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

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POPULAR COMMUNICATIONS

OCTOBER 2005

No Holds Barred— Military Radio Monitoring

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Must-Read— Podcasting–The Next Big Thing Page 28

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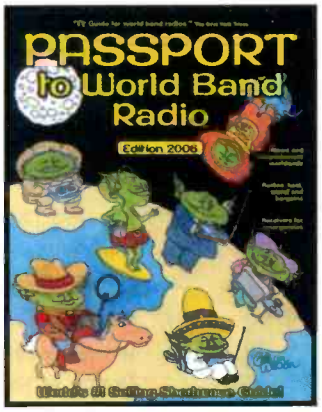

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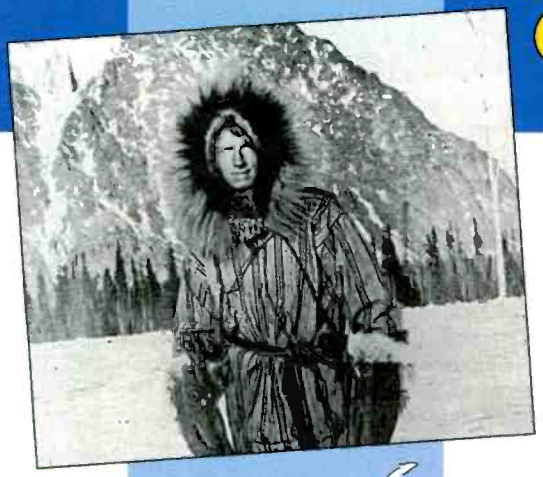

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Departments

On The Cover

Kent Olson, KAØLDG, of Fargo, North Dakota, at the controls of an F-16A Air Defense Fighter from the 119th Fighter Wing North Dakota Air National Guard prepares for mid-air refueling over central North Dakota. Remember, you don't need to live near a military base to hear military comms on VHF, UHF, and even HF. This month, we present a new column dealing exclusively with these communications; how to hear them, how to decipher what you're hearing and much more. Check out Allan Stern's "Military Radio Monitoring" column on page 22. (Photo by Lisa Bares-Olson)

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by Harold Ort, N2RLL, SSB-596

Do Not Resuscitate

With slightly less fanfare and far less pomp and circumstance than a change of command ceremony, the FCC has proposed dropping even the 5-wpm Morse code requirement to obtain a ham license of any class. The FCC's July 19 Notice of Proposed Rule Making and Order (NPRM&O) can be found on the FCC's official website at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-143A1.doc. I'd recommend that you read the whole thing, especially if you're still in a 1940 mode, because then—and only then—will the news of the inevitable finally strike home.

You've got 60 days from the publication of WT 05-235 in the Federal Register to file comments with the Commission. Then there's a period for reply comments before the Commission takes the matter under consideration. Once you read (and re-read) the mumbo-jumbo in the NPRM&O, you'll see that the Morse code ball has finally been tossed in the public's court.

For years the Code ball has been the single hottest ball you could toss. I've tossed it a few times, and each time I get lots of correspondence and calls from both sides of the aisle ("I'm droppin' my *Pop'Comm* subscription 'cause you're telling folks they should be able to get somethin' for nothin'—after all, I got mine, they should get theirs. Darned liberal media.").

Yes, and in the Service *you* might have rolled in the mud for x number of years, so you think everyone else should have to do the same. Nonsense. There are loads of other rewarding—and yes, still challenging—things to do. And so it is with amateur radio.

Learning the Code isn't all that difficult, or different from anything else in life. I did it, but certainly didn't consider it a fun thing. Today I'm strictly a voice op and keyboard-to-keyboard digital hound. Point is, just because *you* tortured yourself with learning it back in the day doesn't mean young Johnny wants to today. It's like soldering. And please, unless you've experienced soldiering *or* CW *firsthand* (that doesn't mean hearing about it from your daughter's husband or your uncle), I respectfully ask you to simply go back to using your imagination about what you *might* have done from the comfort of the couch, thank you. Perhaps another comparison might be, "I had to walk five miles to school in zero-visibility blizzards (or skin-scorching heat) when I was a kid. Young folks today have it too easy with buses picking them up and dropping them off within a block of home." You get the idea.

Yes, times change, and way back when if you didn't like having to spend every weekend for a month or more learning CW and didn't say anything to the FCC or League about it, so be it. What's done is done.

Then there are those in the other group, who usually tell me something like, "The Code requirement is, for most people, a relatively easy hurdle to overcome. I did it but, truth be known, it wasn't very pleasant, and I don't use the mode today. I don't want to take anything away from others that do, but I don't think requiring folks to test on something that's no longer as relevant as it once was makes a lot of sense."

Like I said, we've talked about this issue before, and I've listened to and chatted with folks at hamfests, had live on-air talkshows with non-hobbyists, and even e-mail exchanges, and (surprisingly) I've even lived to experience yet another glorious day on the radio! I've really got nothing against Morse code as an on-air mode, but not as an integral part of an amateur, or as the only way of being permitted to use HF, regardless of who's making the rules—in this case, of course it *was* the International Telecommunication Union based in Geneva.

Interestingly, those international rules requiring telegraphy proficiency date back to around 1938. But since 1947, at each successive World Administrative Radio Conference (WARC) meeting, the actual cut-off frequency for requiring code has been lowered. Then, finally, at the last World Radiocommunication Conference in 2003, Morse testing was deleted as a requirement for amateur applicants seeking HF privileges. They left it up to individual countries to determine whether or not they wanted to mandate Morse code testing. Some countries have already done so; as a matter of fact, Japan has even allowed HF operation below 30 MHz. And they've got half the world's hams. Imagine that.

You don't have to be a rocket scientist to realize that ITU's holding onto the telegraphy requirement for HF was more about tradition than it ever was about "code getting through in an emergency" or that it doesn't cause interference to other services. After all, if you go back far enough, the ITU began 140 years ago as the International Telegraph Union. If the interference issue was as valid as many folks would have you believe, the telegraphy requirement probably wouldn't have eroded away. So you see, it's some American phenomenon of "this new generation trying to get something for nothing" as some died-at-the-key hams would have you believe, it's an inevitable part of radio's evolution. (We *do* want to evolve with the world, don't we?)

Let's face it, there's a whole lot less studying involved and it's a heck of a lot easier for a teenager to get a *driver's* license and take a multi-ton SUV out on an Interstate than it is to get a *ham* license. Ouch, that hurts a whole lot more than a renegade radio operator kerchunking a repeater!

Think about it for a moment: *requiring* new drivers to know how to light a safety flare or two and place them behind a broken-down vehicle at just the right distance (carefully measured by the examining officer, of course) probably wouldn't do much more in the long run than burn the kids' fingers and sell a lot of flares. Today folks will simply pull over and call AAA on the cell phone or ask Daddy to pick them up. Honestly, there's nothing wrong with knowing how to change a flat tire either; but again, in many cases, in a *real* emergency, even if you're proficient in tire changing, you're going to call for roadside assistance because changing the flat a mere foot or two off the road is downright dangerous!

We're now at the point in radio's evolution where even the Commission believes the code requirement is obsolete. They say it's, "now unnecessary," and that if it's dropped more people would be encouraged to become hams. Sound familiar? We heard the same thing years ago when the Code-Free Technician license came along. And, of course, there was the usual moaning and groaning from the usual moaners and groaners that it would only attract CBers and rule-breakers looking for an easy way to get a ham license.

History and statistics prove that the opposite happened. Ham ranks grew dramatically, making the Technician license one of the best things that ever happened to ham radio.

The next time you're at your local club meeting (you *do* attend them, don't you?), take a look at the faces. What's the general age bracket of the members? Have you ever wondered why we applaud and cheer a new under-20 licensee or a woman at these meetings? Beyond our obvious genuine pride in their accomplishments, we're also pleased as punch that there are a couple of newcomers preparing to take the journey of a lifetime. We almost breathe a collective sigh of relief that they're at the meeting and made the grade.

Maybe we can help them enjoy the many aspects of our fantastic radio hobby, including using Morse code—if that's their thing. If not, let it go and be glad they're sitting next to you and are as genuinely enthusiastic about radio as you once were. Maybe they can help us with the computer and using those new digital modes—unless *they* aren't *your* thing.

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.*

Nasty Press And A Couple Of Ham Beefs?

Dear Editor:

Every month, I am faced with the same dilemma at the newsstand: do I or don't I buy your magazine? Every month, I buy it, hoping that things have changed. There are no good, national publications devoted to general hobbyist radio. Sadly, your magazine isn't helping the trend. The general tone of the magazine veers further to the left with each passing month....

In any event, the July issue was the bottom for me. Seeing a picture of a doctor-looking fellow and a caption "Is It Safe to Use That Mobile Rig?", I expected some treatment of the hazards of RF applied too close to the body. Instead, I got to read about a couple of guys' beefs with some itty bitty police department in Boo-Foo, New York. Perhaps that department had an issue with a Neighborhood Watch gone berserk or some other reason for taking action with scannists. Nasty press won't help change this, folks. As a matter of fact, it will make it worse. In any event, a gathering of organized radio hobbyists making a presentation to the city council is in order here, not a broadside blast in a national publication. Where is the local ham club? Sitting home contesting and speaking ill of new licensees, I'll imagine. However, I digress. The cover was misleading.

The days of quality press on the subject of hobbyist radio are long gone. *Pop'Comm* is going to considerably outlast Wayne Green's *73* only because you publish the last national general circulation magazine concerning hobbyist radio. However, your editorial stance is just as goofy and confused as ol' Wayne's was. Only thing missing here is the "moon landing was fake" and "our food is killing us" discussions, which I expect any month. Clean it up, people. You have a marvelous opportunity here, and you are wasting it on neo-political nonsense.

Tom Ciciora, KA9QPN
Sandwich, IL

Dear Tom:

Thanks for providing us some much needed entertainment on a Monday morning. The incident you refer to as reported by columnist Jock Elliott occurred in Colonie, New York. I don't know where Boo-Foo, New York, is; perhaps there's a Boo-Foo in Illinois, but I haven't found it after several Internet searches. Regardless, Colonie is a city of about 79,000 people, probably not much different than any other city across America. Trouble is what happened to the radio enthusiasts there could happen to KA9QPN in Sandwich, Illinois, or anywhere else for that matter. And as I've said before in these pages, until it happens to you, it hasn't happened.

You state that "perhaps that department had an issue with a Neighborhood Watch gone berserk or some other reason for taking action with scannists." Where's the common sense in that statement, Tom? You're correct—there is none.

Let me give you a different example of what might happen in Boo-Foo, minus any radios: Your son is driving down Main Street and is stopped by the police for not making a complete stop at the stop sign before turning right. I'll be darned, wouldn't you know it—your kid on the brand shiny new motorcycle has also violated the city's noise ordinance for that super-loud muffler. But, it's probably a good thing the cop pulled him over because the kid was probably one of that group of clowns speeding down the Interstate earlier that day. Regardless, it'll teach him a lesson and to respect authority. Not a good deal because it strikes home!

It's also *not* a media problem, Tom. It's not the fact that we reported it that makes it an untidy news situation. If your local newspaper picked up the hypothetical story from the police blotter about your son, would your thought process be the same as it is with our ham comrades? Frankly your assumption (you know, I'm sure, what "assuming" does) does much

(Continued on page 73)

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Scancat Gold For Windows Software	$99.95
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Compact professional handheld TrunkTracker III scanner featuring Close Call and Dynamically Allocated Channel Memory (up to 2,500 channels), SAME Weather Alert, CTCSS/DCS, Alpha Tagging. Size: 2.72" Wide x 1.26" Deep x 4.6" High

Frequency Coverage:
25.0000-54.0000 MHz., 108.0000-174.0000 MHz., 216.0000-224.9800 MHz., 400.0000-512.0000 MHz., 806.0000-823.9875 MHz., 849.0125-868.9875 MHz., 894.0125-956.000 MHz., 1240.0000 MHz.-1300.0000 MHz.

The handheld BC246T TrunkTracker scanner has so many features, we recommend you visit our web site at www.usascan.com and download the free owner's manual. Popular features include **Close Call Radio Frequency Capture** – Bearcat exclusive technology locks onto nearby radio transmissions, even if you haven't programmed anything into your scanner. **Dynamically Allocated Channel Memory** - Organize channels any way you want, using Uniden's exclusive dynamic memory management system. 1,600 channels are typical but **over 2,500 channels are possible** depending on the scanner features used. You can also easily determine how much memory is used. **Preprogrammed Service Search (10)** - Makes it easy to find interesting frequencies used by public safety, news media TV broadcast audio, Amateur (ham) radio, CB radio, Family Radio Service, special low power, railroad, aircraft, marine, racing and weather frequencies. **Quick Keys** - allow you to select systems and groups by pressing a single key. **Text Tagging** - Name each system, group, channel, talk group ID, custom search range, and S.A.M.E. group using 16 characters per name. **Memory Backup** - When power is lost or disconnected, your BC246T retains the frequencies that were programmed in memory. **Unique Data Skip** - Allows the BC246T to skip over unwanted data transmissions and birdies. **Attenuator** - You can set the BC246T attenuator to reduce the input strength of strong signals by about 18 dB. **Duplicate Frequency Alert** - Alerts you if you try to enter a duplicate name or frequency already stored in the scanner. **22 Bands** - with aircraft and 800 MHz. The BC246T comes with AC adapter, 2 AA 1,800 mAH nickel metal hydride batteries, belt clip, flexible rubber antenna, wrist strap, RS232C cable, Trunk Tracker frequency guide, owner's manual and one year limited Uniden warranty. For more fun, order our optional deluxe racing headset part **#HF24RS** for $29.95. Order now at www.usascan.com or call 1-800-USA-SCAN.

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The Alaska Telegraph System: Necessity Was The Mother Of Invention

How Chief Signal Officer Adolphus Greely Solved A BIG Communications Problem

by Bob Sturtevant, KD7KTS

On October 18, 1867, when the Stars and Stripes replaced the Imperial Russian Golden Eagle over Sitka, the headquarters of the U.S. Military District, Alaska, America inherited a tremendous communications problem, and an even bigger lack of information. Nobody was more aware of this than General Nelson Miles, District Commander. Even without proper funding from Congress, Miles sent a number of young Army officers to explore various swaths of the awesome landscape to find out just what Secretary of State Seward had bought.

Greeley, The Man For The Job

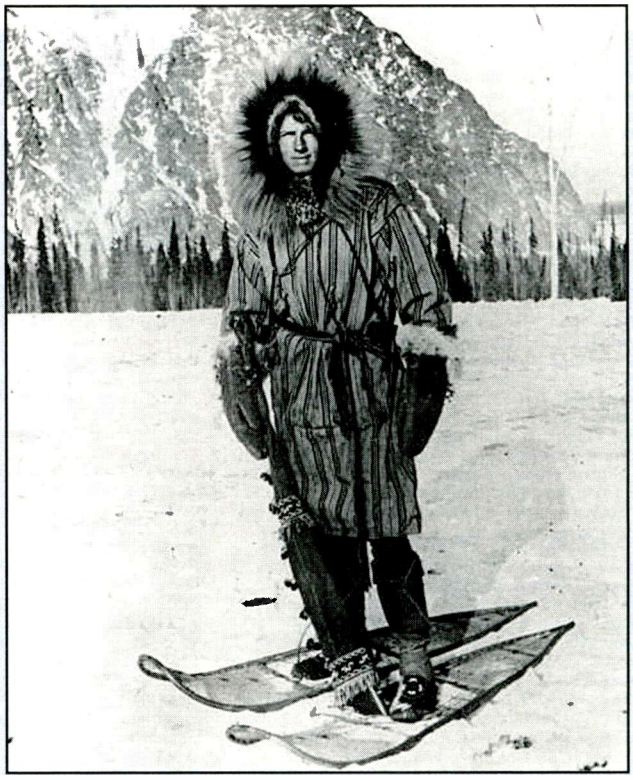
As the possibilities of Alaska settlement became apparent, spurred on by the discovery of Gold, Congress authorized $500,000 to establish communications to and within the territory. The job fell to General Adolphus W. Greely, Chief Signal Officer of the Signal Corps.

Greely was a remarkable man. He was the first man who volunteered as a Civil War Private to rise to the rank of Brigadier General in the Regular Army. Self taught in telegraphy, electricity, and meteorology, he had served as a Signal Officer during the Indian Wars, helped set up Army weather stations (prior to that function being turned over to the Department of Agriculture), and worked as a "troubleshooter" in the construction of frontier telegraph lines. Greely was also familiar with Arctic conditions, having survived, without resupply, a three-year expedition on Ellesmere Island near the North Pole.

Greely explained his plans for the area this way: "The growing commercial importance of Alaska and the prospective future of that country, as indicated by the best experts, show conclusively that a system of communication for this department should be undertaken at once for proper control and economical administrations of this district." Greely also stated, "It should be clearly understood that the greater part of this telegraphic system is an absolute military necessity, as without it the [War] Department commander can not reach any of the posts during the critical winter period of the year."

The Plan

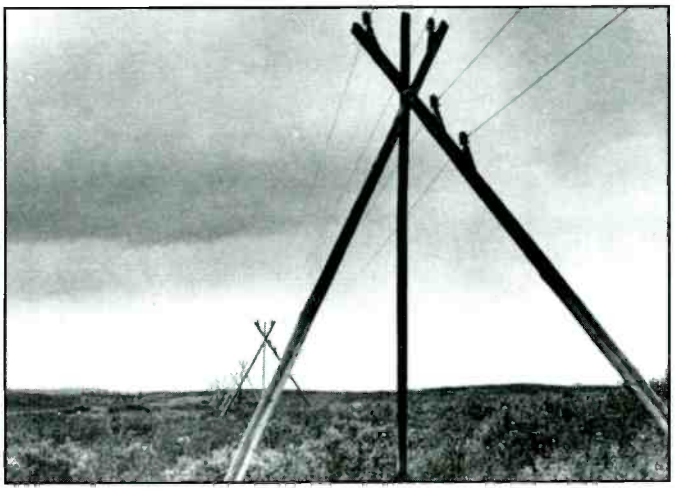
The plan was called the Washington-Alaska Military Cable and Telegraph System and, by the time it was completed in 1904, it included 1,500 miles of telegraph line and 2,000 miles of submarine cable, as well as the first permanent wireless telegraph station in the Western Hemisphere.



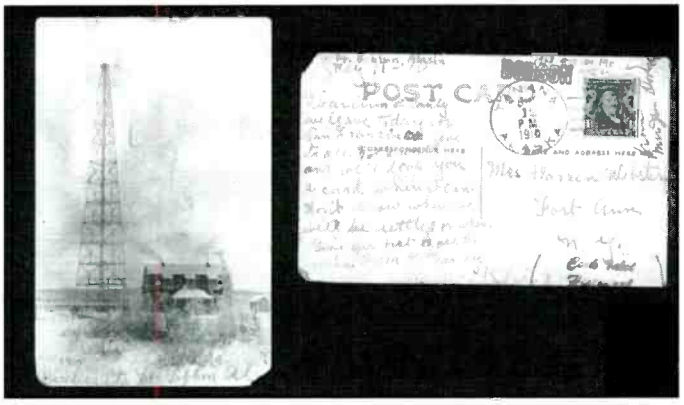
Lt. Billy Mitchell in Alaska for the U.S. Army Signal Corps, building the Washington-Alaska Military Cable and Telegraph System.

First, a submarine cable was laid between Seattle and Sitka, which gave Alaska a year-round link to the rest of America. Regular telegraph wires connected Anchorage, Fairbanks, and the interior. By 1906, two years after its completion, the system was carrying 300,000 messages per year. Although the system was built, manned, and maintained by the Army, only 20 percent of the message traffic was of a *military nature*. Civilians were able to use the system for message traffic involving administration of the territory as well as for commercial and personal messages.

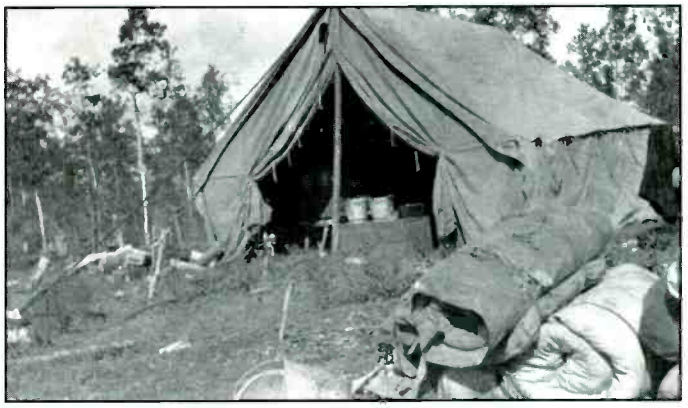
Wortman's Telegraph station on Valdez-Fairbanks Trail.



Washington-Alaska Military Cable and Telegraph System tripod .



Wireless Station, Ft. Gibbon, Alaska, 1910.



U.S. Telegraph Construction camp on Valdez-Fairbanks Trail, Alaska.

The wireless station was the idea of Billy Mitchell, who after learning to fly in 1916, would become a General in America's World War I Flying Corps and later a leading advocate of air power in the pre-World War II era. But between the years 1900 and 1903, Mitchell was a young Lieutenant assigned to bring the telegraph into Nome. His major problem was Norton Sound. A quick look at a map showed Mitchell that going around the Sound would be too expensive and time consuming. Mitchell instead had a submarine cable laid between Fort St. Michael and Safety Harbor, near Nome. A telegraph line from Safety Harbor to Nome was easily accomplished.

Completed in October 1900, the submarine cable carried messages for a few weeks only before moving ice destroyed it in November. After being repaired, the underwater link carried messages throughout most of 1901. Then the cable was again destroyed by November's moving ice.

A Radio Solution, And A Heroic Feat Of Endurance

Mitchell's solution to this problem was to install 210-foot masts at both Fort St. Michael and Safety Harbor to accommodate radio antennas. The 107-mile wireless radio link was fully operational by 1904.

In fact, it was this link that enabled Dr. Curtis Welch to telegraph Fairbanks in January of 1925 to report an epidemic and tell the outside world of his desperate need for diphtheria serum in Nome. The telegraph system was used to search the territory for the needed serum. Dr. J.B. Beeson, of the Alaska Railroad Hospital, Anchorage, telegraphed back that he had 300,000 units of serum on hand and ready to ship. Territory officials used the telegraph to set up the famous Serum Run from Nenana (where the Alaska Railroad ended) to Nome. Reports of the serum's progress were flashed across the country during the entire 674-mile relay run from January 21 to February 2. The names of the 20 mushers involved became household words. This was especially true of Balto, lead dog of the first dog team to reach Nome and who is now immortalized in a statue in New York City. Alaska's famous Iditarod Race commemorates the event to this day.

The Dreaded Aurora Borealis

In those early days, beside Alaska's weather and harsh terrain, Army telegraphers had to put up with the Aurora Borealis. The Aurora, in case you were sick that day in high school Science, is caused by the sun's radiation and other sources of cosmic rays sending proton-sized particles through the Earth's atmosphere. As the particles come through, they change their electric charges and create secondary radiation that glows much like a fluorescent light. The lights always occur in waves that reverse polarity in cycles. The cycles can be anywhere from 15 to 60 seconds long.

Another affect of these particles hitting the atmosphere is

(Continued on page 74)

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- 550 programmable memories
- Memory page customization
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- Internally recharges included Ni-MH batteries
- Clock with alarm, sleep timer & snooze functions

Dimensions: 7-1/2"W x 4-1/2"H x 1-1/2"D / Weight: 1 lb. 1oz. / Power Source: 4 AA Batteries Or Included AC Adapter/Charger

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Half Hour Revolutions

Your Special Guide To Clandestine Stations On Shortwave!

by Gerry L. Dexter

Clandestine radio—both the stations themselves and the hunt for them by SWLs and DXers—has always been one of the most fascinating aspects of the shortwave hobby. Where is the transmitter? Who is providing the facility? What group is behind the broadcasts? What's their purpose? And, often the most maddening: how do you QSL them? Is there an address for reports? If not, how do you track one down? Each new station brings a package of such questions waiting to be unraveled.

Clandestine radio dates back some 70 years, to the mid-1930s with the first such broadcasts believed to have been in opposition to Herr Hitler. World War II brought any number of short and mediumwave clandestine broadcasters to the airwaves, some of them operating low-power transmitters in hidden locations, others using captured commercial station facilities, and still others operating over government-owned transmitters.

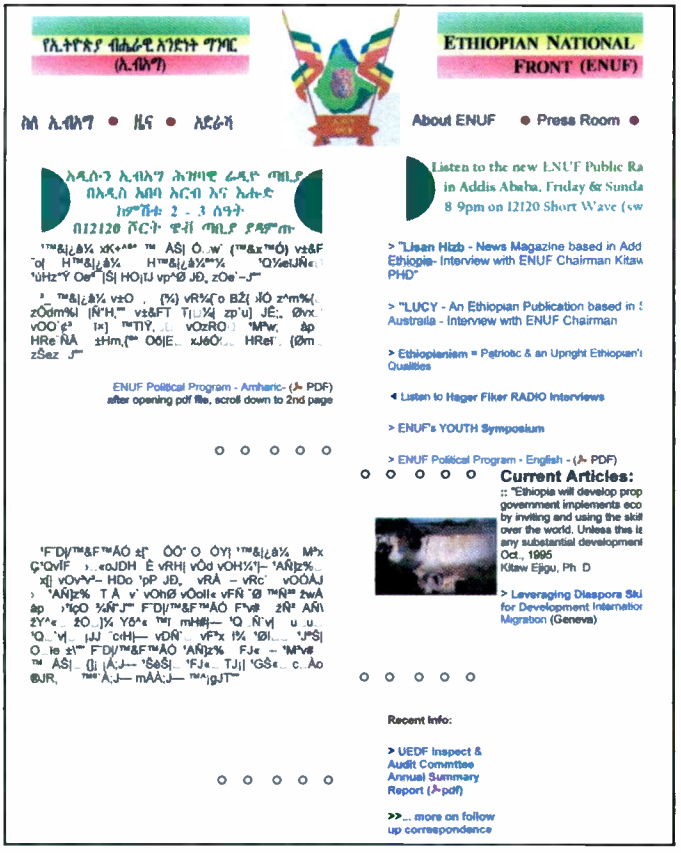
Once the Cold War got going, every hot spot—from the Communists near take-over of Greece and the long Angolan civil war to the Korean "police action" and later Vietnam—saw clandestine broadcasting activity, some of it intense. The leftist guerrilla campaigns in Nicaragua and El Salvador in the 1980s featured some of the last "pure" clandestine operations; that is, small, easily portable transmitters operating from locations in mountainous jungles. Furthermore, they were about the last ones that could be widely heard in North America. You can practically close your eyes and picture it—the gear on a rickety table, an announcer in fatigues, a generator providing power sitting off to the side, a single wire running up to a tree serving as the antenna…

Surrogate Broadcasters

Another intriguing type of station is the U.S.-operated "surrogate" broadcaster, such as Radio Free Europe/Radio Liberty, Radio Marti, Radio Free Asia, Radio Farda, Radio Sawa, which are mostly broadcast over U.S-operated relay sites. Many, especially those involved in these operations, do not consider these clandestine broadcasts. Strictly speaking they probably aren't. But, like the traditional clandestine, "regime change" is the ultimate goal, even if it isn't stated in so many words.

Buying Airtime

The last decade or so has seen a tremendous increase in the number of regular broadcasters who arrange trades or outright purchase of time on high-power transmitters better suited to provide coverage to a particular area. The selling of unused transmitter time led to the creation of still another form of clandestine broadcast. For 30 bucks, an organization or a group—



The Ethiopian National United Front is one of many Ethiopian groups with their own program on shortwave.

Radio Free Syria on 13650 seeks to bring democracy to that Middle East dictatorship.

Can You Hear These Clandestine Stations?

Broadcaster	Directed to	Frequency	Trans. Site	Time(s)	Language
Conversando Entre Cubanos	Cuba	9955	WRMI-Miami, Florida	0000- 0030 Sun	Spanish
Degar Voice	Vietnam	7250	Russia	1300- 1330 T/T/Sat	Vietnamese
Dejan Radio	Ethiopia	12120	Samara, Russia	1700-1800 Sun	Tigrigna
Democratic Voice of Burma	Myanmar	5910	Alma Ata, Kazakh	1430-1530	Burmese
Democratic Voice of Burma	Myanmar	17625	Talata, Madagascar	1430-1530	Burmese
Democratic Voice of Burma	Myanmar	9435	Julich, Germany	2330- 0030	Burmese
Foro Militar	Cuba	9955	WRMI-Miami, Florida	2300- 0000 M	Spanish
Hmong Lao Radio	Laos	15260	Taipei, Taiwan	0100- 0200 W/F	Laotian
KTVO -Sound of Hope R. Int.	China	7310	Irkutsk, Russia	1300-1400	Mandarin
KTVO -Sound of Hope R. Int.	China	11765	Taipei, Taiwan	1600-1700	Mandarin
KTVO -Sound of Hope R. Int.	China	9635	Taipei, Taiwan	2200- 2300	Mandarin
KTVO -Sound of Hope R. Int.	China	7310	Irkutsk, Russia	2300- 0000	Mandarin
Little Saigon Radio	Vietnam	11540	Taipei, Taiwan	1130-1200 tests	Vietnamese
Little Saigon Radio	Vietnam	7380	Taipai, Taiwan	1500-1530 tests	Vietnamese
Minivan Radio	Maldives Is.	12015	Julich, Germany	1600-1700	vernacular
Que Huong Radio	Vietnam	15680	Vladivostok, Russia	1200-1300 M-F	Vietnamese
Radio Voice of Oromo Liberation Front	Ethiopia	12120	Samara, Russia	1700-1730 M/Th	Oromo
Radio Anternational	Iran	13800	Grigoiopol, Moldova	1630-1715	Farsi
Radio Free Syria	Syria	13650	Julich, Germany	1800-1900 Sun	Arabic
Radio Free Vietnam	Vietnam	9930	KWHR, Hawaii	1230-1300 M-F	Vietnamese
Radio Free Vietnam	Vietnam	9930	KWHR, Hawaii	1600-1700 T/Th	Vietnamese
Radio Fuerza Democratica	Cuba	9955	WRMI-Miami, Florida	0030- 0045 Sun	Spanish
Radio Fuerza Democratica	Cuba	9955	WRMI-Miami, Florida	0000- 0015 Mon	Spanish
Radio Hoa Mi	Vietnam	11555	KWHR, Hawaii	1330-1400 S/Su	Vietnamese
Radio Horyaal	Somaliland	12130	Samara, Russia	1730-1830 F	Somali
Radio Mustaqbal	Ethiopia	15530	Dhabbaya, UAE	0630- 0700 M/T/Th	Somali
Radio Nile	Sudan	12060	Talata, Madagascar	0425- 0500	Arabic/English
Radio Nile	Sudan	15320	Talata, Madagascar	0425- 0500	Arabic/EE
Radio Oriente Libre	Cuba	9955	WRMI-Miami, Florida	0030- 0130 Mon	Spanish
Radio Rhino Int.	Uganda	17570	Julich, Germany	1500-1530 ex. Su/M	English
Radio Solh	Afghanistan	11810	Dhabbaya, UAE	0200-1200	Pashto/Dari
Radio Solh	Afghanistan	17700	Rampisham, UK	1200-1800	Pashto/Dari
Radio Solmal	Somalia	17550	Julich, Germany	1400- 1430 tests	Somali
Radio Solmal	Somalia	15495	Julich, Germany	1600- 1630 tests	Somali
Radio Voice of Iran	Iran	11575	Meyerton, S. Africa	1530- 1730	Farsi
Radio Xoriyo	Somaliland	15670	Julich, Germany	1630- 1700 Tu/F	Somali
Salaam Watandar	Afghanistan	15240	Samara, Russia	0230- 0400	Pashto/Dari
Salaam Watandar	Afghanistan	15500	Rampisham, UK	1300-1430	Pashto/Dari
Seday-e-Jambushi Iran e Farda	Iran	7490	Grigoriopol, Moldova	1600-1645	Farsi
Tansae Ethiopian Voice of Unity R.	Ethiopia	15660	Samara, Russia	1500-1600 Sun	Amharic
The Arabic Radio	Syria	7510	Grigoriopol, Moldova	0330- 0400	Arabic
The Arabic Radio	Syria	12085	Grigoriopol, Moldova	1500-1530	Arabic
The Arabic Radio	Syria	7470	Grigoriopol, Moldova	1500-1530	Arabic
Truth For the World	China	7220	Taipei, Taiwan	1400-1430 Sun	Mandarin
Voice of Democratic Alliance	Eritrea	9560	Gedja, Ethiopia	1500-1600	vernaculars
Voice of Ethiopian Ntl. United Front	Ethiopia	12120	Armavir, Russia	1700-1800 F/Su	Amharic
Voice of Ethiopian Salvation (Medhin)	Ethiopia	15670	Julich, Germany	1600-1700 Sun	Amharic
Voice of Democratic Alliance	Eritrea	7165	Gedja, Ethiopia	1500-1600	vernaculars
Voice of Biafra Int.	Nigeria	7380	Meyerton, S. Africa	2100- 2200 W/Su	English, Igbo
Voice of China	China	7270	Taipei, Taiwan	1430-1530	Chinese
Voice of China	China	7270	Taipei, Taiwan	2300- 0000	Chinese
Voice of Delina	Eritrea	15660	Samara, Russia	1500-1600 Sun	Tigrigna
Voice of Democratic Eritrea	Eritrea	15690	Julich, Germany	1500-1600 Sun	AA/Tigrigna
Voice of Democratic Eritrea	Eritrea	15670	Julich, Germany	1700-1800 Th	AA/Tigrigna
Voice of Ethiopian Unity	Ethiopia	15565	Julich, Germany	1830-1930 W/Su	Amharic
Voice of Iran of Tomorrow	Iran	7490	Grigoriopol, Moldova	1600-1645	Farsi
Voice of Liberty	Eritrea	15675	Samara, Russia	0600- 0700 W/Su	AA/Tigrigna
Voice of Mesopotamia	Iraq	11530	Grigoiropol, Moldova	0500-1500	Kurdish
Voice of Oromo Liberation	Ethiopia	15670	Julich, Germany	1700-1800 T/W/F/Su	Amharic/Oromo
Voice of the Iranian Nation	Iran	11630	Bulgaria	1330-1400	Farsi
Voice of Tibet	China	17540	Tashkent, Uzbek	1100-1150	Mand/Tibetan
Voice of Tibet	China	17525	Tajikistan	1210-1300	Mand/Tibetan
Voice of Tibet	China	17530	Tashkent, Uzbek	1300-1350	Mand/Tibetan
Voice of Tibet	China	17520	Tashkent, Uzbek	1430-1520	Mand/Tibetan
Voices From the Diaspora	Gambia	9430	Julich, Germany	2000- 2030	vernacular

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High-Performance Field Radio
- Aeronautical design with rugged body
- Excellent AM, FM, & Shortwave reception
- Line-level input, separate bass, treble
- External antenna input
- Wide/narrow bandwidth filter controls
- Alarm and sleep timer functions

Dimensions: 10-3/4"W x 7"H x 3-1/2"D / Weight: 3 lb. 2 oz. / Power Source: 4 D Cells (not included) Or AC Adapter (included)

YB550PE

AM/FM/Shortwave Radio $80*

Digital Expertise
- Shortwave range of 1711 - 29,995 Khz
- Autoscan, direct keypad, and scroll wheel tuning
- 200 customizable station presets
- Alarm and sleep timer functions
- AC adaptor and supplementary antenna inputs

Dimensions: 4-1/2"W x 6 1/2"H x 1 1/2"D / Weight: 10.4 oz. / Power Source: 3 AA Batteries Or AC Adapter (not included)

G2000A

AM/FM/Shortwave Radio by F.A. Porsche $80*

Timeless Porsche Style
- Autoscan and direct keypad tuning
- 20 programmable station presets
- Dual alarm and sleep timer functions
- Snap-on protective case that converts to stand

Dimensions: 5-1/2"W x 3-1/2"H x 1-1/2"D / Weight: 13.8 oz. / Power Source: 3 AA Batteries Or AC Adapter (neither included)

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- TV-VHF channels 2-13
- Hand-crank power generator
- Built-in cell phone charger

Dimensions: 5-1/2"W x 6"H x 2-1/2"D / Weight: 1 lb. 4 oz. / Power Source: Built-In Rechargeable Ni-MH Battery Pack; 3 AA Batteries (not incl.); Crank Power Alone; AC Adapter (not incl.). AC Adapter Can Recharge Built-In Ni-MH Battery Pack

FR250

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Self-Powered Radio and Flashlight
- Receives 7 international bands
- Hand-crank power generator
- Built-in cell phone charger
- Built-in flashlight and emergency siren
- Inputs for AC adaptor and earphones
- Rugged splash-proof ABS body

Dimensions: 6-1/2"W x 6"H x 2-1/2"D / Weight: 1 lb. 3 oz. / Power Source: Built-In Rechargeable Ni-MH Battery Pack; 3 AA Batteries (not incl.); Crank Power Alone; AC Adapter (not incl.). AC Adapter Can Recharge Built-In Ni-MH Battery Pack

FR200

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Emergency Crank Radio
- Hand-crank power generator
- Built-in flashlight
- 12 International shortwave bands
- Perfect for camping, hiking, and everyday use
- 5 colors: Metallic Red, Metallic Blue, Metallic Bronze, Yellow, and Sand.

Dimensions: 6-1/2"W x 5-3/4"H x 2-1/4"D / Weight: 1 lb. 2 oz. / Power Source: Built-In Rechargeable Ni-MH Battery Pack; 3 AA Batteries (not incl.); Crank Power Alone; AC Adapter (not incl.). AC Adapter Can Recharge Built-In Ni-MH Battery Pack

FR100

AM/FM Radio and Flashlight with Blackout Alert $30*

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- Just unplug it for bright light and an AM/FM radio
- Plugs into the wall for continuous charging
- Illuminates automatically during a power failure
- Rechargeable Ni-MH battery (included) lasts up to 16 hours for LED light or up to 8 hours of radio use

Dimensions: 3"W x 5-1/4"H x 1-1/2"D / Weight: 10.1 oz. / Power Source: AC outlet charges internal, rechargeable Ni-MH battery pack. 72 hour full-charge

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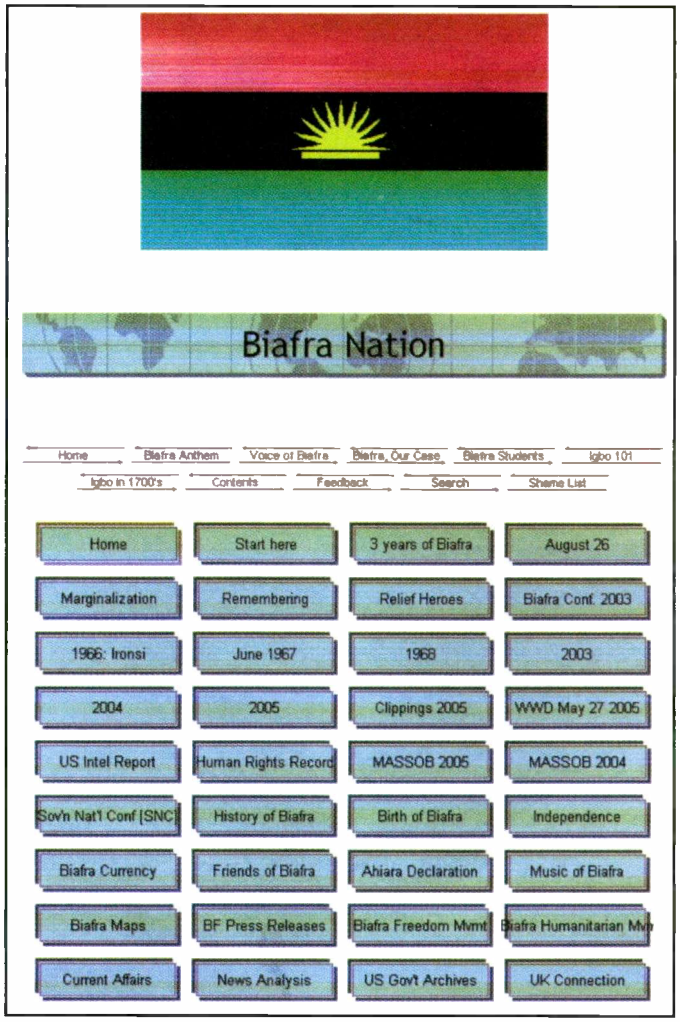
The Democratic Voice of Burma was one of the first clandestine programs to make shortwave work without owning a transmitter.

Oromo Province wants to be free of Ethiopia, says the Oromo Liberation Front.

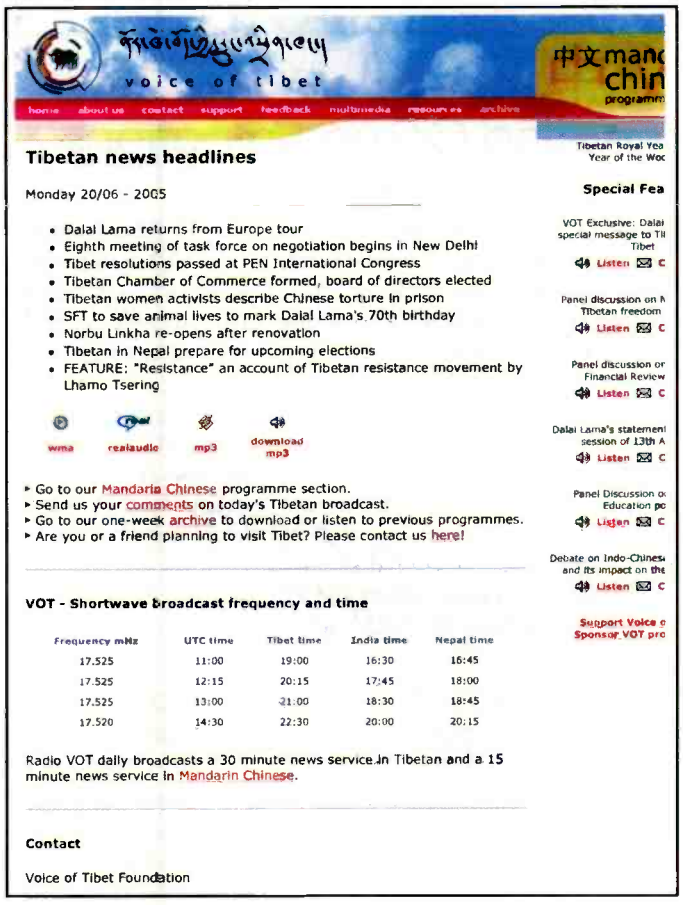


The Voice of Biafra International seeks independence for Nigeria's Biafra State—another attempt after a short-lived independence in the late 1960s.

even you as an individual—can buy time on one of the many high-power transmitters scattered around the world. You can get your message to your desired audience fairly cheaply and easily, even if all you want to do is play Jimmy Buffet recordings. The only other thing you need is a recording studio, which you can rent, and a delivery system, such as a satellite uplink, FedEx, or even the good old U.S. Postal Service, to get your tape to the transmitter site.

We suspect Radio Miami International (WRMI) was one of the first U.S. shortwave stations to go looking for customers who wanted to buy unscheduled airtime. They landed any number of anti-Castro groups who wanted to let Fidel have it verbally. For a time, WHRI also signed a couple of groups, including La Voz de la Fundacion, which had a big block of time for a while.

Slowly the concept caught on. Then, when the British, German, and South African governments privatized the care and maintenance of their high-power HF transmitting sites, spare time on these transmitters was also put up for rent. Today, a whole raft of political parties, organizations, and what-have-yous are on the air with their own programs, mostly dedicated to their own particular version of peace, democracy, and goodness for all.



The Voice of Tibet buys time on Asian transmitters to beam programs to the Chinese mainland.

So there is now an ever-growing, always-changing group of "stations" (with sympathetic backers putting up the money) using shortwave on a pay-as-you-go basis and broadcasting via the DTK's Julich, Germany, site, or one of the VT Merlin sites, or one of the private U.S. shortwave stations.

The Chase Is Afoot

To aid you in your chase for these clandestine programmers, we present here a breakdown of who's broadcasting, to whom, and from where, and when and where you can attempt to hear them (see "Can You Hear These Clandestine Stations?"). They're not all as easy to bag as they might appear, especially in these uncertain propagational times. Also note that many of them are active only on certain days.

Most of these programs are produced by political parties or other concerned groups, and if you "Google" them chances are you'll be able to turn up a website that, in addition to being of interest in and of itself, should also have a "contact us" link through which you can send a reception report.

As noted earlier, these broadcasters come and go, some last only a few weeks before their supporters' enthusiasm wanes, and with it the money needed to keep things going. Anyway, try these on for size—and let us know how you make out by sending any loggings you manage to snag to the "Global Information Guide" column.

Good hunting! ■

by Richard Fisher, KI6SN

Capitol Hill And FCC Actions Affecting Communications

Police Unit In Kabul Gets Emergency Phone Assistance

As part of a program coordinated by the Kabul City Police (KCP) Communications Working Group, the Association of Public-Safety Communications Officials (APCO) is helping with training in a project to create Afghanistan's first emergency telephone system. Also taking part are the Afghanistan Ministry of Interior, the U.S. State Department Police Assistance Program, the Afghan Wireless Communications Co., Roshan Wireless, Task Force Phoenix—the U.S. Army's 76th Infantry Brigade from the Indiana National Guard—and the German Police Support Projektburo.

"The primary focus of the military and law enforcement support effort in Afghanistan is to train the Afghan National Army to defend the nation as a whole and create a strong police force to maintain peace and enforce laws," APCO said in a statement. The KCP Communications Center project "will support this effort by developing a phone system using the existing cellular phone network to provide capabilities similar to 9-1-1 in the U.S. KCP will serve as the model for this new emergency call center."

"APCO is recognized as an international standard for public safety communications training," said Capt. Jeffrey Hammer, a Task Force Phoenix member. "Therefore, APCO was selected by the KCP Communications Center Working Group to supply the training base for the dispatchers."

President Issues 2005 ARRL Field Day Greeting

In a message to radio amateurs nationwide from the White House on the occasion of the ARRL-sponsored 2005 Field Day in June, President George W. Bush recognized radio's "vital role in relaying important information to the public and emergency service personnel in times of need.

"By providing emergency communications at the federal, state, and local level, licensed Amateur Radio operators help first responders and law enforcement officials save lives and make our country safer. Your efforts help ensure the right assistance gets to the right people at the right time. I appreciate all ham operators who give their time and energy to help make our citizens more secure. Your good work reflects the spirit of America and contributes to a culture of responsibility and citizenship that strengthens our nation."

Thousands of radio amateurs across North America participated in the 2005 event, held June 25 to 26.

Commission Revises FCC Form 605

FCC Form 605, "Quick-Form Application for Authorization in the Ship, Aircraft, Amateur, Restricted and Commercial Operator, and General Mobile Radio Services," has been revised by the commission and was introduced July 11. The document has a new Question 13 that now asks: "If the licensee name is being updated, is the update a result from the sale (or transfer of control) of the license(s) to another party and for which proper Commission approval has not been received or proper notification not provided?"

Amateurs applying for an administrative update (AU) to reflect a change in licensee name would use FCC Form 605. For licensed radio amateurs, however, the answer to Question 13 should be "No," as the question does not apply to the Amateur Radio Service. Those failing to answer the question run the risk of having their application dismissed.

For further updates, check the FCC website at http://www.fcc.gov/Forms/Form605/605.html.

Maine Radio Amateur Cited For Alleged Illegal Operation

A Belgrade Lakes, Maine, radio amateur has been issued a Notice of Apparent Liability for Forfeiture by the FCC for alleged interference with other stations, repeatedly transmitting communications in which he had a pecuniary interest, failure to file sufficient information required in an Enforcement Bureau directive, broadcasting, and failure to exercise required control of his station.

Glenn A. Baxter, K1MAN, executive director of the American Amateur Radio Association with its website www.K1MAN.com, is apparently liable for $21,000 in penalties, the FCC said in a June citation. Among the allegations in its Notice of Apparent Liability (NAL), the FCC said that in November 2004 and March 2005, "Mr. Baxter's station repeatedly transmitted references to his website, which offers various products for sale, including a monthly newsletter published by [Baxter] and offered for sale for $45 per year. In addition, on Dec. 1, 2004, station K1MAN transmitted a 70-minute interview with a person who was considering whether to retain Baxter Associates, an employment search firm owned by Mr. Baxter. During the transmission, Mr. Baxter discussed fees, investments and franchising opportunities. We find that Mr. Baxter apparently willfully and repeatedly violated Section 97.113(a)(3) of the Rules on each of these occasions by transmitting communications regarding matters in which he has a pecuniary interest."

The Commission said that "although Mr. Baxter replied in part to the Bureau's demand for information in the Warning Notices dated Sept. 15, 2004 and Oct. 29, 2004, Mr. Baxter failed to provide information regarding how the station is controlled and the identity of the control operator. Mr. Baxter's statements that 'no corrective actions are necessary' and 'no changes are needed with regard to station control' are insufficient."

Furthermore, the NAL said that the Commission found that "the pre-recorded 70 minute interview with a person interested

in retaining Baxter Associates, during which there was no station identification, constitutes a "broadcast' and an impermissible one-way transmission."

APCO EMD Program Upgraded By U.S. Navy

The U.S. Navy Gulf Coast Region Fire and Emergency Services in Pensacola has upgraded its APCO Institute Emergency Medical Dispatch (EMD) Guidecards to Multi-purpose Emergency Dispatch System (MEDS) software. Fire, emergency medical services (EMS), and law enforcement guidecards in an electronic format and a quality assurance/quality improvement component are part of the MEDS software. It is "the only electronic version of the APCO EMD Guidecards approved by the APCO Institute," the organization said.

The Pensacola agency focuses on fire suppression, fire prevention, inspections, public education, and advanced and basic life support EMS for the U.S. Naval Air Station (NAS) Pensacola. "The APCO Institute wants to congratulate the U.S. Navy Gulf Coast Region Fire and Emergency Services on their upgrade to MEDS and is very proud to assist them as they continue to provide the highest level of protection possible to the brave men and women of the U.S. Armed Forces," APCO Institute Director Candice Solie said.

Radio Amateur Gives Congressional Testimony From Space

John Phillips, KE5DRY, a radio amateur and science officer aboard NASA's International Space Station, spoke June 14 to a U.S. House of Representatives subcommittee on space and aeronautics about working and living in space and on the station's role in preparing humans for long-duration missions. It was the first-ever Congressional testimony from orbit.

"The most important thing up here is that we *are* the experiment," Phillips testified. "We constantly learn new lessons up here," he added in statements reported in the *ARRL Letter*. "The experiences we gather will enable us to establish a long-term station on the moon and to go on to Mars." ■

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

Burning Up The "Nimbus" With NVIS

Recently, a U.S. Marine in Iraq wrote me describing his need to engineer a communications network on shortwave frequencies between his location and unit locations within a hundred miles or so. He stated that the frequencies they operate on are between about 3 MHz and 11 MHz. Here's a bit of his description of his HF station:

[The] current antenna is a full-wave folded dipole (two feet of separation) cut to 5 MHz raised just under 20 feet from the ground. [The] antenna element is made of 14 gauge braided copper wire, [and the] feed line is standard coax approx 70 feet long. I can raise reliable comms with my closest station with a little quarter-wave longwire I threw together (it also gets me one-way comms to our urban station 30 miles away, they can't talk to us), but I can't talk to anyone with the folded dipole ([though] it receives everything under the sun). Because of limited space and resources the antenna is stretched out between two buildings with a pretty good gap in between (also the antenna is about 5 ft above a ton of concertina wire).

What solution can be created that would allow all of these units to communicate on shortwave frequencies when they are beyond the reach of ground wave propagation, yet not far enough out for typical skip propagation (propagation of radio waves off the ionosphere)? The answer is known as NVIS propagation. NVIS is pronounced like "niv-iss." Another loving descriptive name for NVIS propagation is "cloud burning" (hence "Burning up the 'nimbus' with NVIS").

NVIS stands for "Near Vertical Incident Skywave." This radio propagation mode involves using antennas that radiate most of the radio energy at very high radiation angles, approaching or reaching 90 degrees (straight up), at a frequency below the critical frequency of the ionosphere (that frequency that is just lower than what would punch through the ionosphere rather than be refracted back toward the origin of the radiowave). Using NVIS, it is possible to establish reliable communications over a radius of out to about 200 miles or so, give or take 100 miles.

If you're an amateur radio operator and have spent time on 160 or 80 meters at night, talking with others within a 300 mile area, you might have thought you were working them with groundwave propagation, where the radio signal hugs the ground as it spreads out away from your antenna. But, often, the case is quite different.

In the part of the country where I live, there are very tall mountains within two miles, nearly all around me. Yet, using NVIS, I am able to establish communications with stations between 50 to 300 miles away, as if they are line of sight from my antenna. Groundwave is not possible (I've tried to contact them on frequencies above the critical frequency, such as on 20, 15, or 10 meters, with no success), yet on frequencies below the critical cutoff, we are able to communicate with reliable signals.

Picture How It Works

One way of picturing how NVIS works is to imagine taking a flashlight and aiming its light beam toward a white, reflective wall (or mirror). If you were to shine it straight at the wall at a

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.

Optimum Working Frequencies (MHz) - For October 2005 - Flux = 77, 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	19	18	15	12	11	11	10	10	10	9	9	9	9	12	17	19	20	21	22	22	22	22	21	21
NORTHERN SOUTH AMERICA	27	25	22	18	17	16	15	14	13	13	13	12	12	12	20	23	25	26	27	28	29	29	29	28
CENTRAL SOUTH AMERICA	27	24	21	17	16	15	14	14	13	13	12	12	12	15	22	24	25	26	27	28	28	28	28	28
SOUTHERN SOUTH AMERICA	28	27	25	21	19	18	17	16	15	14	13	13	13	12	18	23	26	27	28	29	29	30	30	29
WESTERN EUROPE	9	9	8	8	8	8	8	8	8	8	8	8	8	11	14	15	16	16	16	15	14	11	9	9
EASTERN EUROPE	8	8	8	8	8	9	9	9	8	8	8	8	8	8	12	13	13	12	12	11	9	9	8	8
EASTERN NORTH AMERICA	21	19	15	12	12	11	11	11	10	10	10	10	10	15	19	21	23	23	24	24	24	24	23	22
CENTRAL NORTH AMERICA	12	12	10	7	7	6	6	6	6	6	6	5	5	5	9	11	12	13	13	13	13	13	13	13
WESTERN NORTH AMERICA	7	6	6	5	3	3	3	3	3	3	3	3	2	2	2	5	6	6	7	7	7	7	7	7
SOUTHERN NORTH AMERICA	21	19	17	13	12	11	11	10	10	10	9	9	9	9	15	18	20	21	22	22	23	22	22	22
NORTHERN AFRICA	9	9	8	8	8	8	8	9	8	8	8	8	8	12	15	16	17	18	17	15	11	10	10	9
CENTRAL AFRICA	12	11	11	10	9	9	9	9	8	8	8	8	8	11	14	16	17	17	18	16	14	14	13	12
SOUTH AFRICA	19	17	12	12	11	11	10	10	10	10	10	9	9	16	19	20	21	22	23	23	23	22	22	20
MIDDLE EAST	8	8	8	8	8	9	9	9	8	8	8	8	8	8	13	15	16	14	10	10	9	9	9	9
JAPAN	19	18	18	17	16	13	10	10	9	9	9	8	8	8	8	8	8	8	8	8	13	16	17	18
CENTRAL ASIA	19	18	18	17	16	13	10	10	9	9	9	8	8	8	8	8	10	11	11	10	10	10	18	19
INDIA	12	12	13	13	12	9	9	9	8	8	8	8	8	8	8	8	8	9	10	11	11	12	12	12
THAILAND	18	18	17	16	15	13	10	10	9	9	9	8	8	8	8	8	11	13	12	12	11	11	11	15
AUSTRALIA	24	25	26	26	24	19	16	15	14	14	13	13	12	12	12	12	16	15	14	14	16	19	21	23
CHINA	17	18	17	16	15	12	10	9	9	9	9	8	8	8	8	8	9	8	8	8	8	8	13	15
SOUTH PACIFIC	28	29	28	26	23	20	18	17	16	15	14	14	13	13	12	12	15	14	16	20	22	24	26	27

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	19	17	15	14	13	13	12	12	11	11	10	12	18	21	23	24	25	25	25	25	25	24	23
NORTHERN SOUTH AMERICA	24	22	20	18	17	16	15	14	13	12	12	12	11	17	19	22	23	25	26	26	27	27	27	26
CENTRAL SOUTH AMERICA	26	23	20	19	17	16	15	14	14	13	13	12	15	21	23	24	25	26	27	28	28	28	28	28
SOUTHERN SOUTH AMERICA	28	26	23	21	19	18	17	16	15	14	14	13	13	18	22	24	26	27	28	29	29	29	29	29
WESTERN EUROPE	9	9	8	8	8	8	8	8	8	8	8	8	13	15	17	17	17	17	16	16	14	12	10	9
EASTERN EUROPE	8	8	8	8	8	8	9	8	8	8	8	8	11	14	15	15	15	14	14	13	11	9	9	9
EASTERN NORTH AMERICA	15	12	9	9	8	8	8	8	7	7	7	7	8	13	15	16	17	17	18	18	18	17	17	16
CENTRAL NORTH AMERICA	7	6	5	4	4	4	3	3	3	3	3	3	3	5	6	7	7	8	8	8	8	8	8	7
WESTERN NORTH AMERICA	13	12	10	7	7	7	6	6	6	6	6	6	5	5	9	11	12	13	13	13	14	14	13	13
SOUTHERN NORTH AMERICA	14	13	11	9	9	8	8	7	7	7	7	7	6	9	12	14	15	15	16	16	16	16	16	15
NORTHERN AFRICA	11	10	10	9	9	9	9	8	8	8	8	8	14	16	17	18	19	19	19	19	14	13	12	11
CENTRAL AFRICA	12	10	10	9	9	9	9	8	8	8	8	8	14	16	17	18	19	19	19	17	16	15	14	13
SOUTH AFRICA	19	16	15	14	14	13	13	12	12	12	12	12	21	25	27	28	29	29	29	28	27	24	22	20
MIDDLE EAST	9	8	8	8	8	9	9	8	8	8	8	8	13	15	17	17	17	15	12	10	10	9	9	9
JAPAN	18	17	16	14	10	10	9	9	9	9	8	8	8	8	8	8	8	8	8	8	12	15	17	18
CENTRAL ASIA	18	17	16	14	10	10	9	9	9	8	8	8	8	8	8	12	11	11	10	10	10	10	17	18
INDIA	11	12	12	10	9	9	9	8	8	8	8	8	8	12	13	13	12	10	9	8	8	8	8	8
THAILAND	17	16	15	12	10	9	9	9	9	8	8	8	8	8	12	14	13	13	12	12	11	11	10	13
AUSTRALIA	25	26	25	22	17	16	15	14	14	13	13	12	12	12	12	17	16	15	14	14	17	19	21	23
CHINA	16	16	15	12	10	9	9	9	9	8	8	8	8	8	9	9	9	8	8	8	8	8	11	15
SOUTH PACIFIC	29	28	26	23	20	18	17	16	15	14	14	13	13	12	14	15	15	14	18	21	23	25	27	28

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	17	15	14	13	12	11	10	10	9	9	9	9	13	16	18	19	20	20	21	21	21	20	20	19
NORTHERN SOUTH AMERICA	22	20	19	17	16	15	14	13	12	11	11	10	13	16	18	20	21	22	23	24	24	24	24	23
CENTRAL SOUTH AMERICA	26	23	21	20	18	17	16	15	14	13	13	15	19	21	23	24	25	26	27	28	28	28	28	27
SOUTHERN SOUTH AMERICA	27	25	23	21	19	18	17	16	15	14	14	13	18	21	23	25	26	27	28	29	29	29	29	29
WESTERN EUROPE	9	8	8	8	8	8	8	7	8	7	11	14	16	17	18	18	17	17	16	16	14	12	9	9
EASTERN EUROPE	9	8	8	8	8	8	8	8	8	8	8	14	16	17	17	16	16	16	15	14	12	9	9	9
EASTERN NORTH AMERICA	6	5	5	4	4	4	4	3	3	3	3	3	6	7	8	8	8	9	9	9	8	8	8	7
CENTRAL NORTH AMERICA	15	13	10	9	9	8	8	8	8	8	8	7	9	14	16	17	18	18	19	19	19	18	18	17
WESTERN NORTH AMERICA	21	19	15	13	12	11	11	11	10	10	10	10	10	16	19	21	23	24	24	24	24	24	24	23
SOUTHERN NORTH AMERICA	17	15	12	12	11	10	10	9	9	9	8	8	9	15	17	18	19	20	20	20	20	20	19	18
NORTHERN AFRICA	12	11	11	11	10	10	10	10	10	10	16	20	22	23	24	24	24	23	22	20	16	14	13	12
CENTRAL AFRICA	13	12	11	11	11	10	10	10	10	10	16	20	22	23	24	24	24	23	22	19	17	16	15	14
SOUTH AFRICA	19	18	16	15	15	14	14	13	13	12	14	21	25	27	28	29	29	29	29	28	27	25	22	21
MIDDLE EAST	10	10	9	9	9	9	8	8	8	8	12	15	17	18	19	19	20	20	17	13	12	12	11	11
JAPAN	16	14	10	10	9	9	9	9	8	8	8	8	8	9	9	9	8	8	8	8	10	15	16	17
CENTRAL ASIA	15	13	10	10	9	9	9	8	8	8	8	8	12	12	12	11	11	11	10	10	10	10	15	17
INDIA	8	8	8	9	9	9	8	8	8	8	8	11	13	12	12	12	12	12	11	11	10	9	8	8
THAILAND	14	10	10	9	9	9	8	8	8	8	8	8	14	16	15	14	14	13	12	12	11	11	11	10
AUSTRALIA	25	24	20	17	16	15	14	14	13	13	12	12	12	17	18	17	16	15	14	14	17	20	22	24
CHINA	14	10	10	9	9	9	9	8	8	8	8	8	10	10	9	9	9	9	8	8	8	8	8	13
SOUTH PACIFIC	28	25	22	21	19	18	16	15	15	14	13	13	13	17	16	15	14	16	20	23	25	26	28	29

90-degree angle, you would see the light reflected back at you. This is much how we discover the ionosphere's ever changing ability to reflect a radio wave at any given frequency. Ionospheric sounding is done by sending pulses of radio waves straight up at the ionosphere and measuring at what frequency the reflections cease. The highest frequency that is reflected is the critical frequency at that location.

Now, slowly re-aim the flashlight so that you are angled about 10 degrees to the left. What happens to the reflected light? The beam's azimuth changes, resulting in the light to illuminate an area just to your left. The more of an angle, the farther away from you the reflected light radiates. Call that distance the "skip zone." In radio, the same thing happens with a radiowave that is refracted. The angle at which the radio energy arrives at the reflective ionospheric layer dictates how far away the reflection will end up. The more of an angle of radiation, the farther the distance.

One can then see that NVIS is all about reducing the angle, so that the reflected radio energy returns to locations much closer to the originating antenna, than if we were trying to shoot the radiowave far out to the low horizon so we could work very distant DX.

How do you make an antenna so that it radiates most of its energy toward the overhead sky, rather than out to the low horizon? Part of the answer is in how high above the ground you deploy your antenna. Most NVIS antennas are horizontal in polarization, and kept much lower than the height typically sought when attempting DXing. The closer to the ground an antenna is positioned, the higher the angle of its main radiation. For this reason, it is common to see a dipole cut for 5 MHz only up at eight feet.

A great introduction to NVIS is found at WB5UDE's page at http://www.qsl.net/wb5ude/nvis/. Additional resources include KV5R's page at http://www.athensarc.org/nvis.htm and an interesting collection of information at http://www.tactical-link.com/nvis_discussion_page.htm.

Have you experimented with NVIS? If so, I'd like to hear your results and then share them with our readers!

HF Propagation

A change in propagation conditions in the Northern Hemisphere can be observed as we move away from the long sunlit days of summer into the longer hours of winter's darkness. However, the change in the length of daily darkness is not the only influence on the propagation of radiowaves through the atmosphere. The amount and strength of radiation arriving and passing through our atmosphere also varies from season to season, as well as from the solar cycle minimum to the solar cycle maximum.

During the Northern Hemisphere's winter months, the Earth is closer to the sun than during any other time of its orbit. This makes the daytime ionization more intense than that of summer daytimes. During the longer winter hours of darkness, the ionosphere has more time to lose its electrical charge. These conditions cause a wide daily variation in the maximum frequency that can be refracted by the wintertime ionosphere. Many radio enthusiasts celebrate the arrival of the winter shortwave season for these reasons.

Signals below 120 meters are improving, with nighttime paths growing larger in the Northern Hemisphere. Seasonal static, which makes it difficult to hear weak DX signals, is starting to decrease as we move into winter. Expect a few DX openings during the hours of darkness and into the sunrise period. These openings will often be weak due to the relatively high signal absorption during the expected elevated geomagnetic storminess through the rest of this year. Look for openings from Europe and the south if you are listening in the eastern 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.four-milab.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 westerly 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 the 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.

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 occasionally open through October when flux levels reach above 100. Paths from Europe and the South Pacific as well as from Asia, at least during days of higher solar flux levels, are common, 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.

VHF Conditions

Conditions during October should include moderate levels of trans-equatorial propagation (TE) in which stations in the southern states and parts of the Caribbean will be able 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 decline from the current Solar Cycle's peak, these openings will be rarer than in previous years, but some exciting openings might occur.

While sporadic-*E* activity is sparse during October in the northern Temperate Zone (where much of the United States is located), 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.

Current Cycle 23 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for June 2005 is 39.6, a decrease from May's 42.6. The lowest daily sunspot value recorded on June 26, a day of zero observable sunspots. The highest daily sunspot count was 73 on June 7. The 12-month running smoothed sunspot number centered on December 2004 is 35.3, not even a full point below November's 35.4, or October's 35.9. A smoothed sunspot count of 17, give or take about 12 points, is expected for October 2005.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-centimeter observed monthly mean solar flux of 93.7 for June 2005, down from May's 99.5. The 12-month smoothed 10.7-centimeter flux centered on December 2004 is 101.3, barely down from November's 101.5. The predicted smoothed 10.7-centimeter solar flux for October 2005 is 77, give or take about 16 points.

The observed monthly mean planetary A-Index (Ap) for June 2005 is 13, a nice drop from May's 20. The 12-month smoothed Ap index centered on December 2004 is 14.8, about the same as it was for November. Expect the overall geomagnetic activity to be varying greatly between quiet to active during most days in October, with a chance for isolated periods of stormy activity.

Propagation Questions? 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 cell phone or other WAP device, check out http://wap.hfradio.org/, the wireless version of my propagation site.

Please don't hesitate to write and let me know about any interesting propagation you've noticed. E-mail me at pc-prop-man@hfradio.org or write to "Propagation Corner," P.O. Box 213, Brinnon, WA 98320-0213. Do you have questions about propagation? I look forward to hearing from you. Till next time, happy signal hunting! ■

by Allan Stern, allanstern@aol.com

The *USS Theodore Roosevelt*'s COMPTUEX Exercise, And Hurricane Dennis

Editor's Note: There's one aspect of our great radio hobby that we've decided needs to be addressed in greater detail here in Pop'Comm, *and it's what Al Stern lives for: Military Monitoring—VHF, UHF, HF, and Satellites. Sure, we've had the occasional "monitoring the military" feature, but nothing as in-depth as we'll be presenting in this new column with Al at the helm.*

Al is well known to Military Communications monitoring hobbyists through his contributions to many hobby publications and computer e-mail groups. Al has been associated with the military for most of his life and has served as a consultant to the Military/Aerospace divisions of such firms as Grumman, Boeing, Litton, GE, RCA, Hercules, Honeywell, General Motors, and Siemens. His huge radio collection and massive outdoor antenna array have been covered in many radio-related publications. Be sure to peek at his equipment at http://hometown.aol.com/scanaddict/index.html and also check out his home page at http://hometown.aol.com/allanstern/myhomepage/index.html.

We're pleased to have Al Stern contributing to Pop'Comm, and we welcome your related letters, e-mails, and military loggings, which can be sent directly to Al at AllanStern@aol.com or to him via the USPS to Popular Communications, *25 Newbridge Rd., Hicksville, NY 11801.*

Interested in military monitoring? It's one of the most exciting aspects of our radio hobby, and you don't have to live near a military base to hear plenty of military radio activity. It's actually quite easy, too. In this new monthly column I'll provide readers insight into the communications we hear from military aircraft and military bases around the country as well as hints on how to improve your monitoring of the military frequencies. You'll also see identifications for the military callsigns and designations that are so numerous and often so mysterious.

Some of the other items you'll see in these pages along the way will "head-up" notices to us all, so that we can anticipate military exercises that are coming our way and program the probable frequencies into our scanners. And I'll be explaining the hardware features of our scanners that enable us to listen to the 225- to 400-MHz and 138- to 150-MHz bands that hold the communications of interest to us. And, of course, much more.

In this issue, let's take a look at two events which lately dominated the monitoring of military communications: the *USS Theodore Roosevelt's* COMPTUEX (Composite Training Unit Exercise) and Hurricane Dennis.

Monitoring COMPTUEX

The *USS Theodore Roosevelt*'s COMPTUEX was performed in the waters of the Atlantic off the Georgia and Florida coasts. The aircraft struck targets at Avon Park Bombing Range and Pinecastle Range, both in Florida. Here is a scorecard of the exercise, identifying the aircraft callsigns and the frequencies used. When the *Roosevelt* performs in another COMPTUEX, many of these same frequencies will be active again, so save this list for future monitoring excitement.

***USS Theodore Roosevelt* Exercise**

Freq.	Exercise Participant
120.950	Sealord, Dart 13
133.950	Sealord, Dart 11, Dart 12, Cougar 05, Vader 14
226.825	Tahoe 81 wkg Tango Papa, then Tango Romeo
236.275	SAR Alpha (Pinecastle CSAR)
238.325	Strike Common
243.000	Scout 36
245.100	Felix Tactical; Secure comms.
252.200	Lion Tactical
258.700	Tango Papa Button 7; Bear 604; Romeo
259.600	Felix 111: Clear & encrypted comms
261.425	Bear with Tango Sierra, Outlaw, Scout
262.650	Pride Tactical
266.425	Trident 13 with Gunslinger
267.500	Bear 31
268.300	Bear Button 9: with Party, Lion

C-25A SAM 28000 departing Patrick AFB after staging as back-up to Air Force One during President Bush's recent visit to Florida. This aircraft later accompanied the President to England for his meeting with the other G8 Conference members. The aircraft is based at Andrews AFB with the other 89AW aircraft of the Presidential fleet. (Photos by Al Stern)

268.900 Strike Common
270.125 Molson 713, 703, Trident 11 with Tango Xray
272.000 SAR Bravo (Pinecastle Range CSAR)
273.350 AR boom: Bolt 23, Bolt 61
273.850 Guard Dog 01
274.100 Molson 713 calls Red Crown
274.375 Party, Felix, Lion Air-air
277.800 Fleet Common: Dart 11, Guard Dog calls Gunslinger
280.350 Lion Air-air
284.500 Sealord
284.850 Bear Tactical: Bear 601, Bear 604
286.100 USS Theodore Roosevelt Strike
301.000 Scout Tactical
301.425 Bear with Oscar; Have Quick tones heard
303.000 Unid Air-Air, possibly DRAGONs
303.200 Viper, Straycat 14
311.575 Link-4A "Timber"
317.925 USS Theodore Roosevelt Marshalling
317.975 USS Theodore Roosevelt Marshalling
322.000 Air-air
325.450 Pride Air-air
340.450 Party Tactical
342.025 Guard Dog 01
351.800 Jacksonville Departure
351.975 Button 5: Tango Sierra, Bear 604, Scout 35
357.000 Pinecastle: Lion, Pride
357.950 Departure
358.050 Air Combat Maneuvering (Dog fighting)
364.075 Red Crown: Bolt 23, Bear 27
370.100 Silent Warrior w Bear, Dragon 11, Guard Dog 01
370.900 Miami Center
372.600 Bear 604 Mission Reports; Bear 31 with Lion 43.
380.800 Pinecastle: Felix 23, 24, 35, Lion 35, 36, etc.
390.950 Pride Air-air

Participants/Callsigns
Aircraft 100
Aircraft 302
Bear 27, 30, 31, 601, 604 (E-2C, VAW-124)
Bolt 23, 61, 71 (MacDill 6AMW KC-135s)
Charger 01
Cougar 05
Dart 11, 12, 13
Dragon 11 (probably F-21 Kfir adversary aircraft)
Earl 98 (KC-135, Fairchild 92ARW, TDY @ MacDill)
Falcon 25
Felix 23, 24, 31, 35 (F-14D, VF-31)
Guard Dog 01 (RTB NAS Jacksonville)
Gunslinger (Surface Unit)
Iron Cross
Lion 21, 35, 36, 40, 41, 42, 43, 44, 47, 48, 51, 52 (F-14D, VF-213)
Mash 61 (KC-135, 319 ARW)
Molson 713 (CP-140/P-3)
Omega (Tanker)
Oscar
Outlaw (EA-6B)
Party 12, 13, 15, 16, 31, 32, 33, 73, 75, 403 (F/A-18C, Oceania VFA-87)
Pride 57, 61 (F/A-18C, Oceania VFA-15)
Scout 36 (S-3B, NAS Jacksonville VS-24)
Silent Warrior
Stray Cat 13, 14 (RTB NAS Jacksonville)
Tahoe 81 (KC-135, 940 ARW)
Trident 11 (P-3C)
TANGO PAPA
TANGO ROMEO
TANGO XRAY, Undersea Warfare Commander.
Vader 14
Viper

Hurricane Dennis

With respect to Hurricane Dennis, the most interesting comms were from the Hurricane Hunter aircraft, which are C-130s of the 403rd Wing, 53rd Weather Reconnaissance Squadron, based at Biloxi, Mississippi. These aircraft use the callsign TEAL when on Hurricane Hunter missions.

Since the storm stuck so close to their base, the Hurricane Hunter crews used MARS HF frequencies to make phone patches to their families. The MARS freqs were also used for their comms with the National Hurricane Center in Miami when the SATCOM links failed.

They had some trouble with their SATCOM during the early part of the storm; TEAL 60 returned to Keesler AFB to have a new SATCOM R/T Model 1794C installed. But SATCOM troubles prevailed in several of the aircraft throughout their storm mission.

MARS frequency 13927 kHz (USB) was used for most of their phone patches, but the Hurricane Hunters were also heard on HF-GCS frequencies (11175 and 15016 kHz). I was able to hear some of them using Miami Center ATC frequencies, including 119.825 MHz (Miami Center at Melbourne, Hi-Alt). And as Eglin AFB evacuated its fleet of F-15s to avoid damage, I was able to monitor callsigns KONG, NOMAD, and CROWs evacuating to Wright-Patterson AFB, Ohio, using UHF ATC frequencies.

For those of you who would like to monitor communications associated with hurricanes in the future, refer to the following two sites, both of which display current information: Bill Snyder's Hurricane Info Site at http://www.hurricane.com; and Hugh Stegman's Hurricane List at http://www.ominous-valve.com/hurricne.txt. Always remember the Hurricane Net on 14325 kHz (USB), as well.

Other Military Radio Monitoring

Lately the JSTARS aircraft at Robins AFB have been using JSTARS ## as their front-end (flight crew) callsign. This is a change from their usual RAZOR ## callsign. In the past, the JSTARS callsign had been used only by the JSTARS test aircraft based at the Northrop Grumman JSTARS Integration Facility in Melbourne, Florida. There has been a change in the callsign of overseas flights of the JSTARS E-8s as well; those flights have switched from RAZOR to PEACH on their rotation flights to/from Robins AFB and Al Udeid AB in Qatar.

The frequencies on which JSTARS has been heard lately include 225.725, 228.050, 233.75, 235.325, 276.075, 293.525, 323.9, 328.025, 355.25.

Recently, a Melbourne-based JSTARS aircraft was up with tests. Wizard (JSTARS Mission Crew) worked with TERRA 5 (Northrop Grumman ground station), and was heard in both clear voice and encrypted comms on 308.85 and 315.275. The flight crew used the callsign JSTARS 04.

Also, JG 983 was heard on 269.3 heading into NAS Jacksonville. JG #### has been a Joint Guardian callsign, used

This P-3C arrived at Patrick AFB recently as "Lima Lima 04." The aircraft is Bu No. 160284, tail LL-284, assigned to NAS Jacksonville's VP-30, the "Pro's Nest" Squadron. The Jax P-3s patrol the eastern seaboard and work counter-narcotics operations in the Caribbean.

by aircraft supporting Bosnia Operations, both USAF and foreign air forces.

NASA Astronauts in Shuttle Training Aircraft worked several days over the Cape recently, preparing for the Return to Flight Mission STS-114. They performed steep dives that simulate the Space Shuttle landing. Their comms with the ground were heard on 126.65, 259.7 (STS Air-Ground Primary), and 296.8 (STS Air-Ground Secondary).

And at Avon Park Bombing Range in Florida, there was an interesting SAR exercise. SANDY 08, a flight of five A-10s, and SANDY 01, a flight of three, were involved. Frequencies in use were 292.2, 138.875 (Victor 3, comms with Moody AFB HH-60G helo JOLLY 81), and 251.9 (SANDY 01 comms with simulated survivor "Viper 21"). The activity took place in Placid MOA.

A Civil Air Patrol exercise was performed in central Florida. SEARCH 01, one of NASA's UH-1N helos, participated along with CAP Flight 838. They were heard on A/D frequency 132.65 and Cape Control frequency 133.8, as well as on the Civil Air Patrol's 121.1. The U.S. Coast Guard's "CG 6551" HH-65B from CGAS Savannah participated and often IDed as "Dolphin 51."

At the same time, a Mil CAP (Combat Air Patrol) was active; Tanker 08 was in comms with NORAD's Oakgrove and with F-16 Pitman 21 on 252.0. Pitman 21 was up with Miami Ctr on 119.825 and 133.475 and used 141.9 for air-air. Pitman 21 said he was flying the Atlas 2 CAP.

Recently, SNAKEs and FANGs of the FL-ANG 125FW were engaged in aerial combat maneuvers; frequencies in use were 267.5 (Sealord), 288.4, 316.3, and 343.0. At the same time, Robins E-8C "JSTARS 86" was training in the JSTARS 4 Area and was in comms with Bristol on 349.8. AWACS acft "Dragnet" was heard on 251.25, announcing that it was working in the AW-003 area.

A recent Missilex was performed by CVW-8 off the *USS Theodore Roosevelt*. E-2C aircraft Bear 26 coordinated aircraft routings with Sealord on 267.5 and 284.5 and had comms with Bristol Range and with S-3B 705 on 311.5. Bear 26 also worked callsigns Alpha Alpha and 705 on 268.3. KC-135 tanker Rhet 71 was heard on 284.5 and 273.35; the tanker was alerted by Bear on 268.3 when it wandered into the missile "box" inadvertently.

Shuttle Monitoring

Even though the Shuttle fleet was grounded after NASA filmed debris striking the vehicle, when Space Shuttle launches resume they'll undoubtedly attract Military comms monitors to the Florida Space Coast. So here's a summary of the busiest military-related freqs for you to try when you visit the Kennedy Space Center area:

Patrick AFB Aero Freqs
Tower: 133.75, 269.375
Grd Ctrl: 124.35, 335.8
Clrnc Del: 118.4, 289.4
Ops/PTD: 139.9, 372.2
Trans Alert: 173.125 (now Base TRS)
CP: 138.3, 383.0
PMSV: 344.6
ATIS: 119.175, 273.5
Fuel Ops: 165.1625 (now Base TRS)
Maint Ops Ctr: 149.3 (now Base TRS)
920RQW Ops: 321.0
920RQW Helos: 138.475, 255.5
920RQW Air-Ground: 251.9
Fire/Crash Tac 2: 164.7, 172.3 (now Base TRS)
Security: 163.4875, 173.0250 (now Base TRS)
Civil Engineering: 171.3875 (now Base TRS)
Supply: 149.2650 (now Base TRS)

CCAS and NASA's Kennedy Space Center
CCAFS Twr: 118.625, 393.0 (Skid Strip)
Cape Ctrl: 133.8
Cape Radio: 11.780
KSC Twr (SLF):128.55, 284.0, 126.65 (for STAs)
KSC-SLF Grd: 121.75
NASA T-38s Air-air: 235.4

Daytona Beach Appr/Dep
Appr S: 132.65, 281.425
Appr N: 134.95, 281.425/239.275

Avon Park Bombing Range
292.200 Range Ctrl
126.150 Twr
138.125 MAKOs Air-air
139.800 SHARKs air-air
141.700 AKULAs air-air
141.900 SHARKs air-air
264.600 Bravo Range
264.625 Bravo & Foxtrot Ranges
285.725 Charlie & Echo Ranges
286.400 Charlie Range

Pinecastle Range (Ocala Forest)
357.000 Sealord Check-in
380.800 Range Ctrl, R-2903
321.800 Rodman Targets

Tarpon Range (near Key West)
250.600
265.000
275.400
318.500
344.200
370.850 (Mia Ctr)

MacDill
311.000 Lightning Ops
292.100 Thunder Ops
283.700 Buccaneer (TDY) Ops
279.600 Tampa Appr
290.300 Tampa Appr
294.700 MCF Twr
353.575 Tampa Appr

Homestead
303.150 Mr Mako Ops
138.025 Homestead SOF

NAS Jax
310.200 Jax Base Ops
285.000 Fiddle TSC
383.400 P-3 Sqdn Base Common

FL-ANG 125FW Jax IAP
251.250 Ops
351.800 Jax IAP Dep

Busiest Miami Ctr Mil
269.300
278.500 WPB
281.500
285.500
291.600
306.900 Hi-alt
307.100 Pahokee
307.300 Sarasota Hi-Alt
319.000 Vero Hi-Alt
323.000 Hi-Alt
323.100 Key West Hi-Alt
335.500 Ft Myers
343.700 Melbourne Hi-Alt
348.700 Melbourne Hi-Alt
349.000 Avon Park
353.600 WPB
370.850 Tarpon Range
370.900 Vero
377.100 Sarasota
379.350 Melbourne Hi-Alt
380.300 Ft Myers

Busiest Jax Ctr Mil
269.250 Ocala
273.550 St Johns
291.700 Gainesville
307.250 St Augustine
317.600 Lowell
327.100 High Alt
346.250 St Augustine Hi-Alt
360.700 Lowell

AAR
238.900 AR-620
276.500 AR-655
324.600 AR-617, AR-638

SEALORD/BRISTOL
267.500 Seaord South Primary
270.600 Bristol GCI
284.500 Sealord North Primary
120.950 Sealord
133.950 Sealord
341.1 Discrete

NORAD-Oakgrove
364.200 AICC
228.900
252.000
254.200
265.400
301.500

Northrop Grumman JSTARS Integration Facility, Melbourne IAP
123.200 Ops
141.850 Air-Ground, Testing
231.750 Air-Ground, Testing
275.200 Air-Ground, Testing
286.250 Air-Ground, Testing
308.850 Air-Ground, Testing
351.025 Air-Ground, Testing

Help Wanted!

Of course most of the military comms discussed above are associated with Central Florida where I live. With your help I hope to cover military comms related to exercises and activities elsewhere. So, if you have something you think *Pop'Comm* readers would enjoy learning about, be sure to send it along to me at allanstern@aol.com. Questions are also welcome. I'm usually up on my Buddy List, so say hello if you see my screen name AllanStern on your display.

For those of you just starting out in Military Radio Monitoring, don't despair over what may be unfamiliar terminology. We'll be putting together a quick-reference glossary to accompany the column to explain some of the jargon used.

I'll also leave the newcomers with a short bit of advice that might help you in your quest for military comms receptions. Instead of programming in a scanner full of frequencies and sitting back to wait for a "hit," get into the habit of using the SEARCH function of your scanner, and search the 225- to 400-MHz range in small segments. You will find this hobby a lot more satisfying when you discover frequencies on your own, rather than plugging in frequencies from websites and directories. Websites and directories have their place, but the real adventure comes in finding frequencies on your own. STAY THE QUEST! ■

by Harold Ort, N2RLL, Editor

The Otterbox 6010 Protective Case

The opened Otterbox 6010 case and radio goodies.

After we mentioned the Otterbox lineup of protective cases in our August *Pop'Comm's* "Power-Up" department, we got a few letters and e-mails asking us to put them to the test. This month, we did—and the results were right on target with Otterbox's claims about its containers ("...waterproof, crushproof and they float...protect valuables from the elements...make a great toolbox, function as document storage, video equipment, small laptops, a customized first aid kit").

Planning, Plucking, And Packing

The Otterbox 6010 is one of a complete line of protective, rugged cases that range in size from ones for your PDA (personal digital assistant), cell phone, or digital camera, to the larger 6000 series boxes that will store a couple of handheld radios, scanner, pocket knife, batteries, and, if you're clever at planning what you're packing, additional items. As a matter of fact, that's just what I decided to pack into the Otterbox 6010.

Today you just never know when you might need a grab-and-go box or two (perhaps one with living essentials for a week or so and the other with a radio or two). Planning what you're going to store is essential. While that's certainly common sense, I suspect far too many folks don't always plan ahead and quickly pulled out the "Pick-and-Pluck foam (included with the larger Otterbox cases like the 6010 we tested), to "fit" radio x or item y, only to ended up frustrated—and needing to order replacement foam for their case.

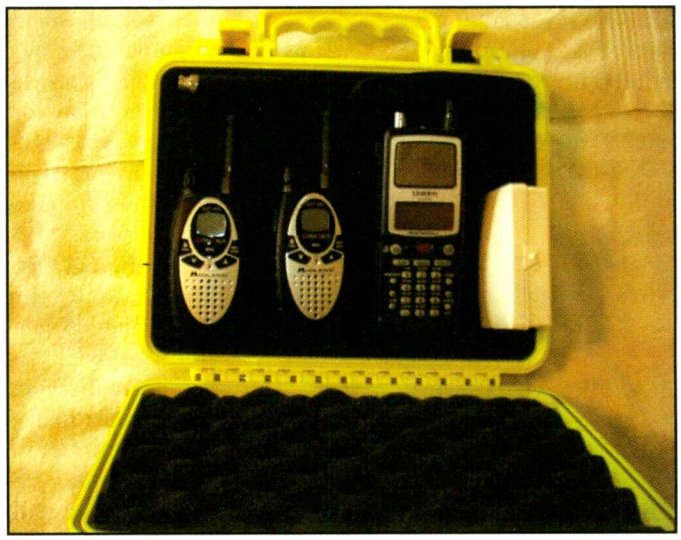
Check it out: The Otterbox 6010 case, with inside dimensions that measure 12 x 9 x 4 inches (LWD), is available in fluorescent yellow or midnight black and holds more than you might first think. I initially put the things I wanted to protect on top of the foam: my BC-296D scanner (by no means a tiny radio!) and PC control cable, small soapbox of 16 "AA" alkaline batteries to power my two Midland GXT-400 GMRS/FRS handheld radios with a pair of earpiece/mic sets, and a Gerber pocketknife. (A knife? You bet. I've found that when push comes to shove, a knife is an invaluable tool. It's right up there with duct tape and extra batteries!)

Once you've determined that your gear will all fit in the case with ample protective foam on the sides of your items, pluck away. The knife also comes in handy here to allow you to *carefully* separate the foam—pull too much and, well, you get the idea. I put the cables and small earpiece/mic sets in as an afterthought, and I could have substituted the scanner's wall charger for the knife or extra batteries (but I know from experience that keeping the volume down on the radio greatly extends battery life, plus I typically get at least eight hours of listening before the scanner needs to be recharged).

Once the goodies are packed in their respective places, ensure that the cover closes and the two latches securely seal the box. If you've got to force the case closed and have difficulty latching the box, it's your own fault; there's too much stuff or it's improperly stored. Mine works perfectly. Frankly I couldn't design a better case!

A Perfect Fit, And A Real-World Test

Even with those radio items inside the Otterbox, there's about an inch or so of foam protection between the scanner and battery box, another inch between the scanner and Midland GMRS/FRS radio, and at least two inches (room for the knife



Always plan the packing before you pluck away the protective foam. I placed the equipment on top of the case to get a precise idea of where to pull out the foam.

Out comes the foam and in goes the soapbox with "AA" batteries.

Safe and dry! I couldn't submerge the Otterbox in 100 feet of water to test their claim that their cases are waterproof to that depth, but given my simple homebrew test (and the fact that if you or your case is submerged in 100 feet of water, you've got more problems than worrying about wet radios!), I'd say you can certainly count on the Otterbox 6010 case to protect your gear.

The only items not packed in the case are the small manuals for the scanner and (only one, of course) for the Midland GMRS/FRS handhelds, and the PC control cable for the BC-296D. It's a snug, perfect fit!

Into the drink—a full minute underwater! Try this with your department store rubber or plastic container (but don't put your radios inside if you do!).

to lie on top of the foam) between each Midland radio. Of course the top of the Otterbox has a thick layer of protective foam and the case itself is, well, I'd say nearly indestructible. Why? Well, I didn't run over it with a tractor-trailer, simply because I'm not that crazy, but I did place it on the floor and stand on it with one foot. Now *that's* a true real-world test. (Remember those true stories about the donuts I like?) So far, so good, but is it waterproof as Otterbox claims?

Faith-Based Testing

I'm not a swimmer and floating is even sometimes a problem (it would probably make a funny video!). So I decided to fill the kitchen sink and dunk the case, radios and all. Now, if you're a radio nut like me, this isn't something to take lightly. It's not like storing some pliers or a box of bandages that can be wiped off quickly or easily replaced if they get wet. No, these are things held as near and dear to us as are old pictures of Aunt Millie or Uncle Bob.

After I checked the seal one last time, into the drink it went. And, yes, it floats as Otterbox claims. I had put a dry paper towel inside the box to help detect even the smallest leak, and then held the box—radios and all—underwater for a full minute. Trust me, that's a long time when you're imagining what could happen!

The verdict? Dry. There wasn't a drop of water inside the case; that paper towel was, thankfully, as dry as when I sealed the box!

Check Them Out For Yourself

So, what's my verdict on the Otterbox line of products? I give them two thumbs up for making excellent protective cases that are as tough as they are good looking and versatile. The Otterbox 6010 is $67.95. You can contact Otterbox directly at 888-695-8820 or visit them on the Web at www.otterbox.com. Please be sure to tell them you read about their protective cases in *Popular Communications*. ■

by Bruce A. Conti, BAConti@aol.com

Podcasting: What It Is, How It Works, And How You Can Take Part!

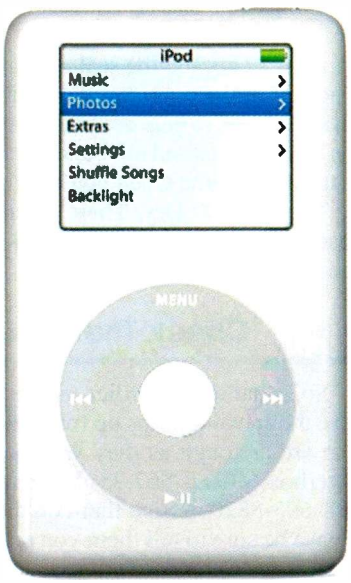
Podcasting is challenging broadcasters to think outside the box. Some are already meeting the challenge. For instance, Z100 FM WHTZ New York podcasts feature the "Morning Zoo Phone Tap"; 700 WLW Cincinnati provides "podbits" from the Gary Burbank show; select radio programs are available from 820 WNYC and NPR via podcasts; Coast-to-Coast AM with Art Bell and George Noory is podcasting daily; the BBC podcasts various feature programs; and Republican Senators in Pennsylvania have launched a weekly podcast about state issues, joining thousands of individuals producing their *own* podcasts for listeners worldwide. But just what is podcasting, how do you receive a podcast, and how can you get your own podcast on the air?

Podcasting 101

Podcasting began as a natural extension of weblogging, or blogging for short, only in audio form. It provides a convenient forum through which anyone with a voice can be heard online or via download to a portable MP3 player. The term *podcasting* came from the marriage of the popular iPod portable MP3 player and this latest form of Internet broadcasting, although any MP3 player or computer can receive a podcast. Now podcasts are available from radio stations, nationally syndicated programs, sports networks, musical groups, and individuals. You name it, and it's probably being podcast. Clear Channel radio stations nationwide were among the latest to jump on the podcasting bandwagon, introducing listeners to the new technology on participating radio station websites as follows:

Podcasting is a method of publishing sound files to a website which go to a dedicated XML feed. An audio broadcast is automatically downloaded onto portable MP3 players like the iPod. Using podcasting software, you choose the content you want once, and from that moment it will be delivered to you regularly. The software does all the work, reaching out to the site all the time, automatically downloading sound files when they are posted.

Of course, you don't need a portable MP3 player to listen. All you need is a computer with a sound card, an MP3 player like the Windows Media Player preinstalled on most PCs and iTunes on a Mac, an Internet connection, and podcasting software like iPodder to get started. Then simply click on podcasting or XML links at your favorite audio, radio, music, and blogging websites. Not sure where to find content? Check out an online podcasting directory like iPodder.org or Podcast.net where you can search for programming to suit specific tastes.



The Apple iPod 20-GB model with color display.

Upload Your Own Podcasts

After becoming an experienced podcast listener, you may be ready to try producing your own programs for podcasting. Getting started was the topic of a recent discussion on the Boston Area DXers e-mail reflector, where Steve Byan of Oak Ridge Radio explained, "Basically you need to set up a website that provides an RSS feed that supports enclosures. That seems to mean you need to use RSS 2.0. The audio files are just plain MP3 or AAC (.m4a) files or you could even use ogg vorbis."

Steve recommends the following Internet resources. For a brief Mac overview, that mostly skips the interesting bits about how you actually put the audio file into an RSS feed, visit www.engadget.com/entry/5843952395227141/. For a brief Windows overview, that skips the bits about how you actually put the audio file into an RSS feed, see www.zefhemel.com/archives/2004/10/11/how-to-create-your-own-podcasting-show. To learn how to make an RSS feed, see http://searchenginewatch.com/sereport/article.php/2175271.

When you're ready to upload to a website, you really don't need any software other than ftp access to a website. Steve adds, "Basically you just need to drop an RSS feed XML file on a website that references the audio file, and provide a link to the RSS feed XML file from the HTML so people can find out about it."

RSS, XML, And HTML?

What is XML? RSS? XML is the acronym for Extensible Markup Language and is a complement to HTML (Hyper Text Markup Language). The primary function of XML is to describe data, while HTML displays data. XML has become a standard language for transmission of data over the Web, such as in the transmission of a podcast. RSS stands for Really Simple Syndication and is a dialect of XML. When you place your MP3 file in an RSS feed, you're essentially preparing your file for syndication by defining various aspects of your file for release on the Web, including a brief description for the directories and search engines that may list and track your podcasts.

Originally designed to track updates for automatic news and blog feeds, RSS when applied to podcasting allows for the automatic updating or downloading of audio files. This, in a nutshell, is actually what separates podcasting from MP3 downloading. A podcast is an RSS feed with an audio link. Instead of manually seeking out and downloading an MP3 file, once you setup RSS software for upload or download, it becomes a

The SanDisk Red 256-MB measures just under three inches long.

plug-and-play operation. Then the most difficult decision will be selecting from thousands of podcasts, or producing original material for podcasting. However, unless you're an HTML programming expert, all this probably seems too geeky. Fortunately for the rest of us there are plenty of software resources available on the Web to help package the final product for podcasting. Steve recommends www.podcastingnews.com/ topics/ Podcasting_Software.html "for all-in-one automatic podcast creation."

MP3 Players

While Apple iPods dominate the field of portable MP3 players, they aren't the only players in town. Other manufacturers are playing to win with innovative designs and new features. The SanDisk (www.sandisk.com) Red 256-MB flash memory player comes complete with an FM tuner, voice recording with a built-in microphone, a USB 2.0 interface cable, and install CD. It runs 15 hours on a single AAA battery, and measures just under three inches in its largest dimension.

The iriver (www.iriveramerica.com) H10 portable MP3 player also displays digital photos on its color LCD, plus it includes an FM tuner with the ability to record broadcasts for replay. The iriver H10 is outfitted with a USB 2.0 interface cable, install CD, and rechargeable battery with an AC adapter.

Apple (www.apple.com/ipod) is fighting back with a new generation of iPod players featuring color screens for photo display capabilities and up to 60-GB hard drive capacity. The latest release of iTunes, Version 4.9, supports podcasting, and as of this writing Apple was preparing to introduce an iPod-enabled cell phone supported by Version 4.9 software.

Need A Player? Here Are Some Key Shopping Tips

There are so many makes and models of portable MP3 players, it would be impossible to rate them all here. The best advice is to visit your favorite electronics retailer for a test drive. Some key features to consider are memory, computer compatibility, user interface, versatility, battery life, and cost. As a point of comparison, 128 MB of flash memory will store up to two hours of near CD-quality audio, while a 40-GB hard drive can hold

The iriver H10 6-GB model holds up to 180 hours of music. →

more than 600 hours of programming. Some models with low-capacity flash memory use memory cards or memory sticks so you can save audio on additional cards, while other low-capacity models can only be reloaded via USB interface to a computer. However, with flash memory you don't have audio skipping problems due to motion, such as jogging, although most hard drives use buffering to minimize skips.

A low-capacity flash memory portable MP3 player will cost well under $100, and for applications requiring only a few hours of audio at a time, this might be the best option. If you're looking to do more, a jump up to a 20-GB model would give plenty of bang for the buck, starting at under $300. A full-featured 40-GB portable model with enough memory to store your entire music library will cost around $500. Double check the compatibility with your computer, especially the version of Windows on your PC, before making a purchase. Most MP3

players come with a USB 2.0 interface, but will operate with older versions of USB, albeit at a slower speed. The Apple iPod will work with both Mac and Windows operating systems.

If the interest is there (based on your letters and e-mails, of course), we'll explore podcasting further right here in *Pop'Comm*. Let's hear from you!

Broadcast Loggings

Lawrence Ressler brings us back to the analog side of broadcasting with observations from the eastern Ohio radio scene, as follows:

1020 KDKA Pittsburgh, Pennsylvania, has dropped CNN Radio as their network news provider, returning to CBS Radio after leaving the network for about a decade due to mandated changes required by the FCC when Westinghouse bought CBS during the 1990s. 1570 WANR Warren, Ohio, has become an Air America affiliate during the day, while continuing to play rock oldies music at night and on the weekends. 1520 WJMP Kent-Akron-Cleveland, Ohio, is now a full-time Air America

AM And FM Station Changes And Updates

Pending

New Call	Location	Freq.	Old Call
WZQK	Brandon, MS	970	WRKN
KOTK	Omaha, NE	1420	KHLP
WNYH	Huntington, NY	740	WGSM
WPOG	St. Matthews, SC	710	WQKI
KWLU	Chester, CA	98.9	KBNF
KXZM	Felton, CA	93.7	KTEE
KXSM	Hollister, CA	93.5	KOTR
WMYJ	Oolitic, IN	88.9	WXVW
KKLG	Newton, IA	88.3	KNNU
KMXH	Alexandria, LA	93.9	KFAD
WLKB	Freeland, MI	90.9	WWZP
KELU	Clovis, NM	90.3	KKCC

Changes

New Call	Location	Freq.	Old Call
WIXI	Jasper, AL	1360	WZPQ
KXXA	Conway, AR	1330	KTOD
KKGO	Beverly Hills, CA	1260	KSUR
KRXA	Carmel Valley, CA	540	KXME
KFPT	Clovis, CA	790	KOOR
WAYS	Macon, GA	1500	WWFN
WPMP	Pascagoula-Moss Pt., MS	1580	WZZJ
KWWN	Las Vegas, NV	1100	New
WBBF	Buffalo, NY	1120	WMNY
WNYY	Ithaca, NY	1470	WTKO
WIXT	Little Falls ,NY	1230	WLFH
WARF	Akron OH	1350	WTOU
KMGS	Highland Park TX	1150	KBIS
KWMG	Auburn-Federal Way, WA	1210	KDDS
KBIS	Forks, WA	1490	KVAC
WMLV	Butler, AL	93.5	WKZB
KVKL	Lake Havasu City, AZ	89.3	KLHA
KVIB	Sun City West, AZ	95.1	KFMR
KCNY	Bald Knob, AR	107.1	KKSY
KKLT	Texarkana, AR	89.3	KWLL
KVID	Barstow, CA	89.1	New
KBLO	Corcoran, CA	102.3	KXQX
KEXA	Salinas, CA	97.9	KEBV
KPGS	Pagosa Springs, CO	88.1	New
WLVX	Elberton, GA	105.1	WEHR
WIFN	Macon, GA	105.5	WAYS
WLZN	Macon, GA	92.3	WMKS
KAWS	Boise, ID	89.1	KZJB
KQTA	Homedale, ID	106.3	KBNH
KTPO	Kootenai, ID	106.7	New
KZJB	Pocatello, ID	90.3	KAWS
WVWN	Heyworth, IL	97.9	New
WDNQ	Normal, IL	100.7	New
WWMU	Muncie, IN	88.3	New
KWVI	Waverly, IA	88.9	New
KOUZ	Blanchard, LA	89.1	New
KMSL	Mansfield, LA	91.7	New
WKZB	Stonewall, MS	106.9	WMLV
WFCG	Tylertown, MS	107.3	New
WWBR	Big Rapids, MI	100.9	WBRN-FM
WDMK	Detroit ,MI	105.9	WDTJ
WHTD	Mount Clemens, MI	102.7	WDMK
KGSF	Anderson, MO	88.5	New
KKSB	Scottsbluff, NE	89.1	New
KKJJ	Henderson , NV	100.5	KMZQ-FM
WUSX	Campton, NH	105.7	WVFM
KUSW	Farmington, NM	89.7	New
KNMA	Socorro, NM	88.1	New
WGMM	Corning, NY	98.7	WGMM-FM
WSSM	Havelock, NC	105.1	WKOO
WGHW	Lockwoods Folly Town, NC	88.1	New
KRVX	Wimbledon, ND	103.1	New
WTKC	Findlay, OH	89.7	New
KWXC	Grove, OK	88.9	New
KHAL	Condon, OR	93.5	New
KPIJ	Junction City, OR	88.5	New
KYOR	Newport, OR	88.9	New
KJRV	Wessington Springs, SD	93.3	New
WFHU	Henderson, TN	91.5	WFHC
KMZZ	Bishop, TX	106.9	KFLZ
KJKE	Ingleside, TX	107.3	KRPX
KHML	Madisonville, TX	91.5	New
WWMP	Waterbury, VT	103.3	WLKC
WWDW	Alberta, VA	103.1	WSMY-FM
KMNT	Chehalis, WA	104.3	New
KDDS-FM	Elma, WA	99.3	KAYO-FM
WVMG	Kenova, WV	97.9	New
WKQV	Richwood, WV	105.5	New
WLGA	Opelika, AL	66	WSWS-TV
WFXW	Terre Haute, IN	38	WBAK-TV
WSYR-TV	Syracuse, NY	9	WIXT-TV
WHRE	Virginia Beach, VA	21	New

affiliate, abandoning its pop oldies music format. The owner of WJMP already has a news/talk format on sister station 100.1 WNIR Kent-Akron, Ohio, so it makes me wonder if changes are coming to the FM station. 1500 WGFT Youngstown, Ohio, has switched to Spanish pop music, formerly a longtime urban contemporary and gospel station. And, finally, 1350 WTOU Akron, Ohio, has become liberal news/talk with the slogan "Radio Free Ohio" and is now an ABC Radio affiliate. WTOU was formerly a sports talk ESPN Radio affiliate.

And now this month's selected logs. All times are UTC.

670 WSCR Chicago, Illinois, at 0630 a good signal with "The Chris Russell Show" on Sporting News Radio and slogan "The Score." (Ressler-OH)

760 WCIS Morganton, North Carolina, at 0001 a very good signal with southern gospel, marred by lightning crashes, "...the best in Southern Gospel, 760 AM, WCIS Morganton." (New-GA)

770 WKFT Pittsburgh, Pennsylvania, at 1800 a fair signal heard with a station ID, followed by Doo Wop rock music. (Ressler-OH)

780 WBBM Chicago, Illinois, at 0520 to 0535, heard a series of test tones, then silence, then back to the test tones. Returned back on the air for about one minute at 0526, then was off the air for several minutes. Returned briefly at 0533 before going off the air for good. Heard signal overlap from 770 WABC New York. (Ressler-OH) XEMF Radio Nostalgia, Mexico, and YVMN Radio Coro, Venezuela, were received while WBBM was off the air for transmitter maintenance. (Conti-NH)

790 WPIC Sharon, Pennsylvania, at 1810 a good signal with "The Tom Martino Show," the host was asking callers for safe ways of donating money. (Ressler-OH)

920 CKNX Wingham, Ontario, at 0635 a weak signal with signal fade. Listened to country music from "Western Ontario's best country music station." (Ressler-OH)

1089 TalkSport synchros, United Kingdom, at 0140 a man and woman with sports talk about the 2012 Olympics; fair in WBAL null. (Connelly-MA)

1280 WJST New Castle, Pennsylvania, at 1605 a strong signal with the "Dave's Diner" rock oldies program and slogan, "Just Oldies 1280." Formerly WBZY. (Ressler-OH)

1314 NRK Kvitsoy, Norway, at 0149 heard "Old Man" by Neil Young, then Norwegian talk; fair. (Connelly-MA)

1467 TransWorld Radio, Roumoules, France, at 0344 heard with the TransWorld Radio musical box interval signal; fair to good. (Connelly-MA)

1540 KXEL Waterloo, Iowa, at 0859 a fair signal with light static. Listened to a station ID, followed by "The Best of the Midnight Trucking Radio Network." (Ressler-OH)

Thanks to Steve Byan (BADX), Mark Connelly, Ira Elbert New, and Lawrence Ressler for their contributions this month. If you have a favorite podcast, let us know about it. Your podcast reviews will be featured in a future edition of "Broadcast Technology." Don't forget legacy AM, FM, and TV DX logs are always welcome, too. 73 and Good DX! ■

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

News, Trends, And Short Takes

Taliban Set Up Two More Radio Stations

The Taliban have set up two more radio stations in Afghanistan, bringing to three the total number of its active stations. Speaking to the Afghan Islamic Press from an unknown location, Taliban spokesman Mofti Latifollah Hakimi said that the Taliban stations have begun broadcasting fairly successfully. They intend to activate more such stations, with the goal of eventually reaching as many as 20.

Broadcast Tests From Little Saigon Radio

The U.S.-based Little Saigon Radio is currently testing via transmitters in Taiwan on 11540 at 1130 to 1200 and 7380 at 1500 to 1530. Little Saigon Radio is produced by Little Saigon Broadcasting, Inc., and is available 24 hours daily via local AM stations in the United States and via Webcasting. More info about the station can be found on its website, http://www.little-saigonradio.com.

Podcasting Station Launched New Searchable Podcast Directory

Podcasting Station, a new categorized directory of podcasts, makes it easy to find the latest podcast feeds in a single convenient and easy to navigate location. Its website, www.podcasting-station.com, groups similar podcasts under general topic headings that provide podcast titles and descriptions. A search feature allows Web surfers to search for podcasts using keywords and phrases. The directory covers a huge range of audio content, from humor and news to foreign language instruction and sports interviews. The intention of Podcasting Station is to provide a convenient resource that unites the podcasting community and makes it easy for consumers and industry professionals to locate podcasts and information. Podcasters are encouraged to add their podcast feeds to the database. All listings are currently free of charge.

Radio Insurgente Broadcasts Suspended Indefinitely

A communiqué dated 19 June 2005 from the Mexican-based Clandestine Revolutionary Indigenous Committee—General Command of the Zapatista Army of National Liberation, states that the organization has declared a General Red Alert. For an indefinite time period, members of the Good Government Juntas and the autonomous authorities will be carrying out their work in a clandestine and nomadic manner. Their announcement says that all broadcasts by Radio Insurgente, "The Voice of Those Without Voice," on FM and on shortwave have been indefinitely suspended.

BBC Beethoven Downloads Receive More Than 600,000 Requests

Live performances of Beethoven's first five symphonies, broadcast as part of The Beethoven Experience on BBC Radio 3, have amassed an incredible 657,399 download requests during a week-long trial. The downloads, launched on June 6, offered complete Radio 3 programs containing live performances of the symphonies by the BBC Philharmonic in Manchester, conducted by Gianandrea Noseda. They were available free of charge. The BBC recently announced it will be offering up to 20 programs as podcasts and downloads, as a time-limited trial to obtain a more detailed picture of audiences' preference for downloads and to assist in the development of the BBC strategy for audio downloads and on-demand content.

Sirius Develops New Technology To Increase Network Capacity By 25 Percent

U.S.-based Sirius Satellite Radio announced that it has developed a new, advanced proprietary technology that will initially increase the company's total network capacity by approximately 25 percent within its existing digital transmission system. The technology, known in the industry as hierarchical modulation, will allow Sirius to offer additional audio channels as well as advanced services, such as data and video, without affecting the quality of its broadcasts.

The technology, developed by Sirius's Advanced Development Team based in Lawrenceville, New Jersey, will work over Sirius's current network, with minimal upgrades to its satellite uplink and terrestrial repeater infrastructure. Sirius has already conducted several tests of the technology to confirm the performance. The new modulation technology will not impact the customer experience of existing Sirius radios sold or currently on the market. Future Sirius radios will be outfitted with the new technology, making it possible for them to receive the additional services planned. Sirius is currently working with its silicon partners to integrate the advanced modulation technology into its chipsets. The company expects to begin offering services using the new technology in the second-half of 2006.

SW Radio Africa Soliciting Donations To Ensure Survival

SW Radio Africa, which broadcasts to Zimbabwe from studios in the UK, has launched an appeal for donations. On its website, the station says its funding remains uncertain. Mugabe's jamming of the airwaves has forced the station to suspend its transmission on shortwave and drained its funds because of the high cost of using extra shortwave frequencies to counteract the jamming. The station can now only broadcast on mediumwave. Donations can be made using PayPal or via banks.■

Popular Communications
October 2005 Survey Questions

I get Popular Communications from:

Bookstore in mall 1
Newsstand 2
Electronics store 3
Supermarket 4
Convenience store 5
Drug Store 6
Subscription 7

Finding *Pop'Comm* on the newsstand in my area is relatively easy.

Yes 8
No 9
Most of the time 10

When I get *Pop'Comm*, I spend the following amount of time with the magazine:

Less than a half-hour 11
One-half to one hour 12
One to two hours 13
Two to three hours 14
More than three hours 15

I've purchased a product as a direct result of reading a Pop'Comm equipment review:

Yes 16
No 17

I've purchased a product as a direct result of reading a *Pop'Comm* advertisement:

Yes 18
No 19

I would purchase a Best Of Alice Brannigan or Shannon Huniwell book if it were available.

Yes 20
No 21

During the past 12 months I've used a CB radio about this much time:

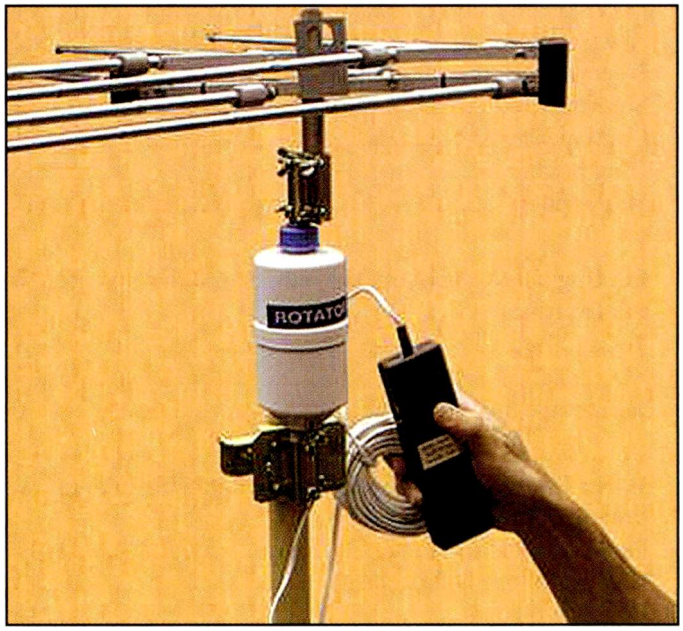
I haven't 22
Once or twice 23
Three or four times 24
Several times daily 25
Only about once a week 26
About once a month 27

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

Two Radio Gems You *Really* Need!

In a never-ending crusade to provide the readers of this column with the latest in technology that can help them enjoy the radio hobby and enhance their monitoring post/radio shack, your faithful scribe and all-'round "good guy" has, once again, stumbled (reminiscent of Inspector Clouseau) upon a piece of radio hardware (actually a couple of pieces) that you really need to investigate.

Craig Andersen, K1CRA, at The K1CRA Radio Store (www.k1cra.com), offers a whole bunch of "radio stuff" for sale, but a couple of really nifty little station accessories caught my eye that, at first glance, will have you, too, saying "WOW! Why couldn't I do something like that!" If you read last month's column you're aware that Craig provided a small 6-volt DC rotor (the Eagle Rotor) and a 2-meter/70centimeter log periodic antenna (LPA) for use during the annual ARRL Field Day. While the rotor proved too light duty to be effective (and safe) for the application I had originally intended, it definitely has a place in your radio kit for those times you need to turn a small, lightweight array without the use of AC power.



This is a close up of the small 6-volt Eagle Rotor that is one of the neatest things I've seen in a long time. Although not able to turn a huge array, this rotor is great for spinning small antennas like VHF/UHF dual-band beams for roving and portable operations.

The Eagle (Rotor) Has Landed

The Eagle Rotor is nothing more than a 6-volt motor housed inside a plastic case with brackets on each end to accommodate mounting to a mast, one of which remains stationary while the other, connected to a small antenna, is free to turn when power is applied to the rotor. Like I said, it is extremely lightweight and light duty, but for someone who wants to assemble a small, inconspicuous VHF/UHF rover station or to set up a VHF/UHF ham station or scanner listening post on a non-permanent location, this little rotor could prove quite handy. The 6 volts is obtained from four "AA" cells located in the handheld control box which is attached to the rotor using about 10 meters of flexible wire.

Don't Overload It

The main thing to remember regarding this rotor is to not overload the thing. It just won't turn a five-element 2-meter Yagi, a three-element 6-meter Yagi, and a 70-centimeter antenna all at the same time. The mast that mounts the antenna needs to be kept relatively short (under two feet in length) to keep lateral motion and side-to-side flexibility to a minimum. If you mount too many antennas on a long pole and try attaching this to the tiny 6-volt rotor, you're in for disaster. It's better to limit the number and size of antennas and mount the rotor/antenna assembly as high as possible (keeping safety in mind and the limitations of the 10 meters worth of control cabling) than to try to stack antennas atop the rotor using a six- or 10-foot aluminum mast section. In this case, shorter is better.

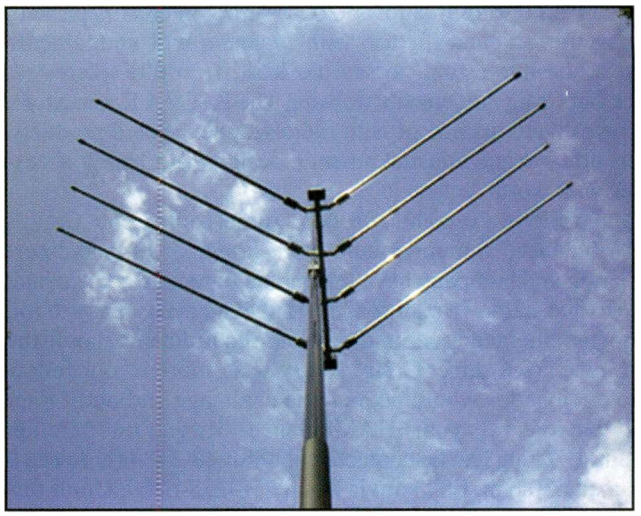
Small Rotor Ideas

Having all these limitations attached, exactly what is this little 6-volt DC rotor really good for? Well, for one thing, it can be used by someone who wants to drive to an elevated location (hill-topping expedition) to set up a one- or two-band rover station for VHF/UHF contests.

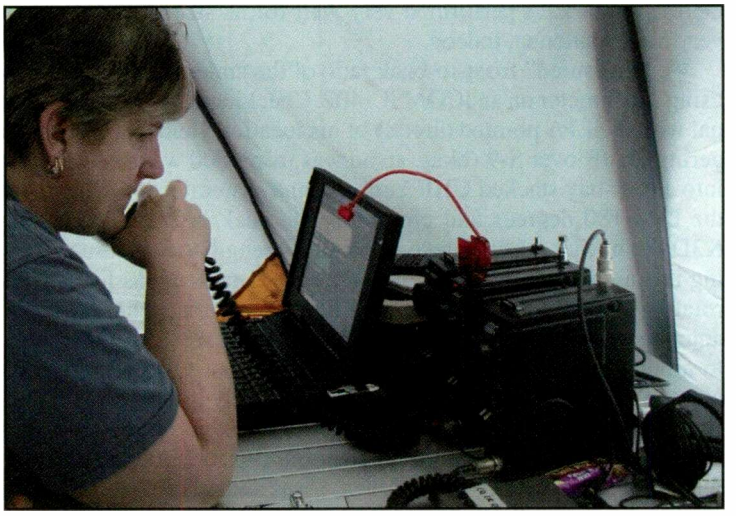
We've all seen pictures of some of these outlandish (and, yes, I do mean *outlandish*) VHF/UHF mobile installations designed to work from 6 meters through daylight that have been assembled by some overzealous members of the VHF+ crowd. Antennas are attached to every part of the truck, van, or car using elaborate scaffolding that holds multiple beam antennas while the signal chaser is driving down the highway. Once in place, the scaffolding swings away and the antennas are cranked up to operating position. Nice, in a geek sort of way, but for the rest of us mere mortals, it's a bit much. Certainly it's not in keeping with most spouses' idea of something they would like to be seen driving on non-contesting weekends.

Enter K1CRA's tiny 6-volt DC Eagle Rotor. A couple of five-foot mast sections that will telescope together and can be stored in the trunk of the family sedan coupled to the base of the rotor will yield a compact mast system that will hold and turn a small VHF or UHF beam on a short mast above the rotor. This low key (I shy away from calling it a "stealth installation") mobile setup will allow the casual VHF+ operator to engage in a contest weekend *and* keep peace in the family.

All that is really needed to complete this portable rover antenna system is some way of anchoring the base of the mast sections to keep them from moving once things are erected. This can be accomplished by fabricating some kind of small plate that will accept the butt end of the mast and allow you to drive



This is the KANG00002 dual-band (2 meters and 70 centimeters) Log Periodic Array (LPA) that I used during Field Day 2005. This tiny antenna has some great characteristics and can be readily adapted to ham radio and general scanning use.



Here's my wife, Patricia, on her first ARRL Field Day making some contacts on the N3EPA VHF/UHF station. The KANG0002 LPA was used on UHF and performed flawlessly. Just ask Pat!

the rear tire of the vehicle over to anchor it to the ground while operating. Teardown consists of bringing down the mast sections, disconnecting the antenna, rotor and masts, moving the vehicle a couple of feet to retrieve the ground plate, and packing everything back into the trunk of the vehicle. That's it and you're on your way—elegantly simple, to say the least.

Another Nifty Gadget: Craig's Small Four-Element Antenna

Craig's second handy-dandy little gadget is a dual-band (2 meters and 70 centimeters LPA, called the KANG0002, which is really tiny by comparison. This is a very small four-element antenna that folds up and collapses into an extremely small package, ideal for keeping in the "Jump Kit" for EmComm deployments, or in the trunk of the family sedan for the occasional VHF+ hill-topping expedition. The antenna's boom length is 12 7/8 inches, its reflector element is 38 1/2 inches long, and its director element is 32 inches long. Its weight is only 12 ounces! Now that is small, compact, *and* light! This antenna is ideal for the backpacker or hiker who wants to have a gain antenna available with minimal impact on his or her backpacking load.

Specs on this antenna? According to info on Craig's website: forward gain on 2 meters, 8 dB; on 70 centimeters, 9 dB; front-to-back: 20 dB. Personally, I found these gain figures a bit optimistic in light of the antenna having only four elements on a short boom. Additionally, without having a decibel reference (dBd, or dBi), these gain figures are open to interpretation.

Lacking a proper test range and instrumentation, I will, for now, accept these figures, but I have an "in" at Wilkes University's Electrical Engineering Department that allows me to get some time on their automated test range, so I plan on wringing this little antenna out and will report my findings in an upcoming column.

When I first saw this antenna I was more than a bit skeptical about its performance versus size. Made in Germany (a country noted for its veracious approach to VHF+ portable/mobile operating), this tiny antenna is well fabricated with four folding, collapsible elements on a dual boom assembly. The antenna feedline connects to this LPA via a standard BNC female connector mounted on the boom. When unfolded and with elements fully extended, this antenna resembles a four-element "arrow head," with directionality off the front of the arrow head.

And, yes, it does work very well, thank you, according to my limited field testing during Field Day 2005 from French Creek State Park, near Reading, Pennsylvania. My wife, Pat, KB3MCT, and I were lending our support to the Eastern Pennsylvania QRP Group (www.epaqrp.com) using the callsign N3EPA. We were the VHF+ station for this emergency communications exercise and had three 25-year-old ICOM "Bookshelf" rigs set up to cover 6 meters, 2 meters, and 70 centimeters, SSB/CW. Since I didn't have anything but a 19-element 70-centimeter antenna available, I decided to use the dual-band LPA for the 70-centimeter station. It worked flawlessly.

Pat and I erected it on a 15-foot mast (two mast sections, one five-foot and one 10-foot, fitted together) held vertically by a very old and rusty RadioShack five-foot-tall tripod that came off my roof at home several years earlier. Can you say "Kluge"? Sure you can!

For a feedline, we used 30 feet of RG-8X 50-ohm coaxial cable terminated in BNC connectors at each end. I know what some of you are going to say: "RG-8X! Are you mad, Arland!" No, I'm not. It was what I had handy and I seriously doubted that this kluge setup would have tolerated a heavier coaxial cable like LMR-400 or 9913, which is much better suited to UHF performance. The bottom line: with a short run (under 40 feet) RG-8X works just fine for a non-permanent installation.

Since the LPA had a very small mast receptacle mounted to the boom, it would not mate to the 1 1/4-inch pipe we were using as a mast. Well, that's why God invented duct tape (you know, the stuff that binds the universe together!). After applying several layers of duct tape to the LPA boom/mast, it was deemed sturdy enough to go into the air.

Since I didn't have any method of checking VSWR at UHF, nor did I have a UHF antenna analyzer handy, I had to rely upon the designer's specifications to be within the ballpark. After several QSOs on 70 centimeters, and doing some testing with K3DAT about 25 miles from our location, I decided that this little

German-built LPA performed very well for its size and was a very handy antenna, indeed.

We "measured" front-to-back ratio of the antenna ourselves using the S-meter on an ICOM IC-402. Checking K3DAT's signal with the LPA pointed directly at his location yielded a staggering 20 dB over S-9 (okay, so he was using 800 watts of RF into a four-bay stacked UHF Yagi antenna system!). Swinging the LPA 180 degrees and presenting the back of the LPA to K3DAT showed a drop in received signal strength to S-9, resulting in roughly a 20 dB front-to-back ratio. I noticed, as I was rotating the LPA through the 180-degree arc, that when the antenna was broadside to K3DAT's location, his signal dropped to around S-7, indicating roughly a 32 dB front-to-side ratio. Not too bad. Of course, this method is extremely imprecise and I will have to get this antenna over to the Wilkes University's antenna test range for a proper evaluation. But for a field expedient method of testing this antenna, I was suitably impressed. Your mileage may vary.

Kudos To Craig

I have yet to test this antenna out on any of my scanners. That will be fodder for an upcoming "Homeland Security" column. However, rest assured that the KANG0002 dual-band LPA worked well during Field Day 2005, so my interest is peaked. Testing this antenna for use with scanners will undoubtedly prove to be interesting, to say the least. If you're interested, check out Craig Andersen's website, The K1CRA Radio Store, and investigate his line of ham radio/scanner related products. Craig offers some unusual antenna designs and handy accessories well worth a close look.

And while you're on his site, don't forget to check out Craig's "HAMbulance," a mobile radio workshop and command post that Craig and company have assembled to help introduce ham radio to non-hams. In addition, the HAMbulance is ready to roll to support emergency communications requirements should the need arise. Well done, Craig! I only wish more of our fellow radio aficionados would take up the challenge and outfit their own versions of your HAMbulance. If you're "Internet impaired," Craig can be contacted at 888-248-3434 (between 9 a.m. and 5:30 p.m. EST) or via fax at 718-228-6869. Don't forget to tell Craig where you read about his products.

Bad Legislation—Again

Unfortunately, many of the provisions of the original "Patriot Act" were voted upon and "approved" in the Legislature during the last part of July. What began under the auspices of U.S. Attorney General John Ashcroft as a means to counter terrorism using Orwellian Methodology within the borders of the United States by circumventing the U.S. Constitution has finally become federal law. This does not bode well for most of America.

I don't know about you but the less our federal government has to say about which library books I check out, which places on the Internet I go, which medications I take, and what my charge account habits are, etc., etc., the better I like it! Federal prying into private citizen's lives is the first step in America becoming Amerika.

I devoted 20 years of my life defending the Constitution of the United States of America and our country while on active duty with the United States Air Force. For much of those 20 years I served in overseas locations, well away from my family and friends. I did this gladly, going where the Air Force needed me. I *didn't* do this so a bunch of faceless appointed bureaucrats could undermine the Constitutional freedoms all Americans are guaranteed and should be able to enjoy. When we, as a country, lose sight of the goals of our Founding Fathers and what they initially conceived in writing our Constitution, we are doomed.

We cannot allow Islamic Fundamentalists or any religious zealots, including our woefully misguided "Religious Right" for that matter, to influence how we conduct our affairs inside our borders, which the government has done in the name of national security. In short, the Fed has short-circuited the Constitution, and this is definitely not a good thing.

The best way to counter this blatant attempt at circumventing our Constitution is to shed plenty of sunlight on the activities of these imprudent bureaucrats and vote their bosses out of office. While this country was founded on a belief in God and by the power of an armed citizenry, we now settle our political differences democratically at the ballot box—just like our Founding Fathers envisioned. Let's not forget this when it comes to election time!

That's it for this month. Until next time, remember: Preparedness (on all levels) is not optional. ■

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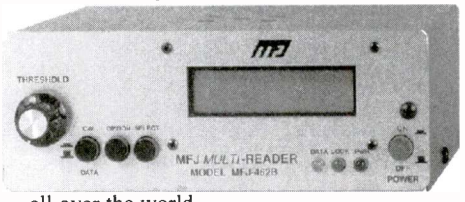

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MFJ's exclusive *TelePrinterPort*™ lets you monitor any station 24 hours a day by printing transmissions on an Epson compatible printer.

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

MFJ MessageSaver™

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

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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*™ 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.

New!

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.

New!

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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World News, Commentary, Music, Sports, And Drama At Your Fingertips

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	9700	Radio Bulgaria	BB
0000	11620	All India Radio	
0000	5865	Voice of Greece	GG
0000	9410	BBC Relay, Cyprus	
0000	9435	Democratic Voice of Burma, via Germany	BB
0000	9480	Radio Rossii, Russia	RR
0000	6955	La Voz del Campesino, Peru	SS
0030	9705	All India Radio, Panaji (Goa)	
0030	11690	Radio Vilnius, Lithuania	
0030	9745	China Radio Int., via Bonaire	
0100	9460	Voice of Turkey	TT
0100	9665	Voice of Russia via Moldova	
0100	9590	Radio Budapest, Hungary	
0100	11800	RAI Int., Italy	
0100	9345	Kol Israel	HH
0100	7590	AFN/AFRTS, Iceland	
0100	7345	Radio Prague, Czech Republic	
0100	9720	RT Tunisienne, Tunisia	AA
0100	17815	Radio Cultura, Brazil	PP
0130	6010	Radio Sweden, via Canada	
0130	15748	SLBC, Sri Lanka	
0130	9737	Radio Nacional, Paraguay	SS
0130	4810	XERTA/Radio Transcontinental, Mexico	SS
0130	6973	Galei Zahal, Israel	HH
0130	4780	Radio Cultural Coatan, Guatemala	
0130	4885	Radio Clube do Para, Brazil	PP
0130	4915	Radio Nacional Macapa,. Brazil	PP
0130	6115	Radio Tirana, Albania	
0130	6030	Radio Marti, USA	SS
0130	6060	Radio Nacional, Argentina	SS
0200	9440	Radio Slovakia Int.	
0200	9690	China Radio Int., via Mali	CC
0200	6175	Voice of Vietnam, via Canada	
0200	12005	RT Tunisienne, Tunisia	AA
0200	4996	Radio Andina, Peru	SS
0200	5014.5	Radio Altura, Peru	SS
0200	4800	Radio Buenas Nuevas, Guatemala	SS
0200	9495	VOIRI/Voice of Justice, Iran	
0200	4052.5	Radio Verdad, Guatemala	SS
0200	11850	Radio Cairo, Egypt	AA
0200	11780	Radio Nacional Amazonia, Brazil	PP
0200	11925	Radio Bandeirantes, Brazil	PP
0200	4900v	Radio San Miguel, Bolivia	SS
0200	7210	Radio Belarus	
0200	11710	RAE, Argentina	
0230	3320	Radio Sondergrense, South Africa	Afrikaans
0230	4939.7	Radio Amazonas, Venezuela	SS
0230	7305	Vatican Radio	FF
0230	9795	Radio Budapest, Hungary	
0230	9805	Radio Farda, USA via Morocco	Farsi
0230	11745	Voz Cristiana, Chile	PP
0230	4905	Nossa Radio, Brazil	PP
0230	7160	Radio Tirana, Albania	
0230	6150	Radio Record, Brazil	PP
0230	3250	Radio Luz y Vida, Honduras	SS
0300	3240	Trans World Radio, Swaziland	Shona
0300	4750	Radio Peace, Sudan	
0300	4910	ZBC/Radio Zambia	
0300	4976	Radio Uganda	
0300	6190	Deutschlandfunk, Germany	GG
0300	4780	RTV Djibouti	FF
0300	7270	Voice of Turkey	
0300	6090	Caribbean Beacon, Anguilla	
0300	7110	Radio Ethiopia	Amharic
0300	7120	BBC Relay, South Africa	
0300	6940	Radio Fana, Ethiopia	Amharic
0300	6035	VOA Relay, Botswana	
0330	9780	Republic of Yemen Radio	AA
0330	7135	Radio France Int.	Ff
0400	4965	Christian Voice, Zambia	
0400	6155	Radio Austria Int.	GG
0400	11810	Radio Jordan	AA
0400	6080	VOA Relay, Sao Tome	
0430	11820	Radio Romania Int.	
0430	5985	Radio Congo (Rep)	FF
0500	7255	Voice of Nigeria	
0500	5025	Radio Rebelde, Cuba	SS
0500	7275	RET Tunisienne, Tunisia	AA
0500	9625	CBC Northern Service, Canada	
0530	9865	Christian Voice, Zambia	Swahili
0530	4950	Radio Nacional, Angola	PP
0530	5005	Radio Nacional, Equatorial Guinea	SS
0600	11820	Channel Africa, South Africa	
0600	5470	Radio Veritas, Liberia	
0600	11970	Radio Japan/NHK	GG
0600	4915	GBC, Ghana	
0600	7125	RTV Guineenne, Guinea	FF
0800	4990	Radio Apinte, Surinam	DD

UTC	Freq.	Station/Country	Notes
0800	9620	Radio Victoria, Peru	SS
0830	6135	Radio Aparecida, Brazil	PP
0900	5020	SIBC, Solomon Islands	
0900	6185	Radio Educacion, Mexico	SS
0930	4815	Radio Buen Pastor, Ecuador	SS
0930	6140	Radio Lider,, Colombia	SS
0930	6135	Radio Santa Cruz, Bolivia	SS
1000	9650	Voice of Korea, North Korea	KK
1000	6025	Radio Amanacer, Dominican Republic	SS
1100	11710	Voice of Korea, North Korea	FF
1100	9870	Radio New Zealand Int.0	
1100	11730	Radio Japan/NHK	
1100	9590	Radio Australia	
1100	6010	La Voz de su Concencia, Colombia	
1100	9795	KNLS, Alaska	RR
1130	7120	Wantok Radio Light, Papua New Guinea	
1130	3905	Radio New Ireland, Papua New Guinea	
1130	9710	FEBC, Philippines	unid
1200	12040	VOA Relay, Philippines	CC
1200	7295	Radio Malaysia	
1200	9975	Trans World Radio, Guam	unid
1200	9715	Radio Tashkent, Uzbekistan	
1200	9805	Radio Veritas Asia, Philippines	unid
1230	9650	KBS World Radio, S. Korea, via Canada	
1230	9540	BBC Relay, Singapore	unid
1230	12020	Voice of Vietnam	
1230	9525	Voice of Indonesia	
1230	11640	CBS, Taiwan	CC
1230	11515	Radio Free Asia, via Sri Lanka	unid
1300	6150	Mediacorp Radio, Singapore	
1300	9445	Trans World Radio via Uzbekistan	unid
1300	15400	YLE/Radio Finland	Finnish
1330	13665	Radio Rossii, Russia	RR
1330	15735	Radio Sweden	
1330	15350	Voice of Turkey	TT
1330	15150	Voice of Indonesia	
1330	11555	Radio Hoa-Mai, via Hawaii	VV
1400	12133.5	AFN/AFRTS, Florida	
1400	12105	Voice of Greece	RR
1400	15375	Radio Sultanate of Oman	AA
1430	11555	KWHR, Hawaii	CC
1500	17660	Sudan Radio Service, via UK	
1530	17770	Channel Africa, South Africa	
1530	12105	Trans World Radio, Guam	
1530	13775	Radio Austria Int.	
1600	15420	BBC Relay, Seychelles	FF
1600	21655	RDP Int., Portugal	PP
1600	15725	Radio Pakistan	
1700	15475	Africa No. 1, Gabon	FF
1700	17605	Radio France Int.	
1700	17680	Voz Cristiana, Chile	SS
1700	15145	SW Radio Africa, via South Africa	
1700	17765	Radio Canada Int.	FF
1700	15435	Emirates Radio, Dubai	AA
1800	15120	Voice of Nigeria	
1800	17570	RTBF, Belgium, via Germany	FF
1830	11625	Vatican Radio	Latin
1830	11690	VOA Relay, Greece	unid

UTC	Freq.	Station/Country	Notes
1900	12070	Voice of Russia	
1900	11820	BSKSA, Saudi Arabia	AA
1900	17810	Radio Nederland Relay, Bonaire, NWI	
1900	15345	RTM Marocaine, Morocco	AA
1900	15640	Kol Israel	
1930	15205	Radio Jamahiriya, Libya, via France	AA
1930	12095	BBC Relay, Ascension Is.	
1930	11690	Radio Okapi, Congo (Dem. Rep), via S. Africa	
2000	15245	Adventist World Radio, via South Africa	FF
2000	17845	VOAA Relay, Morocco	
2000	15495	Radio Kuwait	AA
2000	11695	VOIRI, Iran	AA
2000	12050	Radio Cairo, Egypt	AA
2030	9830	Radio Jordan	AA
2030	15275	Deutsche Welle Relay, Sri Lanka	GG
2030	15476	Radio Nacional Arcangel/LRA36, Antarctica	SS
2100	15110	Radio Exterior de Espana, Spain	SS
2100	9580	Africa No. 1, Gabon	FF
2100	15190	Radio Africa, Equatorial Guinea	
2100	11760	Radio Havana Cuba	
2100	15345	RAE, Argentina	SS
2100	9870	BSKSA, Saudi Arabia	AA
2100	12140	VOA Relay, Kuwait	
2130	12085	Radio Damascus, Syria	
2130	9840	Radio Exterior de Espana, Spain	
2130	11855	Radio Japan/NHK, via Ascension Is.	
2130	9915	BBC Relay, Cyprus	
2200	11975	VOA Relay, Sao Tome	
2200	11565	Radio Taiwan Int., via Florida	CC
2230	15255	Radio Romania Int.	SS
2230	9870	BSKSA, Saudi Arabia	AA
2230	11840	Deutsche Welle Relay, Rwanda	GG
2230	11820	Radio Veritas Asia, Philippines	Indonesian
2230	9875	Radio Vilnius, Lithuania	
2230	9895	Radio Nederland Relay, Madagascar	SS
2230	15320	Adventist World Radio, Guam	
2230	9925	Voice of Croatia, via Germany	
2230	13790	BBC Relay, Thailand	CC
2230	21740	Radio Australia	
2300	9580	Int. Radio of Serbia & Montenegro	
2300	15720	Radio New Zealand Int.	
2300	9935	VOIRI, Iran	AA
2300	15500	China National Radio/CPBS	CC
2300	11825	Radio Canada Int.	SS
2300	11700	Radio Bulgaria	
2300	5030	RTV Burkina, Burkina Faso	FF
2300	7440	Radio Ukraine Int.	UU
2300	9820	Radio Nacional, Venezuela, via Cuba	SS
2330	9715	RDP Int., Portugal	PP
2330	4845	Radio Mauritanie, Mauritania	AA
2330	9855	Radio Kuwait	AA
2330	9745	HCJB, Ecuador	QQ
2130	11600	Radio Prague, Czech Republic	

by Harold Ort, N2RLL

New, Interesting, And Useful Communications Products

Sangean's new WR-2 digital AM/FM receiver is big on sound and loaded with features.

Sangean's New WR-2 Digital AM/FM Receiver

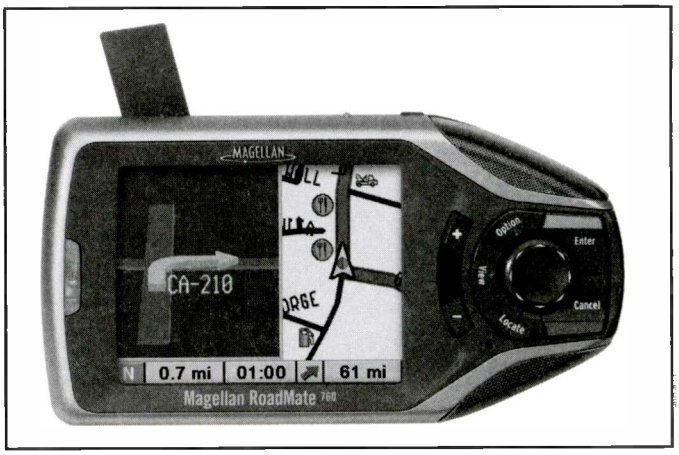
Sangean's new WR-2 digital AM/FM receiver combines a special acoustically balanced enclosure and an enhanced frequency response speaker to for rich, room-filling sound. (You'll recall that we reviewed the Sangean WR-1 in the August *Pop'Comm* and found the audio it offered superb; we'll be reviewing the WR-2 next month, so stay tuned!)

The WR-2's features include a wooden cabinet, PLL synthesized tuning, RDS (Radio Data System), clock and alarm (both radio or buzzer), rotary tuning, variable bass and treble controls, three-inch 7-watt full-range speaker with enlarged magnet, bass compensation, external AM antenna terminal and external F-type FM antenna terminal, detachable power cord, and 10-memory preset. It weighs 5.5 pounds and measures 4.5 x 9.5 x 6 inches (HWD).

For more information on the new Sangean WR-2, contact Sangean at 2651 Troy Avenue, South El Monte, CA 91733; Phone: 626-579-1600; E-mail: sales@sangean.com; Web: www.sangean.com.

New Magellan RoadMate 760 With Audible Street Names And Traffic Detour

Thales's navigation business, global provider of Magellan GPS products, has introduced the new Magellan RoadMate 760. This easy-to-use portable vehicle navigation system offers SayWhere, an industry-first text-to-speech option that announces street names for upcoming maneuvers. The Magellan RoadMate 760 with color touch-screen delivers convenient navigation capabilities that allow drivers to find destinations quickly, detour around traffic, route to multiple destinations, and more.



Here's the new Magellan RoadMate 760 portable GPS. This state-of-the-art system even offers drivers the ability to quickly detour around traffic jams.

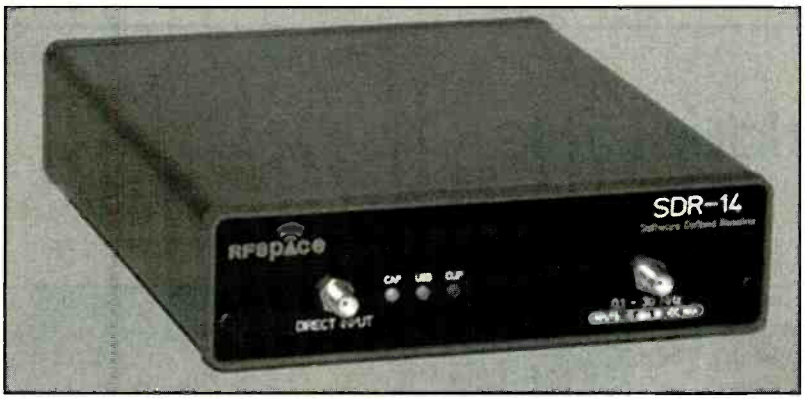
For instance, its SmartDetour feature automatically offers routing options in traffic jams and construction delays, so drivers can navigate around traffic and reach their destinations sooner. You can also enter as many as 20 destinations when using Multi-Destination Routing, and the Magellan RoadMate 760 will automatically sort the multiple destinations by shortest distance to find the best route between addresses. It offers an array of easy routing options, a directory of nearly seven million business addresses, and the ability to save an address with the touch of a button.

Address entry is facilitated by the optimized QuickSpell predictive keypad or the large, color touch screen. Drivers can choose their destination by street address, intersection, touching a point on the map screen, or by selecting from the searchable database of millions of points of interest (POI), such as banks, hotels, shops, ATMs, gas stations, tourist attractions, and restaurants.

Priced at $1,099 US, this GPS can be used in any vehicle and requires no professional installation. For more information on Magellan RoadMate products, retail locations, or accessories, like carrying cases and alternate mounting devices, visit www.magellangps.com. And please tell them you read about the RoadMate 760 in *Popular Communications*.

SDR-14 Software-Defined Receiver And Spectrum Analyzer

RFSPACE, Inc. announces the availability of a new software-defined receiver (SDR) and spectrum analyzer for the HF band, called the SDR-14. The SDR-14 connects directly to a personal computer using a high-speed USB connection. The receiver features extensive visual capabilities like 2D, 3D and waterfall



The new SDR-14 allows you to record segments of any band to your hard drive in real time.

displays. In addition, the receiver allows the display of the whole HF (0.05 to 30 MHz) band at once using the latest FFT technology. This feature allows the monitoring of any type of transmission occurring on the band even those that are of very short durations. The SDR-14 also allows the recording of 150 KHz of band to a hard drive for late playback and tuning.

The RFSpace news release said, "The display capabilities make the SDR-14 one of the most powerful spectral display units on the market for use with communication receivers."

Any IF output in the HF band can be accommodated. The SDR-14 ships with a copy of SpectraVue software and everything that is needed to get the product running on a PC.

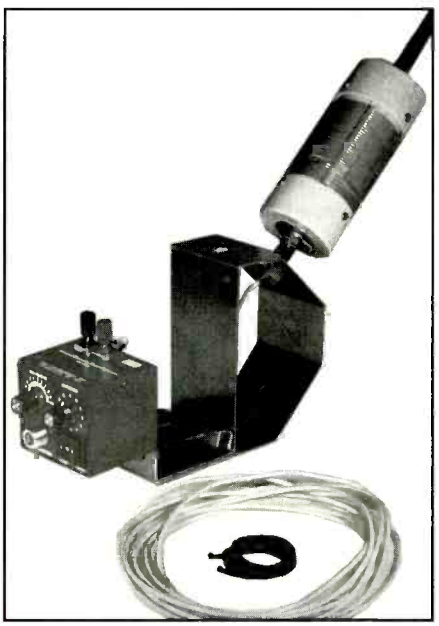
The SDR-14 is the first and only software-defined receiver in its price class that samples the RF signals directly at the antenna port after amplification using a high-speed analog to digital converter. This architecture uses no analog mixers or analog downconversion stages. All of the down conversion steps between the RF carrier and baseband are performed exclusively in the digital domain. This reduces the analog section to just a low noise amplifier and filter. The *entire* HF band is sampled directly at RF and processed digitally on your personal computer.

For more information, on the SDR-14 that sells for $999, visit http://www.rfspace.com and tell them you read about it in *Popular Communications*.

New MFJ 80- Through 6-Meter Window/ Balcony Antenna With Built-in Tuner

MFJ Enterprises' new MFJ-1625 is a complete antenna system that mounts on window frames, balconies, or railings, making it ideal for apartment dwellers. Priced at $199.95, it handles 200 watts and covers 80 through 6 meters and includes a universal mount/clamp, built-in antenna tuner with RF isolator, 12-foot telescoping whip (22.5 inches collapsed), high-efficiency loading coil for 40/80 meters, counterpoise wires, and safety rope. In addition to the MFJ-1625, the company also offers the MFJ-1623 for $179.95, which covers 6 through 30 meters. Both models are protected by MFJ's "No Matter What" one-year limited warranty.

For more information, get a free catalog, or find your nearest dealer, contact MFJ at 300 Industrial Park Road, Starkville, MS 39759; Phone: 800-647-1800; Fax: 662-323-6551; Web: http://www.mfjenterprises.com. ■



The new MFJ-1625 is a complete antenna system that mounts on window frames, balconies, or railings.

by Gerry L. Dexter, gdex@genevaonline.com

HCJB: In For A Serious Dose Of Future Shock?

Here's one for the "strange" file. It seems that the new Quito airport is going to infringe even more closely on the Pifo transmitter site than originally believed. The airport expansion, planned some years ago, made it necessary for **HCJB** to seek another transmitter site. Eventually they selected a site near Ecuador's northern coast, but that now appears to be too far away from HCJB's hydroelectric site (which provides power to the station) to be both economical and practical. So now they're looking for a site closer to Quito, yet safely away from the new airport. Meanwhile the airport infringement will make it necessary for the station to cut the height of the antenna towers at Pifo, which, of course, would decrease the station's effective coverage. Going that route is unacceptable, so it comes down to either finding a new and workable in-country site or renting time on other transmitters, meaning that HCJB would no longer be transmitting from Ecuador. Gee, is nothing sacred any more?

The former IBP Radio in Brazil on **4895** has been reborn as **Radio Nova Tempo** operating from Campo Grande. It also IDs as A Voz da Esperanza and airs religious programming in Portuguese.

You've no doubt heard of the Revolutionary Armed Forces of Colombia (FARC) narco/guerrilla force, which is giving so much trouble to the people and government of Colombia. (They actually control a good portion of the country.) Clandestine radio hunters have tried to hear their station many times over the years, almost always without success. Some began to wonder whether the station still existed. We've recently learned that the station, **La Voz de la Resistencia**, is indeed active. But the odds of hearing it are no better now than in the past. The operation parameters make reception in North America virtually impossible. They run until sign off just past 2330 (probably signing on around 2230) on **5800**, **6000**, and **6120**. Apparently the modulation is nothing short of awful, the power is extremely low, and the reliability of the schedule not a whit better. In fact, the station may not even be active on a daily basis. But at least now you know when and where to look!

This VOA QSL received by Rich D'Angelo pictures the IBB/VOA relay station at Briech, Morocco. It's unclear whether the camels "parked" out front are transportation for the engineers!

The Other Side Of The World

Hoi-Mai Radio is a new broadcast aimed at Vietnam and aired over KWHR-Hawaii on **11555** from 1330 to 1400 Saturdays and Sundays. This group has an address of P.O. Box 4175, Garden Grove, CA 92842-4175. The group tries to promote development and democratization in Vietnam.

Radio Veritas in Liberia (not the one in the Philippines) is active again on its former **5470** spot. The first few logs of this were in the 2200 period, with the station signing off a few minutes past 2300. Very likely they also have a morning sign on, which should give us a good opportunity around 0500 or 0600.

Radio Nigeria (actually the Federal Radio Corporation of Nigeria, or FRCN) has begun using **7275** from Abuja, opening at 0500. Watch out for **Radio TV Tunisienne**, which also uses this frequency.

Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But please be sure to double or triple space items, list them by country, and include your last name and state abbreviation after each log. Also much wanted are spare QSLs you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And how about sending a photo of you at your listening post? Step right up and get your 15 minutes of fame!

Meanwhile, back at Melody Ranch...

ALASKA—KNLS, **9780** in CC at 1315. (Barton, AZ)

ALBANIA—Radio Tirana, **6115** at 0149. (Charlton, ON) 6115//**7160** with news in EE, domestic folk songs, ID at 0257, IS and off. (Burrow, WA)

ANGOLA—Radio Nacional, **4950** in PP monitored at 2342. (DeGennaro, NY)

ANGUILA—Caribbean Beacon, **6090** at 2321 with the late Dr. Gene Scott. (Wood, TN)

ANTARCTICA—LRA36/Radio Nacional San Gabriel, **15476** heard at 1920 with extended SS talk, pop ballads. Lost in noise by 1940. (Strawman, IA) 2020 bypassing the powerhouse on 15475. (Wilkner, FL) 2305 in SS. (MacKenzie, CA) (*2305 would be past their normal sign off, which is around 2100.—gld*)

ARGENTINA—Radio Nacional, **6060** in SS at 0942. (DeGennaro, NY) 0119 in SS. Also **15345** in SS at 2031. (Charlton, ON) Radio Nacional/RAE, **11710** in SS at 2312. (Brossell, WI) 0227 in EE with DX program at 0232. (Burrow, WA) 15345 in SS heard at 1815. (Maxant, WV)

ASCENSION IS.—BBC Relay, **15400** with news at 1630. (Paradis, ME)

AUSTRALIA—Radio Australia, **5995** at 0905, **9580** at 1049, **9590** at 1052 and **9710** in Pidgin at 1019. (DeGennaro, NY) **7240** at 1440. (Strawman, IA) **9560**//9580//9590 at 1240. (Brossell, WI) 9580 at 1200. (Paradis, ME) 1345. Also **21470** at 2315. (Maxant, WV) 9580//9590 at 1100 relaying a newscast from China Radio International. (Linonis, PA) **15230**//21470 at 2245. (MacKenzie, CA) **15515** with ID, frequencies at 2157. (Charlton, ON) 21470 at 2255. (Wood, TN)

AUSTRIA—Radio Austria Int., **6155** in GG at 0408. (DeGennaro, NY) **13775** heard

Help Wanted

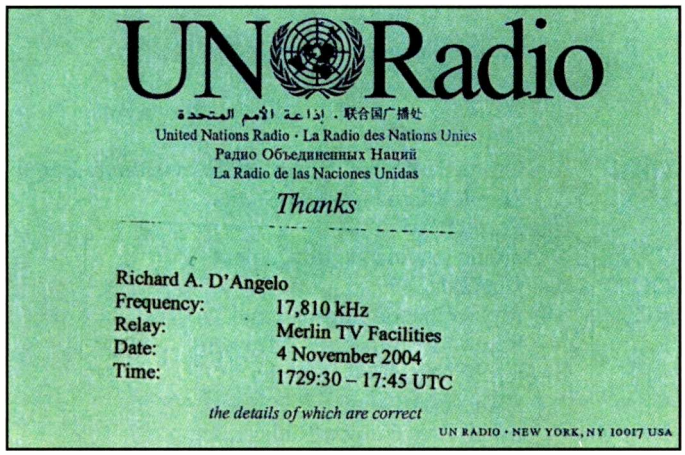
We believe the "Global Information Guide" consistently presents more shortwave broadcast loggings than any other monthly SW publication! (This month we processed 491 loggings!)* Why not join your fellow SWLs, let us know what you're hearing, and also become eligible for our monthly shortwave book prize! Send your logs to "Global Information Guide," *Popular Communications*, 25 Newbridge Rd., Hicksville NY 11801-2953. Or e-mail them to Editor Harold Ort at popular-com@aol.com, or to your "GIG" columnist at gdex@genevaonline.com (please see the column text for basic formatting tips.) Come join the party—we look forward to hearing from you!

**Not all logs get used; there are usually a few which are obviously inaccurate, unclear, or lack a time or frequency.*

Abbreviations Used In This Month's Column

*	— before or after a time (time the station came on or left the air)
(l)	— after a frequency (lower sideband)
(p)	— presumed
(t)	— tentative
(u)	— after a frequency (upper sideband)
v	— variable
//	— in parallel
AA	— Arabic
ABC	— Australian Broadcasting Corporation
AFN	— Armed Forces Network
AFRTS	— Armed Forces Radio TV Service
AIR	— All India Radio
Anmt(s)	— announcement(s)
Anncr	— announcer
AWR	— Adventist World Radio
BSKSA	— Broadcasting Service of Kingdom of Saudi Arabia
CC	— Chinese
Co-chan	— co-channel (same frequency)
Comml(s)	— commercial(s)
CP	— Bolivia, Bolivian
CRI	— China Radio International
DD	— Dutch
DJ	— disc jockey
DW	— Deutsche Welle/Voice of Germany
EE	— English
ECNA	— East Coast of North America
f/by	— followed by
FEBA	— Far East Broadcasting Association
FEBC	— Far East Broadcasting Company
FF	— French
GBC	— Ghana Broadcasting Corp
GG	— German
GMT	— Greenwich Mean Time
HH	— Hebrew, Hungarian, Hindi
HOA	— Horn of Africa
ID	— station identification
II	— Italian, Indonesian
Int	— international
IRRS	— Italian Radio Relay Service
IS	— interval signal
JJ	— Japanese
KK	— Korean
LSB	— lower sideband
LV	— La Voz, La Voix
NBC	— National Broadcasting Corporation (Papua New Guinea)
ORTB	— Office de Radiodiffusion et Television du Benin
PBS	— People's Broadcasting Station
PP	— Portuguese
PSA	— public service announcement
QQ	— Quechua
RCI	— Radio Canada International
Rdf.	— Radiodifusora, Radiodiffusion
REE	— Radio Exterior de Espana
RFA	— Radio Free Asia
RFE/RL	— Radio Free Europe/Radio Liberty
RNZI	— Radio New Zealand International
RR	— Russian
RRI	— Radio Republik Indonesia
RTBF	— RTV Belge de la Communate Françoise
Relay	— transmitter site owned/operated by the broadcaster or privately operated for that broadcaster
relay	— transmitter site not owned by the broadcaster
SCI	— Song of the Coconut Islands (transition melody used by Indonesian stations)
s/off	— sign off
s/on	— sign on
SIBC	— Solomon Is. Broadcasting Corp.
Sked	— schedule
SLBC	— Sri Lanka Broadcasting Corporation
SS	— Spanish
TC	— time check
TOH	— top of the hour
TT	— Turkish
TWR	— Trans World Radio
Unid	— unidentified
USB	— upper sideband
UTC	— Coordinated Universal Time (as GMT)
UTE, ute	— utility station
Vern	— vernacular (local) language
(via)	— same as "relay"
VOAS	— Voice of America
VOIRI	— Voice of Islamic Republic of Iran
WCNA	— West Coast of North America
ZBC	— Zimbabwe Broadcasting Corporation

The Voice of Malaysia's current QSL passes all the tests for "classy." (Thanks to Rich D'Angelo, PA)



UN Radio is on shortwave regularly but is only a shadow of what it was back in the "old days." (Thanks to Rich D'Angelo)

at 1530 with Blue Danube theme and "Austria Today." (Maxant, WV)

BELARUS—Radio Belarus, **7210** at 0200 with IS, multi-lingual ID, open in EE with address and news. (Alexander, PA)

BOLIVIA—Radio Santa Cruz, Santa Cruz, **6135v** in SS at 0924. (DeGennaro, NY) 0001 with apparent ad string, SS anmts. Into Aymara at 0015. (D'Angelo, PA) 0120 with live concert. (Wood, TN) Emisora Pio XII, Sigio Veinte, **5952.5** at 0940 with "musica de Bolivia". Back after a month off the air. Also at 1000 with news. (Wilkner, FL) Perla del Acre, Cobija, **4600** at 1005 in SS. (Wilkner, FL) Radio San Jose, San Jose (p) **5580.3** at 0050 with a program of flute music and man in SS. (D'Angelo, PA) Radio Eco, Reyes, **4410** at 0105 with vocal music, clear ID and off suddenly at 0126. (Wilkner, FL) Radio San Miguel, Riberalta, **4900.5** at 0215 with SS talk, SS pops, CP music. Off at 0307. (Alexander, PA) Emisoras Camargo, Camargo, **3390** at 0030 with flutes bothered by RTTY and other UTE QRM. (Wilkner, FL) Radio Guanay, Guanay, **4761.6** at 0010 with man in SS. (Wilkner, FL) Radio Maliku, Uyuni, **4796.4** at 1000 IDing as "La Voz de los Campesinos" and into spirited Andean flute music. "el servicio de...mas grande del mundo" at 1008. (Wilkner, FL)

BRAZIL—(all in PP) Radio Brazil Central, Goiania, **4985** with futbol at 2347. (DeGennaro, NY) 0204 with music and PP anncr. (Jeffery, NY) Radio Guaiba, Porto Alegre, **11785** at 0316 with PP anncr and dramatic vocals. Five time pips at 0330. (D'Angelo, PA) Radio Difusora Roraima, Boa Vista, **4875** in PP at 0850. (DeGennaro, NY) A Voz do Sao Francisco, Petrolina, **4945** with futbol at 2333. (DeGennaro, NY) Radio Cancao Nova, Cachoeira Paulista, **9675** with music and religious talks at 2358. (DeGennaro, NY) 0023 with man and woman back and forth. (Brossell, WI) Radio Nacional, Macapa, **4915** with futbol at 0012. (DeGennaro, NY) Radio Congohas, Congohas, **4775** with local anmts and commls at 0845. (DeGennaro, NY) Radio Cultura, Sao Paulo, **6170** at 0853 with songs, anmts in a relay of local 103.5 FM. (DeGennaro, NY) **17815** at 0120 with romantic ballads. Very weak. Better on parallel **9615**. (Alexander, PA) Radio Rural, Santarem, **4765** with local talks at 0842. (DeGennaro, NY) Radio Guaruja Paulista, Guaruja, **5045** with music and talk at 0820. (DeGennaro, NY) Radio Aparecida, Aparecida, **6136** with music, time check, ID at 0847. (DeGennaro, NY) 0026. (Charlton, ON) Radio Clube do Para, Belem, **4885** with music, local talks at 2320. (DeGennaro, NY) Radio Anhanguera, Goiania, **4915** with music and talks at 0807. (DeGennaro, NY) Radio Difusora Acreana, Rio Branco, **4885** with talks, full ID and frequency anmt at 0300. (D'Angelo, PA) Radio Bandeirantes, Sao Paulo, **9645** at 0326 with talks, time pips at 0330, music and phone interview. (D'Angelo, PA) **11925** with live sports event at 2349. (Brossell, WI) Radio Alvorado, Parintins, **4965** with music and talk at 0915. (DeGennaro, NY) Radio Alvorada, Londrina, **4865** with long religious talk at 0320. ID at 0400 and more religious talk. (D'Angelo, PA) Nossa Radio (p), **4905** at 0236 with non-stop vocals to 0257 when carrier was cut. (D'Angelo, PA) Radio Nacional da Amazonia, **6185** at 0004. (Wood, TN) 0903 with call-ins on local topics. Also **11780** at 0925 (DeGennaro, NY) 11780 at 2315. (Brossell, WI; MacKenzie, CA) Radio Bras, **11780** with music and talk at 0045. (Barton, AZ)

BULGARIA—Radio Bulgaria, **9400** in SS to Central America at 0100, **9700** to North America at 2352 and **11700** at 2313. (DeGennaro, NY) 9700 with ID, news at 0200. (MacKenzie, CA) 9700//11700 at 2300 with ID, news. (Burrow, WA) 9700 in BB at 0014 and 11700 in EE at 0216. (Charlton, ON) 11700 at 0234 on bats in Bulgaria. (Brossell, WI) 2340. (Wood, TN) **11940** at 2335. (Maxant, WV)

BURKINA FASO—Radio Burkina, **5030** from 2300–0000 in FF with highlife music. (Linonis, PA) 2335 in FF. Off with national anthem at 0000. (Alexander, PA)

CANADA—Radio Canada Int., **5840** via Sweden in AA to the Mid East at 0230, **9620** in AA via Austria at 2021, **9755** to North America at 0024 and **11945** in FF at 1048. (DeGennaro, NY) **11825** in SS at 2311 and **17765** in FF at 1723. (Charlton, ON) **13655** with news at 1200. (Paradis, ME) **15240** at 1330 and **17765** at 1905. (Maxant, WV)

CHILE—Voz Cristiana, **5960** in SS at 0931, **6070** in SS at 0907 and **6110** in PP to Brazil at 0910. (DeGennaro, NY) **11655** in SS at 0600. (Barton, AZ) **11745** in PP at 0231. (Brossell, WI) 0128 in SS and **17680** in SS at 1715. (Charlton, ON)

CHINA—China Radio Int., **7210** in SS at 2325, **9745** via Bonaire in SS at 0029 and **13740** via Bonaire at 1400 sign on. (DeGennaro, NY) **9570** at 0016 and **9580** via Cuba at 0101. (Charlton, ON) **9690** via Spain in CC at 0220, **11900** with sporting event at 1301. Also **12020** in CC at 1239. (Brossell, WI) 11900 at 1310 and **11935** in RR at 1100. (Barton, AZ) **17880** via Mali in AA at 1630. (Paradis, ME) China National Radio/CPBS, 1750 in CC at 2322 on **15500** in CC at 2310. (MacKenzie, CA) "The Music Jammer," **9455** at 1900, //**11785** and **13625**. Also **15430** at 2259. (MacKenzie, CA)

CLANDESTINES—Voices From the Diaspora, **9405** at 2000 sign on in presumed EE talking about Gambia. No ID heard. Off at 2030 (Alexander, PA) Democratic Voice of Burma, **9435** via Julich at 2351 with long talk in Burmese, brief music, more talk. Closing ID and anmts over a vocal. Off at 0029. (D'Angelo, PA) Radio Hoa-Mai, **11555** via KWHR at 1328 sign on with bells f/by woman with ID and soft music. More talk including postal and website address. Then VV talks by man and woman. Off at 1359. (D'Angelo, PA) SW Radio Africa. **15145** at 1720 with talks on the political process in Zimbabwe. E-mail address given as talk@swradioafrica.com (Brossell, WI) (*They, for one, seem to have found the money to stay on the air.—gld*) Radio Free Asia, **13775** via Saipan in CC at 2223, **15510** via Saipan in CC at 1957 and **15585** via Saipan in CC at 2315 and no sign of the Music Jammer. (MacKenzie, CA) **11515** in unid Asian language at 1257. Also **11795** in CC at 1710. (Brossell, WI) Radio Farda, **9805** via Morocco in Farsi at 0239. (Brossell, WI)

COLOMBIA—Radio Lider, Bogota, **6139.8** with SS ID "esta es Radio Lider, 730 AM desde Bogota" at 0933. (DeGennaro, NY) 0535 with IDs, SS and US romantic ballads. (Alexander, PA) 0600 with lots of IDs, ballads. (Linonis, PA) La Voz de tu Concencia, Puerto Lleras, **6009.8** in SS at 1123. (DeGennaro, NY)

The Voice of Africa (also known as Radio Jamahiriya) is going fancy on us, with this brochure picturing archeological sightseeing in Libya. (Thanks to David Weronka, NC)

CONGO—RTV Congolaise, **5985** at 0520 with "almost" classical-type music. (Linonis, PA) Radio Okapi, **11690** via South Africa with talks in FF at 1945. (Brossell, WI)

CROATIA—Voice of Croatia, **9925** via Germany in SS at 0245. (Brossell, WI) Unid language at 2223. (Wood, TN) Croatian at 2325. (DeGennaro, NY)

CYPRUS—BBC Relay, **9410** with news report at 0014. (Brossell, WI)

CUBA—Radio Havana Cuba, **6000//9820** in EE at 0118. (Charlton, ON) 6000 in SS at 1119 and **11760** in EE at 2053. (DeGennaro, NY) Radio Rebelde, **5025** in SS at 0218. (DeGennaro, NY) 0500. (Linonis, PA)

CZECH REPUBLIC—Radio Prague, **7345** in SS at 2259, **6200** in SS at 0203 and **9440** in EE at 0002. (DeGennaro, NY) 7345//**9870** at 0302. (Burrow, WA) 7345 at 0106 and **11600** at 2155. (Charlton, ON)

DJIBOUTI—RTV Djibouti, **4780** at 0257 with open carrier, instl music at 0259, then man with ID and s/on anmts at 0300 f/by Koran. (D'Angelo, PA) 0300 with HOA music, choral music, brief FF? (Wilkner, FL) 0300 to 0330 with local music, vern. Anmts, Koran at 0302. (Alexander, PA) 0330 in possible Swahili, later with African music. (Linonis, PA)

DOMINICAN REPUBLIC—Radio Amanacer, **6025** at 1000 with possible Catholic Mass and mention of the Pope. (Linonis, PA)

ECUADOR—HCJB, **9745** at 2330 in SS with lots of Andean flutes. (Wood, TN) 2342 in QQ with presumed religious talk. (DeGennaro, NY)

EGYPT—Egyptian Radio/Radio Cairo, **7260** in AA at 0128, **9990** with EE news at 2135, **12050** in AA at 2045. (Charlton, ON) 7260 at 0243, 9990 at 2157 and **12050** in AA at 1914. (DeGennaro, NY) 9990 at 2135 with news. (Burrow, WA) **11850** in AA at 0212. (Wood, TN) **11885** at 2303 with music and "The Holy Koran and Its Meaning." (D'Angelo, PA) 12050 in AA at 2000. (Paradis, ME) 2319 in AA. (Brossell, WI)

ENGLAND—BBC, **9915** via Cyprus Relay in AA at 2138, **12095** via Ascension Relay to South Africa at 1923. (DeGennaro, NY) **15390** at 2131, **15400** via USA at 2137 and **21470** via Ascension at 1725. (Charlton, ON) WYFR/Family Radio, **15165** via Wooferton in AA at 1936. (Jeffery, NY)

EQUATORIAL GUINEA—Radio Africa, **15190** with EE religion at 1910. (Maxant, WV) 1915 with "Truth for the World" program. E-mail as radioafrica@myway.com, (D'Angelo, PA) 2140 with EE religious programming. Sign off anmt included email address at 2159. (Alexander, PA)

FRANCE—Radio France Int., **12075** via Russia in CC at 1205. (Brossell, WI) **15596** via Vladivostok with two men in FF at 2316. (MacKenzie, CA) **15605** to Africa at 1700. (Paradis, ME) 1711 with news items. (Charlton, ON) 15605 with EE news at 0730, **15615** with EE news items at 1400 and **17605** with EE news at 1700. (Maxant, WV)

GABON—Africa No. One, **9580** in FF at 2120 and **15475** in FF at 1706. (Charlton, ON) 15475 with sign on ID and into news at 1700. (Yohnicki, ON) FF at 1717. (Wood, TN)

GERMANY—Deutsche Welle, **9825** in EE to SE Asia at 0016. (DeGennaro, NY) **11690** via Canada in GG at 2224 and **15275** via Sri Lanka in GG at 2033. (Charlton, ON) **15520** in EE at 1910, //**13780**. (MacKenzie, CA) Deutschlandfunk, **6190** in GG with jazz at 0316. (DeGennaro, NY)

GHANA—GBC/Radio Ghana, **4915** in EE with rap at 2325. (DeGennaro, NY)

GREECE—Voice of Greece, **5865** in GG at 0224, **7475** in GG at 2312, **9375** in GG at 2355 including an EE ID and **12105** in RR at 1406. (DeGennaro, NY) 5865 with "This is Athens; this is the Voice of Greece" at 2357. Into German at 0000. (Brossell, WI) **15630** in Greek at 2019 and **17565** via Greenville in Greek at 2017. (Charlton, ON)

17705 (via Delano) 1845. (Maxant, WV) VOA Relay, **11690** in unid African language at 1850. (Brossell, WI)

GUAM—Trans World Radio/KTWR, **9975** in unid Asian language at 1205. (Brossell, WI) **12105** with "Source of Light" program at 1544. (Burrow, WA) Adventist World Radio/KSDA, **11640//11680** with religious message and music at 1602. (Burrow, WA) 11850 at 2237 and **15320** heard at 2254. (MacKenzie, CA)

GUATEMALA—Radio Buenas Nuevas, **4800** with SS talks at 0225. (Brossell, WI) Radio Cultural Coatan, **4780** in SS at 1039l. (Brossell, WI) Radio Verdad, **4052.5** at 0258 with classical music, ID 0304. (Wood, TN)

HAWAII—KWHR, **11555** with Mandarin service at 1452. (Strawman, IA)

HUNGARY—Radio Budapest, **9590** with EE commentary at 0106. (Charlton, ON) **9795** at 0229 with "This is Radio Budapest signing on" and "Ici Radio Budapest." (Brossell, WI)

ICELAND—AFN/AFRTS, Grindavik, **7590 USB** with news moniotred at 0110. (DeGennaro, NY)

INDIA—All India Radio, **5010**-Thiruvananthapuram in Hindi at 0047 and **9705**-Panaji (Goa) with EE news at 0029, ID, music and off at 0045. (D'Angelo, PA) **9470**-Aligarh in presumed Hindi at 1210 and **11585**-Delhi with 1230 sign on with IS, ID and into an Asian language. (Brossell, WI) **9950**-Delhi with EE to Europe at 2144. (DeGennaro, NY) **10330**-Bangalore in Hindi at 1656. (Strawman, IA) 0045 in Hindi, **11620**-(Delhi) in Hindi at 0005 and **13605**-(Bangalore) with General Overseas Service heard at 1745. (Maxant, WV)

INDONESIA—Voice of Indonesia, **9525** with usual pops program at 1152 and **15150** with pops heard at 1340. (Strawman, IA) 1235 with soft vocals and woman host in II. (Brossell, WI) 2001 in EE. (Burrow, WA)

IRAN—VOIRI, **9495** with Voice of Justice "service" at 0204. At 0209: "This is Iran. You are tuned to the Voice of Justice." (Wood, TN) **9610** with news items at 1950 and **9935** in AA at 2322. (DeGennaro, NY) **9635//11650** at 1528 with IS, ID, anthem, schedule, Koran. (Burrow, WA) **9905** in AA at 0033 then into SS at 0035. (Brossell, WI) 9935 in AA at 2322. (Brossell, WI) **11695** in AA at 2024. (Charlton, ON)

ISRAEL—Kol Israel, **7545** with EE news at 0330. (Maxant, WV) **9345** in HH at 2352. (DeGennaro, NY) 0100 in HH and **15640** in EE at 1911. (Charlton, ON) **11585** in HH at 2308. (Brossell, WI) 15640 in EE at 1905. (MacKenzie, CA) Galei Zahal, **6973** in HH at 0130. (Paradis, ME) 0139. (DeGennaro, NY)

ITALY—RAI Int., **9840** in II to South America at 2340, **11800** in II to N. America at 2320 and **11900** in II at 0935. (DeGennaro, NY) 11800 at 0055. (Maxant, WV) 0104 in EE. (Charlton, ON) 0250 in II. (Brossell, WI) 2310 in II. (MacKenzie, CA)

JAPAN—Radio Japan/NHK, **5960** via Canada in JJ at 0232, **9530** via French Guiana

in JJ with ID at 1000, **9540** in SS at 1021, **11920** via Singapore in JJ at 0930 and **15220** via Ascension in JJ at 2217. (DeGennaro, NY) **6145** via Canada at 0049, **11855** via Ascension at 2134 and **21600** via French Guiana in JJ at 1728. (Charlton, ON) **9535** at 1705, **11730** at 1100 and **11970** in GG at 0605. (Barton, AZ) **11740**-Singapore in an Asian language at 1251. (Brossell, WI) **11935** via Bonaire at 0111. (D'Angelo, PA) 15220 via Ascension in JJ heard at 2238. (MacKenzie, CA)

JORDAN—Radio Jordan, **9830** in AA at 2044. (Charlton, ON) **15345** in AA at 2047. (DeGennaro, NY)

KUWAIT—Radio Kuwait, **9855** in AA at 2336 and **15495** in AA at 2349. (DeGennaro, NY) 15495 in AA at 2321. (Jeffery, NY) **15505** in AA at 2021. (Charlton, ON) VOA Relay, **11995** in Asian language at 0220. (Brossell, WI)

LATVIA—Radio Tatras Int., via Ulbroka site, **9290** heard at 2225 with a variety of pops and periodic anmts. (Strawman, IA)

LIBERIA—Radio Veritas, **5470** monitored at 2300 out of the "mud" long enough to hear "on half of the management of...Liberia." (Wilkner, FL)

LIBYA—Radio Jamahiriya/Voice of Africa, **11635** in AA at 2026. (Charlton, ON) **11715** in AA at 1937. (MacKenzie, CA) **15205** in AA at 1941. (Jeffery, NY) **15660** in EE at 1745 about palm trees in Africa. (Maxant, WV) (*all frequencies via France—gld*)

LITHUANIA—Radio Vilnius, **9875** at 2254 with "This is Radio Vilnius from Lithuania." (Charlton, ON) 2330 with IS, ID, sked and news. (Burrow, WA) 2333 with news. (DeGennaro, NY) 2338 with pgm on children's rights and ID "You are listening to Radio Vilnius, the strongest station in the Baltics." (Brossell, WI) **11690** with news at 0030. (Paradis, ME) 0050 on emergency communications and services in Lithuania. (Wood, TN)

MADAGASCAR—Radio Netherlands Relay, **9895** in SS to South America at 2330. (DeGennaro, NY) **15335** in unid language heard at 1600. (Paradis, ME)

MALAYSIA—Radio Malaysia, **7295** at 1621with western music and dedications to listeners in Kuala Lumpur and other locales. (Burrow, WA)

MAURITANIA—Radio Mauritanie, **4845** in AA at 0002. (Brossell, WI)

MEXICO—XETRA/Radio Transcontinental de America, **4810** at 0133 with Latin pop vocals, man with ID and frequency anmts in SS after each number. CODAR pulses marred reception. (D'Angelo, PA) Radio Educacion, **6185** with jazz from the '30s and '40s at 0952. (DeGennaro, NY)

MOLDOVA—Voice of Russia relay, **7125** in RR at 2312. (DeGennaro, NY) **9665** with news at 0000. (Paradis, ME) 0102 with news, mention Joe Adamov being ill. (Wood, TN) 0220 on video game violence. (Brossell, WI)

MONACO—Trans World Radio, **9870** with religious program at 0715. (Maxant, WV)

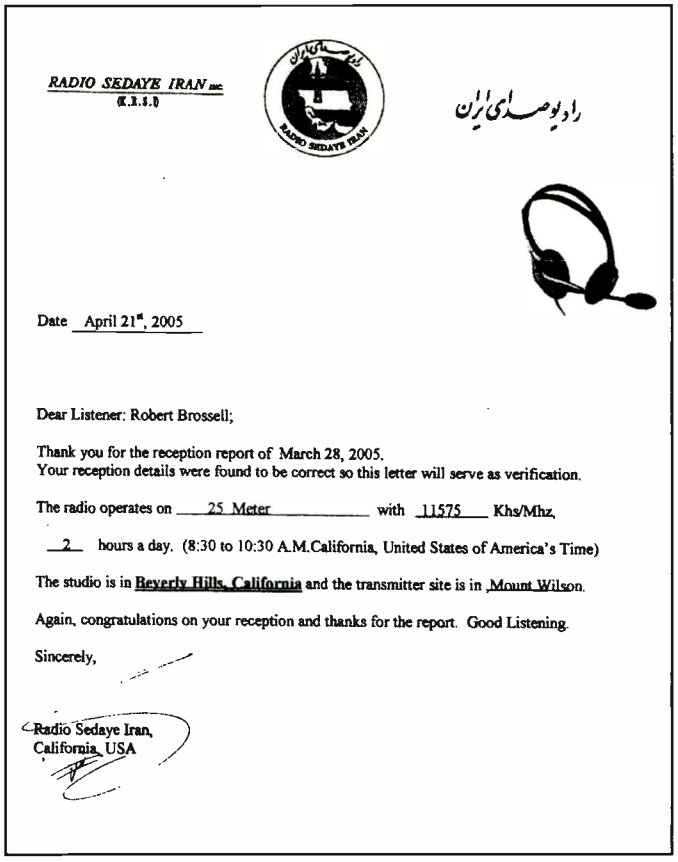
MOROCCO—VOA Relay, **15235** at 1842. (Brossell, WI) 15410 with sports at 2038. (Charlton, ON) **17845** with EE lesson at 2005. (Wood, TN) **17895** with "Education Report" at 1630. (Paradis, ME) RTV Marocaine, **7135** in AA to Europe at 2314 and **15345** in AA heard at 2040. (DeGennaro, NY) 1855 in AA. (Charlton, ON)

NETHERLANDS—Radio Nederland, **9695** in DD at 1959 sign on and **9895** in DD to Southern Europe at 1110. (DeGennaro, NY)

NETHERLANDS ANTILLES—Radio Netherlands Bonaire Relay, **9845** with news at 0000. (Paradis, ME) 0021.and **17810** with "Dutch Horizons" at 2020. (Charlton, ON) 1915 on African politics. (Maxant, WV) 1918. (MacKenzie, CA)

NEW ZEALAND—Radio New Zealand Int., **6095** with big band jazz at 1415. (Barton, AZ) 1553 with music, ID. (Burrow, WA) **9885** with weather at 0708. (Yohnicki, ON) 0715. (Maxant, WV) 1107 to the Pacific. (DeGennaro, NY) **15720** at 0405 forecasting snow showers. Also 2315 on entering university. (Maxant, WV) 2159. Also **17675** at 2133. (Charlton, ON) 2301 with news. (Wood, TN) 2319 on preparing potatoes. (MacKenzie, CA) 0057 with talk show. (Jeffery, NY)

NIGERIA—Voice of Nigeria, **7255** in Hausa at 2253, off at 2258. (DeGennaro, NY) **15120** heard at 1410 on Nigeria-China cooperation and 1800 with news and abrupt close at 1810. (Maxant, WV)



RADIO SEDAYE IRAN inc
(U.S.A.)

رادیو صدای ایران

Date April 21st, 2005

Dear Listener: Robert Brossell;

Thank you for the reception report of March 28, 2005.
Your reception details were found to be correct so this letter will serve as verification.

The radio operates on 25 Meter with 11575 Khs/Mhz,

2 hours a day. (8:30 to 10:30 A.M.California, United States of America's Time)

The studio is in Beverly Hills, California and the transmitter site is in ,Mount Wilson.

Again, congratulations on your reception and thanks for the report. Good Listening.

Sincerely,

Radio Sedaye Iran,
California, USA

Bob Brossell of Wisconsin got this response from Radio Sedaye Iran. Don't believe the bit about Mt. Wilson—it probably refers to a local AM or FM transmitter.

NORTH KOREA—Voice of Korea, **9650** in KK to East Asia at 1010. (DeGennaro, NY) **11535** with EE comment at 1914, **//11910**. (MacKenzie, CA) **11710** with national anthem and into French service at 1101. (Strawman, IA)

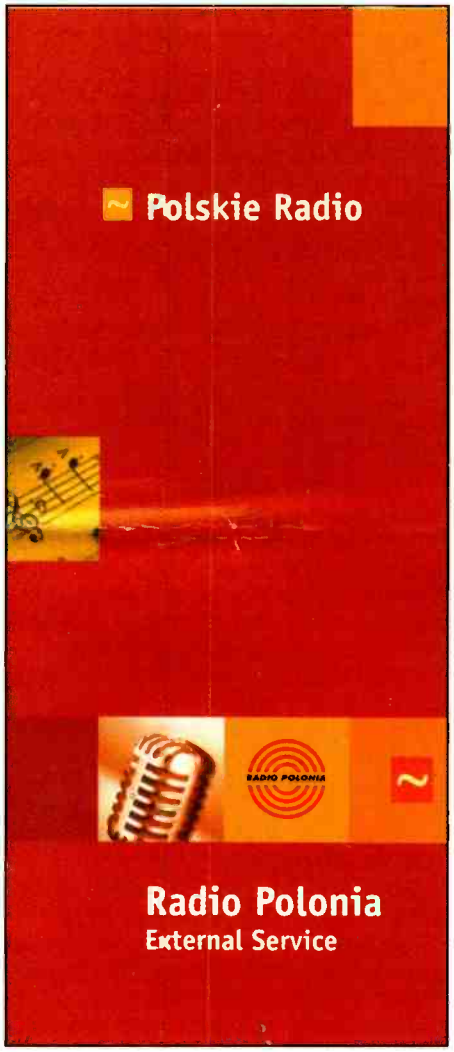
PAKISTAN—Radio Pakistan, **11570//151200//15725** at 1600 with Pakistan news in progress, ID at 1606, commentary at 1610 and off abruptly at 1615. (Burrow, WA)

PARAGUAY—Radio Nacional, (t) **9737** at 0115 in SS with possible domestic folk music. (Linonis, PA) 0145 with SS phone talk, ballads, ID at 0200. (Alexander, PA) 1056 with music and frequent IDs. (DeGennaro, NY) 2312 with piano music. (Wood, TN)

PAPUA NEW GUINEA—Radio New Ireland (p) **3905** with pops under ham chatter at 1145. (Strawman, IA) Wontok Radio Light, **7120** with female anncr and vocal music heard at 0830. (Barton, AZ)

PERU—Radio Bolivar, Bolivar, **5460.3** at 0010 with ID by man. (Wilkner, FL) Radio Sallique, Sallique (p), **6329.9** at 0000 with woman and man in SS. Bird call effect on the half hour. (Wilkner, FL) Radio Victoria, Lima, **6020** with man talking or preaching at 0815. (Yohnicki, ON) Radio Tawantinsuyo, Cusco, **6173.8** at 1050 with music and some SS talk. (Wilkner, FL) Radio Altura, Cerro de Pasco, **5014.5** at 0210 with continuous SS talk. After 0233 a variety of pops, ballads and OA folk music. (Alexander, PA) Radio San Andres, Cutervo, **5544.7** at 0010 with music and IDs. (Wilkner, FL) 0245 with SS talk, OA music, IDs at 0305 and 0308. (Alexander, PA) La Voz del Campesino, Huamarca, (p) **6956.9** at 0130 with OA music, SS pops and talk. Off abruptly at 0307. (Alexander, PA) Radio Andina, Huancayo, **4995.6** at 0201 with long SS talks, some OA vocals, commls and mentions of Huancayo. Off after an OA vocal selection. No anthem. (D'Angelo, PA)

PHILIPPINES—VOA Relay, **9760** at 1448 and **11740** in Korean at 1455. (Strawman, IA) **11805** at 2307 in Tagalog and **15290** in EE at 2250. (MacKenzie, CA) **12040** in CC at 1205. (Brossell, WI) Radio Veritas Asia, **11820** with Indonesian at 2258. (MacKenzie, CA)



This Radio Polonia brochure tells us that a shortwave radio covering the 25- to 51-meter "band spread" is all that's needed to hear them. Right.

PIRATES—WHGW, **6925 USB** at 2312 with digital broadcast at first, f/by some CW IDs. At 2315 into audio which was mostly a drama of sorts. Gave whgw@myway.com for reports. (Zeller, OH) "Too Young" **6925 USB** at 2306 with Monty Python theme, various rock things, including some Beatles. Anncr said "too young" repeatedly, then variety of animal noises and European-type sirens. Never got a clear ID. Was off for two minutes at 2307 and three minutes at 2314. (Zeller, OH) Mystery Radio, **6219.9** at 0140 with Euro-pop techno-dance, pop ballads, canned IDs. (Alexander, PA) 6220 at 0256 with pop/dance combination and occasional IDs but no other talking. (D'Angelo, PA) Yosemite Sam, **6925 USB** at 0100 with clips from Warner Brothers cartoons. Probably a spoof of some kind. (Hassig, IL) WMPR **6925** at 0025 ending a broadcast that sounded like religious chanting. (Hassig, IL) 2328 with mostly synthesizer and clear IDs but no address, as usual. (Zeller, OH) The Crystal Ship, **6854** at 0044 with political commentary, Bob Dylan. (Wood, TN) 0157 with rock, political talks criticizing the administration, pirate song at 0135 and mention of "The radio voice of the blue states republic." Reports to the Belfast address. (Zeller, OH) 0150 with drug songs, *Star Trek*'s Mr. Spock saying, "drugs are illogical." (Hassig, IL) **6954.2** at 0127 with ID by the Poet, Burt the *Turtle Duck and Cover* song, Reagan's quip, "We begin bombing in five minutes." (Zeller, OH) Undercover Radio, **6925 USB** at 0010 with Jethro Tull number. QSL e-mail as undercoveradio@mail.com. Also at 0148. (Hassig, IL) 0102 with Dr. Benway with mostly rock but some Middle Eastern AA vocals, noises from Mars at times, usual "broadcasting from the middle of nowhere" slogan. Merlin address given for reports. Also at 0104 with rock, frequent IDs and e-mail address for "special QSLs. Off for about five minutes around 0200. (Zeller, OH) Voice of Laryngitis, **6925.3** at 2315 sign on with Farty the Seal barking to "Smoke on the Water" Usual "best damn radio station you'll ever hear" slogan. Most of the show was an old "pirate busters" sketch. (Zeller, OH) Grasscutter Radio/Sunshine Radio, **6925 USB** at 0112 with the usual female anncr for Sunshine and male for Grasscutter. They said both stations could be contacted via Grasscutter's e-mail address. (Zeller, OH) 0144 with a joint broadcast. Several IDs by both stations, hello to several pirate DXers. (Wood, TN) Take It Easy Radio, **6925 USB** at 0123 with all Eagles numbers, "broadcasting from Radio Free America," and greetings to many. Reports to the Merlin address. (Balint, OH) 0135 with "Take it Easy" song. Gave Merlin address for reports. Also at 0405 with the Supremes, 3 Dog Night, talk of Vietnam. (Hassig, IL) Pirate Radio Boston, **6875** at 0235 with rock, familiar-sounding DJ. A lot of dead air. (Hassig, IL) 0235 to past 0303. One song was said to be by a local Boston group. (Zeller, OH)

PORTUGAL—RDP Int., **9715** in PP at 2349 to Eastern North America. (DeGennaro, NY) **11630** at 2338 with pop vocals. Off at 0200. (MacKenzie, CA) **21655** at 1558 with music, time check, ID at 1600 and man with news in PP. (Wood, TN)

ROMANIA—Radio Romania Int. **6135** in SS with news heard at 0306 and **15255** in SS to South America at 2223. (DeGennaro, NY) **9645//1940** heard at 2335. (Maxant, WV) **11820** with music, ID, sked, sign on and IS at 0456. (Burrow, WA) 15255 in SS at 2243. (Jeffery, NY)

RUSSIA—Voice of Russia, **7300**-Armavir with SS to South America at 0126, **7330**-Moscow with PP to Brazil at 2339, **9830** with SS to South America at 0013, **9880**-Armavir with EE at 0355 and **12070**-Moscow with EE to Europe at 1919. (DeGennaro, NY) **9860** via Vatican with RR folk songs at 0241. (Brossell, WI) **15455**-Armavir in FF at 1932. (Strawman, IA) **15465** with FF service from 1700 sign on. (Yohnicki, ON) Radio Rossii, **13665**-Moscow with RR to Europe at 1356. (DeGennaro, NY)

RWANDA—Deutsche Welle Relay, **11840** in GG at 2243, //**11690**-Canada, **11865**-Portugal, **15275**-Rwanda and **15410** ex-Antigua. (MacKenzie, CA) **15205** with news about Africa at 2016. (Charlton, ON)

SAO TOME—VOA Relay, **11975** at 2200 with news in the African edition, closed at 2300. (D'Angelo, PA)

SAUDI ARABIA—BSKSA, **9870** in AA at 2249 and **11820** in AA at 2249. (Charlton, ON) **11740** in AA to Africa at 1901, **11820** with Koran at 1905 and **11915** in AA to North Africa at 1909. (DeGennaro, NY) 11820 with Koran heard at 1850. (Brossell, WI) 2255. (MacKenzie, CA)

SERBIA & MONTENEGRO—Int. Radio of Serbia & Montenegro, **9580**-Bosnia heard at 2356 with IS, ID, frequencies and news. (Wood, TN) 2358 with sign on procedure. (Burrow, WA) 0045 with news. (DeGennaro, NY)

SEYCHELLES—BBC Relay, **15420** in FF at 1608. (Charlton, ON)

SINGAPORE—Mediacorp Radio, **6150** with music, ID monitored at 1549, more music. (Burrow, WA)

SLOVAKIA—Radio Slovakia Int., **9530** in SS at 0146. (Charlton, ON) **7345** in FF at 2030. (Linonis, PA) **9440** in EE with news at 0103. (DeGennaro, NY) 0227 with "You are listening to Radio Slovakia International," then IS, ID again and into SS at 0230. (Brossell, WI)

SOUTH AFRICA—Channel Africa, **9685** with IS, ID and news at 0500. (Burrow, WA) **11820** at 0600 on Mandela and into rap. (Maxant, WV) **17770** at 1539 with African news items. (Wood, TN) Radio Sondergrense, **3320** at 0245. (Wood, TN) Adventist World Radio via Meyerton, **15245** with ID at 2000 and into FF. (Brossell, WI)

SOUTH KOREA—KBS World Radio, **9560** (via Canada) with "Seoul Report" at 0243 (Burrow, WA) **9650** (via Canada) with music at 1245 but difficult as North Korea has taken to putting their Voice of Korea on the same frequency/time, and probably not by coincidence! (Barton, AZ) (*hmmm—gld*)

SPAIN—Radio Exterior de Espana, **6125**-Costa Rica in SS at 0214, **9840** with EE to Europe at 2132 and **15110** with program for seafarers in SS at 2105. (DeGennaro, NY) 15110 in SS heard at 2039. (Charlton, ON) 2234 in SS. (MacKenzie, CA)

SRI LANKA—SLBC, **15748** at 0125 with religious music, ID at 0130 and wide variety of music. Time pips and ID at 0200 and into news in EE. (Alexander, PA (*Supposedly they have now dropped English.—gld*)

SUDAN—Radio Peace (p) **4750** at 0300 in EE but with very deep fades. (Wilkner, FL)

SURINAME—Radio Apinte, **4990** in DD at 0813. (DeGennaro, NY)

SWAZILAND—Trans World Radio, **3240** at 0319 with preaching in listed Shona. ID and familiar IS at 0330 prior to language change. (D'Angelo, PA)

SWEDEN—Radio Sweden, **6010** via Canada in Swedish at 0222 and **9490**-Canada in Swedish at 0009. (DeGennaro, NY) 6010 in EE at 0140 and **15240**-Canada in SS at 1459. (Charlton, ON) 15240 heard at 1230. (Paradis, ME) **15735** discussing cigarettes and cancer. (Maxant, WV)

SYRIA—Radio Damascus, **9330** at 2145 with EE programming and domestic music. Slight QRM from strong co-channel WBCQ in reduced carrier LSB. Damascus was weaker on **//12085**. (Alexander, PA)

TAIWAN—Radio Taiwan Int., **5960** via Florida in CC at 0029 and **11565**-Florida in CC at 2204. (Charlton, ON) CBS, **11640** in CC at 1249. (Brossell, WI) WYFR/Family Radio via Taipei on **9280** in CC at 1228. (Brossell, WI)

THAILAND—BBC Relay, **13790** in CC at 2230. (MacKenzie, CA)

TUNISIA—RT Tunisienne, **9720** at 0056 with open carrier, man with opening ID and frequency anmts in AA, www.radiotunis.com URL at 0058. **//12005**. (D'Angelo, PA) 12005 in AA at 0219. (Brossell, WI)

TURKEY—Voice of Turkey, **7270** (t) at 0300 with distinctive IS. The broadcast starts at 0300 but too weak for copy. (Burrow, WA) **9460** in TT to North America at 0100 sign on and **15350** in TT at 1344. (DeGennaro, NY)

UGANDA—Radio Uganda, **4976** with choral religious vocals to 0320. More music at 0326 and religious talk again. Talk segments poorly modulated and barely heard. (D'Angelo, PA)

UKRAINE—Radio Ukraine Int., **7440** at 0004 with news of Iraq war and Ukrainian troops there. (Wood, TN) 0330 with Ukrainian composers. (Maxant, WV) 0346 with talk, music, IDs and schedule at 0357. (Burrow, WA) 2307 in UU. (DeGennaro, NY)

UNITED ARAB EMIRATES—Emirates Radio, Dubai, **15435** in AA with news at 1704. (Charlton, ON)

UNITED STATES—Radio Six Int./WBCQ Maritime transmitter, **5105** at 0133 with jazz, some new age rock and Irish jig. No talk until close when they gave the Radio Six International ID and a WBCQ ID. This, from their ship in Boston harbor, was not parallel to **7415**. (Zeller, OH) AFN/AFRTS-Key West, **5446.5 USB** with sport call-ins heard at 0831 and **12133.5 USB** heard at 1410. (DeGennaro, NY)

UZBEKISTAN—Trans World Radio relay, **9445** in Asian language at 1305. (Brossell, WI)

VATICAN—Vatican Radio, **7305** in EE at 0250. (Maxant, WV) 0249, also **11625** in Latin at 1854. (DeGennaro, NY)

VENEZUELA—Radio Amazonas, Puerto Ayacucho, **4939.7** in SS at 2328. ID at 2330. (DeGennaro, NY) 0235 with various men in SS, Latin vocals. Off at 0302 w/out national anthem but carrier remained for another nine minutes. (D'Angelo, PA) 0245 to 0252 abrupt close. (Alexander, PA)

VIETNAM—Voice of Vietnam, **6020**-Da Lai, in VV news at 0253 with alternating m/f anncrs. Also **6175** via Canada in VV at 0209. (DeGennaro, NY) 6175 with EE news at 0110. (Charlton, ON) **9840** with news and features at 1508. (Burrow, WA) **12020** with EE ID at 1239. (Brossell, WI) 2215 in VV. Off at 2228. (MacKenzie, CA)

YEMEN—Republic of Yemen Radio, **9780** in AA at 0348. (DeGennaro, NY)

ZAMBIA—Radio Zambia, **4910** with group vocals in vernacular at 0303. (Brossell, WI) Christian Voice, **4965** with contemporary Christian music at 2336. ID and address at 2350, TC, ID and program previews at 2358. (D'Angelo, PA) **9865** with religious programming in presumed Swahili at 0530. (Linonis, PA)

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, Pennsylvania, who receives a copy the 2006 edition of *Passport to World Band Radio* from the good folks at Universal Radio, 6830 Americana Parkway, Reynoldsburg OH 43068. You can write them at that address to request a copy of their great catalog, send an e-mail to dx@universal-radio.com, or give them a jingle at 614-866-4267.

And that's all you wrote! A gazillion barrels of appreciation to the following who braved the scary propagation gods this time: Robert Wilkner, Margate, FL; Charles Maxant, Barboursville, WV; George Zeller, Cleveland, OH; Stewart MacKenzie, Huntington Beach, CA; Dave Balint, Wooster, OH; William Hassig, Mt. Prospect, IL; Jerry Strawman, Des Moines, IA; Michael Yohnicki, London, ON; Joe Wood, Greenback, TN; Robert Brossell, Pewaukee, WI; Bruce Burrow, Snoqualmie, WA; Brian Alexander, Mechanicsburg, PA; Jack Linonis, Hermitage, PA; Dave Jeffery, Niagara Falls, NY; Ray Paradis, Pittsfield, ME; Rick Barton, Phoenix, AZ; Rich D'Angelo, Wyomissing, PA, Robert Charlton, Windsor, ON and Ciro DeGennaro, Feura Bush, NY.

What a crew! Thanks to each one of you. Until next month—good listening!■

by R.B. Sturtevant, KD7KTS

Radio Fun And Going Back In Time

Q. What is the difference between broadcasting and point-to-point transmission on radio?

A. Technically they are the same thing. The difference is in your intent. If you are transmitting point to point, you are sending out a signal with the anticipation of one person picking up the signal, and perhaps replying. If you are broadcasting, you are sending out a signal that you hope or expect many people will listen to at the same time with no anticipation of any of them replying. That is why the FCC says amateur radio operators can transmit but they can't broadcast. Commercial radio stations broadcast, but hams, who are working point-to-point, are transmitting, not broadcasting.

Q. When did women finally prove they could do all the jobs in broadcasting?

A. They all probably thought they were going to be the "token" woman at the station, but it didn't work out that way in Memphis in 1955. When a new station took up its place at 1430, all the staff were women. The all-female staff is thought to be the first ever. The ladies read the news, did interviews, created commercials, and sold them. They produced and directed programming and sat behind the station's control boards. The station's motto was "1000 Beautiful Watts" and no visiting celebrity would miss visiting the "dolls den" for an interview. The callsign? Why WHER-AM of course.

Q. Why were the letters SOS selected for the international signal of distress? Does it really mean "Save Our Ship"?

A. No, it doesn't and never did mean anything. It was a matter of economics. Radio operators hired onto ships were very expensive. At $20 a month they cost more than sailors. That's why shipping companies only put one operator aboard a ship. But no single operator could stand a daily 24-hour watch for seven days a week, so when the radio operator was off duty after his 14-hour watch another crew member was to sit by the wireless and monitor it. The famous SOS (...—-...) repeated three or more times would sound so different from the usual Morse chatter that any intelligent person would realize it was an emergency call and go summon the radio operator.

Q. When was radio first used in time of war?

A. It was back in 1899, when Paul Kruger, leader of the Boers (the Dutch word for farmer), was trying to prevent British expansion from Britain's Cape Colony into the Boer lands of the Transvaal and the Orange Free State in what is today South Africa. The British immigrants wanted to exploit the area's mineral wealth. The British government in Cape Town, pushed on by the likes of Cecil Rhodes, who would gain millions from diamonds, decided to take over the whole area.

The British had the finest army in the world at the time, but the independent-minded Boers, who lived on scattered farms with limited contact between groups, waged a guerilla war against them. Somehow the Boer government became aware of Marconi's 1896 successful demonstrations to the British. The British had been slow to pick up on the idea, but the Boers were desperate.

In August 1899, Kruger's Boer's Republic placed an order for six wireless telegraph sets. The plan was to use the sets to begin communicating between fortified positions around the Boer capital of Pretoria. The wireless was guaranteed to have a range of at least 15 kilometers with antennas 36 meters high. The wireless sets were confiscated when they arrived in Cape Town. The sets were turned over to the British Army, who couldn't make them work on the arid plains of South Africa because of extremely low ground conductivity.

The Navy, however, had better luck when they got the wireless sets. Some of the transmitters were installed by the Delagoa Bay Squadron, about 400 kilometers east of Johannesburg on the Indian Ocean coast, in what is today Mozambique. Delagoa Bay was a port and the head of the area's only railroad, so was very important strategically.

The wireless sets were subjected to rigorous trials. Successful experiments were reported over a range of 85 kilometers in April 1900. Transmissions between Delagoa Bay and Durban, a distance of 460 kilometers, were also reported.

Boer forces, even without wireless, demonstrated a great deal of ingenuity and resourcefulness in the use of telegraph and telephone for military communications. The Boers had a telephone exchange at a time when the British Army never tried to establish one. But, in the final accounting, when the war was over in 1902, wireless simply had not made that much difference for either side. The Boer Commandos had been beaten and South Africa was a British colony. ■

Looking Back...

Five Years Ago In *Pop'Comm*

"New" radios in October 2000 were the Alinco DJ-X10, Yaesu VX-5R and AOR AR8200 Mark IIB. Not so new was the Family Radio Service (FRS), which took off like a rocket with FRS radios now sold virtually everywhere. We talked about how some licensed General Mobile Radio Service (GMRS) users were concerned about potential interference from FRS—interference that, for the most part, never happened. Also new was NASA's X-43 aircraft, which writer Laura Quarantiello reported on, complete with frequencies!

Ten Years Ago In *Pop'Comm*

The "new" OptoScan 535 was billed as "the next generation in computer controlled interface boards for the Radio Shack series of scanners." Also, you couldn't hear it then, but now you can: Cleveland, Ohio's digital trunked radio system. Technology for radio monitors typically keeps pace—or at least catches up—with public safety comms. And RadioShack was advertising (imagine that!) its HTX-202 and 404 handheld amateur transceivers, as well as its 2-meter mobile HTX-212, saying, "we're serious about amateur radio."

Twenty Years Ago In *Pop'Comm*

New radio goodies? There were plenty, including Sony's AIR-8, a handheld programmable scanner with a grand total of 40 channels; Antenna Specialists' Formula-1 CB antenna; and those 49-MHz two-way low-power communicators. Also new were Yaesu's FRG-9600 and 8800 receivers.

by Ken Reiss, radioken@earthlink.net

Scanner Specifications

Back in May we talked about buying your first scanner. Now that you've had a few months to digest all that great stuff, or if you have ideas of upgrading your scanner over the upcoming holidays, you might think it a good idea to consider the published specifications. That's probably *bad* advice, as we'll see, but it's worth spending a little time to understand what you can and cannot read from those published numbers.

One of the major problems here is that getting those numbers in the first place is difficult at best. Radio manufacturers are publishing them infrequently now often as customers rely on them less. Unfortunately, it's a sign of the consumer economy, but particularly in the scanner end of the radio listening hobby, radios are bought pretty much like toasters and computers. Whatever looks best or has the longest list of features is likely the winner. As radio hobbyists spend less time with the electronics and really understanding the unit, interpreting the specifications has become a lost art. Besides, we're not likely to open the cover and try to repair or modify anything in there, prompting less information to be released. In fact, newer scanners have the guts "sealed" in an epoxy muck so that you *can't* tamper with them!

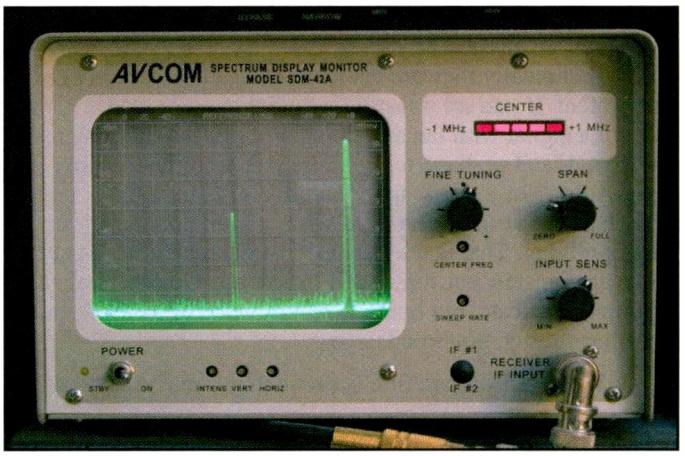
There are some basics, however, that are still available on some models and are often published in more technical reviews. Let's take a look at what those specifications tell us so if you're interested you can get some meaning from them—*some*, but not a lot.

Scanner Specs: Is It Really In The Numbers?

Scanner specifications are the most important part of choosing a new scanner. Well, at least some folks would make you feel that way. In reality, detailed specifications are not available on most consumer-grade scanners, and the ones that are can be misleading. My advice is to look at scanner specs if you're interested, but as far as picking the radio, you should use the official *Popular Communications* Editor Harold's "Official Radio Test Procedure": Let your ears make the decision about what radio works best for you. Regardless of the fancy numbers and information, different radios work differently for people in various situations, and with the differing demands placed on the radio. Your ears, particularly if you can arrange a side-by-side test of the models you're interested in, are the best evaluation method.

Having said that, if you're not interested in what all that stuff means you can stop reading here and we'll see you next month. However, if you're curious about what all those numbers refer to, and just what your receiver is up to, keep reading.

So what's all the hype? Well, it turns out, of course, that there are a multitude of ways to get the signal decoded and out of the speaker, with slightly different results based on the choices of the designer. By choosing slightly different components in the design of the circuitry, there can be a major impact on the performance of the overall receiver—and a major impact on the cost of manufacture, which has a huge influence on most of the component and design choices. It's a hobby for us, but serious business for the manufacturers.



A receiver's ability to handle a weaker signal in the presence of a strong one is a function of its dynamic range. If the larger spike on the right had been closer in frequency, it could cause many receivers to decrease their amplification and lose the weaker signal completely.

The specifications are a way of measuring and calibrating how successfully a radio can achieve the objective of extracting signals from the ether. But the problem is that all specs are not created equal. The specifications of one manufacturer may or may not be based on the same criteria as another, and therein lies the real problem with using specs to make any kind of comparison between consumer receivers. To make matters worse, some specs (like those concerning filters in particular) may be published as the specs of the original component manufacturer based on the stand-alone component, not how it performs in the circuitry of your radio. Depending on how the surrounding electronics are configured, there may or may not be any relevance to the original manufacturer specs.

There are, however, some basics of receiver operations and specifications that are useful to understand. Having a feel for what the radio "is up to" can help in reading specifications (if you can get them) or in evaluating by ear any radio you may be considering. After all, it's ultimately how the receiver works that's important. If you can get detailed specs, great. By all means, use them as a tool to help your evaluation. But don't be too upset if you can't. It's still just a radio receiver.

Receiver Performance

Yes, your scanner is a radio receiver. That shouldn't surprise anyone, but it does get forgotten as we start looking at the wealth of information that's published on various models. What we want the radio to do is receive signals that are coming through the air, process them in some fashion, and turn that into audio that's not too harsh on the ears. Right? So what we need to know is what features make for a really good radio, versus the bells and whistles and other hype that goes along with the marketing scanners and other receivers.

So if the basic function of the radio is to pull a signal out of the air, convert it down from radio frequency energy to something manageable by the internal circuitry of the unit, and, finally, to extract the audio, it should be pretty simple. Well, it's not quite as easy as it sounds.

Antenna Crowding

If you think about it for a second, your antenna is the gateway to the whole process. Lots of radio energy is arriving at the antenna all the time. Some of it from the VHF/UHF public safety channels that we want to hear, but a lot from other sources as well. The AM and FM broadcasters in town are putting out fairly strong signals that arrive at your antenna, too. Of course, it's up to the receiver to pick out what we want to hear and ignore the rest, but this can be a major problem if you're in an area of dense RF with lots of strong signals to sort through.

Your antenna is actually the first line of defense here. We make scanner antennas so they are more sensitive to the frequencies that we want to hear, and so, hopefully, they will also be *less* sensitive to the frequencies we don't want to hear, and less likely to pass those signals on to the receiver. Depending on the antenna, however, this may not be exactly the case.

For instance, many of us use discones precisely because they perform over a broad frequency range and allow us to listen to lots of signals in the different bands. Guess what? That same discone is also passing energy you don't want into your receiver, precisely *because* it's so broad banded. The antenna can't tell what's important and what's not, so it passes along everything it hears. Now, I'm not trying to pick on discones; I use a few myself. But if you're having trouble with AM and FM broadcasters (or even TV signals), you might consider a more "tuned" antenna to help the situation a bit.

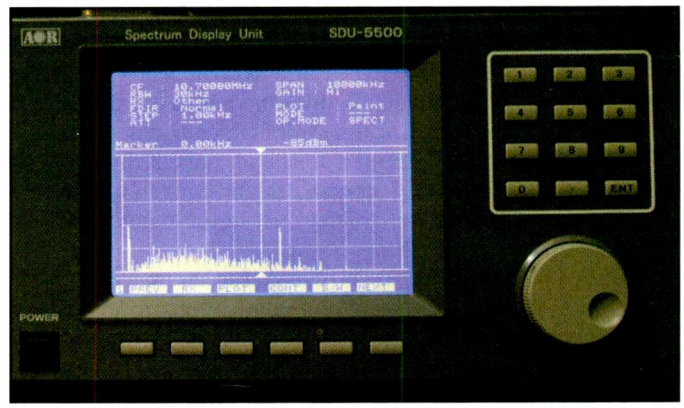
Double Conversion, Triple Conversion...Whatever It Takes

One of the main specifications you'll see discussed regarding scanners is this notion of double conversion or triple conversion reception. This isn't really a "specification" as such, but rather a short summary of how the receiver is built. It can be pretty important in certain circumstances, but there's a lot of confusion on the subject, so let's take just a minute (okay, half a column) to discuss exactly what this is and why is it so important.

Simply put, once the signal enters your receiver through the antenna jack, it has to go through a lot of processing to convert it back into the audio signal you're interested in listening to. If you'll remember, that's your primary objective. In order to do this, most (99.99%) modern receivers use a system called superheterodyne reception. This fancy term is a lot like saying that most cars use gasoline engines. There are a few other kinds, but you're not likely to run into them unless you go looking on purpose.

The first thing that usually happens is the amplification of a weak signal that is coming from the antenna. This stage is called RF, or radio frequency, amplification. I said *usually* happens because there are some receivers designed without this "front-end" handling. They tend to be much more susceptible to overload and other forms of interference, but also are much cheaper to build.

Once the signal is amplified to the point where we can begin to work with it, we then have to set about the task of extracting the audio from it. To accomplish this, we send the amplified signal to a mixer. This mixer takes the RF signal, mixes it with something called the local oscillator, and produces a new frequency called an intermediate frequency, or IF. There are numerous advantages to processing the signal through this intermediate frequency, but the main one that concerns us is that we can build a circuit that filters and otherwise processes this IF because we know exactly what it should be, regardless of the frequency being received. This process is called "conversion."



Here there are almost no transmissions found in the range, and the receiver's amplifiers are on full alert...amplifying the noise right along with the signals.

If you think about it for a second, what you'd expect to happen in a double conversion receiver is to go through this process again. And that's exactly right. The second mixer produces what's called the second IF, and if we stop there, we have a double conversion receiver with a processed signal that's ready to send on to the discriminator (part of the circuit that actually extracts the audio signal from the last IF circuit).

If this occurs one more time, you have a *triple* conversion receiver. Why bother? Well, it turns out that one of the problems with the superheterodyne design is that in these mixer stages you get not just the IF you want, but also another stray frequency as a result of the mixing. If you're up for a bit of math, I'll try to explain.

The local oscillator, which I mentioned earlier, has to be tuned along with the frequency you're actually trying to receive. We need to extract the IF, remember, so we don't tune the local oscillator to the same frequency, but rather to a different one. Some designs tune the IF lower than the actual frequency, and some tune it higher. By tuning the local oscillator to a frequency that is different from the actual frequency we're trying to receive, we can make sure that the intermediate frequency we'll extract stays constant, say 10.7 MHz for instance.

If you're trying to receive a signal on 450.000, the local oscillator would be tuned to 460.700 (assuming a receiver that converts 10.7 MHz higher; it could also be 10.7 lower), and the mixer would look for the difference. However, a strong signal 10.7 MHz above the local oscillator might also find its way into the circuit and produce a difference of 10.7 MHz, which is the exact frequency we're looking for. Oops.

Again, in our example, with the local oscillator at 460.700, a strong signal on 471.400 (10.7 higher than the local, or 21.4 higher than the desired) would also produce a difference of 10.7, which the radio could not tell apart from our desired signal. This is called image reception, and sometimes is used on purpose to receive things the radio wasn't supposed to, but more often than not is a problem.

So the answer to our original question of why bother with triple conversion is that the more stages of mixing and filtering the signal is put through, the more likely it is that the image frequency will be eliminated before the audio is extracted. It is, however, still possible for stray frequencies to enter the triple conversion receiver at various points and make it through, but it's much less likely. Of course, triple conversion means more parts and, therefore, greater cost in the manufacture of the receiver.

Just as a point of interest, you can go further than even triple conversion. In many high-end communications receivers and government equipment, where performance is the most important factor (that's a polite way of saying "Cost is NOT a factor"), you'll find quadruple conversion. Add some expensive and high-quality filtering and a few other doodads and you have a very high-performance receiver—with an appropriately high price tag to go with it.

Having outlined the basics of the typical design, we can now begin to understand a little bit more about where these specifications come from. They are all just measurements of how effectively the receiver is doing the jobs outlined above.

The Big Three

How well can the receiver pull signals out of the air? This is probably the most basic question that we can ask, and the measurement for this is *sensitivity*. Sensitivity is a receiver's ability to "hear" or respond to signals, particularly weak signals. It's usually expressed as so many microvolts (millionths of a volt) of signal at the antenna terminal, and if you're fortunate enough to see specs on a scanner you're interested in buying, remember that the lower the number, the better, and the better the receiver will detect weaker signals. Most modern scanners have no problem in the sensitivity range. In fact, quite the opposite can be true, particularly in metropolitan areas. A radio that is too sensitive (if there is such a thing) can be prone to interference if the other circuitry in the receiver can't process the signals correctly.

Can the receiver pick out just one signal? This is known as *selectivity*, and it probably causes more problems than sensitivity for most of us. Selectivity is the ability of the receiver to pick out just the one signal that we are interested in from all of those arriving at the antenna at once. Selectivity is largely a function of the IF filters, and frequently you'll see a specification for the width of the filters or the shape factor, which we'll discuss in a bit.

The job of the filter is to allow the signals that we're interested in to pass on to the next stage of the receiver, but to block any signals outside that range. Filters have a certain "bandwidth" that specifies the range of frequencies that will be passed through

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*.

Our frequency for this month is **460.3875**. See what's on it in your area and send me an e-mail or post card. Make sure you note the frequency in the subject of the e-mail, or on the front of the card/envelope so it can be entered for our drawing.

When a stronger signal shows up, it forces the receiver's amplifiers to decrease their output (automatic gain control) and the noise is lost, as are weaker signals.

them. If you're listening to normal FM broadcast signals, that filter needs to be about 150 kHz wide. Within that width, with the narrowband FM commonly used in two-way radio transmission, 10 signals would fit. So we need a narrower filter to pick out the one signal of the 10 that we're interested in hearing. A filter of about 15 kHz is more appropriate in this case.

Ideally, the filter would present a box shape as viewed on a graph, with lower frequencies on the left becoming higher as we move to the right. All the frequencies outside the box would be eliminated, but everything inside the "magic" box would be passed through. In reality filters are not on/off switches that can stop a certain frequency signal, but instead allow one just a few hertz higher to pass through. Digital signal processing shows some promise in being able to do this, and the Watkins Johnson shortwave receiver is an excellent example of this technology implemented in a receiver. However, for scanners, we're still using analog systems, and analog filters are not nearly this selective.

Most analog filters have a shape that looks more like a triangle on each end of the desired box shape we discussed before. Signals that are very strong can get through the filter even if they're some distance away in frequency. The measurement of how sloped the lines are is called the shape factor, and the closer to 1:1 the shape factor is, the better the filter.

As an interesting side note to this filter discussion, new rules in the mobile radio services are pushing people towards narrower channel spacing, or narrowband. The result is that your older scanner may not be able to tune directly to the frequency that is in use. However, there's a good chance you'll still hear the audio, albeit a bit weaker because the wider filters will let it through. That might save you from having to go out and buy a new scanner the same day that the narrowband system goes into operation in your area.

How versatile is the receiver? This is measured in terms of *dynamic range*. Dynamic range is the spread between the weakest signal that the radio can process and the strongest signal, expressed as a ratio. In reality, you're unlikely to see it published, but when seen it is, it is shown in decibels (dB). Frankly, the best measure of dynamic range is your ears, anyway: how well does the receiver deal with strong signals when you're trying to hear weaker signals? Does the radio "desense" or reduce the signal so much it's hardly discernible, or is the dynamic range so poor that intermodulation (intermod) results, with out-of-place signals showing up at various frequencies you're tuning?

The range of signals a scanner can encounter over the range of frequencies it covers is quite extensive. Very weak signals can tax the ability of the amplifiers to even detect the signal, and then the circuitry must pull that signal out of the noise. Very strong signals can lead to overloading, which can make signals appear in places where they don't exist. It can also cause the receiver to shut down its amplifier circuitry so that weaker signals are lost, or cause distortion somewhere in the process that leads to noise coming through the speaker that you can't understand. Of course, none of these is a good thing. Metropolitan listeners are more likely to have problems at this end than at the other.

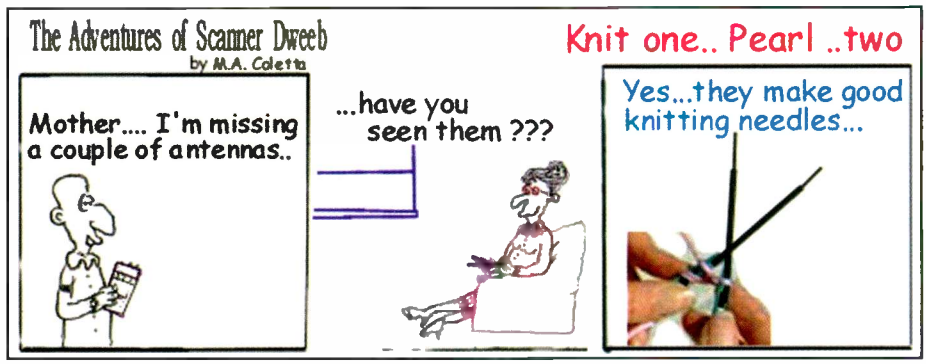
This becomes an issue when you're trying to listen to a weaker signal in the presence of strong ones. Let's say you have a frequency that you're interested in listening to and the scanner has stopped on that frequency because it detected activity there. Then, only a few kHz away, a big strong signal comes on. Since the strong signal is overpowering your receiver, the tendency will be for the amplifiers to reduce their sensitivity a bit so as not to overload the receiver with the stronger, but undesired, signal. As that amplification drops, however, the weaker signal you're trying to listen to falls below the noise and it's gone. That's an illustration of dynamic range, or rather a *lack* of dynamic range, in operation; it's a matter of how well the receiver can handle this situation and still allow reception of the weaker signal that you wanted.

Look At The Numbers, But Listen, Too

That's it. Those three specifications will tell you more about the makeup of a receiver than any of the rest of the gobbledygook that you're likely to encounter. This is not to say that some of the other specs aren't relevant, but they tend to be more like gravy than essential specs. Pay attention to frequency coverage, number of memories, audio output, and those things that you can touch and feel. But remember, there's also merit to looking at the specifications if you can get them, but the numbers won't tell you nearly as much as a few minutes with the receiver listening to the frequencies you like to listen to. Good luck!

Your questions are always welcome via e-mail or through the post office. You can reach me at radioken@earthlink.net, or at Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126.

Until next month, good listening! ■



by Steve Douglass, webbfeat@gmail.com

MILCOM: Venturing Above 30 MHz

Recently I received a letter asking, "When are you going to feature an article on MILCOM monitoring above HF? I've been waiting what seems like forever!" As an answer to that request: How about now?

Many utility monitoring purists think that true UTE monitoring only takes place below 30, and to wander above into the VHF and UHF bands is to stray from the righteous path. But if you monitor military communications on a regular basis, you know that even though there's lots of MILCOM on HF, there's even more above 30 MHz. By confining your MILCOM listening habits to shortwave, you're missing out on almost *half* of the MILCOM monitoring action.

The Military Action Bands

The U.S. military can be found communicating on a wide range of the military spectrum, from VLF to microwave. Amazingly enough, the bulk of communications are made in the clear with no encryption, just don't expect to hear the President ordering an attack on a terrorist outpost or Navy Seals engaged in covert action. It's not quite as easy as tuning in to the local police channels.

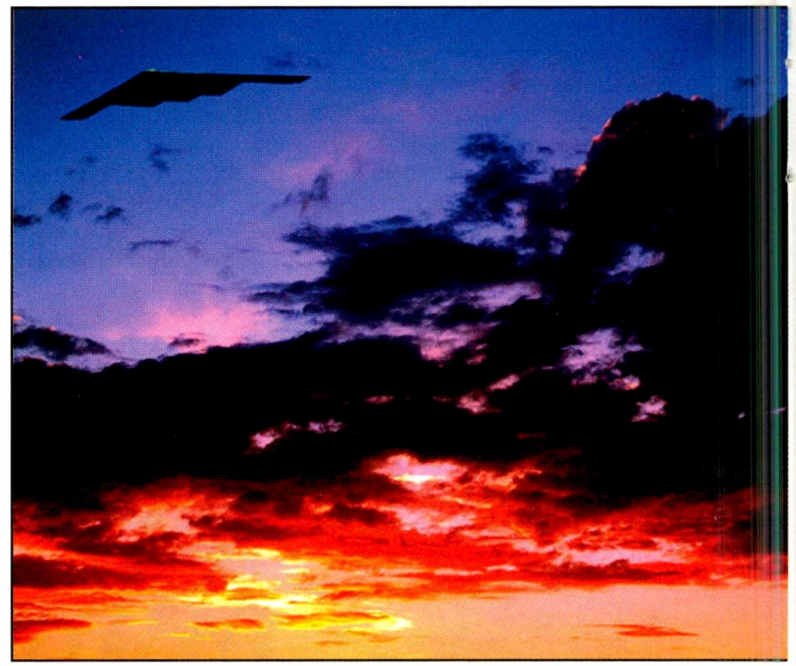
What you can expect to hear are the day-to-day communications concerning troop deployments, training exercises, and military air-traffic control. High-level communications are almost always protected in some form or another, as they should be, because you never know who has the capability to listen in.

Still, despite the restrictions, the VHF/UHF military bands provide lots of real human drama and action, such as air-combat-training, emergency search & rescue operations, military exercises, and even combat air patrols during heightened terrorist alerts. To listen in on the military frequencies, make sure the receiver you buy has the right frequency band coverage. Now here's a brief look at the bands in use.

Military Low Band Mobile: 30 to 70 MHz

On this band you'll find mostly land-based tactical military expeditionary units like Army and Marine Corp mobile (ground forces) tanks, military land vehicles, and intra/inter-squad infantry communications. There's also aviation action to be found in the form of aerial tactical platforms, such as Army/Marine helicopters and ground attack aircraft, flying in support of ground forces.

Although most communications are considered short-range, during times of peak sunspot activity and during the summer (sporadic-*E*) skip-months, the ionized atmosphere can cause low band communication to bounce hundreds, and sometimes thousands, of miles, enabling you to monitor them from afar. Most commercial scanner receivers don't allow unrestricted frequency coverage up to 70 MHz (usually stopping at 50 MHz), thus leaving out a big chunk of this band. Also keep in mind that some receivers won't let you change modes (from FM to AM) in this band, also limiting your ability to receive VHF low band communications. Although most military units operating on VHF low use FM, some aviation platforms use AM.



Military monitoring above HF can yield communications intercepts from aircraft as varied as slow-moving conventional attack aircraft to stealthy and nearly silent advanced bombers like this B-2. This B-2 flying near Roswell, New Mexico, was monitored on 311.000 MHz using the callsign SPIRIT 82.

VHF Military Land Mobile Band: 138 to 149.0 MHz

Another "forgotten" band, many monitors often over look this stretch of frequencies located just above the civil aviation band and just below the VHF public safety/business band. Lot's of air-to-air tactical communications take place on this band.

VHF High Band: 150 to 174 MHz

Sprinkled through this band you'll find small pockets of communications used mainly on domestic military bases. Some base security and crash & rescue crews (as well as maintenance) can be found hiding in the 150- to 152-MHz range. Another group of frequencies to search through for active security, base operations, military contractors, and military alert paging-services is in the 163- to 174-MHz range.

UHF Military Aviation Band: 225 to 399 MHz

The meat and potatoes of military communications (that you can monitor on conventional scanners) are to be found here. A real hodge-podge of military users, from fighters to spacecraft, is on this band. You'll even find military satellite communications and (low-echelon) Air Force One communications channels on this band, as well as hundreds of frequencies in use for military air-traffic control. Space Shuttle communications (only on ascents and descents and during spacewalks) have been reported by monitors living close to launch/landing sites.

Some of the most popular and interesting frequencies to monitor are those used by aircraft involved in fighter training and

aerial refueling. Modes are predominantly AM but you'll also stumble across narrow band and wide band FM and even SSB. If your scanner doesn't cover this exciting band of military frequencies, sell it and buy one that does.

UHF 400 to 415 MHz

On this tiny slice of frequencies can be heard other military base-related communications like disaster and commander's nets and those concerning shipboard operations on Navy ships at sea or in port. There's also some military and scientific data/telemetry frequencies embedded in this range as well.

1 GHz And Beyond?

There are many types of military communications that take place on the microwave bands above 1 GHz, but because they're very narrow banded and almost impossible to intercept and decipher they aren't as much use to the casual monitor. Some hardcore monitors with specialized receiving equipment have monitored military–related communications taking place on International Maritime Satellite (INMARSAT) frequencies.

Military Frequency Lists—Where Do You Get Them?

Your first stop for finding military frequencies in use in your area should be the Internet. There are dozens of MILCOM and MILAIR sites that can be great starting off points. Some of the best sites include the following:

MilAirComms (http://www.milaircomms.com/): One of the best sites on the Internet, including frequencies, callsigns, sound samples, and equipment reviews.

Scanning Reference (http://www.panix.com/~clay/scanning/index.cgi?military): Great list of radio scanning and military frequency information and links.

Radios Online (http://home.flash.net/~av8tor/radios/milair1.htm): An older list of military radio frequencies used across the country, but many are still active.

Supplies For Guys (http://www.suppliesforguys.com/id191.htm): Lots of frequency information here including non-military.

Microvolt (http://microvoltradio.com/text_files/usafar.txt): Here you'll find a complete list of U.S. aerial refueling tracks and frequencies.

Brooks Military Information (http://www.pacificsites.com/~brooke/MSC.shtml): Nice table of UHF military satellite frequency listings.

Here are some other resources to help you find military air traffic control frequencies in your area

IFR Charts and Supplements: Official charts and maps used by pilots, these documents contain lists of both civil and military frequencies at all airports. You can buy them online or through your local airport Flight Service Station, or you can (as I have) call the local tower and politely ask them to save any outdated supplements for you, instead of throwing them out. Don't think that just because they're outdated that the frequencies aren't current. A great place to look online for airport information, including frequencies, is http://www.airnav.com/.

Radio Hobbyist and Electronics Retailers: Visit your local RadioShack to see if they keep an updated frequency list on file. Some give them out free and some charge. You might try trading your list for theirs instead of buying what just might be a list of stuff you already have. Some radio hobbyist frequency guides, such as *Police Call*, have a limited number of local frequencies in their databases.

Even if you don't live near a military base, chances are there is an aerial refueling track in your area that can make for some exciting monitoring. I photographed thus B-1 from Dyess Air Force Base refueling over the Gulf of Mexico.

Local News Media: Call the newspaper and TV news departments in your area and you'll probably find at least one reporter who has a pretty good frequency list on hand.

Ham Radio Operators: Not only do they talk, they also *listen* to the airwaves. Most ham radio operators also scan the bands. Even if you aren't a ham radio operator, you can become friends with a few of them. You'll find they're filled with useful radio-related information, including frequency lists. Consider joining a ham radio club or attend a ham swapfest. Not only might you find someone at a ham event with a great list of frequencies, you might even find the right military monitoring piece of equipment on sale for a great price.

Internet E-Mail List Groups: Also consider joining an e-list group where you'll find many people just like you, all seeking the info you have and visa-versa. A word to the wise, though: lurk for a while and just read the missives, learn the lingo and terms before posting. Beware of a few Internet bullies who like to make themselves seem more important by criticizing the posts of newbies, but don't let them chase you off. There's lots of great information in these groups and much of it can be learned by just reading the intercept (loggings) reports. For a list of many of the nest radio-related e-groups, point your browser to qth.net.

The Best Magazine: Last, but not least, subscribe to *Popular Communications*!

Next month our topic will be the right MILCOM receiver for you. See you then, and Good Listening! Now on to this month's loggings.

Reader Logs

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

2252.0: V4X and 5IW in Link coordination net at 1251. (MC)

2772.0: HOTEL, LIMA, NOVEMBER, SIERRA, PAPA, and

NOVEMBER FOXTROT in Link-16 coordination net at 0133. (MC)

3048.4: DELTA, HOTEL, FOXTROT, ECHO, OSCAR in Link coordination net at 1130 (MC)

3167.4: I5A and B1S in Link-11 coordination net monitored at 1049. (MC)

3247.4: ZKLF, METSERVICE, Wellington, New Zealand w/wx map, unusually good signal, FAX, at 1048Z. (SJ)

4068.0: D2R, Y8P, 0FU in Link-11 coordination net at 0146. (MC)

4241.0: 4XZ, Israeli Navy, Haifa, Israel w/CW marker, "VVV DE 4XZ..." at 0045Z. (SJ)

4469.9: U.S. Civil Air Patrol net, reading apparent eulogy, into callup, USB, at 1145Z. (SJ)

4372.0: J4D and 1DN in Link coordination net in VACAPES OPAREA at 2343. (MC)

4469.0: FLORIDA CAP 904 as NCS taking check-ins from numerous stations in Florida CAP Net at 1134. (MC)

5616.0: Shanwick Oceanic Control, UK, receiving position reports from several aircraft in USB at 2150Z. (CG)

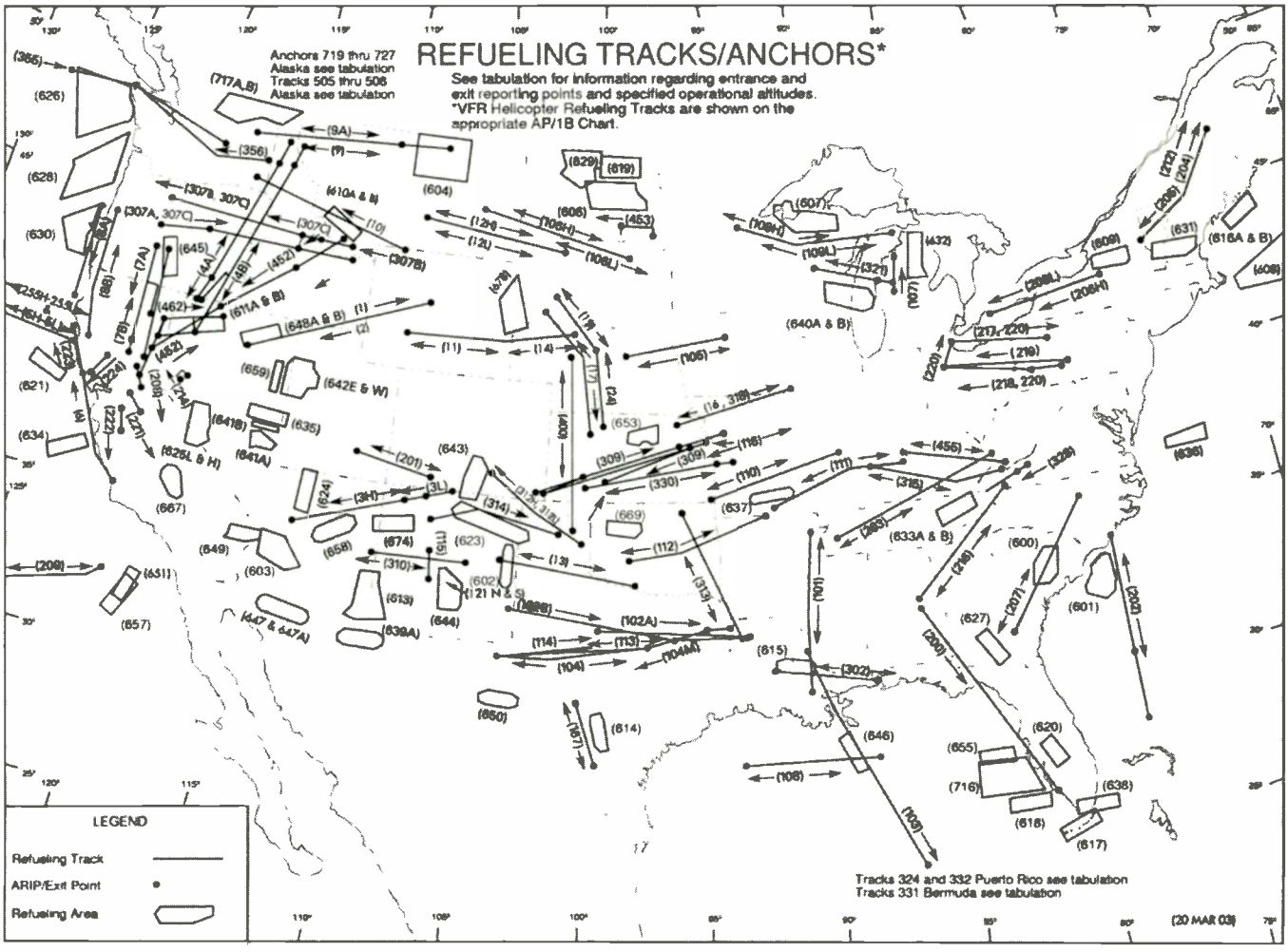
5696.0: Camslant: 1233 USB w/CG 2139 (USCG HU-25 #2139 CGAS Cape Cod-not heard) w/position report. (RP)

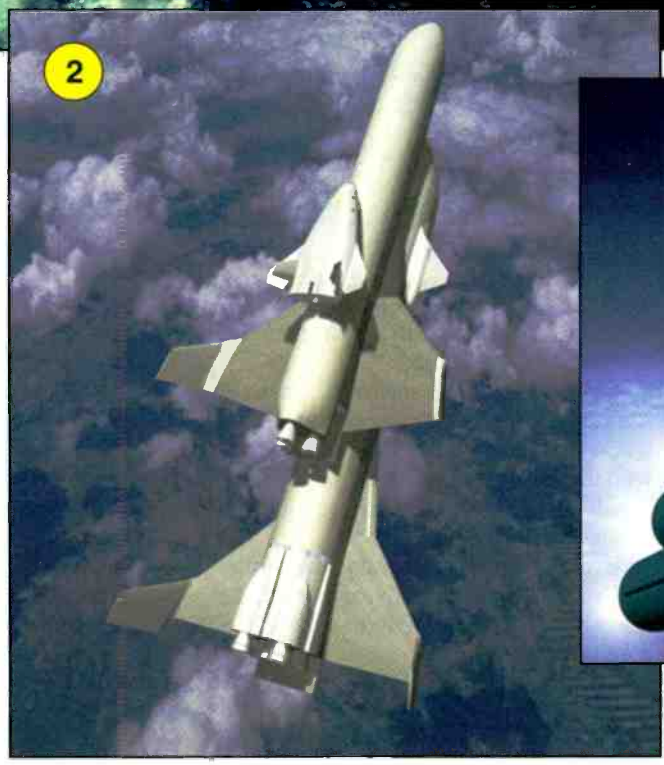
5755.0: VMW, Wiluna R., Western Australia w/wx map, //7535.0 and 10555.0, FAX, at 1110Z. (SJ)

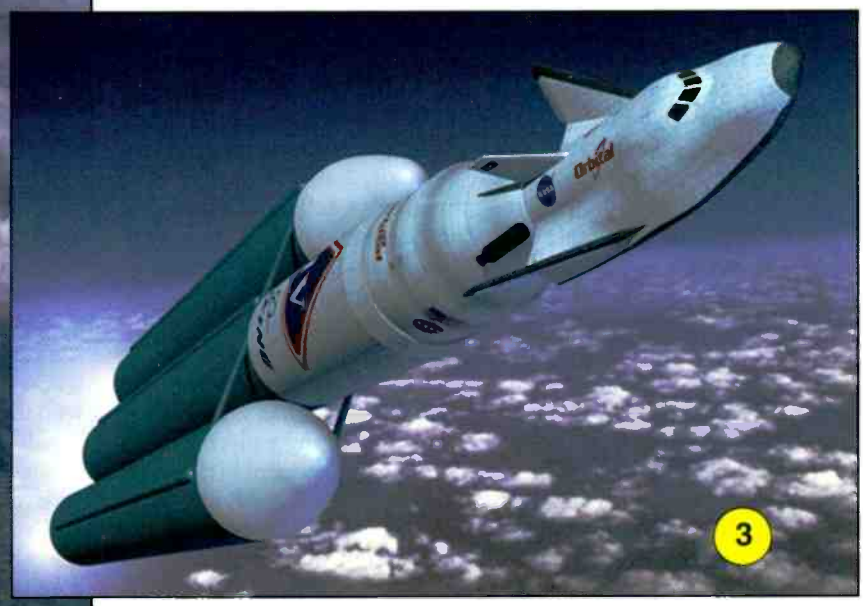
5875.0: EAATS (Eastern Army Aviation Training Site, Muir AAF Ft Indiantown Gap PA) 1624 USB/ALE sounding. (RP)

You can sometimes hear helicopters like these talking to military towers on VHF low band around 41.50 MHz, a common helicopter base frequency. →

A Defense Mapping Agency map showing the location of military aerial refueling tracks across the United States. ↓







Three different concepts for the next generation space transportation system: 1. Artist concept Boeing; 2. Artist concept Lockheed; 3. Artist concept Northrop Grumman/Orbital Science.

6251.0: FUO, French Navy, Toulon, France w/marker in ITA2, 75 baud, 850 Hz. "TESTING," "RYRY," and "SGSG" strings, numbers 0123456789 twice, at 2350Z. (SJ)

6330.0: LZW34, Varna R., Bulgaria w/Bulgarian language news, currency quotes, SITOR-B at 2345Z. (SJ)

6389.0: CTP, NATO, Lisbon, Portugal w/marker "NAWS NAWS DE CTP CTP QSX 04 06 08 12 MHZ. AR", ITA2, 75 baud, 850 Hz, at 2350Z. (SJ)

6438.0: FUE, French Navy, Brest, France w/marker "TESTING" and "RYRY," 150 baud, 850 Hz at 2305Z. (SJ)

6462.0: FUM, French Navy, Papeete, Tahiti w/marker, "RYRY' and "SGSG" strings, ITA2, 75 baud, 850 Hz monitored at 1150Z. (SJ)

6887.0: UNID YL/GG with 5-fig groups, each given twice. USB at 1835Z. (CG)

6694.0: PATHFINDER 03 wkg HALIFAX MILITARY with request they pass ops normal report to MOC HALIFAX at 0141. (MC)

6985.0: USACE1010 (U.S. Army Corps of Engineers (USACE), Washington DC): 0244 USB/ALE sounding. (RP)

7508.0: ZSJ, Cape Naval Radio, South African wx Service w/unscheduled map, FAX, at 2345Z. (SJ)

7527.0: CG 1720 p/p via SERVICE CENTER to District 7 Ops. States they have 6 aircraft searching and they are assuming duties as on scene commander at 1838. (MC)

7527.0: OPB (OPBAT Service Center, Nassau, Bahamas): 1524 USB/ALE TO J40 (USCG HH-60J #6040 CGAS Clearwater. (RP)

7535.0: VMW, Wiluna Meteo, Western Australia w/map, FAX at 2330Z. (SJ)

7650.0: T2Z238 (2/238th Avn, IN NG Shelbyville IN): 0020 USB/ALE sounding. 06/30. (RP)

8056.0: CLS (probably Sabre AAF, Ft Campbell KY): 1708 USB/ALE sounding. (RP)

8140.0: BMF, Taipei Meteo, Taiwan, extremely weak FAX at 0930Z. (SJ)

8416.5: NMO, USCG, Honolulu, HI w/wx forecast in SITOR-B //12579.0 at 1340Z. (SJ)

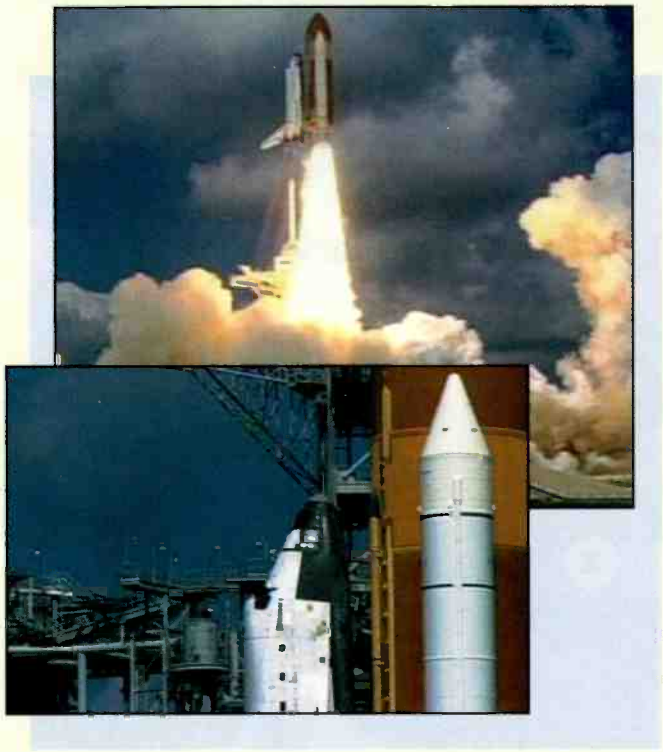
8423.5: WLO, Mobile R., Mobile, AL w/traffic list, info on registration for services, contact modes, SITOR-B at 0130Z. (SJ)

8439.0, PBC38, Dutch Navy, Goeree Island, Netherlands w/marker, ITA2 75 baud, 850 Hz: ""02A 04B 06A 08A 12A 17X PBC", at 0155Z. (SJ)

8503.9: NMG, USCG, New Orleans, LA w/GOES IR satellite photo, //4317.9, 12789.9 and 17146.4, FAX, at 2008Z. (SJ)

8551.5: CTP, NATO, Lisbon, Portugal w/marker "NAWS NAWS DE CTP CTP QSX 04 06 08 12 MHZ. AR", ITA2, 75 baud, 850 Hz, at 2150Z. (SJ)

Return To Space...Almost



As I write this, the Space Shuttle is in orbit after spending two and a half years on the ground due to the *Columbia* disaster. I've always had a major interest in space travel ever since (and I'm showing my age here) I was a little lad in Marietta, Ohio, and I won a grade school "space" art contest with my entry of a detailed drawing of the *Mercury* space capsule. The grand prize was to attend a homecoming parade in Columbus where I would get to meet and shake the hand of astronaut John Glen, who had just become the first American to orbit the Earth. Although I was only six years old, I remember the parade and getting to shake the astronaut's hand as if it was yesterday.

Since then I've followed every launch, from the early days of the manned space-flight-program, through Apollo, and up to the "Return to Space" of STS 114. I remember how thrilled I was to see man first step foot on the moon, watching Armstrong's "one giant leap" in my jammies laying in front of our black & white TV in our house in Oklahoma City.

As a fledgling photographer at the *Amarillo Globe News* I watched with a sick feeling in my stomach as *Challenger* disintegrated in a huge explosion. As clear to me as today is, I can recall the entire newsroom staff, frozen as they watched the endless replays of the fireball consuming seven lives and a shuttle orbiter in as many seconds. I also remember with absolute clarity the staff scrambling to action, rewriting the entire newspaper as I heard for the first time someone actually say, "Stop the presses!" Many years later, I photographed the destruction of *Columbia* and its brave crew, including fellow Amarillo citizen, Rick Husband, as the craft reentered just south of the city that we both called home.

So it was with a tear in my eye and a lump in my throat that I watched *Discovery* blast off into the wild blue, taking along with it the dreams and hopes of a spacefaring nation.

Radio monitoring has been a major component in my interest in all things orbital. I've been a diligent Cape Radio monitor for years, and equally diligent in searching the bands for communications coming directly from the shuttle and the International Space Station (ISS). Although in the early days of the shuttle program it was fairly easy to capture an intercept or two during space missions, since the advent of microwave satellite relays (except for launches and landings), it's a rare thing to hear communications directly from the orbiter, unless you live near the launch site or along the southeastern coast of the United States. However hearing the ISS as it whizzes overhead is a fairly common, but still fascinating, event for many monitors using only the whip on a handheld scanner.

During this last launch (Discovery-STS-114), even though I couldn't hear the communications directly, I was able to follow the mission as never before. Not only could I watch the launch live on the TV news networks, but with broadband Internet I could also follow the rest of the mission in nearly real time via a Real One Player and a link supplied at SPACE.COM. I could also track the shuttle and the ISS in real time via a cool 3D interface at http://scisites.msfc.nasa.gov/realtime/jtrack/3d/JTrack3D.html.

However, I won't be watching it on my computer when it re-enters the atmosphere over Texas. This I want to witness through my own eyes as its path takes it right over my city. Undoubtedly I'll be awake in the wee small hours of the morning, hoping to catch a glimpse of its fiery (yet hopefully safe) return to terra firma. I'm also hoping to grab a few images for this column. Stay tuned.

Still, as exciting as seeing the Space Shuttle return to space, it's very disappointing to hear that all the bugs have not been worked out and the fleet will remain grounded until problems with the foam on the external fuel tank are solved. It looks like it will be some time before we again witness and monitor a Space Shuttle launch.

Even though the grounding of the shuttles is a major downer, I'm sure you share my opinion that everything the rocket scientists at NASA can do to make the STS system as safe as it can be must be undertaken. But no matter what they come up with, manned space flight will always be a dangerous endeavor, which only proves the bravery of all the astronauts.

Chances are that if the shuttle system is considered unsafe, Congress will most likely support a replacement system. Plans are already on the table for a follow-on space transport vehicle that should not only be safer, but better and cheaper. Maybe it is time to scrap the entire Space Shuttle program and move on to a next generation system. If that's the case, it will take many years of research and development before a new space transport system is operational. This not only drastically slows down the expansion of the ISS, but also puts America's plans to return to the moon and explore Mars on permanent hold as well.

It may come to pass that, despite rumors of a secret military mini-shuttle, we may have to depend on the Russians or Europeans to get anything into space over the next 10 years. For the first time in decades, America will have to take the back seat and depend on other nations to keep even a toehold in space. However, monitors of my generation can still be proud that we were witnesses to the golden age of near-space exploration. You were there when space exploration was in its infancy, and brave men and women dared to risk their lives in search of a greater good for all mankind.

8646.0: FUJ, French Navy, New Caledonia w/marker, "RYRY" and "SGSG" strings, ITA2, 75 baud, 850 Hz at 1058Z. (SJ)

8682.0, NMC, USCG, Point Reyes, CA w/satellite image showing large area of the eastern Pacific and U.S. west coast from S. Alaska to Baja California, FAX at 1448Z. (SJ)

8864.0: Gander Radio, Newfoundland, receiving position reports from several aircraft in USB at 2204Z. (CG)

8912.0: RAZORBACK wkg OMAHA 547 during vessel interception near Puerto Rico at 1519. (MC)

8983.0: Camslant: 1249 USB w/CG 2141 (USCG HU-25 #2141 CGAS Cape Cod-not heard) w/radio checks. (RP)

8983.0: Camslant: 1344 USB w/CG 2140 (USCG HU-25 #2140 CGAS Cape Cod-not heard) w/position report (4315N/7002W). (RP)

8971.0: ISLAND 22 wkg BLUESTAR (TSC Comalapa) reporting STOI made a run into territorial waters with no barrels. They were observed dumping 5 barrels overboard. ISLAND 22 reports lost contact due to darkness and they are RTB at 0041. (MC)

8980.0: CG 1712 (HC-130) w/District 7 Miami Ops regarding SAR case they are working near Bimini at 1802. (MC)

8992.0: RED TALON 712 (P-3C) p/p via Puerto Rico HF-GCS to FIDDLE monitored at 1953. (MC)

9007.0: STARGATE (E-8 JSTARS) p/p via TRENTON MILITARY to PEACHTREE at Robins AFB with line code report at 1802. (MC)

9025.0: CG 1504 (HC-130) ALE initiated call to District 7 during SAR off Florida at 1825. (MC)

9165.0: UNID with "815 815 815 1" repeated, then 5-fig grps (T=0), then down with 000 000. CW at 1820Z. (CG)

9360.0: OXT1, Danish Forces, Skamlebaek, Denmark w/wx map, FAX, poor signal, at 1830Z. (SJ)

10046.0: 4XZ, Israeli Navy, Haifa, w/CW marker at 0137Z. (SJ)

10100.8: DDK9, Hamburg Meteo, Germany w/wx forecast in English, ITA2, 50 baud, 425 Hz shift, at 2110Z; also at 2300Z. w/5 number groups. (SJ)

10275.0: P82MED (82nd Medical Coy (Air Ambulance), Ft Riley KS); 0513 USB/ALE sounding. Also sounding on 08161.5. (RP)

10324.0: UNID OM/EE with 5-fig grps in USB at 1805Z. (CG)

10343.0: UNID with 5-fig grps (T=0) in fast CW (ended with 000 000) at 1800Z. Also on 7849 at 1845Z. (CG)

10493.0: WGY912 (FEMA, Mt. Weather, VA) clg WGY993 with No answer at 1239. (MC)

11232.0: Canadian Forces, Trenton Military, ON in QSO w/aircraft 2836, flight plans, wx forecasts, requests for Customs and crew/passenger meals, confirmation of accommodations, in USB at 2030Z. (SJ)

11253.0: MVU, RAF, London, England w/wx report, female computer-generated voice, USB at 2355Z. (SJ)

11300.0: Nairobi Aero R. calling Khartoum in USB at 2143Z. (SJ)

11545.0: "Lincolnshire Poacher" British MI-6, YL/EE w/5 number groups x2 after musical sign-on, USB, at 2000Z. (SJ)

12087.0: TNC45NG (45th CST, TN NG Tennessee): 1620 USB/ALE TO HQ703N (Nat'l Guard Readiness Center, Arlington VA). (RP)

12359.0: Unid. land station & several vessels in simplex QSO in English in apparent sailboat net w/wx forecasts & observations, coordinates, mostly Atlantic & Caribbean regions, USB at 2130Z. (SJ)

12390.0: GYA, Royal Navy, Northwood, England w/2 maps of the Persian Gulf, FAX, at 2145Z; also at 0307Z. (SJ)

12412.5: NOJ, USCG, Kodiak, Alaska w/wx map, FAX, at 1700Z. (SJ)

12528.0: Cruise ship M/V *Galapagos Explorer II* w/traffic in Spanish about passenger accommodations, SITOR-A, monitored at 2250Z. (SJ)

12536.0: Unid. vessels in simplex QSO in Vietnamese, seems to be a regular network, USB heard intermittently over several days from 1500–2200Z. (SJ)

12579.0: NMF, USCG, Boston, MA w/wx forecasts and navigational warnings, SITOR-B, //16806.5 at 1630Z; NMO, USCG, Honolulu, HI w/same at 1330 and 2030Z. (SJ)

12584.5: WLO, Mobile R., AL w/tropical wx outlook, email account and other services info, ship callsign list, mailing address & phone nos., website address, SITOR-B at 1600Z. (SJ)

12585.0: NRV, USCG, Apra Harbor, Guam w/CW/SITOR marker, weak, at 1620Z. (SJ)

12587.0: LZW5, Varna R., Bulgaria w/CW marker followed by SITOR-B notices in English on USCG shipping security alerts, 1850Z. (SJ)

12594.5: A9M, Hamala R., Bahrain w/CW/SITOR marker, "DE A9M TLX" at 2100 & 2300Z. (SJ)

12603.5: SVO5, Olympia R., Athens, Greece, s/on w/"PRESS PRESS PRESS CQ CQ CQ DE SVO SVO SVO PRESS," into Greek w/international news, sports & currency quotes, SITOR-B, at 2102Z. (SJ)

12654.0: TAH, Istanbul R., Turkey w/CW/SITOR-A marker, into SITOR-B at 1957Z, ID as "Turkish State Meterol," wx observations in Turkish. (SJ)

12666.5: FUG, French Navy, Sassaic, France w/marker including "FM NAVITER SUD, TO BATIMENTS," ITA2, 75 baud, 850 Hz, at 2130Z. (SJ)

12702.0: CKN, Canadian Forces, Victoria, BC, Canada w/marker, list of ZKR frequencies, ITA2 at 75 baud, 850 Hz at 0025Z. (SJ)

12749.0: CWA, Cerrito R., Uruguay w/CQ

marker and QSX freq. list in CW monitored at 2255Z. (SJ)

12783.0, MGJ, Royal Navy, Faslane, Great Britain w/channel list & ID, ITA2, 75 baud, 850 Hz at 1850Z; GYA, Royal Navy, London also heard here w/same parameters at 2355Z. (SJ)

12857.0: 6WW, French Navy, Dakar, Senegal w/marker, "VOYEZ. VOUS LE BRICK GEANT...," ITA2, 75 baud, 850 Hz at 0045Z. (SJ)

12786.0: NMC, USCG, Point Reyes, CA on new frequency (moved from 12590.5 in mid-June), FAX at 1405Z. (SJ)

12984.5: 4XZ, Haifa R., Israeli Navy w/CW marker "VVV DE 4XZ. 4XZ. 4XZ. — —," at 2310Z. (SJ)

13015.5: IAR, Rome R., Italy w/CW marker and frequency info at 1720Z. (SJ)

13170.0: SVO55, Olympia R., Athens, Greece w/phone patch, into standard bilingual marker afterward, USB at 2333Z. (SJ)

13270.0: VFG, Gander VOLMET, Newfoundland w/aviation wx in USB at 2350Z. (SJ)

13312.0: 222W to "Radio Lab" w/freq., QSY to "Channel 4," 21931.0 in USB at 1830Z. (SJ)

13375.0: "Lincolnshire Poacher" British MI-6, YL/EE w/5 number groups x2 after musical sign-on, USB, at 1800Z. (SJ)

13597.0, JMH4, Tokyo Meteo, Tokyo, Japan w/multiple maps, FAX, at 1230Z. (SJ)

13882.5: DDK6, Hamburg/Pinneburg Meteo, Germany w/near perfect "Wave Prediction North Atlantic" chart, "Deutscher Wetterdienst" ID, // weaker 7880.0, FAX at 2142Z. (SJ)

13900.0: BMF, Taipei Meteo, Taipei, Taiwan w/offshore fishery wx forecast in Chinese text, FAX, at 1450Z. (SJ)

14396.5.0: NNN0TWT, NCS for a SHARES net in advance of a hurricane. USB at 1902Z. (CG)

15682.0: "Lincolnshire Poacher" British MI-6, YL/EE w/5 number groups x2 after musical sign-on, USB, at 1500Z. (SJ)

15867.0: X60 (U.S. Army UH-60L tail # 94-26560 2-3rd AVN): 1631 USB/ALE TO OPB (OPBAT Service Center, Nassau, Bahamas) then in voice reports that 60A is 35nms on bearing of 319 degrees from Sector Yankee 12 w/7 POB & 4.5 hours of fuel. At 1844 on 13907.0 60A in ALE & voice w/Panther reports they are 80nms on bearing of 314 degrees from Yankee 6. At 1859 60A reports they are 45nms on bearing of 322 degrees from Yankee 6 & ops normal. (RP)

16332.8: FDI8, French AF, Nice, France w/CW marker at 1940Z. (SJ)

16340.0: ZKLF, Wellington METSERVICE, Wellington, New Zealand, very weak FAX at 0150Z. (SJ)

16347.5: FDG, French AF, Bordeaux, France w/marker "VOYEZ. VOUS LE BRICK GEANT...," ITA2, 50 baud, 850 Hz at 1635Z. (SJ)

16351.7: RFLIC, French Forces, Fort de France, Martinique w/marker, 5 number groups and occasional clear traffic, ARQ-E3 at 1915Z. (SJ)

16699.0: Unid. station in Spanish w/"EXTRA URGENTE" msg, SITOR-A at 2330Z. (SJ)

16806.5, NMF, USCG, Boston, MA w/wx forecasts and navigational warnings, SITOR-B, //12579.0 at 1630Z; also NMC, USCG, Point Reyes, CA w/contact info, wx forecasts & navigational warnings, SITOR-B, at 1800Z. (SJ)

16806.7: NMF, USCG, Boston, MA w/wx forecast charts //9110.0. This FAX frequency not listed in the official schedule, usual //12750.0 not heard, possible change in station schedule, 1720–2032Z. (SJ)

16813.0: UAT, Moscow R., Russia w/CW/SITOR-A marker, "de UAT" at 1410Z. (SJ)

16904.9: FUV, French Navy, Djibouti w/marker, "VOYEZ. VOUS LE BRICK GEANT...," ITA2, 75 baud, 850 Hz heard at 1850Z. (SJ)

17069.6: JJC, KYODO News, Tokyo, Japan w/next morning's newspaper edition in Japanese text, FAX at 60 lpm, //17430.0, KYODO in Singapore, at 1500–1640Z. First page is national and international news, 2nd page is business news, 3rd page is sports and navigational warnings. Usually has a header at the start of each transmission addressed to "Subscribers at Sea" requesting donations. (SJ)

17146.4: CBV, Chilean Navy, Valparaiso R., Playa Ancha, Chile w/IR satellite photo, good signal, FAX, at 1940 and 0205Z. (SJ)

17230.0: CWA, Cerrito R., Uruguay w/CW marker and QSX frequencies at 2315Z. (SJ)

17311.0: IAR, Rome R., Italy, YL/EE w/wx info in USB at 2010Z. (SJ)

17430.0: 9VF252, KYODO News, in perfect synchronization from Singapore //KYODO Tokyo on 17069.6 at 1500Z. (SJ)

18560.0: BMF, Taipei Meteo, Taipei, Taiwan w/GMS IR satellite image, FAX //13900.0, at 1330Z. (SJ)

22461.0: FUJ, French Navy, Noumea, New Caledonia w/marker "TESTING" and "RYRY" and "SGSG" strings, double 0-9 count, ITA2 at 2015-2315Z. (SJ)

22527.0: NMC, USCG, Point Reyes, CA sign-on w/"CQ CQ CQ DE NMC NMC NMC" at top of chart, FAX //12590.5 and 17151.2 at 1930Z. (SJ)

This month's star contributors were Mark Cleary (MC); Ron Perron (RP); Steve Jones (SJ); and Chris Gay (CG). A special thanks to all the monitors who answered my SOS and sent in new logs when my computer crashed—taking all their logs with it! ■

Our October Winner: Congratulations To Nolan King Of Traverse City, Michigan!

Here's Nolan King of Traverse City, Michigan, wearing the Yaesu hat a family member got him at this year's Dayton Hamvention. Nolan says, "I can hardly wait to go to Dayton the way they talk about it."

Pop'Comm reader Nolan King tells us,

I am 11 years old. I first became interested in radios about four years ago. I got an FM crystal radio kit and put it together myself. I have 25 different police Matchbox cars and a replica state police patrol car model. I want to be a police officer when I grow up.

My uncle bought a new digital scanner for himself that I listen to all the time. He also gave me the book *Now You're Talking* to study for my Technician ham license. My parents cannot normally get me to read books but I am reading this book all the time.

When on the school bus I always like to sit in the front seat behind the driver so I can listen to his two-way radio. A couple of years ago I went to put on the FM radio for my mom and then went upstairs to talk on my wireless FM microphone and I was a DJ with music, weather, etc. My mom had trouble hooking up a stereo system once and I stepped in and got everything going. I like messing with wires. I have some Family Radio Service radios and I enjoy talking on them.

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 Joe Cooper, carm_popcomm@hotmail.com

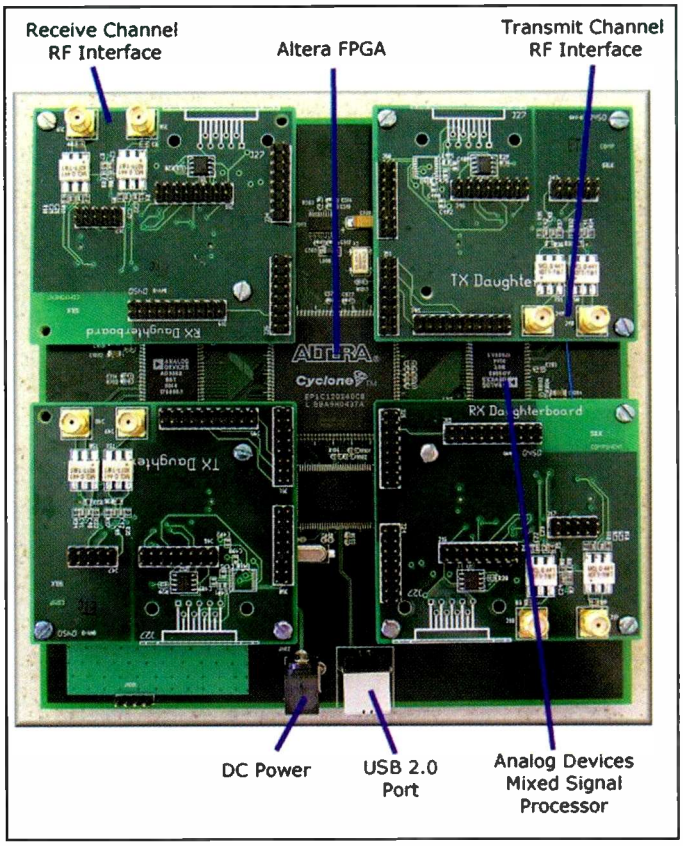
Software-Defined Radio—Part V
The Practical Use Of SDR: What's Available Today?

Over the past four columns I have outlined the theory of Software-Defined Radio (or SDR), which is promising to revolutionize the design of today's monitoring radios, whether they're intended for military, commercial, or consumer use. In this month's column I'll tell you where you can obtain the hardware and software components needed to begin experimenting with SDR technology yourself. I'll also outline for you the first generation of fully assembled SD radios that have been built specifically for the hobbyist market.

Today SDR technology is still in the pioneering stages (a good comparison could be made to where the amateur radio hobby was in the early 1920s) and a certain degree of technical knowledge is required to make this technology work. However, thanks to some significant advances made in the last two years, experimentation with SDR is not out of the reach of the casual hobbyist.

I hope those of you who have been following my column will come to enjoy the benefits of living in this truly amazing age by becoming active participants in this exciting new technology. One thing for certain, SDR will transform radio as we know it, just as the super-heterodyne radio, combined with mass-produced vacuum tube technology, transformed receiver design during the 1920s. SDR technology will certainly become integrated into the information revolution that began with the convergence of the Internet and personal computers back in the early 1990s.

What's even more exciting is that if you take the time to learn how to use this technology properly, you can have a front line role in creating this technology's history, just like Steve Jobs, Steve Wozinak, or Bill Gates did for the personal computer!



Here's the Universal Software Radio Peripheral (USRP), which has four daughterboards attached. In this configuration, the unit can both transmit and receive. Designed for use with software developed for the GNU SDR project, its primary function is to sample analog RF signals and then convert them to digital signals. All processing and detection takes place within a personal computer attached via a USB 2.0 interface. (Photo courtesy Ettus Research LLC)

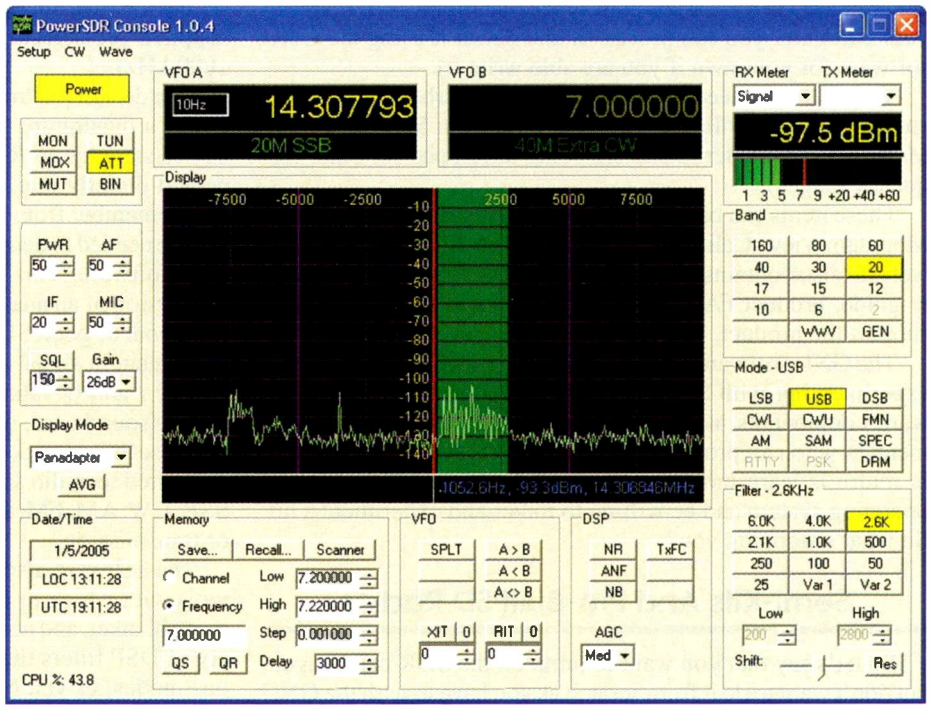
Before Getting Started—Learning New Skills

The first question you must ask your self before beginning to experiment with SDR technology is why you want to do so? While there is a great potential in this new technology, much of this is still to be realized through hard work and development on the part of the hobbyist community. If you do decide to become involved with SDR you may find that you're spending more time reading up on theory and tinkering with prototypes than on monitoring radio signals, just to develop SDR into a fully working technology.

To fully appreciate and use SDR technology properly you will have to develop a new set of technical skills, particularly in digital signal processing (DSP). Because you're sampling RF spectrum rather than tuning it, even the simple act of operating an SDR receiver will require a different set of monitoring skills than are used with analog receivers. One such skill to develop is how to set the proper sampling values in the DSP software used with your computer's soundcard so that it will work properly. In short, you may not have to put up with howling sounds coming out of your speakers as happened with a regenerative radio, but you may find that certain settings either produce no sound at all or sound that is distorted enough to qualify as a howl.

So again, what is it that you actually wish to accomplish by getting involved with SD technology? Is it simply the novelty of doing something new (which is legitimate) or do you have a specific goal to accomplish for developing your personal skill in radio monitoring?

The most important thing you need to decide on is the level of complexity at which you'll begin your experimentation.



This is the user interface of the PowerSDR Console software used with FlexRadio Systems SDR-1000. As you can see, it's set up for ham radio operation, the primary use for this SDR. It supports "point and click" tuning and control via a mouse, but you can also purchase a mechanical tuning knob that connects to the console software through the computer's USB port. It offers a general coverage receiver that tunes from 11 kHz to 65 MHz and is available as a stand-alone receiver in the SDR-1000/ROE version. (Photo courtesy FlexRadio Systems)

There's nothing wrong with buying prebuilt SDR equipment and simply learning to operate it well and then going on to more complex levels of understanding at a later time. But if you have a good background in using digital technology, by all means start out at the breadboard level and begin to prototype leading edge designs that will push the boundaries of the radio monitoring hobby.

So with that in mind, look at sources of hardware, software, and information that will satisfy the beginning experimenter through the expert who wishes to join the SDR revolution.

"Roll Your Own" SD Radio

There could not be a better time to get started in hands-on experimentation with SD radio than right now. Experimentation at the hobbyist level since 2001 has lead to the establishment of a fairly complete body of information that is easy to find on the Internet and in book form. More importantly, there is now a good supply of off-the-shelf" hardware and software components designed for the hobbyist. This will let you put together a working SD radio with minimal difficulty.

Even more encouraging is that there's a significant amount of the software you need for building an experimental SD radio that's available for *free* on the Internet, along with a fair degree of documentation to tell you how to use it. Now, having said that, the catch is that the majority of this free software is written in C++ for the LINUX operating system and requires a good understanding of how to perform basic programming in order to use it properly. While there is software available for off-the-shelf SDR equipment, much of it is still in the early stages of development and needs further refinement.

So at this point you have two choices: throw up your hands in despair or roll up your sleeves and take up the challenge of learning something new. The choice is yours.

In the upcoming year I'll show you free sources for legal copies of compilers (the software that creates computer software) for C++, Visual Basic, and other programming languages. I'll be doing this in conjunction with a series of columns on how to create your own custom user interface for use with popular software-controlled radios, including SD radios.

So why not make this year an interesting and challenging one for yourself—why not use SD radio as a way to take the plunge into computer programming and learning a computer operating system other than Windows? It will, without a doubt, require an investment of time and money, but you'll end up with a set of practical skills that will prove to be invaluable in this new digital era of radio monitoring.

The GNU SDR Project

If you're serious about creating your own SD radio from scratch, then head over to http://www.gnu.org/software/gnuradio/ to begin your journey. GNU (pronounced ghu-noo) was started back in 1984 and has an interesting history (which you should definitely take some time to find out about, given its significant impact upon the "free software" philosophy supported by many reputable software developers). The GNU software radio project was designed to encourage open public development of SDR technology through the sharing of ideas and software and by providing access to SD hardware.

The site provides all the software you need to "build" the virtual components involved in a fully functional SD radio. It also offers a series of documents that take you through the various levels of training needed to use the software. If you've read my previous columns on SD radio you'll find that the material presented there will come together very quickly.

In addition to the software component, you need some hardware to build an SD radio. As mentioned in the previous column, one of the most popular approaches is to use a data acquisition card that plugs directly into one of a PC's expansion slots and then attach it to an antenna. One of the easiest off-the-shelf products for this application is the PCI-DAS4020 by Measurement Computing of Middleboro, Massachusetts (www.measurementcomputing.com). The only problem is that it costs $1,300 from the manufacturer, and while that may seem a bit steep, the trade-off is that you get a lifetime warranty with unlimited technical support, plus other benefits.

Luckily, there's an affordable alternative, called the Universal Software Radio Peripheral (USRP), which was developed for use in conjunction with the GNU SDR software. The USRP costs a reasonable $450 and contains the necessary analog-to-digital (A/D) converters needed to build an SD radio. The USRP lets you direct the digitized RF signal into your person-

al computer via a USB 2.0 port. Once that digitized signal is in your computer you can process it and detect it using the GNU software (or your own if you are able write it).

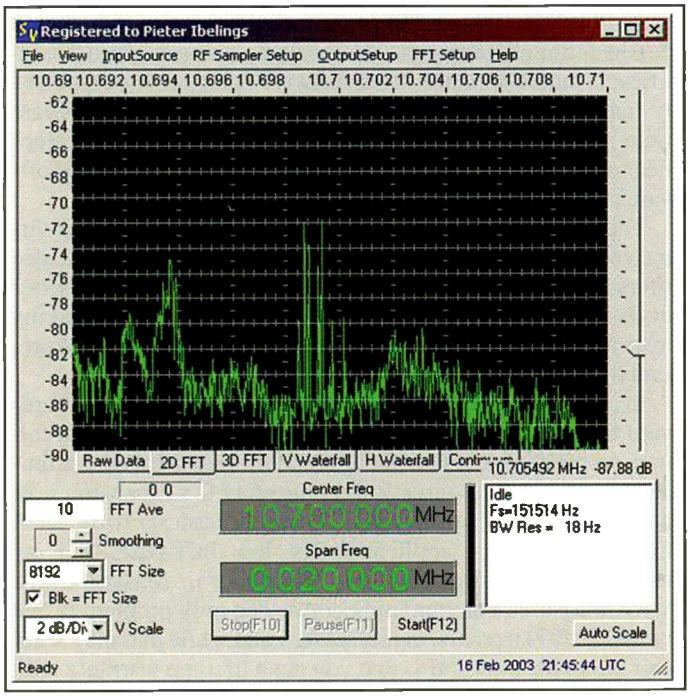
You will also need to purchase a daughterboard RF front-end for $50 that will enable you to tune from 50 MHz to 800 MHz; other daughterboards are being developed for other frequency ranges).

These items can be purchased online from Ettus Research of Mountain View, California (http://www.ettus.com/). The Ettus website also contains a downloadable USRP user and developer guide, product FAQ, and external links to user groups that support the product.

The GNU software project really is an excellent way to begin experimenting with SDR. It offers proven software and hardware components as well as a community of fellow experimenters who can provide technical advice. All you need to do in return is learn more about your computer and the LINUX operating system and be willing to tinker and experiment a bit. So what's stopping you?

Semi-Kits And Pre-Built SD Radios

So let's say that you want to jump on the SDR bandwagon, but don't want to do it from scratch as you have to with the GNU radio approach. But at the same time you don't want to simply buy an off-the-shelf SDR radio and just run it. At this time SDR technology is so new that there is only one semi-kit being offered for the radio monitoring crowd, but fortunately it's a very good one. This is the SDR-1000/ROE available from FlexRadio Systems of Austin, Texas (www.flex-radio.com). This represents the receiver section of the SDR-1000 ham radio HF transceiver. It is a fully operating general coverage and spectral analysis device that tunes from 11 kHz to 65 MHz (though a user supplied pre-selector is required for proper reception below 1800 kHz).



The SpectraVue software, used with the SDR-14 by RFSpace, displays this console. While it doesn't offer as many functions as the software supplied with the SDR-1000, it still contains a number of impressive features. It's primarily designed for spectral display, which it does very well. The ultimate user interface for SDR is still waiting to be written. (Photo courtesy RFSpace)

One design feature that makes this SD radio interesting is its use of a quadrature sampling detector (QSD). This electronic device samples an RF signal at four times the carrier frequency and directly converts the signal to its *I* and *Q* values. You may remember from last month's column that those *I* and *Q* values are needed to detect the intelligence in the signal when using DSP software. This technique allows for the efficient digital conversion of an analog signal directly from antenna—the ultimate goal of good SDR technology design—with an accompanying gain in signal strength as well.

The *I* and *Q* values are sent via cables to a personal computer's sound card, where they are detected using a Windows-based software package (supplied with the SD radio) and then converted to audio sound. You can then listen to stations using SSB, CW, AM, FM, and DRM (Digital Radio Mondiale) modes of transmission.

The software also provides you with a wide range of DSP tools with which to process the signal, including notch filters, noise blanker, and noise reduction. Likewise, you can use a variety of DSP filters that come at either standard widths for various modes, or you can set up custom variable size filters that can be set to a minimum of 25 Hz.

If you want to take the rig out for a "test drive" in virtual mode, you can do so by downloading the free console software from FlexRadio System's website along with the pre-recorded audio files. You can then use these files to check out the DSP capability of the software while listening to actual signals captured by the SDR-1000.

The semi-kit comes with all circuit boards full assembled and tested and a matching enclosure, which you have to put together yourself. It costs $799, which is about $75 less than the fully assembled "receive-only" SD radio. You can also purchase an auxiliary USB-based tuning knob if you want to have a more "traditional" feel to tuning the SD Radio.

Hobby SDR's Leading Edge

If you want to go straight to a built-from-the-ground-up SD radio that's designed specifically for the professional and hobbyist radio monitor, you should definitely take a look at the SDR-14 by RFSpace of Lilburn, Georgia (www.rfspace.com).

Described as a FFT spectrum analyzer and digital receiver, the SDR-14 is a true SDR as the "box" is primarily a high-speed A/D converter, which converts a broad spectrum (0 to 30 MHz) of RF signals into digital data and then processes that digital signal into the required *I* and *Q* format using a direct digital converter (DDC). The *I* and *Q* digital data created within the SDR-14 are then sent to a PC via a USB 1.1 connection. All of the spectrum display and detection functions are then performed on the PC using the Windows-based DSP software that comes with the SDR-14.

The software package, called SpectraVue, supports USB, LSB, AM, FM, WFM, CW, CWr, and DSB, plus DRM with third-party software. This software works directly with the PC's sound card to process the DSP, allowing you to create a number of different filters and noise reduction schemes, and to convert it into audio sound.

One of SpectraVue's strongest features is its ability to display the analog data it samples as Raw I&Q, 2D and 3D graphs,

Continuum (power versus time), and two types of waterfalls. While each of these displays can be used to tune individual signals, their most impressive value comes in when the SD-14 is used for spectrum analysis: You can literally view every single signal between 0 to 30 MHz that appears on your antenna, all at the same time using the waterfall display, or you can narrow the viewing spectrum down to any one particular band or portion of that bandwidth. For example, you could set up the software to monitor only the CW portion of the 14-MHz ham band and check for all the traffic that's found there. Or you can monitor those portions of the HF spectrum where shortwave broadcasters, utility, military, clandestine, or pirate stations are to be found.

Here's where the SDR-14 really becomes interesting: The software has the ability to make sample recordings of segments of RF to the hard drive in real time at a rate of 52 GB/day for a 150-kHz wide segment. The file created from that sampling contains *everything that has happened in that segment of frequencies for the duration of the recording.* The recording can be played back at any time through the SpectraVue software, and you can tune within that 150-kHz wide segment. It's just like actually tuning off the air! While tuning, you can also choose the appropriate demodulation modes or filters so you can analyze the recording for hidden signals and carriers you may have missed the first time you listened.

Again, say you wanted to record everything taking place within the CW portion of the 14-MHz ham band. You could capture a 24-hour period of events within that entire 150 kHz and be able to listen to every single transmission that was picked up by your antenna during that period in whichever order you wanted to. This is not like making an audio recording of one single frequency, hoping to be able to capture a signal that might appear there; instead you have a complete record of *all* the events that took place within that 150-kHz bandwidth and time period. Imagine the possibilities.

There many other important features of the SDR-14 of particular interest to serious radio monitors. For instance, there is built-in RF amplification of signals directly off the antenna, as well as the attenuation of strong signals, all of which is software controllable. You can also remotely control and listen to the SDR-14 across a high-speed network. You can directly monitor frequencies up to 200 MHz via an unfiltered/amplified antenna input, which can be used for listening to commercial FM, utility, and amateur radio stations. If you can build your own RF front-end converter, you can also use the SDR-14 for monitoring in the UHF/SHF regions.

You can also take the SDR-14 out for a virtual test run by downloading the SpectraVue software free from RFSpace's website along with the demo wav files that are available. The demo files have the 150-kHz recordings that will allow you to fully test the DSP and tuning features that are available using real-time signals.

The SDR-14 with its software cost $999 and is available directly from RFSpace or from Universal Radio, Inc. (www.universal-radio.com/catalog/commrxvr/0014.html).

Given the historic importance of both the SDR-1000/ROE and the SDR-14, I'm going to take a closer look at them in next month's column. I can't overstate how significant a breakthrough these products represent in radio monitoring methodology, one that will lead to radical change in the hobby. More importantly, the control codes for each of these SDRs are publicly available, so hobbyists can develop custom software applications to operate them. This in itself opens many opportunities for the hobby to revitalize itself by encouraging a greater degree of experimentation and the learning of new skill sets, like computer programming.

So ask yourself the question: Do I want to continue being an appliance operator who is dependent on the engineering skills of the radio manufacturer I purchase from, or do I want to create a radio that reflects my own monitoring needs by using my personal skills?

Next Month

In addition to our more detailed look at the SDR-1000/ROE and the SDR-14, we'll meet the people who developed these products. I may also take a second look at the USRP produced by Ettus Research for the GNU SDR software.

This is all leading up to a series of columns on how you can write your *own* software to use the features in each of these products with custom user interfaces you design yourself.

If you want to send me any questions, use my e-mail address carm_popcomm@hotmail.com. I cannot answer general questions on computers, but will be more than happy to help you with any issues raised in the columns. I'm also interested in any pictures you may have of your own computer-assisted monitoring station or stories about how you have built and run it.

I have placed a list of the columns that I've done over the past two years, along with a summary of the content, on my personal webpage at www3.sympatico.ca/joe_in_ey. There you'll also find instructions on how to purchase back issues of *Popular Communications*.

Please remember our troops overseas and give them your support. Visit the U.S. Department of Defense's official webpage, "Defend America." There (URL http://www.defendamerica.mil/support_troops.html) they provide an amazingly wide range of practical and useful ways you can directly help. Take some time to check out these resources and put them to use.

See you again next month!

by Peter J. Bertini, radioconnection@juno.com

Let's Talk Resistors—What You Need To Know!

In keeping with our May column's theme on vacuum tubes, this month we'll discuss resistors with an eye toward deciding what values and sizes are most commonly encountered when restoring vintage sets. We'll be discussing the small signal, low-wattage carbon types in this month's column.

In The Beginning...

Anyone who has worked on early AC radios is familiar with the odd resistor values and equally odd proprietary marking codes used by many radio manufacturers, such as Atwater Kent. This has created all manner of confusion for repair shops, which have had to rely on the generosity of various manufacturers in releasing data to identify often-cryptic color codes.

But what brought about the standardized values and color codes we're accustomed to today? Let's go back a bit to a time several years before AC radios were becoming readily available to the general public (around 1928 to 1931 for most metropolitan areas). Earlier, in 1924 to be exact, a group of radio manufacturers, the Associated Radio Manufacturers, was formed to control patent licensing among its members. The name was changed to RMA, or Radio Manufacturers Association, soon afterward. Besides navigating the legal quagmire of radio patents, the RMA was able to establish guidelines to standardize the manufacture of electronic parts, permitting interchangeability and the production by third parties of standardized parts for the industry.

In 1950, the RMA became the RTMA (Radio Electronics Television Manufacturers Association), thus maintaining its name synonymous with the current technologies. To keep its moniker in step with developing technology, and with increasingly world-based manufacturing, the RTMA again changed its name to the Electronics Industries Association in 1957. It's now known as the Electronics Industry Association (www.eia.org).

By the mid-1930s, most resistors followed the RMA color codes. The earliest standardized resistors used a Body End Dot (BED) color code, with the body color being the most significant digit, the end color being the second digit, and the color dot (usually located on the center of the body) being the multiplier. This soon changed to the more commonly seen colored marking bands, the convention still in use today. **Photo A** shows a few examples of early and later production 1000-ohm carbon resistors. I've included an example of the BED style to show you what they were like. These really get confusing when a resistor had two of the same colors for a given value, such as 99,000 ohms. The body and dot would be same color (white)!

Also, the BED system didn't conveniently allow for indicating parts' tolerances, the fourth indicator band on modern resistors. There were some BED resistors made where the tolerance was indicated by the color of the left end of the resistor, but I have never seen one. Resistors without a tolerance marking are generally 20 percent tolerance. In general, when purchasing modern replacements, the parts will be rated at either 10-percent (silver band) or 5-percent (gold band) tolerance.

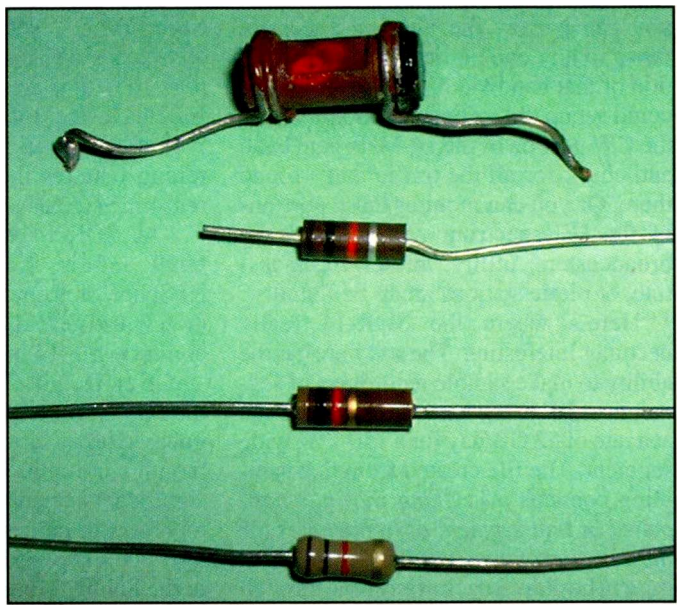


Photo A. The top resistor is a vintage "dog bone" style carbon rod resistor that uses the RMA Body End Dot color-coding scheme. The body is brown, for a first digit of 1, the end is black for second digit of 0, and, finally the center dot is red, for a multiplier of 100. Thus, we have 10 times 100, or 1000 ohms. This is a 20-percent tolerance part since there is no tolerance marking. The other resistors are more contemporary carbon composition types, with silver and gold bands to show 10 and 5 percent tolerance. The bottom resistor is a modern carbon film import, but notice the short leads! These resistors are all 1/2-watt parts.

Table 1 shows the EIA color code system for resistors. I've abbreviated some of the data, keeping it pertinent to what is most commonly encountered in vintage tube equipment.

Most resistor manufacturers sold, or gave away as promotions, simple cardboard color-wheel decoders. The International Resistor Company provided the "Resist-O-Guide" decoder, shown in **Photo B**. As a youngster, I found myself recognizing the more common individual resistor *values* long before I had memorized the color code, however!

Table 2 is a list of standard values of 5-percent and 10-percent tolerance resistors in ohms. This list has been shortened to show the more popularly used values you'll most likely encounter in vintage electronics.

Resistor Tolerances

Note the mathematical progression. For 10-percent resistors, the pattern is as follows: 1.0, 1.2, 1.5, 1.8, 2.2, 2.7, 3.3, 3.9, 4.7, 5.6, 6.8, and 8.2, and so forth for each decade multiplier increase throughout the entire range up to 22 Megohms. Higher values are made, but I've personally never encountered values exceeding 22 Megohms in vintage consumer equipment! Likewise, fractional sub-ohm values are also made.

Table 1. The EIA Color Code For Standard Value Resistors

COLOR	1ST	2ND	MULTIPLIER	TOLERANCE
BLACK	0	0	1X	
BROWN	1	1	10X	
RED	2	2	100X	
ORANGE	3	3	1000X	
YELLOW	4	4	10,000X	
GREEN	5	5	100,000X	
BLUE	6	6	1,000,000X	
VIOLET	7	7		
GRAY	8	8		
WHITE	9	9		
GOLD	-	-	0.1X	5%
SILVER	-	-	0.01X	10%
NONE	-	-		20%

The 5-percent values include those values and intermediate sizes of 1.1, 1.3, 1.6, 2.0, 2.4, 3.0, 3.6, 4.3, 5.1, 6.2, 7.5, and 9.1. This means that for any given tolerance resistor there will be an adjacent next value at the maximum deviation from the marked value for that particular resistance! There *is* rhyme and reason behind those resistor values.

How To Read Early Schematics

Here's something that always confuses beginners. Older schematics abbreviated the resistor value markings by using a short hand. This makes reading larger values, with many trailing zeros, easier. It also keeps the schematic drawing less cluttered. Today, you'd expect to see a resistor value shown as 22,000 or even 22,000 K or K-ohms on a drawing; or for a Megohm value resistor, it would be marked as 1 Megohm or 1 Meg, instead of 1,000,000 ohms. Earlier schematics used an M to denote the multiplier. This isn't for Megohms. This "M" is the Roman numeral 1,000, and is the equivalent of using a K-ohm or K value suffix!

Many drawings now use a European standard. Instead of showing a resistor as 2,200 ohms, or 2.2 K-ohms, the value is shown as 2K2. That avoids "lost" decimal point confusion and leaves no doubt as to the correct value.

Resistor Failure Modes

There are several failure modes for these devices. The higher value carbon composition resistors tend to drift upwards with age. This varies widely from set to set, year to year, and even manufacturer to manufacturer. I've seen sets where every resistor checks within spec, and then I've run across sets in which every resistor had drifted upwards and were well out of tolerance!

Resistors run at near maximum wattage ratings often overheat, and these usually have darkened in color and will usually read much lower in value. If a resistor has overheated, you need to do two very important things. First, consider that you'll encounter parts that were marginally rated from the factory and that after many years of use these parts have either failed or changed in value. This is a common fault for cathode biasing resistors in audio output stages. You'll have to determine, if the part was marginally rated, that the failure was reasonable given the operating life of the radio, or if the failure might have hastened by the failure of another part. For example, a gassy audio tube could draw excessive current through its cathode resistor, resulting in failure. The cause of the problem must be corrected. Second, for resistors that were marginal at best, you'll have to go to the next higher size wattage for the replacement, and perhaps use a more stable and heat tolerant metal-oxide resistor.

Another problem is noise. Carbon composition resistors are made from a filler and carbon granules that are compressed and sealed to make resistance. It's not uncommon for the internal electrical connections to become erratic with age, and these resistors will then generate

Table 2. Standard Values Of 5-Percent And 10-Percent Tolerance Resistors (In Ohms)

1.0	*10*	*100*	*1,000*	*10K*	*100K*	*1.0 meg*	*10 meg*
1.1	11	110	1,000	11k	110K	1.1 meg	11 meg.
1.2	**12**	**120**	**1,200**	**12k**	**120k**	**1.2 meg**	**12 meg**
1.3	13	130	1,300	13k	130k	1.3 meg	13 meg
1.5	*15*	*150*	*1,500*	*15k*	*150k*	*1.5 meg*	*15 meg*
1.6	16	160	1,600	16k	160k	1.6 meg	16 meg
1.8	**18**	**180**	**1,800**	**18k**	**180k**	**1.8 meg**	**18 meg**
2.0	20	200	2,000	20k	200k	2.0 meg	20 meg
2.2	*22*	*220*	*2,200*	*22k*	*220k*	*2.2 meg*	*22 meg*
2.4	24	240	2,400	24k	240k	2.4 meg	
2.7	**27**	**270**	**2,700**	**27k**	**270k**	**2.7 meg**	
3.0	30	300	3,000	30k	300k	3.0 meg	
3.3	*33*	*330*	*3,300*	*33k*	*330k*	*3.3 meg*	
3.6	36	360	3,600	36k	360k	3.6 meg	
3.9	**39**	**390**	**3,900**	**39k**	**390k**	**3.9 meg**	
4.3	43	430	4,300	43k	430k	4.3 meg	
4.7	*47*	*470*	*4,700*	*47k*	*470k*	*4.7 meg*	
5.1	51	510	51,00	51k	510k	5.1 meg	
5.6	**56**	**560**	**5,600**	**56k**	**560k**	**5.6 meg**	
6.2	62	620	6,200	62k	620k	6.2 meg	
6.8	*68*	*680*	*6,800*	*68k*	*680k*	*6.8 meg*	
7.5	75	750	7,500	75k	750k	7.5 meg	
8.2	**82**	**820**	**8,200**	**82k**	**820k**	**8.2 meg**	
9.1	91	910	9,100	91k	910k	9.1 meg	

Bold values are 10 percent; 20-percent values are marked in bold italics. The 20-percent tolerance value parts are now obsolete and are now only offered as 5-percent and 10-percent tolerances, or better. The 10-percent tolerance values are also available in 5-percent tolerances.

Photo B. Most resistor manufacturers provided a complimentary decoder to help decipher resistor values. This is an example IRC's Resist-O-Guide. Contemporary equivalents are computer programs, available as free downloads for Windows operating systems! They're more trouble than they're worth, however, in my opinion!

Photo C. These two Heathkit signal tracers have the "noise" feature to isolate parts that might be breaking down under operating voltage. I'll be doing a piece on troubleshooting by signal tracing in a future column, and I'll show you how to restore these nifty instruments as well!

Photo D. These simple meters are all you need to measure and test resistors.

electrical noise in the set due to microscopic arcing within the component. If one of these resistors is in the plate RC network for the first audio stage, you're in store for an earful of intermittent and loud static!

You'll also encounter the odd resistor that just goes completely open! This seems to be more common on the higher values, especially 1-Megohm resistors. Virtually every 1-Megohm resistor used to drop the target voltage on tuning eye tubes has gone open, and I've found other high-value resistors in AGC circuits that have also gone open.

Checking Resistors—And The *Real* Scoop

I recommend checking every resistor to assure that it's well within tolerance. My feeling is if a resistor has survived 50 years, it probably will go much longer. Yet others have noted that what seems to be a stable vintage resistor often will drift in value once it is disturbed or placed in operation. I always check resistors right in the circuit. Many restorers insist on lifting a lead to read the resistor, to avoid parallel paths in the circuit.

Here's the real scoop. For tube gear, there are usually very few instances where there will be a parallel path. If a resistor reads high in value, it is high in value, period. If it reads low, then look for a parallel path, or lift the lead to confirm the resistance reading. The majority of low-wattage carbon resistors are used for plate decoupling, grid biasing, or for dropping screen voltages. Unless there's a leaky bypass cap, and all wax capacitors must be replaced, there's usually nothing that will adversely affect the ohmmeter reading.

What To Use? What To Stock?

As I advised with tubes, start slow. I'd suggest stocking several of each for the 20-percent and 10-percent tolerance values shown in **Table 2**. Most suppliers offer inexpensive resistor kits in different wattage assortments.

For years I've stocked new old stock of recent manufacturer carbon composition resistors, as they became available surplus. I've surmised that the manufacturing techniques for producing carbon composition resistors has matured over the decades, and always felt that any made in the past few decades were probably reliable components. The carbon composition resistor is becoming scarce; the more modern equivalents are called carbon film resistors. These are much more stable and reliable than the carbon composition resistors and also offer much tighter tolerances.

Even better are the metal oxides or metal film resistors. I find I prefer these styles for several reasons, and I've been using the NTE replacement line recently. One nice thing about the NTE parts is that they have generous lead lengths, needed for the point-to-point wiring in early radios, as compared to the short leads usually found on the inexpensive imported carbon film varieties.

One thing's for sure, you'll probably find it's very difficult to fully stock every value needed, so it's generally easier to buy as you go along and build up your stock gradually!

Test Gear

Noisy resistors can often be found using a signal tracer that has provisions for applying a DC voltage to a component under test. These tracers, such as the Heath units shown in **Photo C**, have a "Noise" switch that applies a high DC voltage to the part. Any noise caused by microscopic internal arcing in the device

Photo E. No matter what system you use, having your parts sorted and stored in bins makes life a lot simpler!

is amplified by high-gain audio amplifiers in the tracer and can be heard on the internal speaker. I'll be doing a special column on using signal tracers in the near future and will show these techniques in greater detail at that time.

Either a vintage VOM (Volt-Ohm-Milliamp) meter, such as the venerable Simpson 260, or a more modern digital meter would be ideal for measuring resistor values (see **Photo D**). Vacuum tube voltmeters (VTVM) can also read resistances, but they are bit cumbersome for the task for two reasons: 1) they require AC power and 2) the VTVM probes must be switched to DC to read resistance.

If you happen to find a nice Simpson 260—and there are many out there, as they were the industry standard for many decades—be sure to open it and check for battery corrosion damage! If you own one, never store it for extended periods with batteries inside!

And, Finally, Storing Your Parts

My friends, no matter how much inventory you acquire, it's all for naught if you can't find what you need when you need it, or even if you no longer have any idea what you own. I've seen many old-timers with stacks of cigar boxes, with resistors stuffed in some over there, and maybe the caps in those boxes over there on the upper shelf. Having to dig through years of accumulation to find one specific part isn't much fun.

I avoided this pitfall by sorting resistors in plastic drawers (see **Photo E**). There are a few ways to do this. You can sort by linear parts values, starting with the lowest values and working towards the highest; or you can do as I did and sort by decade values. My drawer columns, top to bottom, pretty much follow the row values shown in **Table 2**. I have several sections for different wattages; and capacitors and other parts are stored in a similar manner. These drawers are in plastic cabinets in a large rotary parts storage system, which occupies a small corner of my shop. The system (see **Photo F**) is compact and fairly efficient, albeit a tad costly for the average home shop.

Zenith's Cobra Tone Arm—The Real Scoop!

Our February column fielded a reader's question about an unusual subassembly found in a Zenith combination console radio and phonograph that was equipped with Zenith's Cobra tone arm. I erroneously assumed the subassembly to be a phono-oscillator, which would broadcast the records to the radio. I'm going to close this column with further input from a couple of our readers. It sheds more light, and the correct answer, on the original question. First, here are some observations offered by reader Harold Cornelius:

I read with interest your comments on the Zenith 9H079R chassis. I'm working from memory only, but here's how I recall the system that Zenith used for a short time just after World War II.

The Zenith COBRA tone arm was an attempt to get away from the relatively heavy and stiff crystal pickups of the time. It does not directly generate an audio signal, instead it is simply a capacitor which varies when the needle is moved by the record groove undulations.

The 7F7 chassis contains an oscillator, with the pickup as one of the oscillator elements. This produces an FM signal, which is demodulated on the same chassis to derive audio, then sent to the audio stages of the radio.

The lightweight and good tracking of the COBRA pickup, unfortunately, was offset by drift in the oscillator/demodulator circuits. Zenith dropped the system after a short time in favor of the better crystal and magnetic pickups that were then appearing.

Philco took a different direction, with the Beam of Light pickup, using a lamp, mirror,

Our Readers Say *(from page 4)*

than you might realize. Jock did the right thing; checked the story and reported it. The fact that it's not a good news story is not my fault or problem. But it is our duty to tell the story.

As for the cover, I'll admit that it's a bit of a stretch (clever and eye-catching, though, don't you think?). And the next time NASA asks me to return to the moon, I'll remember to volunteer you, and I'll stay home and have an organic chicken dinner.

Leaking On BPL

Dear Editor:

In the July issue you made a comment about the changing of the guard at the FCC ["Tuning In"]. It seems to me that BPL interference issues cut both ways. If it can leak OUT, then HF signals can leak IN also.

Back in the early '90s, my ham friends teased me about the fact that I had worked in the two-way radio industry for 12 years and most likely had enough accumulated knowledge in my head to pass the No-code Tech exam, and how come I still didn't have my ham ticket? Well it worked. I went to a local hamfest and took the test and passed, much to my amazement.

Now a decade plus has passed and again I am challenged to upgrade to at least General class. I am passing along that challenge to all the other hams who still do not have HF privileges. If 80 percent of the active hams had HF capability, BPL would fail on its own due to all the HF activity and subsequent interference that would leak IN to the BPL system. Imagine the frustration that the BPL tech support people would have to endure on an HF contest weekend like field day, or your state's QSO party, not to mention the regular nets and special event stations! If you had an area with a high-density of HF-active hams, BPL would be a no-sell.

We hams do have the power to beat this on our own turf. K1ZZ and W2NSD (Wayne Green) have been saying this for many years; upgrade and use it, or lose it! Now more than ever, with the potential revenue from BPL driving it, we need to work much harder. I've challenged one of my cohorts to a gentleman's bet. By the time Dayton Hamvention rolls around in 2006 we will both have taken the test, him to get his ticket and me to upgrade to at least General. There's a dinner riding on this. But for the greater amateur radio community, there's much more at stake.

Craig, N3TPM
North Wales, PA

and photocell. That system was also trouble-prone and didn't last too long.

One other short-lived variation was a variable-resistor pickup used by Admiral. It employed a conductive-rubber element, which simply modulated a DC current to obtain audio. That one was even worse—the rubber quickly went bad.

In some respects, these systems were destined to be short-lived; they all used a non-replaceable precious-metal stylus such as osmium (some may have used sapphire), with a rather short life—especially when playing abrasive 78 rpm records.

Reader Ken Betsh shares these similar comments:

In the February, 2005 issue, I think you may be overlooking, or allowing the reader to misunderstand, a point on the Zenith sub-chassis on some post-war radio-phono combinations. That sub-assembly using a 7F7 and "float" mounted on a spring was used with a phono pickup that, as I recall, Zenith called a Cobra. The tone arm was of thin black plastic with a small "head" having a retractable, spring-loaded stylus assembly. The cartridge was a simple two- or three-turn coil, as I recall, against a vane to which the stylus was attached.

Photo F. All my smaller restoration parts and components are stored in this rotary plastic drawer storage system, available from Global Equipment Supply (www.globalindustrial.com/gcs/index.web).

My understanding, and I no longer recall from where this came, is that one section of the 7F7 dual triode was a supersonic oscillator that was frequency-modulated by the cartridge coil. I don't know if the second triode section was a detector, a pre-amplifier, or both. I do know that microphonics was a potential problem. As I recall, Zenith was not a "loctal lover." Also as I recall, the 7F7 was identical to an octal 6SL7, except for having separate cathode leads, but probably was less susceptible to microphonic problems.

I'm quite certain that the output of the 7F7 was an AF signal that went into the radio chassis [in the same manner as] the output of a crystal phono cartridge. Your description made me think of tuning the AM radio to an RF signal from the phonograph a la wireless phonograph days, and that doesn't match any of my Zenith recollections. The Cobra design was sold on the basis of eliminating (perhaps minimizing would be a better word) needle noise common to the old 78s. While part of this was probably the cartridge design that minimized vertical movement, I suspect the electronic circuits also rolled off the higher frequencies.

I grew up in the then-village of Huron, Ohio (next to Sandusky), along Lake Erie. A regular visitor and customer in the radio store and shop where I worked while in school was the owner of the first 100-MHz FM station to go on the air in Northern Ohio: WATG in Ashland. He and his family had a summer cottage along the lake near town. I remember him telling us how Zenith gave the station special "long" Cobras for their transcription/record turntables for publicity value, but they only used them for playing worn records. Transcriptions (remember the old 16-inchers?) and good 78s sounded better on most home receivers played with their regular equipment.

As I recall the Cobra never made the transition to LP and 45 rpm microgroove, at least not with the technology described above.

Thanks for your letter, Ken. Remember, if you've got a question about radio restoration, antique or classic radios, send them along. I can be reached at radioconnection@juno.com or Popular Communications, 25 Newbridge Road, Hicksville, NY 11801. See you again next month! ■

The Alaska Telegraph System *(from page 7)*

interference with radiowaves and electric wires. You can just imagine that the effect of a large Aurora display on 1,500 miles of open, bare telegraph wire would be considerable. The strength of the power in the system would fluctuate with the intensity of the Aurora. Sometimes the Aurora would carry a positive charge so great that the telegraph system could be used without any battery power from the various stations! The system would be fully charged just from the Aurora effect.

When the Aurora carried a great enough negative charge, the system would weaken or shut down completely and drain all the batteries connected to it. That meant that the affected telegraph system would come to life or increase power, and then turn off or decrease power as the polarity changed back and forth every 15 to 60 seconds. Meanwhile, the Signal Corps telegraphers struggled to get their important messages through. I wonder if they told the telegraphers about that problem in Signal School?

A Wireless System Grows Up!

As radio became more reliable and could cover greater distances, the landline parts of the system began to be replaced by wireless stations. By 1916, half of the landlines were gone, reducing the systems maintenance costs and giving Alaska more reliable communications. This is because the wireless stations could change frequency to reduce the Aurora effect instead of having to endure its havoc on all those exposed wires.

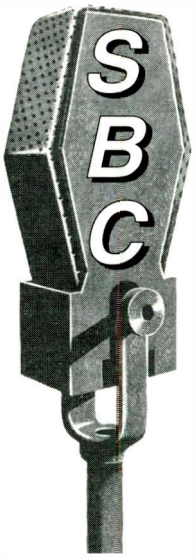
By 1930, the system consisted entirely of radio links and submarine cables. In 1936, the name was changed to the Alaska Communications System. By the time Alaska gained its statehood, the military parts of the ACS had been split off and operated independently.

In 1969, Congress passed the Alaska Communications Disposal Act and put the civilian side of the system up for bid. RCA Global Communications paid $28.5 million for the system, and then put $30 million into system upgrades. At the same time, RCA's pioneering work with long-distance satellites came on the global scene. RCA then renamed its Alaska operations Alascom, which serves Alaska's communication needs today.

As a very famous radio announcer has said, "And now you know the rest of the story!" ■

by Shannon Huniwell, melodyfm@dreamscape.com

Postcards From Some Sunshine State Radio Stations



"Dear, I'm extraordinarily confident of your ability to distinguish between some radio excursion and what is supposed to be our relaxing Florida vacation," Mom said softly to Dad. "Kate," he pledged, though her name is Hannah, "for you, I'll even refrain from DXing while on the drive down." But she knew better, and so insisted that we fly to the Sunshine State that spring of 1987. Because Dad loves Mom even more than he does broadcasting, he quickly concurred. Actually, at 18 and knowing it'd likely be our last family trip before I headed off to college and out on my own, I thought it would've been fun to have one last driving adventure with Dad twisting the car radio dial, me looking up probable stations in a falling apart *Broadcasting Yearbook*, and Mom enduring it all in her petite, sophisticated way.

"Your mother always reminds me of a young Kate Hepburn," Dad would tell me when explaining why we'd be doing things Mom's way, "and you know how *finely tuned* she is." Truth be told, I had no idea what the fine-tuning description meant, other than figuring Dad confused variable capacitance with romance. I had, however, witnessed several occasions where passersby mistook Mom in sunglasses for Hepburn.

"Might you offer rental cars *without* radios?" Kate queried the college-age customer service representative behind the Hertz counter at Orlando Airport. "She's just kidding," Dad laughed. "It's just a little family joke, isn't it Princess Shannon?" "Yeah, just an inside joke—and a long story," I shyly seconded to the cute guy who made me feel a bit self-conscious about being with parents in Florida during spring break week. A few minutes later, we were in the car and headed for Caribbean Beach, our Disney World hotel. Dad didn't touch a dial all the way there and asked me to "be patient" when I suggested we hear what Florida radio sounded like. Mom just smiled like the Cheshire cat.

Upon arrival and true to form, though, my father quickly unpacked his new Sony FM stereo/C-Quam AM stereo Walkman. I laughed when he dropped it as Mom came out of the bathroom after popping into her new Jantzen swimsuit. "Wowee!" Dad exclaimed with the Sony dangling from his head via the earphone cord, "You truly look like 50,000 watts! And may I add that those 50 kilowatts exhibit a nice directional pattern," he winked while gesturing to her shapely figure. She told Dad to cut it out before I was "influenced poorly," but she knew that such a candid display of love between "an old married couple" was part of the upbringing she and Dad intended for me—though they often humorously warned me about getting too serious with someone until I was at least 29.

The reverse side of this card is postmarked January 15, 1949, and its sender mentions nothing about WJNO. I don't know if this is the station's original Okeechobee Road studio/transmitter facility, which was razed after 1945 because of its proximity to an airport, or the North Flagler Drive locale, current at the time of the mailing. Interestingly, WJNO's 1230 kc dial position isn't noted, which defeats the card's promotional purpose. This type of postcard was often distributed as a "freebie" to tourists and snowbirds at various hotels, motels, and information booths.

In The Car By Nine In The Morning

Dad had convinced Mom to "authentically take it easy and sleep until noon," so the next morning he and I were in the car by nine with at least three hours to explore the area. Hunting daytimers and the old Class IV "graveyard channel" locals was his specialty at that point, so we tuned in Orlando's WONQ 1140 (Spanish), WVCF 1480 in Ocoee (which, according to the indicator light on Dad's Walkman, was broadcasting religious programming in AM stereo), Sanford's WUEZ 1400 (Big Band/MOR), and (also Big Band-formatted) WWLD 1190 dual-licensed to Pine Castle-Sky Lake, but actually in Orlando. We then drove by several studio and transmitter sites to get a look-see. "Great Sam Houston's Ghost," he yelled (a phrase he'd picked up from an engineer friend in Pennsylvania), "I forgot the darn camera!" That's why this month's column doesn't have any Florida photos. It does, however, feature two radio station-related pictures. They not only serve as Florida AM/FM historical graphics, but jumpstarted Dad into a new hobby sideline.

Not more than a mile away from one particular directional tower site was a big gathering in a shopping center parking lot. "Flea Market! Possible radio memorabilia!" my father called out, as if claiming all possible broadcast-oriented knick-knacks for us from afar. Because I was "chauffeuring" under the aus-

Imagine publishing a postcard touting an FM tower and cinder block transmitter shack! Perhaps because WJNO-FM's stick was officially the "highest structure in Peninsular Florida," station management sprung for the color printing costs with the idea that the locale might become an informal, drive-by, admission-free tourist attraction? Maybe, too, they figured folks would read the attractive sign, see the note about FM facsimile broadcasting, and get sufficiently interested in the technology to seek a fax demonstration at their local radio and appliance store. But, can you imagine someone advertising the status and whereabouts of such an unfenced/unguarded structure today? It'd be a big lawsuit waiting to happen!

pices of "getting valuable out-of-state driving experience," Dad pointed for me to "zip in there fast in case any other shoppers are looking for radio stuff." I would've been rather surprised if anybody else had been on a similar mission. With me a few paces back, my father race-walked from table to table repeating the question, "Anything radio? Anything at all radio?" as if chanting some Tibetan monk's manta.

The lively jaunt netted a half-dozen instances of vendors offering various and sundry vintage table radios, a pocket portable with corroded battery terminals, and a pair of Midland walkie-talkies. "Look, still got the instruction booklet, and one has its vinyl-leatherette case—minty!" an aggressive seller shouted as he held up his wares to my Dad jogging by. "Thanks anyway, but we're seeking *broadcast*-related literature or equipment," Dad annunciated towards the bedraggled-looking seller, who by this time had waved-off my as some sort of kook. "Buy this for 25-cents and conk him in the head, Missy," the man joked to me while displaying a warped yellow Wiffle ball bat. "That'll slow 'im down so you can catch up to him." The fellow at the next table, whose cracked 1950s Bakelite GE clock radio had been just as summarily rejected, facetiously took out a quarter and offered to purchase the bat for me.

My eccentric father did initially please one vendor, though—a heavy-set middle-aged woman wearing faded jeans, a huge orange tee shirt, and a rhinestone tiara. Slightly out of kilter and sticking to the faux wooden sides of her 1960s Ford Country Squire station wagon was a magnetic sign that proclaimed, "The Bargain Queen—Rare Collectibles Bought & Sold." Dad was pouring through a small cardboard box piled atop other lawn sale-quality goods on the Ford's saggy tailgate. "You say you want radio, I got radio," she assured us in a mish-mash accent that was probably that of a grizzled former-New Yorker turned wannabee southerner. "I tell ya it's either in the carton you're looking in or in one of those. Girlee, help your ol' man find a post card of a radio station or TV place or some such," the lady pointed when I caught up and she figured we were together.

It was literally the second card I flipped through. "Dad, how about this?" I smiled and handed him a linen postcard depicting the 1940s-era WJNO studio building in West Palm Beach.

"Told ya I got the goods," the vendor sniveled. "I'm a specialist."

"That you are, Madam," Dad replied while pulling a few dollar bills from his pocket. "How much you asking?"

"A fiver and that's a bargain cuz I'm the Bargain Queen, just like my sign says."

"But, surely you see in pencil here," Dad noted, "it says one dollar."

"Hey, you want radio, I got radio. Go find the same thing somewhere else."

"I don't suppose you'd take Confederate money?" he playfully wondered.

She looked up at him and disapprovingly squinted her eyes.

They haggled for another minute or two, but the "BQ" wouldn't budge, not until my father suggested we'd fork over the five if she'd simply throw in a second card for a penny.

"Sometimes I'm way too generous for a businesswoman, but okay," she finally shrugged.

Dad extended his hand and they shook on it. He smiled broadly. She just grimaced and then fidgeted with her crown. Strangely, it was his left hand that my father had used to seal the deal, as his right digits were wedged in one of the boxes he'd been flipping through. "Shannon, princess," he beamed, "hand the nice lady five dollars and one cent, regular U.S. American funds of course. Bargain Queen grabbed the dough. She leaned forward to see which card Dad would choose as our "bonus" to the WJNO postcard that I already had tucked safely in my little pink designer purse, popular with teenage girls back in the '80s. "And now may I show you my winning hand?" Dad asked "BQ" as if they'd been in an all-night poker game.

Dad's Winning Hand

"Come on Buddy, get on with it," she stated impatiently.

Ever so slowly, my father pulled a card out of the ratty box. "BQ" and I could see the address side where years earlier somebody had scribbled a note to someone, but we were still in suspense about the picture.

"Come on! You're killin' me here!" shouted the Bargain Queen. "Show me what ya got, pronto!"

In a single, slow, fluid motion, Dad turned over the card, image side up. Depicted on that 3 by 5-inch piece was one of the most wonderful self-supporting broadcast towers I'd ever seen, contrasted against a beautiful, wistfully partly cloudy blue sky. A billboard shown in front of the tall stick's dwarfed transmitter shack read "WJNO-FM, the Palm Beach Voice of South Florida. Simultaneously broadcasting *The South Florida Mercury* [newspaper], daily Facsimile publication." It represented a rare glimpse at late 1940s' frequency modulation and a tie with that era's flash-in-the-pan technology, FM Fax, as well as the perfect companion to the previously found WJNO-AM card. "Madam," father smiled at the vendor, "may I say

that this is a true gem. 'Would've gladly paid *$10* for this fine bit of radio memorabilia alone."

"You're hurting me. You're hurting me!" the "BQ" began chanting. "You rich Yankees are still ripping off us poor, but honest, southern merchants!" During this rant, she unzipped her fanny pack that had been pulled around towards her ample tummy. I imagined the apoplectic woman reaching for a Civil War derringer pistol, but it was a nearly spent pack of smokes she was after. With a classic scowl, the big gal nervously lit one she'd jammed between her choppers.

"A deal is a deal," Dad reminded her while handing me the WJNO-FM card for safekeeping in my purse. He started to paw through another postcard box, but "BQ" snatched it away from him immediately. "Uh, uh...no way!" she enunciated. "My shop is now closed, for lunch hour. The girl is welcome to browse some other time, but you're one of dem persons of non gratitude around here mister," came her pronouncement.

Dad glanced at his watch. "Princess, how could it be five of 12 already? Your mother will be wondering where we are," he remembered. "May I escort you to our carriage?" Dad asked. After a few steps on our way, he turned and caught "BQ's" eye. "Madam, we wish you well and hope that you'll consider giving up the nasty smoking habit, as it would be my great pleasure to return next year and bargain with you again for whatever other radio station literature you might offer."

"Ahhh," she waved through an exhaust of cigarette smoke.

Before slipping the transmission into drive, I reached into my pocketbook for the cards. Dad arranged them side by side on the surface above the dashboard. "Together again," he smiled. The sight of AM reunited with FM must have triggered thoughts of him and Mom, as my father suddenly began talking about mother and how pretty she looks in that red bathing suit.

The Origins Of WJNO-AM

Thursday of our weeklong vacation was planned as a mother/daughter occasion when Mom and I would do girl things in Disney World. Dad had hatched the plan because a few months earlier he found Mom teary about the inevitability of losing me to college and that "empty-nest" feeling that many mothers especially dread. That same Thursday, he was up very early and drove the 165-plus miles down to the Palm Beach area to investigate WJNO AM and FM.

To augment his investigative findings, all these 18 years later, I requested a historical sketch from the latest *Broadcast Pro-File* catalog by dropping a line to Jan Lowry (at 28243 Royal Road in Castaic, CA 91384-3028) and received detailed background on WJNO. Jan reports that an FCC construction permit (CP) for the West Palm Beach station was issued around Thanksgiving 1935 for a 100-watter at 1200 kilocycles.

Ownership of the new AM was held by George A. Hazelwood and John R. Beacham, with studios/transmitter to be located at the El Varano Hotel. A modification of the CP was issued so that the WJNO transmitter site could be built at 1415 Okeechobee Road, about a couple miles west of West Palm Beach. By the mid-1930s, most newly airborne stations were debuting with a vertical radiator, rather than the old-style horizontal wire between two supports. Consequently, WJNO built a 180-foot Lehigh-brand steel tower there, and went with the Hotel George Washington for its studios/offices venue. Its inaugural broadcast occurred on the last day of July 1936.

During the following year, WJNO affiliated with CBS and got the governmental nod to hike power to 250 watts. The move up didn't happen, however, until early 1938, perhaps so a new transmitter could be installed. Reportedly coinciding with the improvement was the enlarging of the transmitter building so that it could accommodate office and studio space, facilitating a move from the hotel. Around this time, "The Voice of West Palm Beach," took to the air at 7 a.m. and ran a bit past midnight. In 1939, the Commission agreed to let WJNO run 250 watts past local sunset. Besides undergoing several majority ownership changes, the station survived the March 29, 1941, North American frequency realignment and shifted from 1200 to 1230 kc.

This Is WJNO News Reporting From The Site Of A Crash Landing—Our Backyard!

In order to avoid such a newsflash during the heightened aviation activity of World War II, the station's studio/transmitter on Okeechobee Road was declared an air hazard around Halloween1944 as it was situated on an airport approach. In a rare wartime authorization, the FCC granted WJNO expeditious permission to construct new headquarters at 1500 North Flagler Drive, West Palm Beach. Though this studio/transmitter venue was prepared in a hurry and "dedicated on February 23, 1945," its predecessor "single story cement building and [Lehigh] tower" remained standing [and no less in the way of planes] until "a later date."

Hey, We Just Put Up That Darn Thing!

WJNO's new stick only had a pair of birthdays under its insulators when a 125-mile-an-hour hurricane jack-knifed it in September 1947. An emergency wire antenna authorization quickly blew in from Washington, D.C., so that the station would function while a replacement self-supporting tower could be fabricated and installed.

The 1950s were pretty routine for WJNO, save a sale and on again-off again affiliations with CBS and the novel Liberty Broadcasting System in Dallas, Texas. The year 1964 saw WJNO adopt a 24-hour middle-of-the-road (MOR) music format. Another ownership change was experienced by the West Palm Beach AM's DJs and other staffers in 1967. MOR tunes continued as WJNO's main fare. By 1970, national/international news and short features were a province of the ABC Information Network, though, and "AM 1230, Serving The Palm Beaches," dumped ABC and remarried CBS five years later. ABC Entertainment Network was invited to share airtime with CBS offerings in 1979 when WJNO switched to a "News/Talk/Information/Sports" format, after being acquired by Fairbanks Broadcasting Company. This organization eventually added ABC's then-new *TalkRadio* and NBC's *TalkNet* services to the lineup.

Dad's "Booster Station" Goose Chase

By the way, WJNO had been granted a power increase to 1000 watts daytime in 1973; night wattage went to 1000 in 1985. My father walked into WJNO in April 1987, just a month prior to it activating a very unique CP for a 380-watt "synchronous amplifier," or booster/repeater station, on 1230 kilohertz at

Eavesdrop On An Authentic 40th Birthday Broadcast

If you've got access to the Internet, you can travel back to 2:00 on the afternoon of May 18, 1962. That's when a WGN Chicago engineer pushed the "play" button on an AMPEX reel-to-reel machine that rolled the tape containing the legendary Windy City station's 40th anniversary special. It's several hours of worthwhile listening for any true radio history buff. Tune in via http://wgngold.com/ features/40th anniversary.htm.

Deerfield Beech, some 28 miles south of West Palm Beach. Dad presented our WJNO postcard to the person at the lobby desk—as if it were an FCC ID badge—and asked to speak with the chief engineer.

Apparently the technical staff (local and Fairbanks Corporate engineering) was down at the new "repeater" installation. Dad scribbled the receptionist's iffy directions, but nobody at WJNO seemed completely certain where the unique re-broadcast transmitter setup was or when it would debut. He buzzed south of West Palm Beach for a bit before calculating the time an extended foray into the dicey world of pinpointing radio tower venues (especially if the stick hadn't yet been erected) would likely consume. Concurrently, he recalled his promise to Mom about "taking his ladies out to the Disney colonial New England theme restaurant" that night. "Dang it to Sam Houston! Seeing that synchronous operation would have been better than a turkey dinner, but a promise is a promise," I imagine him saying as he committed to redirecting to Route 95 north.

When I told him that Jan Lowry had sent me the *Broadcast Pro-File* for WJNO, Dad immediately asked about the booster, which I told him became activated in May 1987. Three years later (as I was able to tell Dad), WJNO officials bought an AM on 1330 in Fort Pierce—recast as WJNX—in order to simulcast "The News Station of the Gold Coast" and extend the WJNO programming coverage. By 1994, the Deerfield Beach synchronous facility received an okay to go up to 880 watts during the night, though it cut back to 380 watts at sunrise, making it one of the unusual *higher at night than during days* AM authorizations. And a mighty rare synchronous amp to boot!

Pack Up Your Tower In Your Old Kit Bag

For the summer of 1995, the FCC granted WJNO a CP to move its transmitter/tower to Jog Road and 45th Street in West Palm Beach. The switch took almost two years to implement and, by that time, the studios/offices had been relocated to 1540 Latham Road. Shortly thereafter, the heritage calls were changed to WJNA so that WJNO, a well-known south Florida radio moniker, and the news/talk/sports format could be assigned to AM at 1040 kHz in Boynton Beach. (A quick aside: My Dad tells me there used to be a small daytimer called WZZZ on 1510 in Boynton Beach. Reportedly, it lost its license in some controversy. Anybody know the story?)

Newly branded 1230 WJNA was tapped to run easy listening output off a bird. Fairbanks sold its Palm Beach area AM/FM operations to Clear Channel Communications in 1998. WJNA (formerly the original WJNO) was spun off but was reacquired by Clear Channel within two years. Studios settled down (after several additional moves) at 3071 Continental Drive in West Palm Beach. The station's calls got changed to WBZT, and 1230's short-lived satellite-delivered standards format (as well as on again-off again CBS affiliation) went the way of the wind in favor of "brokered Spanish religion." In 2004, that was silenced to clear the schedule for a useful mix of self-help talk shows mostly snagged off the bird, though some are locally produced.

What About That WJNO-FM Postcard?

Its heading reads, "Peninsular Florida's tallest structure, 529-foot WJNO FM radio tower, just north of West Palm Beach. Broadcasting FM signal at 98.7 megacycles, 49,000-watts, covering Daytona Beach to St. Petersburg, and south to Key West. Designed for television." There was also that mention of transmitting FM facsimile text/pictures from the *South Florida Mercury* newspaper. Between the lines, radio historians can see that WJNO's FM investment was more of a way to get into the circa-1947–1948 FM fax craze or "crazette," when proponents—mostly newspaper execs hoping to save paper and delivery costs—realized that the general public would spend money to get a TV set, but not for an FM fax receiver.

Constructing a sturdy FM tower would also ensure the instant availability of a great place to attach a television transmitting antenna should an FCC TV CP come down the pike. In fact, WJNO secured an authorization for Channel 5. Apparently, its VHF antenna was quickly mounted on the WJNO-FM stick when WJNO-TV debuted in late summer 1954. This lucrative video property got cashed in a little more than two years later and recast as WPTV-TV. By then, the original WJNO-FM 98.7 had been long deleted, disappearing from even the most lackadaisical station lists by 1952.

When the fax craze fizzled, WJNO AM/FM ownership couldn't find evidence of sufficient southern Florida frequency modulation listeners to justify the FM transmitter's monthly utility bill. Nor were the station's executives confident of FM's ability to ever attract a saleable audience. In that circa-1950 assessment, they were hardly alone—and were actually about 25 years ahead in being able to distinguish between whether dumping a big-coverage FM was a good or bad decision.

Your Turn To Dig Up Some History

Remember, I'd love to receive any information that anyone may have on WZZZ on 1510 in Boynton Beach, Florida. Send your tidbits to me here at "Shannon's Broadcast Classics," *Popular Communications*, 25 Newbridge Rd., Hicksville, NY 11803. Until next time...*And so ends another day of radio history at* Pop'Comm. ■

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by Bill Price (who might once again be) N3AVY

Can The Internet Save A Ham License?

Stupid, stupid, stupid. And no—I don't get paid by the word, or I'd have put more "stupids" in there. Yes, it was some 10 years and four months ago, more or less, that I drove all the way to Gettysburg, Pennsylvania, to drop an application into the slot on the side of the FCC's Civil War Battlefield site for a last minute, hope-I-get-it-there-before-midnight slot-drop (as if they have a person stationed inside the slot to mark which ones arrive after the town clock strikes 12.

And when I got *this* license back, with its 2005 expiration date, I *swore* I would check it every month, making sure that I didn't let the 10th year of its term go blithely by without my being aware.

Well, I did. And under the old terms, my 90 days are up. Kaput. Kablooie. And you know, I have to this day never even LOOKED at the FCC's website. With all the research I do for my own edification and for my job, and how I can find what satellite has replaced which one, and when the spring and fall solar transients give us problems, and which ones are nearing the end of their useful lives, and all that (not to mention the interesting websites one finds in between the business-related information). Ahem. I said not to mention them.

Anyway, with all that, you would think that I'd realize that I could go on line and find the FCC's website, find a link to the amateur radio division, blah blah blah, and see if there was any hope for me.

And as a one-time hero of mine would say, "But, Noooooooooooooooo!"

No, indeed. I had resigned myself, literally, to being without that favorite callsign. In fact, I was about to contact the *USS Enterprise*, (the one that sails on the ocean, not the starship) because they once asked if they could talk me out of that callsign, and I was about to tell them I'd lost it forever.

But we have our turns of events in our lives, and just yesterday—not a moment too soon—I had one of mine.

A friend, a very good friend, who like Norm must remain anonymous because he values his privacy, has been corresponding with me about many things, from radio to mutual friends to handguns. At one time, I sought him out for advice on handguns, but more recently I've been doing the research while he's been delving into other areas, so this time I'm giving him the latest information on what bullet trumps what load at what distance under what conditions. We talk about RFI driving him crazy with remote control relays—just the same as we discussed some 25 years ago. We talked about house wiring techniques, surge protection, our favorite pets, and I was reminded not to bring my rats to visit because of his wife's aversion to rodentia.

"We continued on about other things. Old war stories about ham operation, his days as a broadcast engineer, my days as a shipboard radio operator. Things we would never tell other people."

And as we talked about various handgun permits and the reciprocity of concealed handgun permits, I let slip that my ham license had expired.

Because it's e-mail, I did not get an immediate reaction; however, in his reply the following day, I was admonished to act quickly.

"Too late," I told him. "As I remember it, I have only a 90-day grace period, and that was gone before I even remembered to check the expiration date."

We continued on about other things. Old war stories about ham operation, his days as a broadcast engineer, my days as a shipboard radio operator. Things we would never tell other people.

The following day he told me I had a *year's* grace period and that I'd better get on it right away. These are words from a friend speaking in my best interest, of course—not someone who knows what's best for me. So tomorrow (I would have done it tonight, but I'm writing this instead), I will see if the Internet can save old N3AVY and keep me from becoming just another "four."

That *is* a friendly old callsign. When it came to me one day in Pennsylvania, I did not immediately notice its significance. I was too busy seeing how it would sound in CW, which was my main mode, when all of a sudden it struck me. NAVY with a 3. How unique! And me, from the Coast Guard. I'd have had to be Russian to get U3SCG, so I guess it was as good as it could do.

And when I moved to General, and to Advanced, how careful I was to check the box that I wanted to keep that old callsign, thank you very much.

So even though I'll be in the Nation's capital tomorrow, and I do some business at the FCC, and even get access to their roof now and then, the folks I want to deal with are in Gettysburg. Can't even reach them by microwave, which is all we have on the roof of the FCC's headquarters right now. Oh, I could buy some C-band satellite air-time at wholesale, plug a mic and camera into the modulator at the uplink and talk nice to them, but there's no guarantee they'd even bother to tune in to watch me.

No, it's me and the Internet. No more paper and envelopes. Tomorrow, I look for that electronic Form 610 and find out if there will still be an N3AVY when you read next month's column, or if I'll be "just another 'four.' "

Wish me luck.

AOR SR2000 Frequency Monitor

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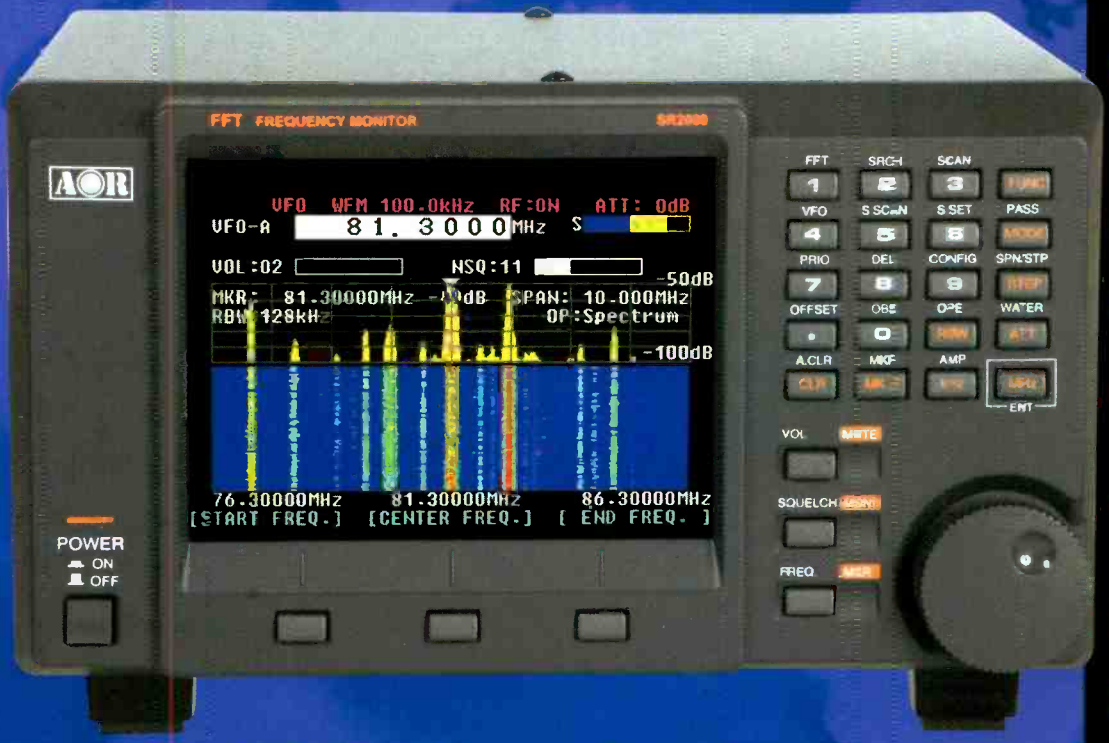

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