 2000 with instrumental music and ID in Greek. (Brossell, WI)

GUAM—Trans World Radio/KTWR, **9865** in CC at 1012 and into EE at 1015. (D'Angelo, PA) **12120** in CC at 1240. (Brossell, WI) Adventist World Radio/KSDA, **11900** in CC at 1227. (Brossell, WI)

GUATEMALA—Radio Verdad, **4052.5** with SS religious programming at 0540. EE sign off announcements and "Radio Truth" ID and address, closing anmts in SS at 0559, followed by national anthem. (Alexander, PA) Radio Cultural, **3300** at 0953 with LA vocals, SS ID, another talk, more vocals. (D'Angelo, PA) 1027 with SS religious songs. (Brossell, WI) Radio Buenas Nuevas, **4800** with SS talks at 0158. (Brossell, WI) Radio Maya de Barillas, **3325** with songs in SS at 1029. (Brossell, WI)

GUYANA—Voice of Guyana, **3291** with music and occasional announcements at 0855. (DeGennaro, NY)

HAWAII—KWHR, **11565** with sermon at 1212. (Brossell, WI)

HUNGARY—Radio Budapest, **9690** at 0100 with news in EE. (Linonis, PA) **11830** with news at 2100. (DeGennaro, NY) **15185** in HH heard at 2000. (Charlton, ON)

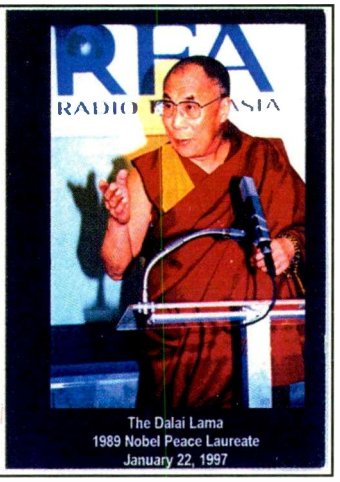
INDIA—All India Radio, Thiruvananthapuram, **5010** on at 0016 with open carrier, IS at 0018, Hindi vocal at 0020, f/by Hindi talk by man. ID at half past 0029, then flute. EE ID at 0035 and into news in EE. (D'Angelo, PA) **9445**-Bangalore with news and comment at 2100. (Paradis, ME) **10330** at 0200 with subcontinental music and anmts. Also **11585** with instrumentals at 1245. (Brossell, WI) **11620**-Bangalore, in unid language at 1043. (DeGennaro, NY) 2345 to 0000 with EE and traditional Indian music. (Linonis, PA) 0027, and **13605** in EE at 0017. (Charlton, ON) 2300 to 2330 with EE news and commentary. Weaker on //11620 and 11645. (Alexander, PA) 13710 with music to close at 1500. (Barton, AZ)

The Cypress Broadcasting Corporation uses the BBC Cypress Relay station to air several Greek language broadcasts each weekend. (Thanks Rich D'Angelo, PA)

Radio Free Asia

Created and funded by the U.S. Congress, Radio Free Asia (RFA) began in March 1996. As a surrogate broadcast network, RFA is dedicated to the free flow of accurate, timely, unbiased news, information and commentary that is beamed to Asian countries where such news reports are unavailable. It also aims to promote freedom of opinion and expression, including the freedom to seek, receive, and impart information and ideas through any medium, regardless of frontiers. Mandated to broadcast in Burmese, Cantonese, Khmer, Korean, Lao, Mandarin, Tibetan, Uyghur and Vietnamese, English is spoken only when appropriate.

RFA is headquartered in Washington, DC with offices in Asia and correspondents throughout the world. Please listen to our programs and learn more from our website at www.rfa.org.



The Dalai Lama is not the verification signer for Radio Free Asia. The card received by Rich D'Angelo was for a broadcast in Tibetan on 9365 but no site was given (it was probably Albania).

INDONESIA—Voice of Indonesia, **9525** in II at 1310. (Brossell, WI) **15149.9** at 1954 with woman in FF to 2001 when EE began with ID and news. At 2013: "That's the end of the news from the Voice of Indonesia, Jakarta." (D'Angelo, PA)

IRAN—Voice of Islamic Republic of Iran, **9635//11650** in EE at 1616, ID at 1620 and more commentary. Also **9905** in SS with talk at 0227, ID, anthem and into Koran lesson. (Burrow. WA) **11740** in AA at 2054. (DeGennaro, NY)

ISRAEL—Kol Israel, **11585** with Elvis songs and talks in HH at 0135. (Brossell, WI) **11590** at 0400 with time pips, ID, and Middle East news. Very strong. (Burrow, WA) **15760** in HH at 2022 with songs in SS. (DeGennaro, NY) **17535** in HH at 1854. (Charlton, ON)

ITALY—RAI Int., **6110** via Ascension in II at 0157, **9850** in II at 2339, **11800** in II at 0017. (DeGennaro, NY) **9840** in II at 0305. (Brossell, WI) **11880** in EE at 2026 with ID, news. (Burrow, WA) 11800 in II at 0054 with birdcall IS, bells, ID. (Charlton, ON) IRRS, **13840** with EE programming at 0850, into religious program at 0900. (Alexander, PA) 0950 with U.S.-style religious programming. (DeGennaro, NY)

JAPAN—Radio Japan/NHK, **9530** via French Guiana in JJ at 0952; **9825** in JJ to the Pacific and South America at 0858; **11920** via Singapore to Australasia at 0934; **17585** via UAE in EE to Europe at 1015; **21820** via Gabon in Italian with II/JJ lessons at 1043. (DeGennaro, NY) 6145 via Canada in EE at 0031 and 11895 in JJ at 2218. (Charlton, ON) 9695 at 1019, //6120 via Canada. (D'Angelo, PA) 9835 in JJ at 1815. (MacKenzie, CA) **11740** via Singapore in JJ at 1255. (Brossell, WI) 15195 with "44 Minutes" at 0545, **//13630**. (Barton, AZ)

JORDAN—Radio Jordan, **11690** at 1552 with pops, possible FM ID, time pips and news at 1600 when buried under QRN and UTE QRM. Possible ID and back to music at 1613. (Burrow, WA)

KUWAIT—Radio Kuwait, **9855** with Koran recitations at 2030. (Brossell, WI) **15495** in AA to Africa at 2324. (DeGennaro, NY) 1900 in AA with mostly music. (Paradis, ME) **15505** in AA at 2008. (Charlton, ON)

LIBERIA—ELWA, **4760** at 0556 with sign on IS, religious music, into EE religious programming at 0600. (Alexander, PA)

LIBYA—Radio Jamahiriya/Voice of Africa, **11635** via France with 10-minute EE broadcast at 2035. Also **15205** via France with EE ID and news at 1920, into FF at 1923. (Alexander, PA) 15205 via France in AA at 1709. (DeGennaro, NY) 1937 in AA. (Jeffery, NY) **15660** via France in AA at 1729. (Charlton, ON)

LITHUANIA—Radio Vilnius, **9875** with EE news at 2332 and "You're listening to the news from Vilnius." (Burrow, WA) 2334 with Lithuanian news, ID 2336. (DeGennaro, NY)

MADAGASCAR—Radio Netherlands Relay, **9895** with SS ID, anthem and news in SS at 0300. (Brossell, WI) Adventist World Radio via Madagascar, **3215** at 0318 with religious vocals, talks in Malagasy, ID, and sign off anmts at 0328. (D'Angelo, PA)

MALAYSIA—Radio Malaysia, **7295** with pops at 1515, "Radio 4" ID at 1522. (Burrow, WA)

MALI—RTV Malienne, **5995** at 0600 sign on with IS, FF ID, local music, and children's chorus. Weaker on **//4783**, **4835**. (Alexander, PA)

MAUIRTANIA—Radio Mauritanie, **4845** with two men talking in AA at 2319. (DeGennaro, NY)

MEXICO—Radio Educacion, **6185** in SS with Caribbean music at 1023. (DeGennaro, NY) XERTA/Radio Transcontinental de America, **4810** at 0315 with short features and IDs between segments, including an EE ID at 0330. Fair, but CODAR QRM and terrible growl made reception difficult. (D'Angelo, PA) Radio Mexico Int., **9705** with music and SS talk at 1542. (DeGennaro, NY)

MOLDOVA—Voice of Russia, Moldova, **9665** in EE/RR at 0239. (DeGennaro, NY)

MONACO—Trans World Radio Europe, **9870** at 0729 with a series of EE religious programs and IDs between each. Close down anmts at 0818 with frequencies and IS. **//11865** via Albania. (D'Angelo, PA)

MOROCCO—RTV Marocaine, **11920** in AA at 0230. (Paradis, ME) **15345** in AA at 1556. (DeGennaro, NY) 1948 in AA. (Jeffery, NY) 2007 in AA. (Charlton, ON) VOA Relay, **11720** at 2006 with Top 40 stuff and man in FF. Into Hausa program heard at 2030. (D'Angelo, PA)

NETHERLANDS—Radio Netherlands, **9895** in DD to Southern Europe at 1135. Also **11675** at 1131 in EE to 1158 close. (DeGennaro, NY) With discussion on infections at 1238. (Brossell, WI)

NETHERLANDS ANTILLES—Radio Netherlands Bonaire Relay, **9785** in EE at 1043. (DeGennaro, NY) **9845** with "Reflections from the Netherlands" at 0028. (Charlton, ON)

NEW ZEALAND—Radio New Zealand Int., **9885** with talk on a book at 0957. (DeGennaro, NY) 1025 and 1259. (Brossell, WI) **15720** with talk on soccer at 2214. (Charlton, ON) 0030 on protests in Wellington. (Linonis, PA) 0200 with news, weather, astronomical feature. (Jeffery, NY) 0400 with Pacific news. (Barton, AZ) 0451 with interview with local actors, f/by IS and closing. Then moves to **9615**. (Burrow, WA)

NIGERIA—Voice of Nigeria, **7255** in FF at 0520. (Brossell, WI) 0522 with continuous local Afro-pops and EE IDs at 0532 and 0609. FF noted at 0644 check. Also **15120** at 0628 sign on. Good, clean audio until the news at 0630 which was very distorted, in fact unintelligible. (Alexander, PA) 15120 at 1857 in EE. (Charlton, ON) **17800** at 2056 with IDs, address, music, ID at 2100 and "Theatre on the Air." (Burrow, WA)

NORTH KOREA—Voice of Korea, **9975//11735** at 1616 with ID, history of Kim

Sung Il. (Burrow, WA) **11710** at 1000 sign on with time pips, IS, man/woman with IDs, IS, more Ids, and orchestral anthem. Then into EE program with ID, more anmts, and news. No parallels noted. (D'Angelo, PA) 1040 with EE talk, ID at 1048. (DeGennaro, NY) 1303 in EE. (Brossell, WI) **11845** (unlisted) opening at 1700. Also **13760** with news at 1500. (Barton, AZ) Korean Central Broadcasting Station, **11710** with woman in KK at 1248, anthem at 1249 and off at 1250. (Brossell, WI)

NORTHERN MARIANAS—KFBS, **11580** in CC at 1215. (Brossell, WI) VOA Relay, **11740** in Asian language heard at 1445. Closed at 1500. (Barton, AZ)

PAKISTAN—Radio Pakistan, **11570** at 1558 with IS, music bridge, possible ID, and news at 1600. Off in mid-sentence at 1615. Burrow, WA) **15485** at 0112 with long talks in Urdu alternating with long Pakistani vocals, ID just before 0200, then time pips and woman with news. Sign off anmts at 0214, musical feature, quick ID, flute music until the carrier was cut. //**17880** weak under RCI but gradually overcoming RCI by 0200. (D'Angelo, PA)

PAPUA NEW GUINEA—NBC, **4890** with EE news at 1009 f/by choral music and religious message. (DeGennaro, NY) News at 1040. (Brossell, WI)

PARAGUAY—Radio Nacional, **9737** in SS heard at 0946. (DeGennaro, NY)

PERU—Radio Madre de Dios, Puerto Maldonado, **4950** with religious program in SS at 0210. (Linonis, PA) Radio Union, Lima, **6115** in SS with anmts, IDs, OA music, sound effects, commercials at 0745 to past 0900. (Alexander, PA) 0944. (DeGennaro, NY) Radio Oriente, Yurimaguas, **6188** with music and commercials at 1026. (DeGennaro, NY) Radio Huancabamba, **6536.1** in SS at 0140 to 0208 abrupt closing. (Alexander, PA) Radio Ilucan, Cutervo, **5678** at 0135 with OA music, SS pops, anmts, promos, jingles, commercials, IDs. Off at 0237. (Alexander, PA) Radio Andina, Huancayo, **4995.6** at 0145 with OA music, ID, SS talks, religious talk at 0245. Off abruptly at 0257. (Alexander, PA) 0242 with long SS talk, OA vocal, more talk, ID, close down anmts, and long choral anthem. Off at 0303. (D'Angelo, PA) Radio Huanta 2000, Huanta, **4747** in SS at 1032. (Brossell, WI) Radio Altura, Cerro de Pasco, **5014.6** at 1009 with SS host of "musical nacional" program, ID 1018 and ad string. (D'Angelo, PA) Radio Imperio, Chiclayo, **4386** at 0827 with fast-talking SS anncr. ID, TC and lively OA vocals with frequent talk-overs. (D'Angelo, PA) Radio Melodia, Arequipa, **5996.6** at 0635 with OA tunes, IDS, SS anmts. (Alexander, PA)

PHILIPPINES—Radio Pilipinas, **11720** in Tagalog at 1850. (MacKenzie, CA) **15190** in Tagalog at 1918. (Burrow, WA) VOA Relay, **9545** in CC at 1210. (Northrup, MO) **9760** with news at 1305. (Brossell, WI)

PIRATES—WMBR, **6925** at 0242 with rock, rap, ID. wbmrradio@hotmail.com for reports. (D'Angelo, PA) 0536 with IDs, pops, email address. (Alexander, PA) WMPR, **6955.2** at 0158 with rock/dance, frequent IDs by man, and occasional frequency anmt by a woman. (D'Angelo, PA) Take It Easy Radio, **6925 USB** at 0330 with nostalgia things by George Burns, Fred Waring, ID with Merlin address. (Linonis, PA) 0700 calling for support of the troops. Off at 0730. (Barton, AZ) 0245 to 9325. (Balint, OH) Free Radio Ancaster (?) **6925 USB** at 0214 with Merlin address, female vocals, "You are listening to Free Radio Ancaster…Canada" and mentioning 6920 kHz. Off at 0231. (D'Angelo, PA) Undercover Radio, **6925 USB** at 0125 with semi-Arabic, semi-rock but mainly a lot of hissy UTE noises that were claimed to be a message from Mars telling us to leave them alone and stop menacing their planet. Had some robot voices mixed in. Undercoverradio@mail.com for reports. (Zeller, OH) WHYP, **6952.6** at 0230 with ID, announced frequency around 6935, then rock. (D'Angelo, PA) Alfa Lima Int., Netherlands, **15069.6** at 2320 with techno-pop, rap, IDs, e-mail address. Also at 0144. (Alexander, PA) CWR, Crazy Wave Radio, **6305** at 0155 with "CWR" IDs, pops, address in Germany. (Alexander, PA)

PORTUGAL—RDP Int., **9715** at 0126 with long PP talk, brief music bits, more talk. Closed with anthem at 0200. //**13660**, **13700**, **15295**, and **15480**. (D'Angelo, PA) **11995** in PP at 0924, 15295 in PP to South America at 2311 and **17575** in PP with futbol commentary at 2037. (DeGennaro, NY) 17575 in PP at 1315. (Brossell, WI)

ROMANIA—Radio Romania Int., **6040** in Romanian heard at 0124 and **15285** in EE at 2155. (Charlton, ON) **11820/15140/15325** at 0450 with news, ID at 0451. (Burrow, WA) **17735** with news and current events at 2138. (Jeffery, NY) **17805** in possible AA at 1022. (DeGennaro, NY)

RUSSIA—Voice of Russia, **9480** from St. Petersburg in RR at 0233. (Brossell, WI) **9860** (Moscow) in RR at 1834. (MacKenzie, CA) 0209 with news. Also **11630** (Moscow) in SS at 2041 and **15455** (Yekaterinaburg) in GG at 1539. (DeGennaro, NY) 1900 in FF. (Paszkiewicz, WI) 1645 in GG to Europe. (Barton, AZ)

RWANDA—Deutsche Welle Relay, **17860** in GG to West Africa at 2219. (Strawman, IA)

SAO TOME—VOA Relay, **9830** at 2025 with FF announcements, EE ID at 2030. (Brossell, WI)

SAUDI ARABIA—BSKSA, **11820** with Koran recitations heard at 2045. (Brossell, WI)

SEYCHELLES—BBC Relay, **17830** at 2057. (DeGennaro, NY)

SINGAPORE—Mediacorp Radio, **6150** at 1205 interviewing the U.S. ambassador. (Barton, AZ) 1431 with news, traffic, sports and multiple "News Radio 9-3-8" and "Mediacorp Radio" IDs. (Burrow, WA) BBC Relay, **9740** to Australia and Southeast Asia at 1001. (DeGennaro, NY)

SLOVAKIA—Radio Slovakia Int., **5930** in EE at 0114. (Chandler, ON) 0057 sign on with IS, ID, brief fanfare, ID, frequencies, news. Off with address given as Box 55, not 14 as listed in the references. //**9440**. (D'Angelo, PA) 0157 signing on in FF. Also 9440 in FF at 0223. (DeGennaro, NY) 9440 in FF at 0225; "You are listening to Radio Slovakia International" at 0227. (Brossell, WI)

SOLOMON ISLANDS—SIBC, **5020** at 0930 with religious program. (DeGennaro, NY)

SOUTH AFRICA—Channel Africa, **9770** with news at 0310, "You are listening to Channel Africa from South Africa" at 0317. (Brossell, WI) **15265** with sports news at 1713, ID at 1715. (DeGennaro, NY) Adventist World Radio via Meyerton, **12105** at 2050 with religious songs and anmts in unid African language. (Brossell, WI) Radio Sondergrense, **3320** in Afrikaans at 0054. (DeGennaro, NY) 0243 in presumed Afrikaans. (Brossell, WI)

SOUTH KOREA—Radio Korea Int., **5975** with "Worldwide Friendship" program at 1623. (Burrow, WA)

SPAIN—Radio Exterior de Espana, **6055** in SS at 0149, **9660** via China in SS at 1011, **15385** in FF to West Africa and 2317, **17560** in

This Month's Book Winner

To show our appreciation for your loggings and support of this column, each month we select one "Global Information Guide" contributor to receive a free book. Readers are invited to send in loggings, photos, copies of QSL cards, and monitoring room photos to me at *Popular Communications*, "Global Information Guide," 25 Newbridge Road, Hicksville, NY 11801, or by e-mail to popularcom@aol.com. The e-mail's subject line should indicate that it's for the "Global Information Guide" column. So come on, send your contribution in today!

Our book winner this month is **Rich D'Angelo**, Wyomissing, PA. Not only does Rich provide fine logs each month but also a number of great QSL replies. He'll soon be using the 2005 edition of *Passport to World Band Radio* thanks to Universal Radio, 6830 Americana Parkway in Reynoldsburg, OH, 43068. That's the address to write to in order to get a copy of their big, free catalog of shortwave and other radio related stuff. You can also send your request to dx@universal-radio.com, or call them at 614-866-4267.

AA at 2032 and **21700** in SS at 1037. (DeGennaro, NY) **15170** in SS at 1225. (Northrup, MO **15290** at 2000 with IS, ID, news, "Day By Day" program. (Paradis, ME) **15385** at 0000 with IS, ID, EE newscast. (Charlton, ON)

SRI LANKA—SLBC, **9770** with US pops at 0036. (Charlton, ON) Tentative at 1506 with news, beautiful music format from 1513, time pips at 1530 with possible ID and frequencies, anthem and off at 1534. (Burrow, WA) 0032 with news by woman, ID and into program of swing music. Also at 0037 with continuous pop instrumentals, time check, and ID at 0100. Also 11905 at 0024 with Hindi vocal, talk by man and woman, ID, 4-plus-1 time pips and more Hindi vocals. (D'Angelo, PA) 15748 at 0235 with oldies and ID. Also some gospel songs and EE religious programming. Nominal **15745**. (Alexander, PA) Deutsche Welle Relay, **9720** at 2200 with talk about German investments in the Middle East. (Linonis, PA)

SWEDEN—Radio Sweden, **6040** in SS at 0100 with IS and ID. (Charlton, ON) **9880** at 2130 with talk about immigration in Sweden. (Linonis, PA) Also on **15260** at 1230 with news, weather, sunrise/sunset times, ID. (Northrup, MO)

SWITZERLAND—Swiss Radio Int., **9885** at 2331 announcing the end of SW broadcasts. (DeGennaro, NY) **15515** via Germany in AA at 1722. (DeGennaro, NY) **11905** at 2330 announcing their coming demise in October. (Linonis, PA) **13645** at 2000 with anmt of leaving shortwave. (Paradis, ME) **15555** with FF sports event at 1803. (Brossell, WI)

SYRIA—Radio Damascus, **13610** at 2048 with brief news interspersed with Middle East music. (Burrow, WA) 2336 in AA. (DeGennaro, NY)

TAIWAN—Radio Taiwan Int., **5950** (WYFR), **9680** (WYFR) and **15465** at 0220 with music, ID, "Jade Bells and Bamboo Pipes." (Burrow, WA) **9280** in CC at 1225. (Northrup, MO) **15130** via WYFR in FF at 2004. (Charlton, ON)

TAJIKISTAN—Voice of Russia, **11500** in presumed Hindi at 1243. (Brossell, WI)

THAILAND—Radio Thailand, **9680** at 2030 with chimes, EE news, ID, chimes again at 2045. (Alexander, PA) VOA Relay, **9770** in Mandarin to Central Asia at 1408. (Strawman, IA) BBC Relay, **11945** in CC at 1230. (Brossell, WI)

TUNISIA—RT Tunisienne, **7190/7275** in AA at 0518 with presumed news at 0525, possible ID at 0530 and music at 0532. (Burrow, WA) 7190 at 0518, **9720** at 0239 and **15450** at 1310, all in AA. (Brossell, WI)

TURKEY—Voice of Turkey, **6140** at 0340 with music, IDs, schedule, IS, and off at 0348. (Burrow, WA) **9460** in TT at 0229. (Brossell, WI) **15350** in TT at 1527. (DeGennaro, NY)

UKRAINE—Radio Ukraine Int., **7545** at 0000 with IS, ID, schedule. (Burrow, WA) 0030 with discussion on computers and technology in Ukraine. (Linonis, PA)

UNITED ARAB EMIRATES—UAE Radio, Dubai, **13675** at 0330. Was looking for EE but only continuous AA music. Then off in mid-song at 0336, **//15400**. Also **15395** at 1330 but no EE here either, nor at scheduled 1600 to 1615. Also **21605** at 1330 with English missing; only continuous local AA music. (Alexander, PA) **15435** with AA talks at 1536. (DeGennaro, NY) Adventist World Radio via UAE, **15225** at 1530 with ID and addresses. (Burrow, WA)

UZBEKISTAN—Radio Tashkent, **9715** in presumed Uzbek at 0130 with interview, clear ID, and off at 0130. (Linonis, PA) **11905** at 2029 with IS, possible ID, music bridge, schedule, news. Clear ID at 2041. (Burrow, WA) 2030 with IS, ID, and into program. (Paradis, ME) 2130 with IS and opening EE ID and into music. (Alexander, PA)

VATICAN—Vatican Radio, **11625** in FF at 2038 and **13765** in EE at 1734. (Charlton, ON) **15570** opening monitored at 1528. (DeGennaro, NY)

VENEZUELA—Radio Nacional, via Havana, **11760** with multiple SS IDs at 2310 and program about the election in Venezuela. (D'Angelo, PA) **13740** at 1858 in SS with IS, ID, possible schedule. Closed at 1958 with ID and QSL address. Transmitter off at 2002. (Burrow, WA) **12000** in SS at 1453 and 17705 in SS at 2048 (*all via Cuba—gld*).

VIETNAM—Voice of Vietnam, **6175** via Canada in EE at 0116. (Charlton, ON) 0123. (DeGennaro, NY) **9725** via Austria at 1700 with IS, ID, news. (Burrow, WA) **12020** at 1236. (Brossell, WI)

ZAMBIA—Christian Voice (p) **4965** at 0100 with religious programs in EE. (Linonis, PA) 0418 with EE religious programs. (Paszkiewicz, WI) Radio Zambia, **4910** heard at 0300 in unid language. (Paradis, ME)

And it's bottom of the barrel time! An Everest of thanks to the following who provided the meat this time: Ciro DeGennaro, Feura Bush, NY; Sheryl Paszkiewicz, Manitowoc, WI; Brian Alexander, Mechanicsburg, NY; Rick Barton, Phoenix, AZ; Jack Linonis, Hermitage, PA; George Zeller, Cleveland, OH; Stewart MacKenzie, Huntington Beach, CA; Bruce Burrow, Snoqualmie, WA; Ray Paradis, Pittsfield, ME; Rich D'Angelo, Wyomissing, PA; Dave Balint, Wooster, OH; Dave Jeffery, Niagara Falls, NY; Robert Brossell, Pewaukee, WI; Robert Charlton, Windsor, ON; Mark Northrup, Gladstone, MO and Jerry Strawman, Des Moines, IA.

Thanks to each one of you! Until next month—good listening! ■

by Rich Arland, K7SZ, richard.arland@verizon.net

Fresh Air, Cooler Temps—It's Antenna Time!

Right *now* is a good time to investigate antennas with an eye toward erecting and even improving existing antennas in your antenna farm. This month we'll cover several HF antenna options and provide some ideas for VHF/UHF antennas that will enhance your listening post.

Wire Versus Active Antennas: The Low Down

Wire antennas are the workhorses for the shortwave listener and ham radio operator. The military also places a lot of faith in the lowly wire antenna. But why? First of all, wire antennas are cheap and easy to erect. Second, wire antennas do not require any intensive maintenance as do directional, rotatable arrays. True, gain antennas of the steerable variety (like Yagis, quads, or log periodic arrays) provide not only increased gain for the reception and transmission of signals in a given direction, but they also provide large amounts of attenuation off the sides and back of the array. In short, you not only gain increased signal strength in the direction in which the array is pointed, you also benefit from the rejection of unwanted signals from areas not favored by the beam antenna's beam width and directivity. The down side of rotatable antennas is their expense, high visibility, and increased maintenance problems.

Simple wire antennas, on the other hand, also offer ease of erection, simplicity of operation, and require virtually no regular maintenance, except for replacing the feed line every few years. For all but the most exacting HF listening and/or ham radio use, wire antennas give the active operator everything needed to pursue the hobby to the maximum degree with little downside or overhead operating costs.

The visibility factor of antennas really comes into play in these days of Draconian lease/owner covenants imposed by local zoning authorities and homeowner groups. So called "stealth" antennas, made from #28-32 AWG wire and strung from a balcony or convenient window out to a nearby tree or fence, are virtually invisible to most folks in the neighborhood. "Out of sight out of mind," if you get my drift.

Testing Some HF Antennas

Recently I undertook a quest to test some HF antennas with an eye toward what the readers of this column might have in mind for their monitoring posts. Here's what I've found.

The Par Electronics EF-SWL Antenna

The first antenna I'd like to showcase is the SWL sloper from Par Electronics, Inc. (www.parelectronics.com). Company President Dale Parfitt produces some first class antenna and radio-related products in his Glenville, North Carolina, plant. Among them is the **EF-SWL**, a 45-foot end-fed antenna designed for the HF listener and SWL with limited space.

The 45-foot-long EF-SWL antenna from Par Electronics covers from 1 to 30 MHz.

Although primarily meant to be erected as a sloper, this antenna can be configured as an end-fed wire or end-fed inverted-Vee, whichever will fit your physical space.

What makes this antenna different from other end-fed designs is that Dale includes a multi-tap 9:1 binocular core balun transformer at the feedpoint, which, when properly strapped, can help reduce or totally eliminate local noise pick up. Since noise is our enemy, any method available to reduce or possibly eliminate locally induced noise is a welcome addition to the antenna farm.

The 9:1 balun transformer has both the primary and secondary ground leads brought out to 10-32 stainless steel studs on the feed point insulator. The default connection (as it comes from the factory) has both these grounds strapped together for grounding close to the antenna-matching unit. Due to noise and RF generated "hash" in and around the home (primarily from fluorescent lighting, light dimmers, fish tank heaters, plasma TV sets, etc.), the shield of the coaxial cable feeding this antenna can become part of the antenna system and induce additional noise into the receiver front end. Depending upon the efficiency of the receiver ground, more noise may be present with these two terminals strapped.

To help reduce this additional noise, the EF-SWL antenna balun has the option to ground either the primary or secondary at the antenna end of the coaxial cable. By grounding the #1 terminal (receiver side of the balun) or the #2 terminal (the antenna side of the balun) you can reduce or possibly eliminate this extra noise pick up. Alternatively, you could leave both terminals ungrounded. Use whichever strapping option results in less noise.

Dale cautions that you should *NOT* rely on your receiver's S-meter to monitor any noise reduction, but instead tune in a weak station and try the various strapping options, listening carefully to the background noise. It is a good idea to tune weak stations on a variety of frequencies across the entire spectrum that you intend to monitor to ensure that your strapping option(s) yield a noise reduction on all frequencies.

I installed the Par EF-SWL HF sloper antenna in April at K7SZ "headquarters." The feedpoint is approximately 28 feet off the ground (secured to the side of my 55-foot tower) and terminates near my chain link fence on a steel pole 10 feet tall. The #1 terminal (the receiver side of the antenna) on the EF-SWL balun is grounded to the side of my tower, which is well bonded and grounded on all three legs at the base. Overall results are impres-

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RSGB & Newnes, 2002 Ed. 256 pages.A definitive design guide for sending and receiving radio signals. Together with the powerful suite of CD software included with this book, the reader will have a complete solution for constructing or using an antenna; everything but the actual hardware!

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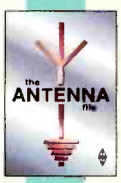

The Antenna File

RSGB. ©2001. 288 pages. **$34.95.**
Order: **RSTAF**
50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masts and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on design and theory, and 9 Peter Hart antenna reviews. Every band from 73kHz to 2.3GHz!

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Amateur Radio Mobile Handbook

RSGB. 2002 Ed., 128 pages. The Amateur Radio Mobile Handbook covers all aspects of this popular part of the hobby. It includes operating techniques, installing equipment in a vehicle and antennas, as well as maritime and even bicycle mobile. This is essential reading if you want to get the most out of your mobile station.

Order: RSARMH **$21.00**

HF Antenna Collection

RSGB, 1st Ed., 1992. 233 pages. A collection of outstanding articles and short pieces which were published in Radio Communication magazine during the period 1968-89. Includes ingenious designs for single element, beam and miniature antennas, as well providing comprehensive information about feeders, tuners, baluns, testing, modeling, and how to erect your antenna safely.

Order: RSHFAC **$16.00**

Practical Projects

Edited by Dr. George Brown, M5ACN
RSGB 2002 Ed, 224 pages
Packed with around 50 "weekend projects," Practical Projects is a book of simple construction projects for the radio amateur and others interested in electronics. Features a wide variety of radio ideas plus other simple electronic designs and a handy "now that I've built it, what do I do with it?" section. Excellent for newcomers or anyone just looking for interesting projects to build.

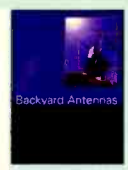
Order: RSPP **$19.00**

The Antenna Experimenter's Guide

RSGB. 2nd Ed, 1996. 160 pages. Takes the guesswork out of adjusting any antenna, home-made or commercial, and makes sure that it's working with maximum efficiency. Describes RF measuring equipment and its use, constructing your own antenna test range, computer modeling antennas. An invaluable companion for all those who wish to get the best results from antennas!

Order: RSTAEG **$28.00**

Backyard Antennas



RSGB, 1st Ed., 2000, 208 pages. Whether you have a house, bungalow or apartment, Backyard Antennas will help you find the solution to radiating a good signal on your favorite band.

Order: RSBYA **$30.00**

IOTA Directory - 11th Edition

Edited by Roger Balister, G3KMA.
RSGB, 2002 Ed., 128 pages
This book is an essential guide to participating in the IOTA (Islands on the Air) program. It contains everything a newcomer needs to know to enjoy collecting or operating from islands for this popular worldwide program.

Order: RSIOTA **$15.00**

Low Power Scrapbook

RSGB. © 2001, 320 pages.
Choose from dozens of simple transmitter and receiver projects for the HF bands and 6m, including the tiny Oner transmitter and the White Rose Receiver. Ideal for the experimenter or someone who likes the fun of building and operating their own radio equipment.

Order: RSLPS **$19.00**

HF Amateur Radio

RSGB. 2002 Ed.
The HF or short wave bands are one of the most interesting areas of amateur radio. This book takes the reader through setting up an efficient amateur radio station, which equipment to choose, installation, and the best antenna for your location and MUCH more.

Order: RSHFAR **$21.00**

Radio Communication Handbook

Edited by Dick Biddulph, G8DPS and Chris Lorek, G4HCL.
RSGB, 7th Ed., 2000, 820 pages.
This book is an invaluable reference for radio amateurs everywhere. It also provides a comprehensive guide to practical radio, from LF to the GHz bands, for professionals and students.

Order: RSRCH **$50.00**

RSGB Prefix Guide

By Fred Handscombe, G4BWP.
RSGB. 6th Ed., 2003. 48 pages.
This book is an excellent tool for the beginner and the experienced hand alike. Designed with a "lay flat" wire binding for ease of use the new "Prefix Guide" is a must for every shack.

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sive—much better than the 30-foot end-fed wire I originally had connected to my trusty ICOM R-75 HF receiver.

While I do a small amount of international broadcast SW listening, my main listening activities are centered on utility DXing, in particular MILCOM frequencies. The Par EF-SWL HF sloper works very well for this particular application. Total length of the antenna is only 45 feet. However, when properly installed, this sloper performs extremely well, helping to reduce the local noise pick up and enabling me to snag much weaker MILCOM signals.

The Par EF-SWL HF antenna comes with instructions on how to install and properly strap the balun. In side-by-side comparisons between the 30-foot end-fed wire I originally used and the newly erected EF-SWL sloper, the Par antenna constantly yielded better signal strengths and lower noise levels.

If you have a limited amount of real estate and are not hampered with restrictive homeowner covenants, I highly recommend that you get one of these antennas. This is a relatively low-profile antenna that won't draw undue attention from the neighbors or landlord. Remember, it is always better to put up an external (outside) wire antenna than to rely on indoor wire antennas or the extremely electrically short and preamplified active antennas.

Active Versus Passive Antennas

Before we begin discussing two MFJ active antennas, we need to revisit the idea behind an "active" antenna. A *true* active antenna provides little or no preamplification. Instead, the electronics inside a true active antenna control box perform impedance matching duties to couple an extremely physically and electrically short whip element (which normally presents an impedance of several thousand ohms) to the low (50-ohm) input port of the HF receiver. Some high-end receivers offer a medium-impedance input port, normally around 500 to 600 ohms. While this port is closer to the impedance of the short whip, it still is nowhere near a perfect match, resulting in massive signal attenuation at the receiver's front end.

The majority of "active" antennas offered today do not match impedances. Instead they have an extremely wideband preamplifier which boosts the signal received on the short whip to levels that are useable to the receiver. This has a major down side: noise. The solid-state devices in the active antenna preamplifier stage induce thermal noise (the noise that the electrons make moving through the solid-state devices) as well as amplify *everything* the antenna intercepts. This includes the desired signal, band noise, and externally produced noise. While your S-meter may show an increase in signal strength when using the preamplifier, much of this visible increase is noise. Therefore, it is highly advisable to use restraint when dialing in any preamplification on the active antenna control box.

The MFJ 1020C Active Antenna

MFJ Enterprises, those friendly folks from Starkville, Mississippi, has a long history of providing a wide variety of after-market add-ons for the radio hobbyist. These include several active antennas for the antenna-challenged among us. I had the opportunity to use several of their antenna products over the last several months. Here's what I learned.

The **MFJ 1020C** is one of several models of active antennas that use a built-in whip antenna. Alternatively, the unit can function as an independent preamplified antenna tuner by coupling it to an external wire antenna. The 1020C covers a frequency range from 300 kHz to 40 MHz with an adjustable gain and attenuation of +10 dB to –10 dB using a front panel control. There is a front panel-mounted bandswitch and tuning control, which are used to select the desired band and peak the target signal. The operator can bypass the internal workings of the unit by using the BYPASS control. Input/output ports are standard dual SO-239 coaxial connectors. The 1020C is powered by either an internal 9-volt battery or via an external 9- to 12-VDC "wall-wart" power supply that terminates in a 3.5-mm coaxial power plug. The unit draws 45 mA so, as you might expect, the internal 9-volt battery gets sucked down fairly quickly. Word to the wise: turn off the control box when it's not in use.

The MFJ-1020C is an ideal active antenna for folks who travel extensively and don't have access to a longwire antenna.

I tried both options and concluded that, in my particular location, using this unit as an antenna tuner coupled to an end-fed 30-foot wire (after removing the whip antenna element) was the way to go. The built-in whip was too susceptible to locally generated noise. However, when using the unit as an antenna tuner between a wire antenna and my ICOM R-75 receiver, it worked very well. The MFJ 1020C is a good choice should you want the option of using an active antenna and a tunable antenna-matching device for existing wire antennas. This is an ideal unit to use while on the road, say from a motel room where you don't have access to an external antenna.

The MFJ-16010 antenna tuner is a cost-effective method of connecting an end-fed or coax-fed antenna to your receiver.

The MFJ 16010 Antenna Tuner

The **MFJ 16010** is a small passive antenna tuner designed for the ham radio operator, but I found that it also works quite well as an in-line antenna tuner for shortwave listening. At about half the price of the MFJ 1020C discussed previously, it's an economical way to provide impedance matching and selectivity ahead of the receiver front end. The added benefit of using the MFJ 16010 tuner is that it is entirely passive, which means no internally generated solid-state noise, no wall-wart power supply to contend with, and no batteries that need replacing. These are big pluses.

The MFJ 16010 tuner is a simple "L"-type device that has been a long-time favorite of ham radio operators using end-fed antennas with a suitable RF counterpoise. One nice thing about this "L" configuration is that you can reverse the input and output connections to gain added impedance and tuning flexibility. Depending on the inductive and capacitive reactances that come into play on a particular antenna installation, your best match may be realized when the antenna is connected to the "Radio" port and the receiver is connected to the "Antenna" port. Honest, I'm not kidding.

The MFJ 16010 tuner has dual SO-239 coaxial ports on the back of the unit for connecting your antenna and radio and a capacitance control and a multi-position inductance switch on the front panel. This unit is ultra simple to connect and use.

The adjustments on the 16010 tuner are a bit broad. Start by centering the capacitor control to mid range. Then step through the various inductor settings, noting an increase in band noise. There might be two or three inductor settings that will yield a noise increase, so start with the first one and slowly rotate the capacitor control for a noise peak. This may be a very broad peak, so tune carefully. Do this with all the inductor settings that initially give an increase in background noise. There may be more than one "optimal" setting for these controls, so use whichever one provides the best reception. If you can't get a good noise peak using the conventional hook up, reverse the input and output connections on the tuner and try it again. As with the Par EZ-SWL, *do not use* the receiver's S-meter as an indicator—use your ears instead.

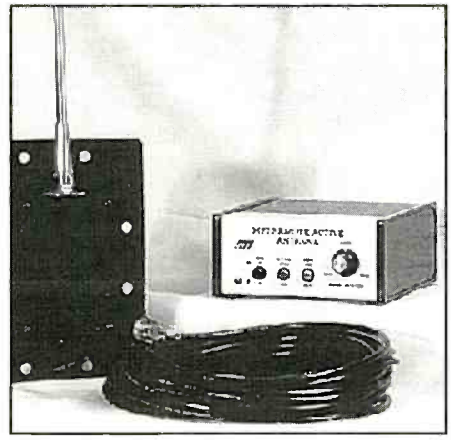
If you need a cost-effective method of connecting an end-fed or coaxially fed antenna to your receiver, I recommend the MFJ 16010 antenna tuner.

The MFJ 1024 Remote Active Antenna

The **MFJ 1024** is the company's high-end active antenna and features a remote, externally mounted whip receiving module coupled with a switching arrangement that allows the connection of a second wire antenna. The receiving module/whip is mounted on the exterior of your house, and a run of RG-58 coaxial cable connects the module/whip assembly to the base unit that sits next to the radio inside your shack. The 1024 covers 50 kHz to 30 MHz. Power for this unit is furnished by a 12- to 15-VDC "wall-wart" terminated in a 2.5-mm subminiature coaxial power plug.

The 1024 has dual receiver output ports consisting of RCA phono connectors. Either of two receivers is selectable from a front panel-mounted push button switch. There is an attenuator switch, also mounted on the front panel, which will allow you to select either 0 dB or -20 dB of attenuation.

Start the tuning process with the attenuator control on the "0 dB" position. MFJ



MFJ's 1024 is the company's high-end active antenna with remotely mounted whip antenna.

recommends that the initial setting of the GAIN control be at the 9 o'clock position. Advance the GAIN control until the desired signal strength is reached on your receiver. In the case of strong signals you might have to reset the ATTENUATION control to -20 dB to provide a lower input signal to your receiver and reduce RF front-end overload. This unit has no band selection or controls to peak an incoming signal via an LC network.

The internal preamplifier of the MFS 1024 can be bypassed by pushing the PWR ON/AUX switch to the AUX position. This cuts off the power to the preamp module and the remote antenna and allows direct connection of your receiver to the AUXILLARY antenna jack on the rear of the unit. Essentially, this provides you with a way to connect both a wire antenna *and* the amplified remote antenna to your receiver. You can select either antenna by cycling the PWR ON/AUX switch. The GAIN control is not operational when using the AUXILLARY antenna.

The MFJ 1024 provides flexibility by combining two antennas (the amplified remote antenna and an external non-amplified wire antenna) to one of two receivers. Using the amplified antenna produced higher signal strengths, along with associated higher noise levels, compared to the 30-foot end-fed wire antenna that was also connected to the 1024. I believe that these higher noise levels were directly related to the placement of the remote unit/whip antenna near the shack window. Mounting the remote unit/whip on a roof peak, away from the main portion of your dwelling, may go a long way in reducing this locally produced unwanted noise.

All in all, the MFJ 1024 works as advertised and definitely provides additional flexibility by allowing the HF listener several antenna/receiver options.

VHF/UHF Antennas

Having covered some HF antenna options, lets now look at some VHF/UHF antenna ideas that will definitely enhance your monitoring post. The nice thing about antennas for above 30 MHz is their size. As you go up in frequency the size of the antenna elements decrease.

Without a doubt, one of the most economical and cost-effective VHF/UHF receiving antennas is the one-quarter wave ground plane. This is the workhorse of the scannist and MILCOM listener, as well as the ham radio operator. The *ARRL Antenna Book* (available from the American Radio Relay League, www.arrl.com, for $39.95) is probably the most informative publication you can find on antennas and should be in *every* radio hobbyist's library. This book has formulas, charts, theory, and actual construction projects for all types of antennas. It is a readable text and is absolutely essential for anyone who wants to understand and build effective antennas to pursue their hobby.

Using the formulas, tables, and examples in the *ARRL Antenna Book* you can scale ground plane antennas for any frequency you want to monitor. Construction of these antennas is, for the most part, ultra simple using inexpensive parts. Taking a quarter-wavelength ground plane antenna, as described on page 18-23 of the *Antenna Book* (20th Ed.) and applying the formulas found elsewhere in the book, the average scannist can scale this design to any frequency from 30 MHz to 900 MHz with excellent results. Corner reflectors (pgs 18-16/17) offer a simple, low-cost gain antenna (between 10 and 15 dB) that is easily duplicated. Again, by applying the formulas in the book, you can scale this design to cover frequencies from 200 to over 900 MHz and fix-mount them for coverage in specific directions.

A Word About Directional Antennas

It is not unusual to have a multi-element VHF/UHF Yagi antenna that exhibits some unbelievable forward gain figures in a relatively compact package. This translates into being able to hear (or "work" if you're a ham) much weaker VHF/UHF signals at extended distances from your monitoring post. That's the nice part. The down side is the fact that to fully utilize one or more of these multi-element gain antennas you almost always have to employ some form of rotator to turn the array toward the area in which you're interested. As you turn the antenna in a given direction, the front-to-side and front-to-back attenuation figures of these antennas reduce signals that are not aligned with the directive plane of the antenna. This can be either good or bad, depending on your perspective.

Side-and-back rejection of unwanted signals is definitely a good thing. However, what happens when you need to hear distant VHF/UHF stations in multiple directions? Unless you're willing to fix-mount several gain antennas in azimuth, you're going to miss some of the action. Directional antennas are just that: directional. They peak a signal in the directive plane of the antenna and reject signals from the sides and back of the antenna.

Omni-directional antennas, on the other hand, receive equally well (or poorly, whichever the case may be) in all directions. By using a combination of directional and omni-directional antennas, you will greatly add to the flexibility of your monitoring post.

For those of you out there who don't feel like building your own antennas or possibly modifying an existing FM/VHF/UHF TV antenna to cover the action bands, there is always the commercially produced antenna route. Grove Enterprises offers two excellent scanning antennas: the omni-directional Scantenna from Antennacraft and the Grove Scanner Beam II, a directional antenna covering 30 MHz to over 900 MHz. RadioShack also has several omni-directional scanner antennas available. At K7SZ I use an omni-directional, wideband Diamond discone antenna, which serves me very well on all bands from 50 MHz through 1 GHz.

Stay Tuned For More Tuning Tips

That's it for this month, gang. Next month we'll examine some of the VHF/UHF antenna offerings from Grove, RadioShack, and Diamond, and I'll present an idea for modifying a RadioShack FM antenna to cover either the VHF aeronautical band or high-band VHF.

Don't forget, there will be an annual Simulated Emergency Test (SET) in October, so please take advantage of this opportunity to get out with a local ARES/RACES/REACT or other emergency communications group and get some training.

Remember: Preparedness is ***NOT*** optional! ■

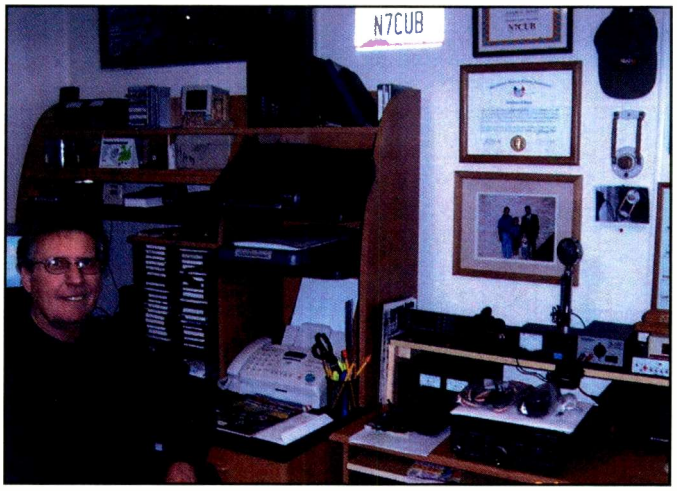
Antenna And Accessory Sources

Par Electronics, PO Box 645, Glenville, NC 28736; Phone: 828-743-1338; Fax: 828-743-1219.

MFJ Enterprises, Inc., PO Box 494, Mississippi State, MS 39762; Phone: 662-323-5869; Fax: 662-323-6551.

Congratulations To Joe Juhasz, N7CUB of Arizona

Pop'Comm reader Joe Juhasz of Arizona tells us, "I've been enjoying *Pop'Comm* for nine years and have been a subscriber for three years. My first contact with shortwave radio came while in the Air Force in 1956. A buddy had a Zenith radio and we heard the BBC. SW stayed with me until 1961 when I met and married my wife Linda (still married after 43 years!). I still found time to build various SW radios from kits and had long wires running everywhere. I also built four-channel crystal CB radios from kits. There wasn't too much radio traffic back then in the early '60s.



October's "V.I.P Spotlight" winner, Joe Juhasz, N7CUB, at his radio post in Mesa, Arizona.

In 1968 I bought my first six-channel Johnson CB set and convinced four other guys I worked with to do the same. It sure helped in deciding where to meet for lunch, at least until our boss showed up at our secret lunch spot. (No one knew he was a ham and that he also had a CB—oh well, one more person for lunch!)

The year 1972 brought on the CB craze in Chicago. I bought a Johnson a 23-channel AM radio. I must admit having a good time learning all those 10-codes. I met some really nice people on CB and joined a sideband club, bought a Cobra AM/SB CB radio; forget the 10-codes as I had to learn the Q-codes. By this time I had several RadioShack scanners, crystal controlled, of course. (Whatever happened to all my crystals?)

While on CB I learned about something called "skip." To be perfectly honest, to this day I would rather listen than talk, but I could not resist talking around the world, even though it was illegal to do so. Maybe out of fear of getting caught or just guilt, I started going to class for ham radio. I received my Novice license in 1976, WD9AII, and my Tech and General license in 1977. I'm still active today with the vanity call of N7CUB, but I would still rather listen than talk.

Besides my Pentium 4 computer with scanner programs, I have a Uniden BC-780 XLT, an ICOM IC-2410 dual bander, IC-229H, and Kenwood 440. In my truck I have a Yaesu FT-100D with an Atas 100 motorized antenna, and a Uniden BC-350C scanner. I'm 66 years old and retired, and without a doubt this is the best job I ever had. Thanks a lot for giving me the chance to talk about my hobby; *Pop'Comm*—keep the excellent articles coming!" ■

Popular Communications invites you to submit, in about 300 words, how you got started in the communications hobby. Entries should be typewritten, or otherwise easily readable. If possible, your photo should be included.

Each month, we'll select one entry and publish it here. 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 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: "V.I.P. Spotlight," *Popular Communications*, 25 Newbridge Road, Hicksville, NY 11801 or e-mail your entry to popularcom@aol.com.

by Harold Ort, N2RLL, Editor

New-Tronics Antenna's Hustler SCB 11-Meter Mobile Antenna

If you're into CB or ham radio you're familiar with New-Tronics Hustler antennas. They've been around for over 40 years, originally in Cleveland, Ohio. Since 1985 Hustler has been manufactured and marketed by New-Tronics Antenna Corporation. I mention their longevity because if you're new to CB or ham radio, you owe it to yourself to check out their great products.

Here at *Pop'Comm* we see a lot of CB and ham antennas; some are good, a few aren't so good, and then again, a small quantity is outstanding. The Hustler mobile 11-meter CB antenna falls in that category!

Hustler has lots of mobile mounts, including their Professional Stainless Steel Series ball mounts, bumper mount, trunk lip mount, and RV mounts, but I decided to use the Hustler magnetic mount, MBM, which retails for $19.95 and comes complete with 16 feet of RG-58U coax and attached PL-259 connector. It's ready to accept a standard 3/8-inch x 24 (a standard mobile antenna stud measurement) and holds an antenna

Here's the Hustler mobile CB SCB antenna on the vehicle.

The short stainless steel Quick Disconnect is perfect when garaging your vehicle or stopping in public areas; just push down and twist the assembly, and the antenna comes off for storage.

The top stainless steel whip is adjusted with a standard screwdriver; you don't have to hunt for yet another Allen wrench!

up to 48 inches. The total length of the separate antenna portion with 22-inch shaft, center-loaded coil, and whip is about 55-inches. It retails for $34.95. And because today it makes sense not to advertise the radio in your vehicle, I also use the Hustler Quick Disconnect gizmo. This short all stainless steel locking assembly attaches to the magnetic mount and the antenna attaches to the Quick Disconnect. Going shopping at the mall? Simply push down and twist on the antenna at the Quick Disconnect and the spring-loaded compression assembly releases the antenna for easy storage on the floor or in your trunk. Nothing could be easier. It's a heavy duty assembly that sure makes life a lot easier!

Quality, Performance, And The Bottom Line

Installing the Hustler CB antenna was a snap. Insert the stainless steel whip into the top of the spring on the coil, screw the bottom shaft into the magnetic mount (or the Quick Disconnect as I did), stick the mount to the vehicle, route the cable to your CB, and you're on the air. Since power-robbing SWR (standing wave ratio) is always a concern, I connected an MFJ SWR/wattmeter between the CB and antenna and at Channel 19, where I usually operate; the SWR was 1.5:1. Moving the whip up slightly—perhaps a quarter-inch—increased the SWR slightly, so I simply left it alone. I've been into mobile CB and ham radio long enough to know how much of a pain in the posterior it can be to constantly adjust a mobile antenna for a little better SWR, and frankly there's nothing like being able to set it on the roof and roll, which is what I was able to do with this Hustler antenna!

Even though the magnetic mount is a super-strong five-inch magnet I hand tested the assembly and the antenna by bending it back as if in a constant highway-speed wind. Bending it back nearly 45 degrees—a lot more than the wind would do—the beefy magnet didn't lift from the vehicle!

The antenna itself looks slick; my coil is red. Hustler tells me it's also available in white. At first I was concerned about using a magnetic mount for a center-loaded antenna that's 55 inches long. I use it on the roof of our car and it withstands turnpike speeds with no problems. Certainly a sane person wouldn't put it on the top of a van or SUV; get their trunk lip mount ($22.95) which will allow you to mount the antenna a little lower on the SUV-type vehicle and with the small adjustable swivel ball, you'll be able to adjust the antenna for vertical in seconds.

Signal reports using two different radios; a Cobra 148 and a Midland 77-250CXL were solid copy. I use this antenna with CB on my many trips to hamfests to listen and talk with the professional drivers. There are a lot of antennas out there; some names you know and others that I've only recently heard about from readers who travel a lot more than I do. My advice would be to stick with a known, reputable company that also offers an excellent line of amateur antennas (both base and mobile) and stands behind their products.

For more information on this Hustler antenna or their complete line of mobile and base antennas, call 940-325-1386 (order line is 877-994-9499) or write to New-Tronics Ltd., One Newtronics Place, Mineral Wells, TX 76067 or visit them on the Web at www.new-tronics.com. Be sure to tell them you read about their SCB-11 in *Popular Communications*. ■

by Steve Douglass, webbfeat@1s.net

Storm Of The Year: A Personal Account Of What It's Like To Be In A Tornadic Storm

Although by the time you read this the leaves are—as we say here in Texas—"fixin" to fall, I just have to tell you about the monster storm that roared through my town in late June. It caught almost everyone by surprise because it wasn't forecast to be a severe weather day.

As a storm spotter for the city I live in, I have written about my weather-related adventures in *Pop'Comm* before. I have stated (the obvious) how important solid radio communications links can be in times of trouble. On June 21, when a potential killer storm threatened my community, those communications links were pushed to the breaking point and beyond. Some links proved to work wonderfully, others failed miserably. Others (just by monitoring them) provided life-saving information.

A Growing Threat

On that day, just to the northwest of Amarillo, a small thunderstorm began to grow. I knew it was there because I had done my daily afternoon check of the National Weather Service (NWS) radar for my area on the Internet. I had also checked out the hazardous weather forecast for the day, and although we had a slight chance of some severe thunderstorms, the chances for them to turn tornadic were slim or next to none.

The previous day we had had some real heavy rain-producing storms (with some small hail) and the same was forecast for today. Spotter activation was unlikely so I didn't even bother to gas up the car as I usually do during storm season. Besides, our severe storm season usually peaks in late May and early June and, as a result, I had dropped my guard and planned to take the day easy, playing with the grandkids and doing a bit of writing.

However, a unique set of circumstances set in motion a chain of events that turned your run-of-the-mill thunderstorm into a monster that would inflict over $100 million in damage to my city.

Two photos of what could have been a huge tornado threatening to touch down just a quarter-mile away from the author. (Photo by Steve Douglass)

Now as I understand it (as the NWS would explain the next day) various macro-weather affecting "boundary-areas" existed just northwest of the city along the Canadian River breaks. In layman's terms, storms the night before had collapsed and sent out rippling waves of energy (like rocks dropped in a calm pool causing opposing waves) that collided with each other, making the normally small storm grow at an amazing rate. Since the moisture had nowhere to go but up, there was tremendous lift, resulting in a severe thunderstorm.

But just because the storm is big and severe doesn't mean it will spawn tornados. The formula for making a tornado is LIFT+SHEAR AT ALL LEVELS=TORNADOS. What is shear? Shear is best explained as winds at different levels moving in opposite directions. A contributing factor that increased shear that day was a weak low-pressure system in a neighboring county and a weak cold front in the northern Texas Panhandle that was slowly moving south. All these weather factors conspired to create a huge super-cell storm that began rotating like a top.

Not Quite Impressed—Yet

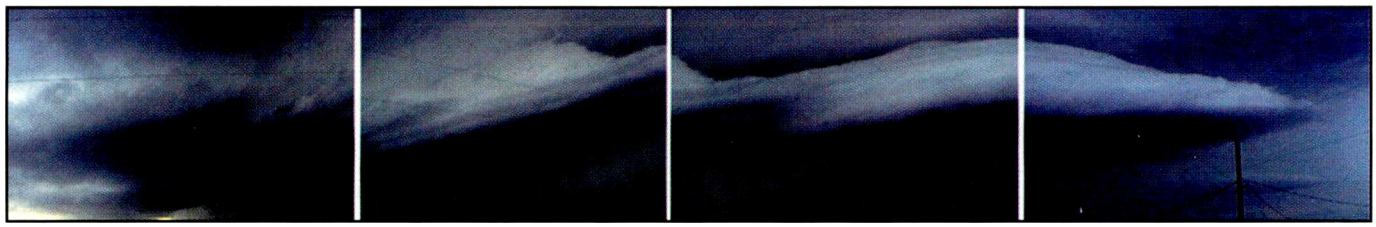
While saying goodbye to the grandkids, as I buckled them in their mom's car, I glanced to the north and saw the first storm towers shooting up. I was not impressed. Since the risk of severe weather was "slight," from the look of things the storm was going to be another "toad floater," like those of the other night, and would probably stay north of the city. Concerned, my daughter Jennifer asked me, "Are we going to have bad storms today?" "Probably some good rain but that's about it," I replied. Boy, was I wrong!

An hour later, as I sat in front of my computer writing, I monitored a radio-page from the NWS (on a frequency reserved for alerting emergency management officials) requesting personnel to man the Emergency Operations Center (EOC) and alerting key managers that severe weather was forecast for the city.

Interesting, I thought. They must be predicting heavy rains for the city just like those that nearly drowned the small town of Gruver the previous night, when a heavy precipitation storm parked itself on the town and dropped over six inches of rain in as many hours.

I still wasn't thinking it would be the kind of storm that required city storm spotters, but just in case, I turned the volume on the scanner up a notch. I also turned on my Panasonic RF-4900 multi-band receiver and tuned it to the local AM news station, not to hear the weather report, but to monitor what the storm was broadcasting itself.

There's an old storm spotter's trick that works well: When storms are close you can monitor the storm intensity by listening for the static crashes of lightning strikes on any AM frequency. The more crashes you hear,



Composite photo showing the enormous inflow feature, known as a "beaver tail," an important component in tornado production. (Photo by Steve Douglass)

the more intense the storm. At first I only heard occasional crashes, but within 10 minutes the crashes came non-stop.

A Monster Storm!

I decided to stick my head out the window to take another look at this storm. Looking to my north and toward my daughter's house (six miles as the crow flies) I was amazed to see a huge storm shooting up high into the atmosphere to an estimated 60,000 feet! At that moment my phone rang and I saw on the caller ID it was from the city Emergency Management Office and I knew immediately it was a full-scale call-out for city storm spotters to get geared up and on the road. I didn't even have to answer the phone. I grabbed my camera bag, portable two-way radio, my GMRS walkie-talkie, and cell phone and gave my wife the standard instructions on what to do if the worst happened. I told her, "You should be ready to leave and seek shelter at a moment's notice if I call you and tell you to take cover."

I parked one of my base scanners on our storm spotter's VHF channel and turned the volume way up. I also did a quick radio check on my GMRS frequency and set my Uniden BC-780 XLT to the weather alarm mode. I then gave her a quick kiss and headed out.

Before I could get out of the parking lot my wife called me on the GMRS and said, "Jennifer just called. She says the storm is bearing down on her home and she's all alone with the baby and is scared and doesn't know what she should do." I glanced at the northern sky and at the black clouds that were quickly turning mid-afternoon into night. "Tell her I'm on my way to her place. She should grab a few valuables and get the baby and be ready to leave when I get there!" I shouted back.

I then checked into the storm spotter's network on 151.115 MHz and told them I was available for storm watch duty and was heading into the storm north of Amarillo. It's fortunate that my daughter lived in the same direction the storm was coming in from. I would be able to stop at her house on my way to my standard storm watching point behind her house. Minutes later I monitored other spotters checking into the net. When I arrived at my daughter's home she had already readied her disaster kit: a big cloth bag containing essential items anyone would need in case a tornado should destroy their home.

Anyone in disaster prone areas (whether from fire, flood, earthquakes) should think about making their own emergency preparedness kit. What you put into it is your choice but you might consider as part of it a strong box containing personal documents such as deeds, stocks, birth certificates and other legal papers, a small AM/FM portable radio, a flashlight, extra money (or a credit card you rarely use), and irreplaceable personal photos. I have been on many disaster sites and one of the main things I've seen survivors searching for are photos of loved ones. You should also keep in your kit any medications or prescriptions you or members of your family are currently on, and a list of contact numbers of friends and relatives so you can get help if the worst happens.

Glancing to the immediate west of my daughter's home I could see an enormous spinning wall cloud, one of the most impressive that I had ever seen, located just a few miles from her house. A wall cloud is an area of up-flow that spawns tornados. In most super cell storms, the up-flow area where the wall cloud exists is located right next to an adjacent area of down-flow or heavy rain and hail. Usually the stronger the up-flow the larger the hail san become, however at the moment it didn't look like the storm would contain much rain or hail and would be an "LP" storm, which stands for low precipitation. That was fine with me because LP storms are easier to spot tornados in. HP (high precipitation) storms can hide tornados and wrap them in curtains of rain.

On arrival at my daughter's place, even though the storm was moving very slowly (under 5 mph) I quickly helped her strap the grandkids into the car and told her to go into town and find shelter there. I said I'd be in contact by cell phone if things looked threatening and would alert them if they should seek shelter underground or elsewhere. My granddaughter, Caysi, could sense her mom's nervousness and touched her lightly on the arm and said quietly, "It will be okay mommy," obviously sensing mom needed some reassurance. She then gave me a hug and said, "I'm not scared granddad!" I gave her a kiss and hug and watched them drive off into town.

As I looked up at the huge menacing storm poised like a monster over my daughter's house I couldn't help but think it might be the last time I would see it intact. The entire subdivision looked incredibly small and fragile, like a Monopoly game about to be trampled by the neighborhood bully.

I checked back into the Amarillo Emergency Service Storm's Spotters network on VHF. I also turned on my ICOM-R3 scanning radio and put it in TV mode so I could see what the local weather guys were saying about the storm. Radar images showed it was growing even stronger, but still wasn't showing much movement. In fact if it was moving at all, it was doing so in the opposite direction of town. Maybe, just maybe, the city would be spared.

Leaving my daughter's place I traveled a few miles north to a point of high terrain to watch the storm. Sitting on top of a mesa I could see deep into the storm without any obstruction, so I had a clear view of its physical structure. Just to my north was an amazing horizontal cloud feature, called a beaver tail, that must have stretched for 20-plus miles feeding mid-level energy into the storm. This feature is a common site in severe storms with wall clouds and can contribute to mid-level rotation. I had observed beaver tails before but never one so pronounced. I radioed my observation to the EOC and—as always—proceeded to document the storm on video for future

This is what softball-sized hail will do to a new car. Damage in the Amarillo area may top $150 million.

study. While I was shooting I suddenly became aware of someone approaching me. It was a man who lived in the double-wide mobile home that I was parked in front of.

"Are we going to have a tornado?" he asked with a look of real concern in his eyes.

I didn't sugarcoat my answer. "From the looks of things I'd say yes."

Knowing the devastating effect that even high-winds can have on mobile homes I told him he might want to consider leaving to protect himself and his family.

"We have an underground storm shelter," he said. "You are welcome to join us if things get dangerous," he said kindly.

I thanked him for his offer but knew full well that my job as a tornado spotter meant that I and the other dedicated spotters in my group would have to remain out in the storm, and mobile at all times, trying to stay just ahead of the damaging weather, all the while reporting to the EOC what we were seeing.

Don't get me wrong. We aren't daredevils. The first rule of storm spotting is to be sure to protect your own life and property first, but you can't get the warning out from inside an underground storm shelter, can you?

Instead, storm spotters are trained to know a lot about storm structure and from where in the storm one can observe what is going on while remaining relatively safe. A television-equipped vehicle is a big help (for when weather broadcasters show the weather radar) because it is fairly easy to see where damaging weather features (such as tornados and large hail) are in relation to your position. I would rely heavily on their radar broadcasts on this day.

The first small tornados began touching down briefly just north of Interstate 40 near the small town of Bushland some 15 minutes later. They were short-lived funnels but potential killers nonetheless. Although not Oklahoma City-sized F-5 twisters, they could still blow the roof off a house or knock over dozens of cars and trucks on I-40. I witnessed a small tornado do that a few years earlier near the I-40 town of McClean.

The stationary storm finally began to move when the rear-flanking-downdraft (RFD) spilling out behind the storm gave it a push south. Suddenly at my location I began to receive occasional hail the size of golf balls. This was my cue that I should move further south. I decided to take Loop 335 (a highway that encircles Amarillo) south into town. As I did, other spotters and I witnessed several more small tornados touch down directly to the west of the city. We reported them and the network went to "CODE RED," which meant all communications should cease except for those of an emergency nature.

As I came into town I was surprised to see hundreds of cars lining the road, all spectators sitting watching the storm move in. If indeed this storm produced a big tornado, no doubt a lot of these rubberneckers would be hurt or killed, either by the storm itself or in the resulting panic to flee the storm.

The Sirens Go Off!

Just as I passed under I-40 going south the tornado sirens sounded on the West Side of the city. This was unfortunate timing because with their sounding the gawkers all decided to hit the road to seek shelter. Suddenly I found myself stuck in a major traffic jam with a huge tornadic thunderstorm bearing down on my position.

When I finally shook the traffic and was able to pull over to watch the storm from another of my prime pre-picked storm watching sites, I watched with amazement as the wall cloud spit out multiple tornadoes that began sucking dust up into the storm. All were short lived but the wall cloud was now so low to the ground that I was sure a multi-vortex tornado touchdown was imminent and the wall cloud was less than a mile away.

I decided I'd better call home to tell my family to take shelter. Picking up the cell phone I was not surprised to find the lines totally jammed. I could not place a call, undoubtedly because of the glut of people trying to do the same.

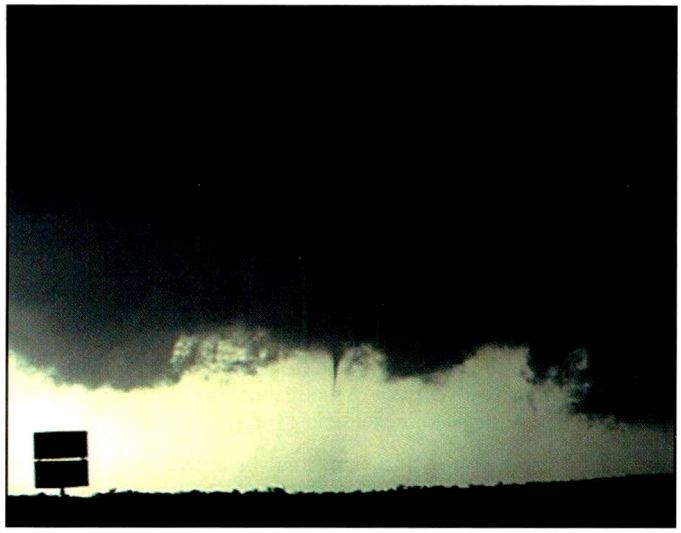
With that line of communication down, I radioed home on my GMRS. Although my home was over five miles to my east, I had no problem getting through. My wife radioed me back immediately and told me she was just going out the door with our daughter and grandkids in tow and asked which direction she should head. Since the storm was headed south I told her east. Storm spotter's rule is: *When threatened by a severe storm travel away from it at a right angle to avoid being chased.*

Again, golfball-sized hail began to pelt me so I said my goodbyes and told them I'd radio when the storm abated or if the lines weren't jammed I'd call her on the cell. It would be many hours after the storm when the cellular system finally came back up, so I was never able to call home on the cell that night. It just goes to show you that during emergencies nothing is more reliable than a good-ol' analog two-way radio! Both my GMRS and our VHF network performed flawlessly despite the huge amount of lightning contained in the storm, which also knocked some of the local TV stations off the air temporarily.

I headed south to try to stay ahead of the storm. At the same moment, other spotters in our group were under attack. Hailstones bigger than softballs were slamming into the city on the west side of town. "Seeking shelter!" calls started coming in from all of the spotters on the northwest side, where I had just been.

Not wanting to lose my windshield I began moving south and east on Loop 335, the radar image on my ICOM R3 helping me stay out of the bigger hail cores but still allowing me to stay close to the hook echo (the tell-tale radar signature that denotes the tornado producing mesocyclone) and in a safe viewing position.

It wasn't hard to spot the huge hook echo on radar. The classic fishhook signature was unmistakable. When I arrived at the



One of the eight small tornados that this storm produced. Radio communications were key in keeping the city warned. Amarillo Emergency Service storm spotters communicated with the Emergency Operations Center on 151.115 MHz. (Photo by Steve Douglass)

southern-most side of the loop I found myself enveloped in dust, caught in an inflow jet (moist air feeding the storm even more energy). These inflow jets are a very important component of tornado development. The stronger the winds being sucked into the mesocyclone are, the larger the tornado. During the infamous Oklahoma City F-5 tornado of a few years ago, the National Severe Storms laboratory clocked inflow winds into that tornado of 85 mph. In our storm (at ground level) winds were clocked by one of our spotters at 109 mph with the NWS clocking winds at 1,000 feet at 140 mph! As a result I was sure that we would have on the ground at any second a major killer F-5 tornado, the kind that sweeps houses clean off their foundations and can even scour the asphalt off roadways.

The Biggest Funnel Cloud!

Minutes later I was looking up into the biggest funnel cloud I had ever seen. It couldn't have been more than a quarter of a mile away and seemed poised to descend on a fragile looking group of houses, but amazingly it just hung there. For some unknown reason the conditions were not just right and the beast just hovered a couple hundred feet in the air for about five minutes before it lost strength and dissipated.

Amarillo dodged a major bullet that day in the form of a killer tornado but the town did not get away unscathed. The golfball and softball-sized hail core that moved so slowly through the west side of town did over $100 million in damage to roofs, windows, cars, and other property. Some who were caught in the onslaught of ice from the sky said huge hail fell non-stop for over 40 minutes. One of the local hospitals, a tall structure, lost every window on its east side. Patients had to be moved out into the hallways as the storm hurled huge chunks of ice *horizontally* through thick-paned windows. The biggest dollar amount of damage was done to new car lots, which had hundreds of cars totally pummeled.

Through all this madness, I was able to keep myself and my family safe by monitoring many radio frequencies. Not only was I able to keep tabs on the storm over the usual public safety channels, but I also got a great deal of information on just how intense the storm was becoming from listening in on civil and military pilots in aircraft flying in the vicinity of the monster. I even heard an F-16 pilot (from nearby Cannon AFB) making a tornado sighting report to the FAA on 255.400 MHz!

I also monitored ham spotters on VHF and UHF, plus fielded storm reports on I-40 on CB Channel 19, as well as storm chasers on FRS and GMRS frequencies.

The moral of this true story: When disasters—natural or man-made—threaten you and yours, it's a good idea for radio monitors to listen to *everything*. You'll never know where that piece of information that could save your life could come from—local public safety communications or world-hopping HF military communications. Being informed is being forewarned. Consider the events that happened on 9/11 that took everyone by surprise. How could it not? But now we know what can happen, and chances are there is some group out there planning another attack, and it's sad to say it probably will occur.

Dedicated monitoring hobbyists have always had an advantage over those who don't know which knob on a radio turns it on. We are tuned into the world and are constantly in the know and on the inside track when it comes to what's going on in the world on many levels, some that have potential to affect our lives directly. Although it is "just" a hobby to the uninitiated, it could be the hobby that saves your family, friends, and maybe your own life.

Crawford Revisited

I sure received a lot of e-mail missives concerning my story "Close Encounter of the Dubya Kind." Most were supportive, but one was obscene with the anonymous writer stating my article was tantamount to treason and possibly aiding terrorists. I responded that since we discovered a few potential holes in presidential security and published them in a national magazine, chances are those holes have been closed by the Secret Service.

Also it is interesting to note that friends say my phone sounds "funny," kind of "crackly," a condition that began shortly after publication. Could my phone be being tapped by the Feds? Quiet possibly. It has happened before (another story for another time), but it could also be that the phone lines leading into my apartment are older than dirt.

Concerning the article, Ken Robinson writes:

I was reading your latest article, "A Close Encounter of the Dubya Kind" in the July '04 issue of *Pop'Comm*. It was a very insightful article and one that touched on my recent encounters, though not nearly as close as yours. *lol*

Recently Dubya traveled to Ft. Campbell, Kentucky, my home state, to greet members of the returning 101st Airborne and I guess do a bit of campaigning for the upcoming election as well. I intercepted nothing as exciting as what you did—just a few extremely brief AF-1 exchanges with civil ATC. Though nothing earth shattering, it was a thrill for me as a communications hobbyist, nonetheless.

The reason for my writing is that I've been following your articles in *Pop'Comm* since before 9/11 when I first received your book on monitoring military frequencies as a freebie when I purchased my IC-R10. Since then I've been fascinated with MILCOM but hadn't had much luck till reading your book. After reading this current *Pop'Comm* article I realized that I have very few VHF and UHF freqs for the likes of Orderwire and CAP. I didn't even have the two you listed in the article.

Therefore, I'm writing to ask if you would provide me with some of the Orderwire and CAP freqs that you've noted to be good hits in general. I'd greatly appreciate any and all information that you'd be willing to share on the subject as well.

Ken, CAP (Combat Air Patrol) UHF frequencies used for

Is this the Switchblade revealed—or is it a bogus piece of dis-information? Read about the enduring mystery surrounding this photo and let me know what you think! (Photos courtesy Navy News)

presidential security support vary widely across the country. Maybe another Kentucky MILCOM monitor could help Ken? If so, e-mail me at the address listed in the header above.

As for Orderwire (a group of government/military frequencies used across the U.S.), a great source can be found on the Internet at http://ncamonitor.tripod.com/nmcs/northstar_gep_info.html. I have found this list extremely helpful when monitoring Air Force One communications.

Mark Butler writes:

I live in Cleveland, Ohio, and am a subscriber to *Pop'Comm*. I look forward to reading your articles each month more than any others. It seems that your radio interests parallel mine.

I have been a scanner buff for about 15 years and a Technician class ham radio operator for a little over a year. Additionally, I have always loved aviation. Listening to air traffic was my motivating factor in purchasing my first scanner.

Anyway, I was reading your article in my *Pop'Comm* that arrived yesterday. I have been trying to achieve some success with MILAIR monitoring. I do realize that Cleveland isn't the hotbed of MILAIR activity but I still haven't had much luck. I have heard some aerial refueling on occasion.

I would like to be prepared the next time Dubya comes to Cleveland. You listed the Orderwire frequency of 350.550 and the MILAIR freq of 272.700 in your article. Do you have any other good frequencies that you could suggest? In your article you referenced the "published Secret Service frequencies," would you be willing to share yours? I've seen some on the Web, but I would like to have an accurate listing instead of trying to fumble through frequencies at that time.

Mark, because space does not permit mY publishing my list here (and for personal security reasons I'd rather not), I suggest you point your Internet browser to http://www.maxpages.com/frequencies/Secret_Service_freqs. It's an updated list of many Secret Service and AF frequencies, all of which are included in my personal list. I suggest you program your scanner with them all, especially when "Dubya" visits.

Mike Carino sent me this interesting e-mail:

I just finished reading your awesome article "A Close Encounter of the Dubya Kind" in the July 2004 *Pop'Comm*, and it is probably the most interesting thing I've ever read in a magazine! I bet that occurrence is one you'll always remember! I thought that my getting a recording of the arrival of Air Force One in Buffalo a few months ago was impressive.

I live in Niagara County, New York, near Niagara Falls, and we don't get too much military air action around here, other than KC-135s and C-130s from Niagara Falls JARS.

Occasionally, though, I'll hear a flight of F-16s from Syracuse or A-10s from somewhere else, or whatever. I only have a short list of MILAIR frequencies, both from local and national sources and from nationwide, and I know that I'm missing a lot of the action because I don't have all the frequencies.

I was wondering if you could send me those MILAIR frequencies which may be heard anywhere in the U.S., such as the Orderwire or CAP frequencies, or if you could refer me to a good place to find such frequencies. My compliments to you for all the great information and awesome stories you've given to the scanner hobbyist community. I hope to see more of your great articles! Happy scanning!

Mike, I think you'll find your answer above. Are there any Niagara Falls-area monitors who can help Mike out with a few local MILAIR frequencies?

Another request for frequencies comes from Joe Allison, Wytheville, Virginia. Joe writes:

I love your columns. After reading one regarding military aircraft communications I remembered an old Aeronautical Chart for the Commonwealth of Virginia that I was given 20 or so years ago. I saw that my hometown is under about four different military aircraft training routes, with several more nearby. Do you have any tips on monitoring these flights? I don't have any information regarding frequencies or schedules. Any information you have would be very helpful. Thanks a bunch.

Okay. Virginia MILAIR and MILCOM monitors, Joe needs your help! Send your frequency list to me and I'll pass it on to Joe!

Reader's Logs

I want to remind you that you can send in your MILCOM loggings above 30 MHz including UHF aero band catches. Just do so in the format below. Many thanks to our ever-faithful UTE monitors who submit their logs every month. Maybe you'd like to be one of them? Maybe you'd like to see how your catches rank with our best monitors? Send them in!

0000: (Frequency MHz): STATION, Anytown, USA, summary of traffic heard, MODE at 0000 Z. (monitor/ location)

5320.0: USCG Group Charleston radio check with District 7 Miami Ops at 1301. (MC)

5690.0: CG 2121 attempting p/p via CAMSLANT to District 8 at 0119. (MC)

5690.0: T3S (USCG HC-130) p/p via CAMSLANT to Group Key West to report radar and infrared failure and report they are on scene with TOI at 0014. (MC)

5696.0: CAMSLANT wkg T3S to report that Cutters *SAWFISH* and *KODIAK ISLAND* are en route to their TOI at 0046. (MC)

5696.0: CG 2006 (HC-130J) airborne with 18 POV from Elizabeth City en route Whidbey Island at 1328. (MC)

5696.0: CG Rescue 6014 working CAMSLANT Chesapeake w/ flt ops and positionreports at 1230Z. (DS2 WI)

5708.0: METRIC (E-3 AWACS) ALE initiated patch to AWACS OPS, Shaw AFB. States they are only 55 miles out and requests they come up on 303.100 MHz at 1458. (MC)

5732.0: 03C wkg PANTHER to report they have located a Go-fast with 4 POV at 0222. (MC)

5860.0: FAAZNY (New York ARTCC): 1207 USB/ALE sounding. (RP)

5860.0: FAAZMP (Minneapolis ARTCC): 1152 USB/ALE sound-

ing. Also sounding on 07611.0. (RP)

6694.0: CANFORCE 1337 calling HALIFAX MILITARY with No Joy at 1818. (MC)

6721.0: METRIC (E-3 AWACS) with ALE initiated p/p to AWACS OPS, Shaw AFB. METRIC states they currently have no line of sight for UHF and requests to know if they can come up on Western Regional SATCOM net for troubleshooting. AWACS OPS requests they come up on HF secure Channel 1 9.145 MHz at 1430. (MC)

6981.0: 204DVA (probably Dept. of Veteran's Affairs) heard at 0049 USB/ALE sounding. (RP)

7650.0: T2Z238 (2-238th Avn, Shelbyville IN): 1354 USB/ALE sounding. (RP)

7805.0: HI1LL (Hillsborough NH EOC): 1044 USB/ALE sounding. (RP)

7805.0: WPFJ625 (New Hampshire State EOC, Concord NH): 1033 USB/ALE sounding. (RP)

7805.0: CL1AR (Clarendon NH EOC): 1003 USB/ALE sounding. (RP)

7805.0: MA1NC (Manchester NH EOC): 0616 USB/ALE sounding. (RP)

7849.0: PORLAM (Destacamento de Apoyo Aero #7, Parlomar Airport): 2326 USB/ALE TO CGGC (HQs, Venezuelan Coast Guard). (RP)

8280.0: BRION (Frigate, "Almirante Brion," F-22, Venezuelan Navy): 0113 LSB/ALE TO DCCOP (Direccion de Coordination Y Control Operacional). Also noted on 08825.0 LSB. (RP)

8971.0: WAFER 96 heard wkg HIGH VOLTAGE to request they come up on UHF at 1648. (MC)

8983.0: CG 1719 (HC-130, CGAS Barbers Point) airborne with 16 POV en route Wake Island requests guard from CAMSLANT at 1142. (MC)

8992.0: SAM 7561 p/p via Puerto Rico HF-GCS to Andrews Meteo for WX at KLAX at 0249. (MC)

8992.0: CZAR 84 requesting info on storms in the area at 0200. (MC)

9007.0: CANFORCE 4325 p/p via TRENTON MILITARY to WING OPS heard at 0323. (MC)

9025.0: REACH 8211 with Westover AFB Ops at 2211. (MC)

9025.0: Sentry 31 (E-3B AWACS, Tinker AFB): 0343 USB w/Raymond-24 (552ACW CP, Tinker AFB) w/formatted report information. Immediately followed by E30008 (E-3B # 83-0008) in ALE checks w/Offutt. (RP)

9052.0: SCLC22 (Communications Logistics Center, 222nd Motorized Inf Bn, Venezuelan Army): 0122 USB/ALE TO CLC22M (Communications Logistics Center, 22nd Motorized Inf Bde). Also noted on 10272.0 & 10600.0. (RP)

9052.0: CGGN (HQs Venezuelan National Guard): 0513 USB/ALE TO MIRA1 (possibly Venezuelan Navy Special Operations Unit "Generalisimo Miranda"). Also noted on 10272.0. (RP)

9190.0: 64B (LST "Los LLanos," T-64, Venezuelan Navy): 0137 OSB/ALE TO BNA (Naval Base "Amario"). Also noted on 13500.0. (RP)

9190.0: BNA (Naval Base "Amario"): 0121 USB/ALE TO CGA (HQs, Venezuelan Navy). Also noted on 13500.0. (RP)

9198.0: LIO (Chilean Navy): 0325 LSB/ALE TO CA2) Chilean Navy). (RP)

9198.0: LIO (Chilean Navy): 0333 USB/ALE TO HLA (Chilean Navy). (RP)

10600.0: CID (unidentified, Rockwell-Collins): 0329 USB/ALE sounding. (RP)

10600.0: SCLC222M (Communications Logistics Center, 222nd Motorized Inf Bn, Venezuelan Army): 2229 USB/ALE TO CLC22M (Communications Logistics Center, 22nd Motorized Inf Bde). (RP)

10115.0: CLC51 (Communications Logistics Center, 51st Jungle Inf Bde, Venezuelan Army): 0020 USB/ALE TO SCLC513 (Communications Logistics Center, 513th Jungle Inf Bn). Also noted on 12191.0. (RP)

10825.0: KHARTOUM (FR Embassy, Sudan): 0201 USB/ALE TO LECAIRE (FR Embassy, Egypt). (RP)

10825.0: ADDISABEBA (FR Embassy, Ethiopia): 0224 USB/ALE TO LECAIRE (FR Embassy, Egypt). (RP)

10993.6: E3Y (HC-130) wkg Group Key West who diverts him to intercept a Go-fast at 0052. (MC)

11202.0: PANTHR (DEA/OPBAT, Nassau Bahamas) heard at 1934 USB/ALE sounding. (RP)

11205.0: SHARK 55 check-in with SMASHER to report departure from MCAS Cherry Point en route to Luis Munoz Marin, PR at 2143. (MC)

11220.0: NAVY 515 p/p via Andrews HF-GCS at 0203. (MC)

11226.0: BOLT 11 (KC-135) ALE initiated p/p through Offutt HF-GCS at 2114. (MC)

11494.0: 17C position report to PANTHER at 0015. (MC)

11494.0: CG 1501 (HC-130, CGAS Elizabeth City) on SAR case reporting to CAMSLANT that they have hailed the vessel GULF GRACE and they are diverting to the location of the vessel PERFECT DAY at 1116. (MC)

12076.0: KRAPNG (Nat'l Guard Bureau, Rapid City SD) heard at 0047 USB/ALE sounding. (RP)

12191.0: CLC51 (Communications Logistics Center, 51st Jungle Inf Bde, Venezuelan Army): 2325 USB/ALE TO SCLC501 (Communications Logistics Center, 501st HQs Bn). (RP)

12191.0: SCLC501 (Communications Logistics Center, 501st Jungle Inf Bn, Venezuelan Army): 0202 USB/ALE TO CLC51 (Communications Logistics Center, 51st Jungle Inf Bde). (RP)

13101.0: ERMRIO (Brazilian Navy Radio Station, Rio de Janeiro): 0045 USB/ALE TO FDEFEN (Brazilian Navy Frigate F-41, "Defensora"). (RP)

13500.0: GC11 (Frigate "Almirante Clemente," GC-11 Venezuelan Coast Guard):

2007 USB/ALE TO CGA (HQs, Venezuelan Navy). (RP)

13500.0: BNF (Naval Base "Falcon," Venezuelan Navy): 0210 USB/ALE TO CGA (HQs, Venezuelan Navy). Also noted on 19200.0. (RP)

13500.0: CGA (HQs, Venezuelan Navy): 2329 USB/ALE TO T81 (Replenishment Oiler " Ciudad Bolivar," T-81). (RP)

14000.0: MOCHUELO (Colombian telephone net): 0326 LSB/ALE TO 1901 (Colombian telephone net)--[AMD] DIAL0963674537. (RP)

14550.0: CID (unidentified Rockwell-Collins): 1216 USB/ALE sounding. Also sounding on 07650.0. (RP)

14780.0: NTGMTA (Brazilian Navy Fleet Oiler, "Almirante Gastao Motta," G-23): 0107 USB/ALE TO ERMBEL (Brazilian Navy Radio Station, Belem). (RP)

14780.0: MVD1 (Army Corps of Engineers, Mississippi Valley Division): 0455 USB/ALE sounding. (RP)

14780.0: NTGMTA (Brazilian Navy Fleet Oiler, "Almirante Gastao Motta," G-23): 2353 USB/ALE TO ERMBEL (Brazilian Navy Radio Station, Belem). Also noted on 17010.0. (RP)

13927.0: RAZOR 33 (E-8 JSTARS) p/p via AFA2SJ Florida to Robins AFB Meteo for WX at 2029. (MC)

13927.0: RAID 37 (KC-135, 319 ARW) p/p via AFA1RE Maine to Grand Forks AFB with inbound message at 0145. (MC)

15016.0: RANGER 68 (self-ID KC-130) p/p via Andrews HF-GCS to Fort Worth JRB at 1817. (MC)

15016.0: Puerto Rico HF-GCS wkg NAVY AX 650 at 0047. (MC)

16160.0: LAB (Rockwell-Collins Integration Lab, France): 1230 USB/ALE sounding. Also sounding on 10600.0. (RP)

164.9 MHZ FM: Blue Angel 1 working Blue Angel 2 thru 6 with engine start and taxi at LaCrosse, WI airshow. Also some maintenance activity heard earlier in day on this freq. (DS2 WI)

284.25 MHZ AM: Blue Angel 1 during Lacrosse, WI airshow performance.(DS2 WI)

265.0 MHZ AM: Blue Angel 1 during Lacrosse, WI airshow performance. (DS2 WI)

This month's shortwave signal sleuths are Mark Cleary (MC); Ron Perron (RP); Dwight Simpson (DS2).

The Switchblade Revealed? Hollywood Myth Versus Military Reality

If you have been reading this column since I took over the helm, you'll undoubtedly have noticed I have written (more than a time or two) about mysterious stealth aircraft that prowl our night skies. One of the "Black Project" aircraft I have been following is a suspected Northrop/Grumman bird known as "the Switchblade."

It is rumored that the Pentagon has been flying a variable forward-swept wing stealth aircraft that has been seen flying near Cannon AFB, New Mexico, and over the Nellis AFB Test Range near Area 51 in Nevada. There has even been a sighting near Langley AFB, Virginia.

Well, color me surprised when supposed photos of the Switchblade arrived (via anonymous e-mail) in my in-box last week. At first I said "holy #$@*" but having been the recipient of disinformation before and always suspicious of anonymous mail, I decided to examine the photos very closely before pronouncing them as the real deal.

The images showed a futuristic stealth aircraft being readied for launch on an aircraft carrier deck. On first inspection the realistic photos showed what looked just like the Northrop patent of a forward-swept wing fighter, the very bird I have been chasing. In fact there was more than one photo showing the aircraft from many angles, which almost ruled out their being creations of Photoshop. Besides, the lighting on the aircraft was correct (compared to other aircraft on the carrier deck).

But then I looked closer and saw what looked like crewmen operating a Panavison motion picture camera. In fact another photo showed another even closer picture of the camera in operation. "Aha!" I shouted. "It's from a movie!" The anonymous source of the photos didn't even bother to Photoshop out the camera crew.

Mystery solved? Not quite. Since I was raised on a steady diet of spy movies and "Scooby Doo" cartoons, there is nothing I love more than a mystery. I decided to see if I could find out where the photos originated, why it looked so much like "my" switchblade, and where the photos had come from.

Using the marvelous tool called the Internet it took me all of five minutes. In one close-up photo of the "pilot" in the cockpit of the Switchblade was scribed on the aircraft the name of the pilot, Lt. Kara Wade. I entered the name in several search engines and the name popped up immediately as a character played by Jessica Biel in the upcoming movie *Stealth*.

A press release for the movie read:

Movie Stealth Update: The *USS Abraham Lincoln* served as the set for Rob Cohen's next project, *Stealth*, starring Josh Lucas, Jessica Biel, Jamie Foxx and Sam Shepard. In the film, Navy officials decide to use an unmanned version of the "Talon," but when one of the planes begins attacking friendly forces, Navy pilots are called in to save the planet from artificial intelligence.

One mystery solved, two more to go. Had some Hollywood writer read my articles and decided to base the look of his stealth aircraft on my illustrations (based on the Northrop patent)?

As I continued my research the second mystery was revealed forthwith. On the Internet Movie Database site I found this sentence "Director Rob Cohen said the film will feature over 800 visual effects with jets designed with the cooperation of the head designers at Northrop Aviation." Okay, that explains that. Northrop was one of the technical advisors on the film, which explained why the aircraft looked so authentic.

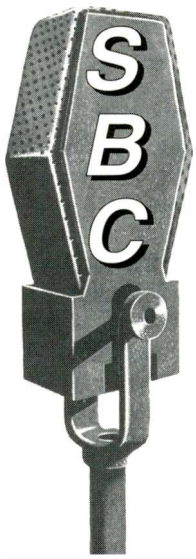
One mystery remained: where had the photos come from? Since I had little hope of tracing them to the sender, I decided to see if the photos had been posted anywhere else on the Web. After a few hours, the original photos were found at: http://www.news.navy.mil/view_gallery.asp?sort_row=1&category_id=26&sort_type=0&page=5.

Mysteries solved, or were they? Solving the mystery only generates more nagging questions in my inquisitive noggin. I couldn't help but think that chances are if Northrop helped design the movie-bird they would never have based the design on a current classified project. Does that mean the Switchblade was never built? Or maybe it was a "one-off" project that never went on to produce an operational aircraft? Or could it mean that the real Switchblade is close to declassification and will be revealed before the movie is released next summer? Was it a Navy or Northrop PR man's great way to create public interest and a public taxpayer "buzz" about the aircraft to induce taxpayers into calling their congressman and saying "let's ensure funding for this aircraft!" Or (and this is the most likely scenario) were the photos anonymously being passed around the net so Hollywood could create a buzz about the movie, some studio publicist's way of getting aviation enthusiasts all hot and bothered about this aircraft and then revealing it as a prop in the next summer blockbuster you have to see?

I guess only time will tell. ■

by Shannon Huniwell, melodyfm@dreamscape.com

From Toy Radio Stations To 10-, 50-, and 100-Watters



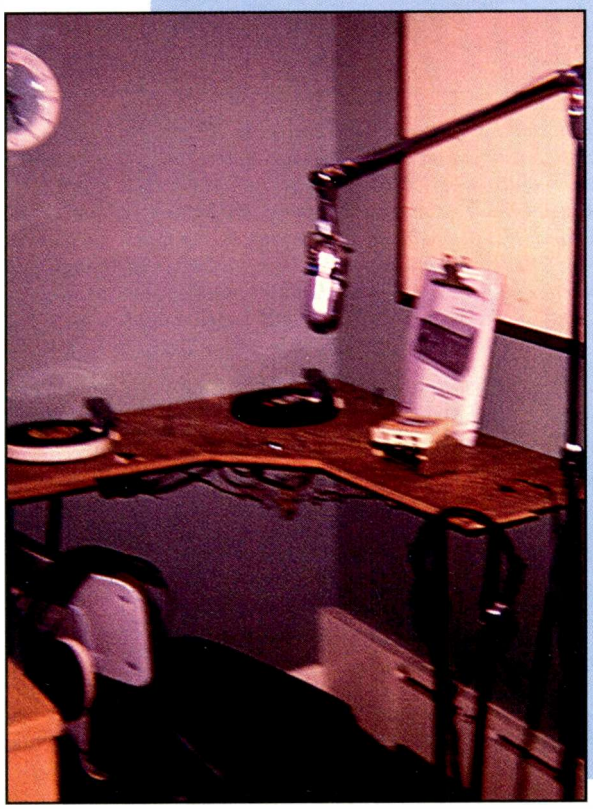
Call me a radio nut. That was the label pinned on me after a series of snow days kept my whole family cozily indoors for the good part of a week. My father announced that he hoped his office would never reopen and then promised a big surprise for my brother, Shawn, and me. Shawn, who was never much interested in technical fare, rolled his eyes when Dad produced a box from Lafayette Electronics, labeled KT-195 Broadcaster Kit.

"It's a miniature AM transmitter," said father, smiling with the kit in one hand and a thumbs-up on the other. "As soon as we build it," he beamed, "you can go on the air and be a real radio personality! We'll all listen, even Shawn." That remark sent my brother to the phone in search of any friend who wanted to talk sports. It prompted Mom to top our kitchen table with layers of newspaper so that the inevitable drips from Dad's soldering gun wouldn't cause trouble.

Truth be told, I don't remember much of the KT-195 construction, except for my reading the instructions aloud. Typically, Dad tagged, "Already done that, princess," to most of my monotone, fourth-grade interpretation of the directions. It was strictly one of those boring, "attach wire C to terminal L and Q"-type narratives. The real show was the mix of my father's mad scientist expressions, deliberate "humms," and "uh-ohs," as well as streams of puffy gray smoke rising from the old maroon WEN soldering pistol.

By mid-afternoon, the Lafayette transmitter was completed. My DJ debut was slated for as soon as Mom could serve up celebratory cookies and milk. Meanwhile, Dad rummaged around in the hall closet for "that old mic from the Webcor tape recorder we used to have." Several more minutes were needed to locate a spare RCA plug and affix it to wires from the heavy microphone's frayed cord. When the big moment arrived, the Lafayette had been clicked on and its tubes warmed. I was invited to throw the switch to "BROADCAST," while Dad used a small screwdriver to slowly move the unit's front panel "TUNING" capacitor control. A classic "All American Five Tube" Westinghouse radio had been readied for the test, its dial meticulously parked on a very vacant 640 kHz.

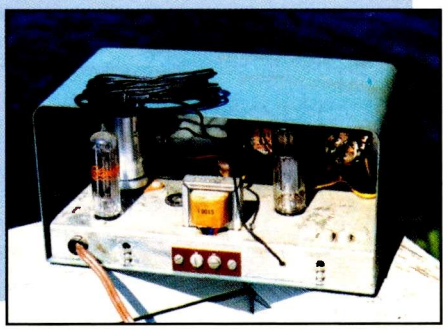
Suddenly, we heard electronic noises and a bit of feedback. Looking as if he were conducting brain surgery, Dad kept tweaking both the transmitter and the radio until he seemed satisfied with whatever it was that he heard. Next, he unplugged the Westinghouse, moved it into the living room where my mother was reading, quietly returned to the kitchen, uncoiled the Lafayette's black antenna wire, pointed to me and announced, "Shannon is now on the air!"



This fuzzy picture is all that's left of the WTKX studio. As a kid, I spent many hours "spinning the hits" on the little station situated in the corner of my West Simsbury, Connecticut, bedroom. It looks like there's an 8-track tape resting on the Lafayette mic mixer/control board. We adapted an old "lawn-sale" 8-track player to the underside of the studio desk, but the unit ate most of the tapes fed into it. The clipboard contains operating instructions for WTKX's Lafayette transmitter.

I wish I could say that it was an informative broadcast, but I sure had fun just talking and telling whatever stories came to mind. A few minutes into my inaugural "show," Mom came into the kitchen "studio" to compliment me on my radio announcing. I interviewed her on-air and she promised to keep listening. That pledge was made good as soon as she put on some hot water for tea that she and Dad sipped while tuned to the "Shannon Show." There was some dead-air when I went to fetch my cassette player so that music could be part of the program. My folks took turns walking to kitchen with their song requests.

For the next few snowy days, I woke up early enough to be the first in the family to hear, on one of our local Hartford, Connecticut, stations, that school was cancelled again. This allowed me to quietly tune radios in my brother's and my folks' rooms to the 640 spot, and then proudly sign-on the Lafayette KT-195 with the message, "THERE IS NO SCHOOL IN SIMSBURY



Front and back views of the Lafayette KT-195 Broadcaster Kit. Note the missing tube. The screw terminals on back allow for connection to an 8-ohm speaker. By switching the front panel control from "BROADCAST" to "AMPLIFY," the KT-195 became a mini public address system. I don't recall us ever trying that feature, as this kit was bought with AM transmitting in mind. The coiled black wire resting on top is the "factory recommended" antenna. Hooked to my father's communication receiver's longwire, though, the KT-195 performed better than the catalog predicted for such a 100-miliwatt item. By the way, Lafayette offered a "factor-built" version dubbed the LA-23.

TODAY!" Shawn stumbled out of bed long enough to complain about being woken up, and dubbed me "a completely hopeless radio nut."

Station Sophistication And Call Letters

It didn't take us long to upgrade my radio station. Dad bought a couple of plastic tone arms (from the Lafayette catalog) that he used with two turntables salvaged from some old phonographs. He mounted these on a plywood, L-shaped desk, which was also home to a four-channel, Lafayette microphone mixer that served as the station's main control board. Powered by a 9-volt battery, it mixed the turntables' output, sound from the cassette player, and crystal microphone suspended with an Atlas stand and boom.

By the mid-1980s, phono oscillator-type broadcast toys gave way to wireless mics for kids. Typically equipped with a tiny FM transmitter, these handheld units turned any location into a radio studio. Even so, they eliminated most of the electronic experimenting charm associated with connecting wires to turntables and plugging a microphone into a phono oscillator transmitter.

The Lafayette KT-195 transmitter was relocated to the attic. For effect, we connected its antenna wire to an old telescoping car aerial attached to a one-inch-diameter dowel steadied on a wooden base. Dad went all out on this item by taping a tiny blinking red Christmas light to the top of this five-foot radio "tower." Incidentally, the transmitter's RF output was also hooked to a line that went to my father's "longwire" communications receiver antenna. This overkill woven copper wire system was rigged—off stiff springs and hefty glass insulators—from our roof to the dome of a neighbor's farm silo.

Eventually, we dedicated an afternoon for coming up with a neat callsign. A copy of *White's Radio Log* was consulted to be sure our letters were original. Of course, that listing was by no means up-to-the-minute or complete with every call in-use, but Dad was pretty certain that he'd never heard of any station claiming my requested WTKX, so that call was adopted for no other reason than that we both liked the sound of consonants.

Coverage was very good everywhere in the house. Once, we put a tape in the cassette player and drove around the neighborhood for a "signal test." When WTKX could still be heard a mile or so down our winding rural road, Dad admitted that the Lafayette "worked a little too well." He then thought about disconnecting his longwire antenna array in case WTKX interfered with anyone's normal reception. Seems to me, though, the system was left intact and special neighbors were notified when they should "tune in to hear Shannon's radio station."

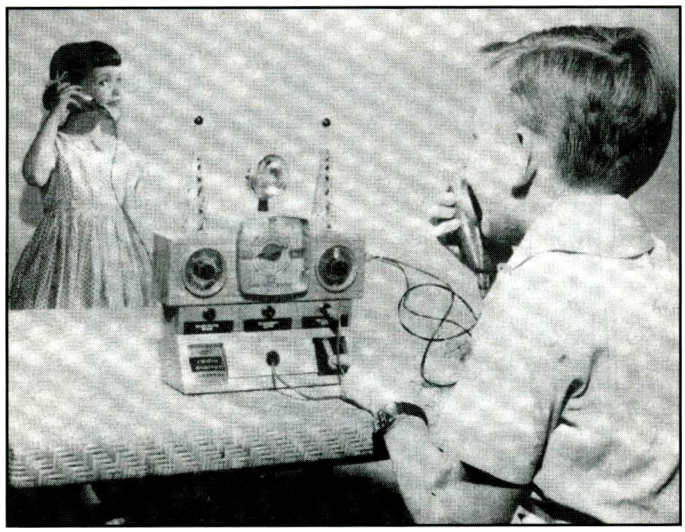
I always thought it too coincidental that people would just happen to catch me on the air. An elderly lady from our church somehow always knew when to call in for a record request. She lived in a tiny hillside house barely visible from my bedroom "studio" window and would phone to say she loved my broadcasts, and then always asked for "The Tea For Two Cha-Cha," a totally hideous (at least to this then 10-year-old's musical tastes) mid-1950s album cut on a scratchy LP she had "donated" to the WTKX record library. This instrumental must have sounded rather incongruous when segued with one of my favorite contemporary records, "My Sharona" by the Knack. These were the last days of the 45-rpm single, a medium that truly served top-40 listeners and disc jockeys very nicely.

Other Toys Designed To Give Fledgling DJs A Start

Today's kids don't seem to appreciate "educational" pastimes, but a broad generalization can be made of toys from the 1920s though the 1960s in that many were designed to let kids "play" at being professionals. And so it was with youngsters who dreamed of being part of the broadcast industry. Targeting just the 1950s, we can find two examples from the era's leading toy makers: MARX and Remco.

The former marketed a tin lithographed control console labeled "W-MARX, the Electric-Powered TV and Radio Station." It was promoted as being "for the young ham operator," though it had a television broadcast theme. Plastic towers on top of this unit accented scores of switches, dials, tubes, resistors, meters, and monitor screens that were printed on the surface. A "D" cell battery powered a code oscillator. A spool of wires connected an earphone to a walkie-talkie microphone plugged into the console. Reportedly, the mic and code key could also send a signal over AM airwaves.

The Remco station also featured a plastic antenna tower motif and could send voice or code "over a distance of half a



Here's Remco Industries' 1955 publicity shot for its mini broadcaster. The promo copy read, "This youngster is broadcasting over a toy radio station that can send and receive voice or code over a distance of half a mile." Some of the toy's "field telephone" function, though, was accomplished via wires. Arguably, a number of 1960s/70s-era radio pros got their start with one of these.

mile." For some reason, it was fitted with a searchlight. Remco must have sold a lot of these, as they often show up (sometimes called "Dan Dare Radio Station") on eBay. A companion crystal radio set was available for the real radio nut who wanted to build her or his own receiver.

Let's Do Some Oscillating

Since the late 1930s, radio nuts knew about something called phono oscillators, tiny AM transmitters meant to transmit the output of a phonograph to a nearby radio. Maximum power on these "boxes" was 100 mW. Soon, young wannabee station owners discovered that souping-up a phono oscillator's antenna and adding a microphone to the input could provide some fun.

During the 1940s and '50s, most radio supply houses had at least one model of phono oscillator in the back of their catalogs. Lafayette's thick directory often featured a modest line-drawn rendition of a $4.95 phono oscillator. It showed a bare-bones set-up with components mounted on a basic chassis. On the front was a single RCA phono plug input. The rear sported a tiny grommet through which about eight inches of antenna wire protruded. I saw one such wire emblazoned with a sticker that said not to connect more cable to it.

By the early 1960s, Allied Radio's Knight-Kit division offered a Radio Broadcaster/Audio Amplifier kit. Similar to my Lafayette unit (though only mounted in a box chassis), the $12.95 kit was a three-tube affair and got promoted as "actually let[ting] you broadcast through any AM radio! Just plug in a microphone or record player and you're on the air. Surprise visiting friends by tuning in radio shows on which you are the announcer, disc jockey, news commentator, or musical entertainer."

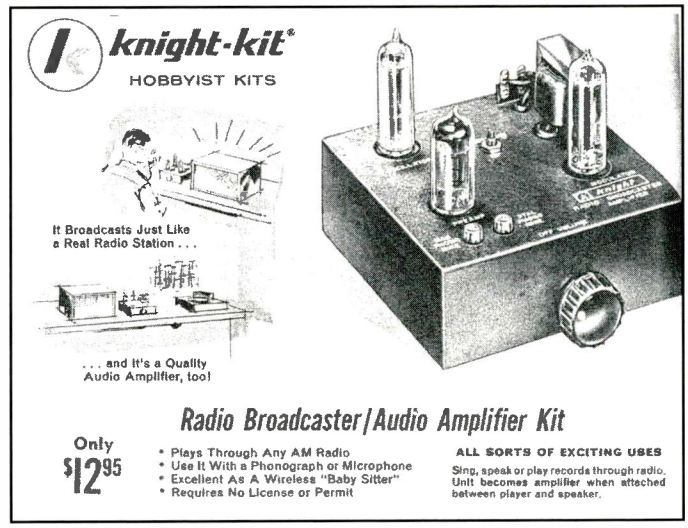
Allied indicated any particular silent spot "from 600 to 1500 kc" on an AM radio would serve as a home to the kit's selected frequency. The manufacturer made it clear that "no license or permit" was required for operating the Broadcaster. Usually, however, this assurance was coupled with a caveat that specifically warned owners *never to lengthen* the transmitting antenna wire. Most kids read that admonition and figured, "Well, I guess that's what you do to give the thing more power!"

10 Watts Worth Of Real Radio

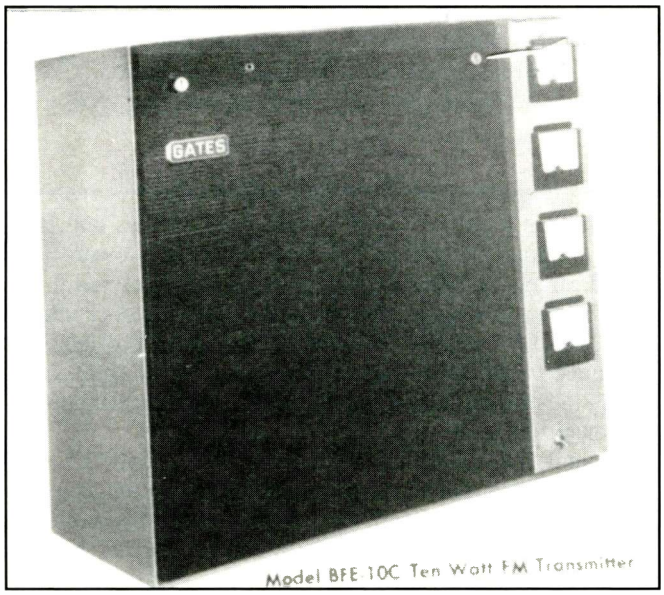
More than a few would-be broadcasters who, as kids, dabbled in "phono oscillation" took the next step toward their desired career via high school or college radio. The notion of a classic school station is often associated with the once ubiquitous "Class D"-type of FM authorization. The FCC established this category in 1948 to allow a low-power, inexpensive, entry-level brand of radio attainable by most any educational or religious institutions.

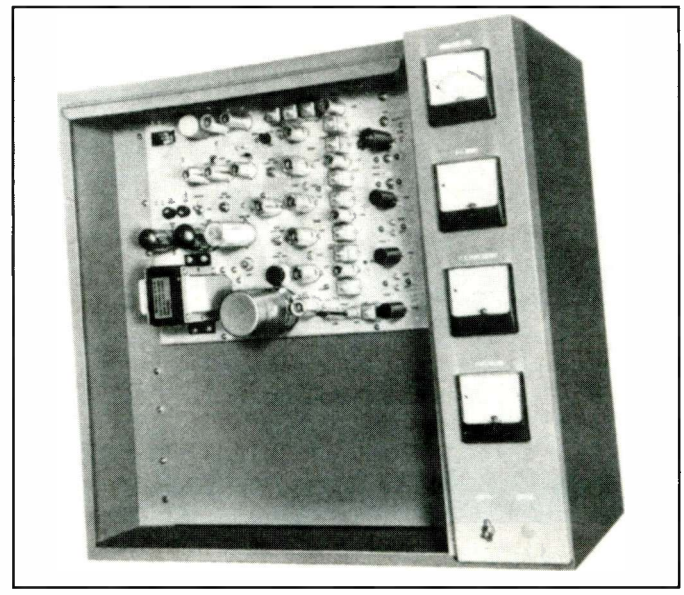
To facilitate operation, the Commission okayed Class D facilities to be routinely run by operators holding only a Third-Class Radio Telephone Permit, and maintained by Second-Class ticket holders. This meant that exacting services of licensed First-Class engineers, the coveted province of full-power stations, did not have to be secured. FCC rules for Class D also allowed for lenient hours-of-operation requirements, meaning that these school stations could sign-on and off in relationship with a scholastic schedule, rather than having to operate daily and year round.

Class D effective radiated power limits were capped at 10 watts, though a few 50-watt, "Super D" outlets were reportedly authorized. Interestingly, an antenna height above average terrain was not specified in Class D licensing. Schools with hilltop buildings on which the station antenna could be mounted enjoyed a far greater signal than 10-watters hooked to relatively low antennas. Depending on this elevation, most 10-watt FMs had footprints of one to five miles. Some, however, were serendipitously positioned in a "golden" place that (especially



Thirteen bucks was big money to most youngsters in the early 1960s, but for a would-be radio announcer, Allied Radio Knight-Kit's Radio Broadcaster was well worth the price. The ad copy promised, "All sorts of exciting uses! Sing, speak, or play records through radio!" Tube functions were marked on the chassis top, "preamp, oscillator," and "modulator," just like the function of a commercial station's AM transmitter. RCA plug inputs allowed for high- and low-impedance mics and other audio. Allied offered a matching crystal microphone for $2.95.





Catalog photos from 1966 of Gates Radio Company's 10-watt FM transmitter. Built for educational Class D use, the model BFE-10C was compact enough to mount on a studio wall.

in FM's uncrowded days) got out surprisingly far.

Everyone On 88.1

When the Class D program was being planned in the late 1940s, it was proposed that all 10-watters be assigned to FM's basement, or 88.1 megacycles. That was in the immediate vicinity of the audio portion of television's Channel 6. Regulators figured that more folks (circa 1949) had a TV than possessed an FM radio, so they could dial in their local Class D offerings simply by clicking to Channel 6 and fine-tuning up the band a little bit.

In communities with more than one 10-watter, other FM frequencies in the 88.1- to 91.9-megacycle educational portion of the band could be requested by those applying for a "D" permit. While most broadcast "firsts" are open to interpretation, we can pretty safely identify DePauw University's WGRE-FM as the first Class D to hit the airwaves. The Greencastle, Indiana, 10-watter debuted in late April of 1949.

More To Follow

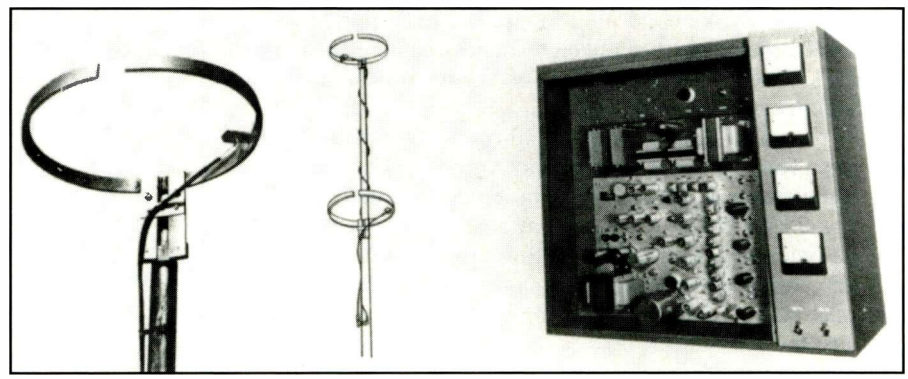
From a standpoint of broadcast students and school budgets, the popularity of 10-watt FMs peaked in the mid-1960s. By that time hundreds had gone on the air. In some areas, like Boston, crowded with public and private high schools and colleges, several stations situated only a dozen miles apart were licensed on the same frequency. This was true local radio, though, so few complained about not covering much beyond one's campus. There were also time-share arrangements allowing for multiple stations in the same immediate area where the aforementioned short-spacing would only produce chaos.

What was on the average Class D? Well, it's unfair to broad-brush the whole genre, but we can safely say that a listener to the typical 1967 version of a 10-watter would have heard a wide variety of DJ talent (from unrefined, nasal accents and sloppy anti-establishment rants, to the clever banter and mellifluent tones of future commercial radio stars), all styles of music, and a happily incongruent potpourri of pre-recorded "free" programming via everyone from the West Germans to the Southern Baptists. Along the way, a few school board meetings and class lectures might be piped through the control board, which was usually an ancient tube-type console donated by some well-endowed regional AM station that recently upgraded its studios.

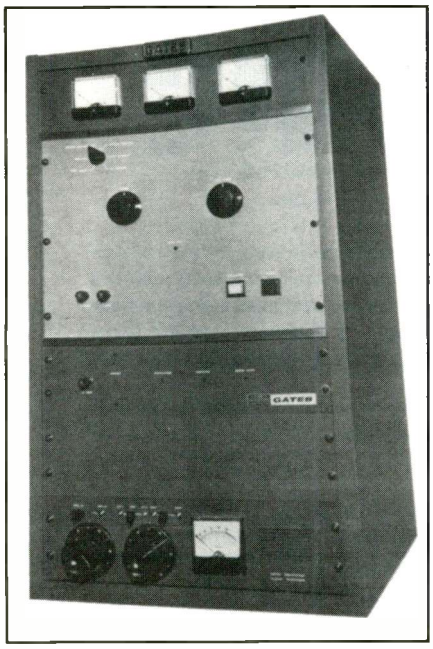
All in all, those with a Class D within their radio's jurisdiction could count on hearing some diverse stuff.

Where Have All The Tens Gone?

In the late 1970s, National Public Radio (NPR) recognized that it could become more socially powerful only if it were a programming source commanding high-wattage affiliates, rather than offering content to several hundred autonomous, seasonal 10-watters with student staff who preferred being on the



The Gates BFE-50C delivered 50 watts of FM and is shown with matching one- and two-bay "ring" transmitting antennas. Students interested in going into broadcasting were happy to see these modest—typically roof-mounted on a pole—arrays crowning a college campus they hoped to attend.



Had Red Bank, New Jersey's 100-watt WBRB been on the air in 1966 when Gates Radio Company offered this transmitter, the compact unit, complete with two-channel audio control board (at bottom), would have fit the bill. The model BC-01-GA was advertised as a "complete medium wave (AM) broadcasting system yielding 100-watts." Via several switches, the two "pots" on the control board section could facilitate inputs from a pair of turntables and a couple of mics. I sure wish I had something like this for WTKX, but that might have caused trouble with the FCC!

air themselves rather than run the NPR network feed.

NPR successfully lobbied the FCC to force all Class D licensees to apply for at least 100-watts or move the 10-watt operation to another portion of the FM band, where it could be "bumped" by any full-power applicant or existing station seeking a power boost. The Commission and NPR knew that not all of the 10-watters could fit in this new regulatory environment. By the early 1980s many had left the air. The "lucky" ones found ways to request power hikes and obtain funding for year-round staffing. In more than a few cases, however, this meant that the station went from a teaching tool to an NPR network operation in which underwriting "commercials" and fundraising phone-a-thons became the station's chief focus.

With apologies for expressing my politics, I count NPR's assault on 10-watters as a symbol of its often Anti-American, Pro-UN/European agenda that seems to fly under most people's radar. And the fact that some of our tax dollars pay for its increasingly influential operation is more than enough to make me feel we were much better served by a loosely organized system of small educational FMs, like the old Class D stations.

Low-Power In The Good Old Days

The folks at Broadcast Pro-File have just produced a new catalog filled with station history inventory and vintage broadcast picture availability. It's well worth the price of a stamp and serves as a decent historic radio station listing (contact them at 28243 Royal Road, Castaic, CA 91384-3028). When I told Broadcast Pro-File's Jan Lowry that we'd be mentioning low-power stations, he suggested signing off with the brief Pro-File of WBRB, a short-lived 100-watter from the AM band. Jan also picked WBRB because it broadcast from Red Bank, New Jersey, the hometown of *Pop' Comm* editor, Harold Ort.

Our little Jersey outlet began life in 1925 as WJBI, when a Red Bank amateur radio operator and electrical shop proprietor, Robert S. Johnson, sought a broadcast license. Authorized as a 250-watt time-share on 1370 kilocycles with WIBI Flushing, New York, the Red Bank AM used Johnson's ham gear, which he "converted to the broadcast waves."

Reportedly, most of the programming consisted of local talks and music targeted to "radioists" in the immediate Red Bank area. A 1927 action by the newly formed Federal Radio Commission (FRC) shifted WJBI to 1170 on the dial, and then to 1140 with a power reduction to 100-watts. In late 1928, the FRC struck again and moved WJBI to 1210 in a timeshare with three Long Island stations. Circa 1931, WJBI resided at 63-67 Broad Street in Red Bank, where a pair of hundred-foot towers with "a six wire 'L' type cage antenna with counterpoise beneath was erected."

The facility was sold during the following year to the company that operated WCAP in Asbury Park, New Jersey. WJBI's calls were switched to WBRB in 1934. It still shared time with several stations, though a few went dark and were replaced by others on the 1210 spot.

Whenever on the air, WBRB used the slogan, "The Home Town Station," and concentrated on its community of license. Reports indicate that WBRB was destroyed by fire on March 16, 1941, just a couple of weeks before the Federal Communications Commission was to assign it the new dial position that WBRB would likely have had today, 1240 kilocycles. Prior to the blaze, WBRB officials had sought permission to construct a vertical radiator at Middletown Township, Building Two, in May Court. Though the FCC issued a permit, WBRB's owners said they couldn't rebuild the small station because of "equipment shortages caused by the United States entering World War II at the close of 1941."

FCC Form 351-A
June 1971

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

File No: BPED-1811
Call Letters: --------

FM BROADCAST STATION CONSTRUCTION PERMIT
NON-COMMERCIAL EDUCATIONAL

Subject to the provisions of the Communications Act of 1934, subsequent Acts, and Treaties, and Commission Rules made thereunder, and further subject to conditions set forth in this permit, authority is hereby granted to

BALDWINSVILLE CENTRAL SCHOOL DISTRICT

to construct an FM broadcast station located and described as follows:

1. Station location: Baldwinsville, New York
2. Transmitter location:
   C.W. Baker High School
   East Oneida Street,
   Baldwinsville, New York
   North Latitude: 43° 09' 48"
   West Longitude: 76° 20' 04"
3. Main studio location:
   C.W. Baker High School
   East Oneida Street
   Baldwinsville, New York
4. Description of transmitter: General Electric, BT-1B, modified for 10 watts output.

(or other transmitter currently listed in the Commission's "Radio Equipment List, Part B, Aural Broadcast Equipment" for the power output herein authorized and, if applicable, for stereophonic and SCA operation).

5. Description of antenna system:
   Composite, four horizontal bays, side mounted on a 50-foot guyed tower on the roof of the C. W. Baker High School.
   Overall height above ground: 78 feet

   Subject to submission of sufficient data in accordance with section 73.550 of the Commision's rules for type acceptance of the transmitter.

6. Operating assignment:
   (a) Frequency 90.5 Megahertz.
   (b) Transmitter output power 10 watts.
   (c) Effective radiated power ---- watts.
   (d) Antenna height above average terrain ------ feet.
   (e) Hours of operation - Unlimited
7. Date of required commencement of construction November 6, 1974
8. Date of required completion of construction September 6, 1975
9. Equipment and program tests shall be conducted only pursuant to Sections 73.216 and 73.217 of the Commission Rules.
10. This permit shall be automatically forfeited if the station is not ready for operation within the time specified or within such further time as the Commission may allow unless completion of the station is prevented by causes not under the control of the permittee. See Section 1.598 of the Commission Rules.

This construction permit consists of this page and pages

Dated: September 6, 1974

FEDERAL COMMUNICATIONS COMMISSION

kim

Secretary

F.C.C. - WASHINGTON, D. C.

A relative latecomer in the Class D realm, the Baldwinsville, New York, Central School District was granted this 10-watt educational FM construction permit in the fall of 1974. The resulting WBXL-FM went on the air after Christmas vacation as a 100-percent student-run operation. When the FCC ordered all 10-watters to find a way to boost power or face cancellation, the school district battled an area NPR outlet wanting to expand into the small station's coverage area. Happily, for the several hundred electronic media students who participate in WBXL-FM activities each school year, the station now boasts 175-watts and is heard throughout suburban Syracuse.

The Commission quietly deleted WBRB's authorizations and call letters during the first week of 1943. Though, most local broadcast buffs had been drafted into service and were far away from Red Bank when word came that the last vestiges of WBRB were gone, there must have been at least one radio nut in town who felt its loss.

Let's Hear Your Stories!

I'll bet there are plenty of broadcasters out there today who started their radio careers as a neighborhood announcer. Let's reminisce about the good old days; send along your stories—and photos if you have them—to me here at *Pop'Comm* and we'll include them in a future column. See you again next month!

And so ends another day of broadcast history from *Pop'Comm...* ■

WGMC PROGRAM SCHEDULE
90.1 on your FM dial
P.O. Box 7197, N. Greece, N.Y. 14515

WGMC, a community-educational radio station - the voice of Greece - is designed to acquaint the community with itself and at the same time provide varied and informative programming. It is operated to a large extent by volunteers who live in the Greece area and supported in part by tax deductible donations from the community.

If you would like to become involved in our active and growing station or have any questions or comments, please call us at 225-5330 or write WGMC, P.O. Box 7197, N. Greece, NY 14515.

Our program guide will be effective Dec. 1, 1977. We trust you will derive many hours of enjoyment from our offerings.

MONDAY

CONSUMER TIME - 12:10 p.m., 5:45 p.m.
Consumer tips and information produced by the United States Department of Agriculture.

EARTHWATCH - 12:20 p.m., 5:50 p.m. Sat.
Ecological issues treated in a fascinating and informative daily featurette produced by the University of Wisconsin.

NEWS - 12:30 p.m., 2:30 p.m., 4:30 p.m., 8:30 p.m., 10:30 p.m., 12:30 a.m.
News briefs gathered from the wires of the United Press International and the WGMC news room.

CARE - 12:35 p.m., 5:55 p.m.
Brief messages from CARE International.

THESE PEOPLE ARE WORKING FOR YOU - 12:45 p.m., 6:15 p.m.
Don Riley, Greece Supervisor, chats with various town employees.

AGRICULTURE U.S.A. - 1:00 p.m., 6:30 p.m.
Informative agricultural bulletins from the U.S. Department of Agriculture.

ENVIRONMENTAL PERSPECTIVES - 1:15 p.m., 6:00 p.m.
The steps society is taking to deal with man's impact on his surroundings.

ISRAEL MAGAZINE - 1:30 p.m.
An audio magazine focusing on today's Israel.

AUDIO NEWS FEATURES - 2:00 p.m.
Three-minute featurettes ranging from make-up hints, sports personality interviews, to a look at today's society.

THE SHOW WITH NO NAME - 2:05 p.m.
Listeners, beware! Burt Stein is even more unpredictable here than he was with Sonic Pathways.

POP'S VARIETY HOUR - 2:35 p.m.
Top 40 music plus a comedy spot from John Popowych.

SKI REPORT - 3:30 p.m.
Snow conditions from the area's most popular ski slopes.

MUSIC SPOT - 3:45 p.m.
Donald Porterfield brings you music with a rock and Top 40 flavor.

DUSTY LABELS AND OLD WAX - 5:00 p.m.
A look at those never to be forgotten old time hits.

NEGRO MUSIC IN AMERICA - 5:15 p.m.
A look at the role black music has played in the United States.

NEWS ROUND-UP - 5:30 p.m.

Here's a sample of what 10-watter WGMC in Greece, New York, offered to Rochester-area radio buffs. It was established as a "community-educational station" and operated by volunteers. This is similar to the ownership structure of the current low-power FM or LPFM service.

by Randy Adams, NT8N

Taking Your First Steps In AM Broadcast DXing

Years ago, in a small house in Cincinnati, Ohio, I remember sitting with my dad and tuning in WSM (650 kHz Nashville, Tennessee) on a Saturday night, using his old Atwater Kent model 967. This is where my interest in Broadcast DXing began. My journey through life has brought me through many things, but radio and electronics has been there through it all. Finding a little station many miles away and being fascinated, and the joy of getting that QSL card in the mail, is still a thrill—there is nothing like it anywhere.

How Do You Get Started?

AM DXing is unlike most other aspects of radio. For one thing, the FCC does not require a license, so you can dive right into the fun almost immediately.

First thing you need is a good receiver of some sort. You can start this pastime with an inexpensive receiver to test the waters (around $100). However, with the lower priced radios you will mainly receive the stronger stations. If you want to get the weak ones, you need a mid-priced receiver ($300 to $500). To go for the really rare stations, a top-of-the-line communications receiver may be the just the ticket ($1000 to $1500). Shown at right are some of my favorites.

What To Look For In A Receiver—Sensitivity And Selectivity

Sensitivity is the receiver's ability to "hear" those weak signals (DX); the lower the number in the specifications, the better. If the receiver has a very low sensitivity number, and you tune near a powerhouse 50-kW station, it is possible to take out the front end of your receiver.

This is why most manufacturers incorporate what is called an attenuator into the broadcast band section of these receivers. This can be either a set attenuation or, in the better receivers, variable attenuation. The noise figure is a measure of the reduction in a signal as it passes through a noisy network (the SINAD number). In other words, it's how well a signal overcomes the noise that is generated inside the receiver. It is a common misconception that the noise you hear in a receiver is coming from the air. In reality, most of this noise is generated in the receiver itself. This is caused by electron flow through the internal electrical components.

The **selectivity** of the receiver is the ability to distinguish between adjacent signals. This is very important when you are trying to hear that distant station with a powerful clear channel station nearby. Filters can increase the effective selectivity of a receiver. By switching in more filtering you can narrow down the bandwidth and reject the adjacent signals. This process does have a cost; the more you decrease the bandwidth, the less frequency response the receiver has, and the sound of the station will become more raspy sounding, losing its lows. However, this is a very effective way of increasing the selectivity to hear

Tivoli Audio Henry Kloss Model One AM/FM Table Radio

This radio offers very good sensitivity and excellent selectivity in a small package. Audio is extremely good, with easy-to-use controls. The frequency range is 88 to 108 MHz FM; 55 to 1700 kHz AM. Supplied with an external speaker connection, it's priced from $99.

ICOM R-8500

This ICOM R-8500 has good sensitivity and selectivity in a desktop model. Advanced controls include IF Shift and Auto Peak Filter functions, triple conversion and advanced RF circuits for a dynamic range (107 dB), built-in keypad for direct entry of frequencies. Attenuation may be set for 0, 10, 20, or 30 dB. Frequency range: 100 kHz to 1999.99 MHz. It's supplied with an external speaker connection, S-meter, and much more. Priced at $1499.95.

Alinco DJ-X10

The DJ-X10 offers good sensitivity and selectivity in a handheld model. Intermediate level controls. Frequency range: 0.1000 to 2000 MHz, AM/FM/SSB, supplied with external headphone connector. It has 1200 memory channels and is priced from $199.

weak stations—a tradeoff, of sorts.

Intermediate Frequencies

AM radios today can be either direct conversion or superheterodyne. A direct conversion receiver does not tolerate strong clear channel signals well. That can lead to overload of the mixer, causing interference (it is sensitive to any harmonically related signals causing interference at multiples from the base frequency the powerful clear channel stations are on).

The better choice is the **superheterodyne** receivers. They have one or more intermediate frequencies that the radio signal is stepped down through to get the audio signal out. In other words, incoming frequencies are down-converted to a usable frequency to amplify them. In general, the more intermediate frequencies that are used in a receiver, the better the selectivity.

Spurious Responses And Image Rejection

All superheterodyne receivers have the potential to respond to frequencies other than those in the desired frequency range. These misplaced signals are referred to as **spurious responses**. They occur when a signal at another frequency than that to which the receiver is tuned produces an output. The signals could be the result of device non-linearities (a technical situation inside the receiver), harmonics from external signals on different frequencies, or external signals which cannot be tuned out. You need to see specifications somewhere in the range of -60 bB to -90 dB for good, or extremely good, image rejection.

The Antenna

This is an extremely important part of your overall system—perhaps it's the most important! You can have the best receiver made and a bad antenna and not hear those weak DX stations. But if you have some real estate and bit of copper wire, a top-performing antenna can be had very inexpensively.

There are extensive plans on the Internet for random wire antennas and loops; in either case you need to match the antenna to the receiver in some way. This can be accomplished with baluns, tuners, matching stubs, or a gamma match. But, remember, maximum power transfer occurs when the device matches the load, which means that you get more signal (higher S-meter reading) when the antenna is matched to the receiver, making sure the two impedances (antenna and radio) are the same.

When building your own antenna, you will need a few tools, including screw drivers, pliers, soldering iron, and the tool I use most, my MFJ–259 antenna analyzer. This device saves lots of time and frustration. I consider it necessary for the home antenna builder.

Build your antenna, connect the MFJ-259, and sweep the frequency dial. The MFJ 259 tells you the resistance and frequency of resonance, plus a lot more! You can find the MFJ-259 on the Internet at http://www.mfjenterprises.com/index.php.

The Longwire

This is probably the oldest and most common antenna design. It is often called a "longwire," though a true longwire is "cut" to a specific frequency (tuned by being a specific length) and is at least one wavelength long at that frequency. A random wire, on the other hand, is generally cut to no specific length and is intended to cover a wide range of frequencies.

It is usually configured as a wire sloping from a mounting point near your radio to a tree or other mounting support. The horizontal section can be about any length, but is usually about 60 to 100 feet long. Wire diameter is insignificant in this type of antenna. It can be made from thin magnet wire or heavy welding cable and it will perform about the same.

The only real concern with wire size is its physical strength. This antenna works quite well, but does have one major drawback: Since the lead-in wire (the wire going to your equipment) is not shielded, it forms part of the antenna, and if run through any high noise fields, such as near fluorescent lights, it will conduct this noise into your receiver. This antenna is inexpensive, easy, and effective. In any case, a static discharge unit should be used to drain static from the antenna and protect the radio, and you should take proper precautions to protect against lightning.

You can attach the longwire directly to your receiver, but it is best to use a coaxial feedline where possible. For the most part, modern receivers work best with coaxial feed that is 50 to 75 ohms impedance. On a longwire you need only attach the **center conductor** to your antenna, and then connect the coax shielded material to an electrical ground, such as a copper water pipe or ground rod.

Never let your antenna touch any conductive material, and keep away from power lines inside and outside. If you are using a longwire antenna there is another risk to be aware of: static! Static can build up on an antenna at any time and any place. Palomar Engineers (www.Palomar-Engineers.com) makes the Magnetic Longwire Balun that lets you use coaxial cable for the lead-in cable. The shield of the cable keeps out the noise to give quieter reception. The balun also protects the radio against static discharge by routing static electricity direct to ground instead of through the radio.

If you would rather not make your own antenna, there are several manufacturers that supply antennas, such as Alpha Delta and MFJ. If you're like me and don't have the area to erect a large wire antenna, you might try the DX-SWL shortwave sloper antenna made by Alpha Delta. You can find full information at http://www.alphadeltacom.com/pg7.htm.

The Feedline

Most people ignore this part of the antenna system, but it can make a dramatic difference in performance. Depending on your antenna, you might use twin lead, coax, or just one wire for your feedline. Whatever you decide to use make sure its impedance is matched to the antenna, using some sort of coupling device. Use a high-quality feedline, such as Belden 174/U coax cable. This cable has an 8.9-dB loss per 100 feet at 100 MHz, meaning that the received strength of a 100-MHz signal is divided in half about three times before it gets to the end of the 100-foot length. But chances are you won't be using anywhere near 100 feet of feedline, and at broadcast band frequencies the losses are much less. This compares to RG-214/U, which has a loss of 1.9 dB per 100 feet at 100 MHz, meaning that the received signal is divided by about two-thirds. The lower the frequency of operation, the lower the effective signal loss on both of these feedlines. You can see that the 174/U has more loss than the 214/U. For frequencies below 5 MHz, using the 174/U is more than sufficient.

In Summary

To get the most signal to your radio's speakers, do some research and check out the advertisements and the Internet. Use high-quality feedline and a good antenna.

AM And FM Station Changes And Updates

New Call	Location	Freq.	Old Call
WQQZ-FM	Clermont, FL	88.7 MHz	WWKQ
KKLU-FM	Lubbock, TX	90.1 MHz	KQRI
KLNB-FM	Grand Island, NE	88.3 MHz	KKLU
KNAX-AM	McCook, NE	700 kHz	New
WSNA-FM	South Webster, OH	94.9 MHz	WRAU
KTFM-AM	Pearsall, TX	1280 kHz	KSAH
KBOZ-FM	Bozeman, MT	99.9 MHz	KZLO
KQSM-FM	Bentonville, AR	98.3 MHz	KFAY
WSMO-FM	Thomaston, AL	97.7 MHz	WAYI
KBTB-FM	Alameda, CA	92.7 MHz	KPTI
WMAK-FM	Murfreesboro, TN	96.3 MHz	WMAK
WQMV-AM	Waverly, TN	1060 kHz	WMQV
WVKO-FM	Johnstown, OH	103.1 MHz	WSMZ
WWRX-FM	Pawcatuck, CT	107.7 MHz	WHJM
KLMR-FM	Lamar, CO	93.3 MHz	KSNZ
KQRI-FM	Socorro, NM	89.5 MHz	New
WWYW-FM	Dundee, IL	103.9 MHz	WZCH
KAIZ-FM	Mesquite, NV	88.5 MHz	New
WCRJ-FM	Jacksonville, FL	88.1 MHz	WNCM
WEBL-FM	Warner Robins, GA	102.5 MHz	WELV
WGRB-AM	Chicago, IL	1390 kHz	WGCI
WRFM-FM	Wadesville, IN	90.1 MHz	WXIR
KKAL-FM	Paso Robles, CA	92.5 MHz	KWSR
KXTY-FM	Morro Bay, CA	99.7 MHz	KKAL
WHOJ-FM	Terre Haute, IN	91.9 MHz	WAPC
WWGY-FM	Grove City, PA	95.1 MHz	WICT
WBPM-FM	Saugerties, NY	92.9 MHz	WRKW
WNRX-FM	Jefferson City, TN	99.3 MHz	WEZG
KHTY-FM	Devine, TX	92.5 MHz	KSJL
KDJQ-AM	Meridian, ID	890 kHz	KQXI

Above all, have some fun finding that rare BCB DX! I'd also recommend that you read, *Discover DXing! How To Hear Distant AM, FM & TV Stations*, by John Zondlo, available at many radio dealers.

I am looking for your AM broadcast DX spots. Please send them to service@therfshop.com

Broadcast Loggings

Sitting here in my radio room listening to those DX AM stations by the light of my desk lamp sure brings back fond memories. Transoceanic DX is still coming in strong! Now let's get to the reports—but, remember, I need your broadcast band loggings every month! Please send them to me at service@therfshop.com. See you again next month!

810 WMGC Murfreesboro, TN. Sports talk from WNSR in Nashville, then into ABC News at top of the hour. Superb signal with no fading, local quality with only interference from nearby lightning crashes."810, WMGC, Murfreesboro, TN." (IEN, GA)

920 Unidentified. Country music simulcast. "103.9, WXKQ, The Bulldog!" (IEN, GA)

1090 WTNK Hartsville, TN. Stock car racing from Riverview Speedway. Sixteen-year-old Brenda Turner won and this was her third Super Stock Feature victory of the season! Good signal, with slight fading. "The heart of Tennessee, AM 1090, WTNK, Hartsville." (IEN, GA)

1320 WMSR Manchester, TN. MLB, Braves & Marlins. A decent signal, but with deep, heavy fades. "You're listening to Braves Baseball on The Groove, 1320, WMSR." (IEN, GA)

1350 WGAD Gadsden, AL. Atlanta Braves Baseball promo with the voice of Pete Van Wiren. Weak, but legible in the slop. "Catch Braves Baseball on AM 1350, WGAD." (IEN, GA)

1370 WDEF Chattanooga, TN. MLB, Braves & Marlins. Tenth-Inning Show, post game wrap-up. A decent signal, with deep, heavy fades. "Home of the Braves and ESPN Radio, 1370, WDEF." (IEN, GA)

1520 KRHW Sikeston, MO. Classic country. Very good signal at times, but subject to fading. Like listening to a local station! "The classic country station, 1520, KRHW." (IEN, GA) *(This is a great catch for me in Cincinnati, OH, as 1520 is usually a mish-mash of bleed from WLAC on 1510 in Nashville, TN, and/or WSAI on 1530 in Cincinnati, OH.—ra)* ■

References

Hall, Gerald, Editor, *The ARRL Antenna Book*, 19th Edition. American Radio Relay League, Newington, CT, ISBN 0-87259-804-7, 2000-2002.

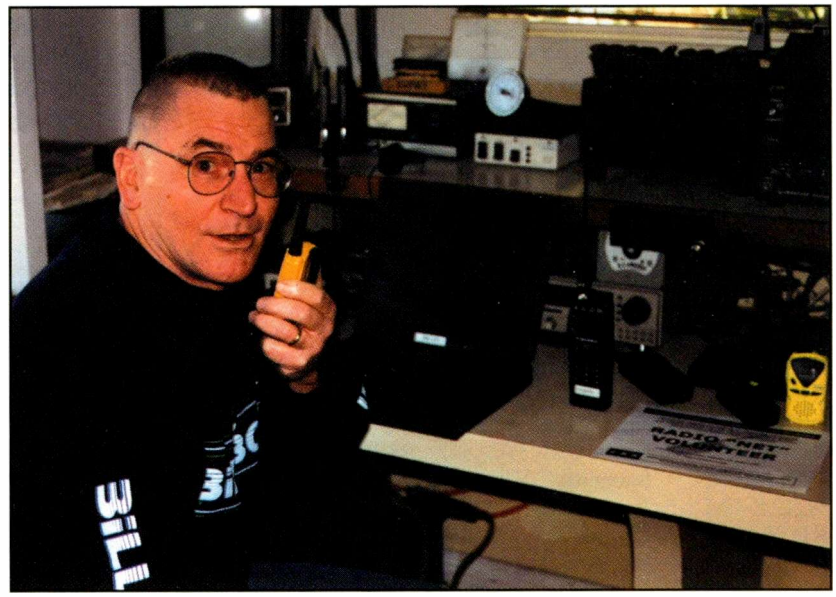
Hughes, Frank P., *Easy Shortwave Antennas*. Tiare Publications, Lake Geneva, WI, ISBN 0-936653-29-9, 1992.

by Gordon West, WB6NOA

Community Emergency Response Teams Reach Out To Neighborhood FRS Radio Users

You all know that blue light special on aisle 4—purchase a *pair* of 14-channel FRS walkie-talkies for $19.95 and receive a manufacturer rebate of $20! By all calculations, aside from your local sales tax, you make a penny on the deal and end up with a pair of 1/2-watt FRS radios!

I've been told that there is no let-up on the sale of these tiny 1/2-watt portable transceivers. Estimates of even 12 million units sold every year may be conservative, especially when you can buy a pair and get the manufacturer to rebate the price. Even in the heyday of 27-MHz CB radio, there was only one year, in the 1980s, that topped 12 million units being sold. Any evening, a quick scan of the 14 FRS "splinter channels" will reveal a hotbed of near-useless kiddie-chatter.



Small FRS radios are more than toys to CERT teams!

...At Least Until 8 p.m.

Every Monday evening at 8 p.m. a commanding voice using his 5-watt GMRS licensed equipment on FRS Channel 4, 462.6375, asks all Channel 4 users to stand by for Community Emergency Response Team (CERT) traffic and news. A quick check of the chatter on Channel 4 shows an open frequency, and the operator comes back up with his 5-watt transmitter to an outside antenna and gives his local city emergency preparedness news broadcast to anyone and everyone within range listening on a little FRS radio.

Without bending any FCC rules, the link-up between FRS and GMRS is a viable, low-cost plan for community emergency preparedness. Throughout the country, most cities are engaged in teaching the eight-week CERT course, developed by the Federal Emergency Management Agency (FEMA) with an on-line CERT training participant handbook from www.FEMA.gov/fema/pre2.html.

Many areas of the CERT training program rely on a means of short-range communications, independent of landline phones or cell phones, which could be inoperative during a local or widespread disaster. CERT-trained members would have already "walked the block" within their neighborhoods *before* any incident, offering evening topical disaster preparedness talks to interested neighborhood residents. They would have encouraged citizens to equip themselves with inexpensive FRS radios and in an emergency to dial into a pre-determined FRS channel to talk within a block to their neighborhood CERT-trained member.

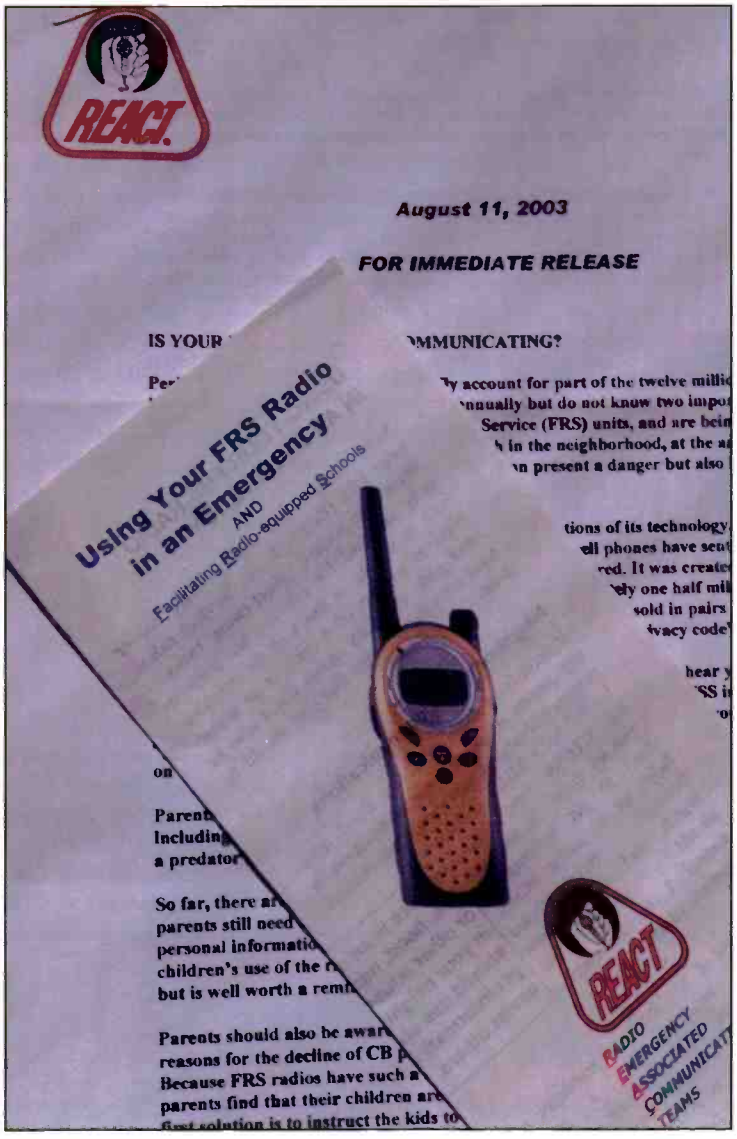
Since the little FRS radios are hard-pressed to communicate more than a block away, each trained CERT member would get as much local information as possible and be prepared to hear the much stronger signal of a nearby GMRS station asking for damage and situation reports.

Many GMRS operators involved with the CERT program are members of REACT. They are also likely to hold both a GMRS license, which allows them access to the seven interstitial FRS channels (1 through 7), and a ham license, which might mean they have radio capabilities relay their localized information to the city net control at, say, the city Emergency Operations Center (EOC).

The GMRS connection is an important one because it allows the licensed GMRS operators to run up to 5 watts of power to an outside antenna system on interstitial FRS channels, as follows:

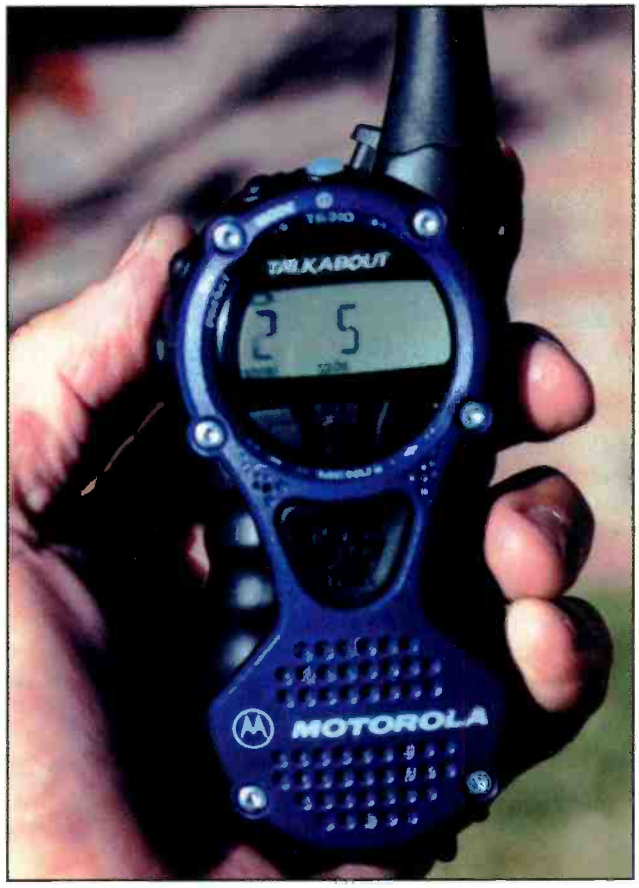
Channel 1, 462.5625
Channel 2, 462.5875
Channel 3, 462.6125
Channel 4, 462.6375
Channel 5, 462.6625
Channel 6, 462.6875
Channel 7, 462.7125

The licensed GMRS stations could probably pull in 1/2-watt FRS signals up to 10 blocks away, developing local "cells" to



← *REACT works FRS radios into a school disaster plan.*

Here's a top-quality Motorola FRS handheld radio with big channel readout. ↓



take the reports from CERT block members on behalf of neighbors inside their homes, or possibly even buried under rubble still clutching their little FRS handheld.

Doing The Right Thing

Things get more interesting technically when CERT block captains have purchased combination FRS/GMRS radio equipment. The combo GMRS/FRS handheld may actually put out 2 watts on the first seven FRS channels and automatically reduce power down to a 1/2 watt on the remaining 8 to 14 FRS channels. There may be a power selector switch to allow the user to reduce the 2 watts down to the half watt on FRS Channels 1 through 7, but in an emergency the higher power would certainly be within the rules to help establish comms to a GMRS-licensed net control seeking damage reports.

These combo GMRS/FRS radios are so commonplace I doubt that few users are getting licensed for GMRS. Rather, they figure low power with this equipment on FRS Channels 1 through 7 might be permissible, and certainly Channels 8 through 14 at a fixed 1/2-watt output is perfectly legal. While the instruction manuals indeed call for a GMRS license, the sharing of both radio services with an ostensibly more powerful GMRS/FRS handheld does not seem a high priority for either licensing or selecting the right power output.

So let me state that all of our local communicators who possess any equipment *beyond* a 1/2-watt, 14-channel FRS radio are encouraged to join the local REACT team with REACT's GMRS license or, indeed, get a GMRS license themselves. Well-known REACT operator Bob Leef, President of the Saddleback Valley REACT (kb6don@earthlink.net; phone 949-770-9501), is hard at work in his community establishing a radio program for schools, kids, and parents using the inexpensive FRS equipment.

"An FRS radio may be allowed on the school campus for the student to carry. In an emergency, this FRS radio, as well as the parent's FRS radio, could be tuned to Channel 1 (462.5625 MHz), without tone, for instructions and to ask for information," Bob explained. The local GMRS operator, using higher power and an outside antenna on FRS Channel 1 could send and receive reports from his/her nearby school, and pass them up the line to an area emergency coordinator.

"Our team, based in Orange County, is comprised of members who are ham radio operators but are also licensed in several other radio services so that we do not rely on only ham radio frequencies. We even have radios for loan to those schools who would like to test the capa-

Here's you see a Pryme GMRS radio on the left and a Kenwood FRS on the right.

bilities of FRS for disaster drills and special situations," added Bob, who has devoted his entire radio career to emergency communications, specifically based on inexpensive equipment that others might just consider toy radios.

While the FCC has not established any one of the 14 FRS channels for emergency use only, FRS Channel 1 without any tone-coded squelch is becoming a center for emergency preparation. Most new FRS radios default to Channel 1 when new batteries are installed. This makes it logical and easy for everyone to remember to go to FRS Channel 1 after "the big one."

Tips For GMRS Users

But it takes the more powerful GMRS-licensed radio system on an outside antenna to take control of the frequency and call for reports. GMRS licensees must also remember not to close-talk their microphones, because most FRS radios will "chop out" and distort audio with any deviation beyond 2.5 kHz. Common *GMRS* deviation is twice that. Some of the combo GMRS/FRS equipment compensates for interstitial channel deviation, others don't. This is an important consideration when working on your radio program.

"The big benefit of these inexpensive FRS radios is their relatively short range—about a block. This keeps interference down to the local CERT block captain taking in damage reports," said Diane Hill, the coordinator of the City of Costa Mesa, California, FRS CERT program. The extremely short-range, ultra-cheap (sometimes nearly free!) FRS radios allow block-by-block damage reports and on-air live radio training sessions to be easily picked up by FRS block captains and then relayed to more powerful GMRS stations nearby.

What's Your Approach?

What are you doing in *your* neighborhood with these inexpensive FRS radios—and with your GMRS equipment? It's time to get involved and help your community! Please let us know about your program and successes. Your photos and short articles are always welcome at *Popular Communications*! ■

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by Bill Price, N3AVY

Okay...Raise Your Hands... Who Remembers Who Norm Is?

Norm is a real person, a licensed ham (Extra class, no less), and I believe he held a first class radiotelephone license (now diluted to a "General" license). He has worked as a radio technician for a county sheriff's department, and is a well-known figure in the amateur radio equipment industry. Any more details might let you sniff him out. Of course, "Norm" is not his real name, but as a high-paid journalist in the field of radio communications, you can bet *I'll* never reveal his real name (unless threatened with physical pain or financial loss).

And Norm's a good friend, too. I don't think a person could have a more loyal friend, and I hope I was that loyal to him also, when we lived near one another and worked closely as well.

But Norm is perhaps to radio what Gerald Ford was to the presidency. Well, perhaps the clumsy misfortune of Gerald Ford, coupled with the inventiveness of Rube Goldberg (Rube *who?* If you don't know him, you'll have to look him up.) There's also some of Fibber McGee in Norm, particularly in his closets and storage facilities. In fact, the more I think of old-time radio characters, I realize that he had all the political savvy of Water Commissioner Throckmorton P. Gildersleve. No wonder the guy likes radio so much.

I've accompanied Norm on so many hapless incidents (risking life, limb, and reputation) that I can so easily identify with him. Soldering on a roof, in a New England winter wind, with a butane-powered pencil iron might be the most frustrating thing I remember of our escapades...if it weren't for *the bus*.

Yes, I know I swore never to write about *the bus*, but I think the statute of humorist's limitations has expired on that one. I don't know if I can even reveal *why* Norm had a bus, where he bought it, who owned it previously, or what he intended to do with it. None of this is illicit, or slanderous, and, with the exception of an errant transmission deciding to let loose with 29 quarts of automatic transmission fluid in the presence of a police officer (I am *not* making that up), nothing about the bus or its intended use was bad in any way. It's just that revealing the details would tell too much about our hero and might lead some of you to discover his true identity, which I honestly try to conceal lest you all want his autograph.

The bus would have been, had it run satisfactorily and had its interior overhauled, Norm's living quarters, transportation, and world-headquarters for his business venture, which I can tell you would have been an honorable one. It was a former city bus, with a huge V6 diesel engine, connected to a "stump-puller" of an automatic transmission. Bus aficionados called its design a "greenhouse" because of the configuration of its windshield.

He almost had me convinced to use a cotton sock (one of mine, I think) instead of buying a new pre-fuel filter for the fuel. He had me dig a hole in the ground in which to set a bucket so that it was lower than the fuel tank of the "kneeler" bus (which had kneeled down so low as to prevent us from even *looking* under it) so that I could siphon a hundred some gallons of "stale" fuel from the tank, which we replaced with "nice fresh" fuel by hauling it, five gallons at a time, in a very small sports car from a very far-away gas station, to a really remotely located bus.

I ended up making a rack-adjustment tool from screen-door turnbuckles—one of my prouder moments. I spent some six months of weekends, some even sleeping in a cheap motel near the bus, at a site similar to a junkyard, with no running water or other niceties (but with plenty of bugs), under what was usually a very hot sun. All the time trying to figure why it wouldn't run, trying to make it run, and trying to do so without spending much of Norm's money on parts or tools.

We eventually found that the less-than-competent person who had installed the nice new starter had wired it backwards, and, as with DC motors, it *ran* backwards. And the lovely engine, which was completely tuned and adjusted to the most finicky of specifications, would not run backwards no matter how many $100 batteries (it required several) we ground to a nub in the process.

Yes, I eventually got it to run. I actually drove the thing, and came close to shearing off a rural mailbox or two on a windy country road. Ran like a top, it did. Power, speed, agility, and comfort. It was only when we tried to turn it around by backing it into a place whose identity I won't even *hint* at for fear of all sorts of ramifications and reprisals, did it give up its 29 quarts of automatic transmission fluid through a gasket, which could no longer stand the pressure of a shift from forward to reverse and back again.

It was at that very moment when my friend Norm, looking out from the living room of the partially converted bus, began to confess every crime back to and including the Lindbergh kidnapping to an officer who was fortunately on the wrong corner of the bus to notice the transmission fluid seeping ever so quickly into the soil, which was so mercifully absorbent. Norm and I have since apologized to nature, and he has donated some amount equivalent to the cleanup (anonymously, I might add) to an appropriate jurisdiction toward its environmental activities. To this day, I cannot figure how that particular officer came to be at that particular location at that particular time. Inverse kismet is the only plausible explanation.

We explained to the officer that the bus would have to cool down for a bit and we'd be on our way, and then we drove off to find 29 quarts of automatic transmission fluid (we had to go to three stores and pay exorbitant prices) in that particular location, on a hot Sunday evening.

The bus is dead now, I believe. So few miles on its rebuilt engine, so little hope of ever getting a satisfactory transmission and having it installed properly. We never got the chance to add any of Norm's (my) radio gear to the bus. Why bother? Today, I think that Norm is satisfied with a k-car and a pop-up tent for his travels, but I guess I'll always be ready to hear an air horn in the driveway beckoning me to "Come see what I got..." ■

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