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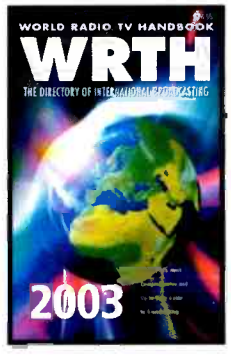

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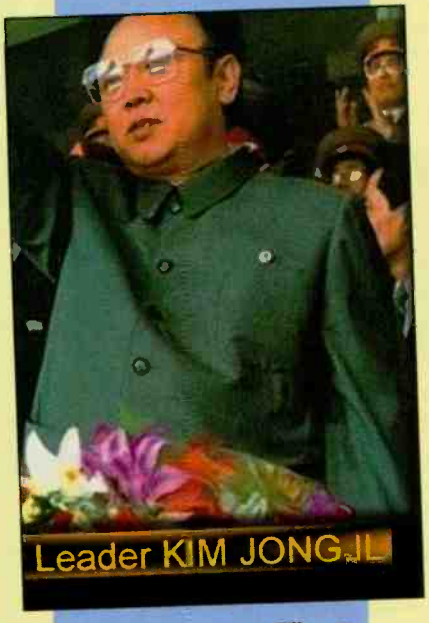

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Departments

On The Cover

Thunderbirds 3, 1 and 2 performing a Line Abreast Loop maneuver, as seen from inside the cockpit of Thunderbird 4. See them live at an airshow near you – and hear the action with Gary Palamara's article, "Airwaves And Afterburners" beginning on page 6. (Photo Courtesy USAF)

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tuning in

by Harold Ort, N2RLL, SSB-596

an editorial

Defying Common Sense

Give folks the proper tools to do their jobs—the education, training, time, computers, phones, paper, and pens—and most people will rise to the occasion by doing at least an adequate job.

Now trust me, if anyone knows it's not a perfect world, it's me. It seems like most things today have a built-in obsolescence. As soon as you plunk down that cash for your new 100-GB computer it's nearly obsolete. If you're lucky it'll be more or less trouble free for a *few* months—at least until the warranty expires. But by then it'll be time for a new machine anyway.

I like to think that I'm up to speed on the latest gizmos and technology, at least those that seem remotely useful to the average person. Although admittedly I'm not like many hip people who buzz, beep, and emit more tones than a Suma wrestler who's had too many baked beans.

There was a time when I wouldn't have *considered* having a cell phone, but I too have become a user. Now, mind you, not an abuser, but user. My daughter recently decided—partly because of New Jersey's new cell phone law that requires drivers to use hands-free devices—that it was time for a new cell phone. I think she *might* have kept her old cell phone a while longer had we been able to find a compatible adapter and hands-free headset/VOX device, but we're talking about a Uniden analog cell phone the size of my slippers.

So now she has a new dinky purse-size digital cell phone, complete with all the nifty features (and a manual the size of the *New Testament*), and I immediately grabbed her *old* phone. It's one of those prepaid wireless deals; a little inconvenient getting the "units" as they're called, but it's another good excuse to visit my local RadioShack for a few minutes, so to speak. My wife and I share another analog prepaid cell phone which we typically use for checking in, "Hi, I'm leaving now," or "Hi, the traffic was bad, I'll be home shortly"-type of call—and for emergencies.

Would you believe that we can't even find an *adapter*, let alone the actual earpiece or headset, for *that* newer phone? I was talking with the salesperson in one wireless store and he was awestricken that the phone even *worked*; after all it *was* two or three years old. "Works for me," I said. But that was a week *before* a trip up the New York Thruway.

Call me crazy, but I don't like giving any state or the federal government, whatever the agency, any more money than they *already* have and don't spend properly. So it's with good reason that I set the cruise control to the 65-mph Thruway speed limit. (It was 55 a few years ago, so I consider 65 a gift from the Governor). Near Kingston, New York, mile marker 92 to be exact, this jetmobile was breaking the sound barrier and on my rear faster than you could say "This guy's a maniac and shouldn't be driving a Big Wheels for Fred Rogers." This fellow really stood out in a crowd, so I made the decision to report him before he took out someone who was doing an otherwise safe lane change at a reasonable speed.

I expected a very simple 1-2-3 process to dial 911 and reach the State Police. Wrong. After three tries and hearing a recorded message saying my call couldn't be completed in this area, I dialed 411 and got an understanding operator who not only gave me the number of the State Police, but actually put my call through. Contact made, finally—but only after about five frustrating minutes as this fellow aggressed his way up Route 87 and far into the distance.

While this might not be considered a true "emergency" to some folks, the fact is reporting this character could save lives—perhaps your kid or parents. *Then* of course it's a real emergency. That aside, the cellular system failed us, and failed bigtime. As a consumer and alert licensed, insured driver, I did everything in my power to make a simple 911 call and got nothing.

When we returned home I contacted the TracPhone folks, my pre-paid cellular

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POPULAR COMMUNICATIONS

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our readers speak out

letters to the editor

Each month, we select representative reader letters for our "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>.

Editor's Note: As you know we typically don't print long letters, but in this case we made an exception because of the hot-button topic of Freebanding. I invite your comments about this volatile issue. If we receive an adequate number of responses we'll devote an equal amount of space in a future issue of Pop'Comm.

Living In La La Land

Dear Editor:

I just read a letter from Robert Anstee in Montreal, Quebec (February 2003). Robert is absolutely correct about the Freeband being the place to be to enjoy great communications. The 40 CB channels have become a wasteland of distorted echo mics, overdriven linears, foul-mouthed truckers, and know-it-alls who think they own the frequencies. I'm old enough to remember when CB was a well-run band. But those days are sadly gone forever.

Like Robert, I too do not wish to become a part of the Ham-snob fraternity. I have listened to the Ham bands for many years, and don't get me wrong, I have heard hundreds of great QSOs, especially on 80 and 40 meters, and I know a few Ham operators who are great people. Even they recognize and despise the Ham snobs. But I have heard far too many of the Ham cliques made up of the biggest snobs in the country. And I will be the first to admit that I cannot get the code down. Believe me, I have tried!

So the next best thing is the Freebands. Are they illegal? Of course they are. We all know this fact very well. The issue is not right or wrong, rather what is fair to the taxpayers who (in very big numbers) want these frequencies opened. Keeping them illegal is pointless. Just like the 155-mile talking limit. We are in a band that allows world-wide communications. You just don't tease a child with his favorite candy then eat it all in front of him while he stands there and drools. Only the minds (?) at the FCC could make these rules and expect everyone to abide by their examples of stupidity.

The Editor's response was, "What if a commercial wireless company decided to use an unused CB frequency? Is that OK"? The answer is, "NO"! The CB frequencies are assigned by the FCC to the Citizens Band Radio Service. But the Freeband frequencies are NOT assigned to any service! The FCC says that those frequencies can be used by the Forestry service and some Military. But these are Federal agencies that can use any frequency they please. And they do. They certainly have enough choices. One day they are at 27.675 MHz, the next day they are at 8 MHz; and the next at 13 MHz. But they are not actually "ASSIGNED" to any of the Freeband frequencies. I have heard the military playing war games at Fort Indiantown Gap, Pennsylvania, on my scanner in the 49-MHz cordless phone channels. And I am sure that they are NOT ASSIGNED to those frequencies.

When Robert used the words "UNUSED FREQUENCIES" it was intended as meaning, UNASSIGNED FREQUENCIES. You interpreted them as meaning, "Not being used at the moment."

You also said, "What's viewed as unused in your area might be busy another 1,000 miles away." That is not true. In my 40 years of Freebanding, I and thousands of Freebanders have talked to and clearly heard DXers from 500, 1,000, 3,000, and more miles away. And the only communications we have ever heard were those of other Freebanders. If we can hear a CBer 1,000 miles away using 5 watts AM, we would most certainly be able to hear any other services on that frequency as well. That is just common sense.

The legal issue is always your answer when confronted with Freebanding. You never mention how professional and courteous the operators are. Or how we use radio etiquette, including "Q" signals, readability, and signal reports. How there are never any cliques. How we never have arguments. Or how there are never any echo mics or foul mouths. Or how radios always have quality sound, etc. There will always be the occasional bad apples, just like the Ham bands have had from time to time, but it is rare. It's a whole different world from the 40 CB channels. It is truly challenging and loads of fun. But all you can say is how illegal it is.

We know it is illegal. You don't need to explain that point. So is breaking the speed limit. But we all do it every day, believing there is nothing wrong with it. A policeman could tell us how unsafe it is and what the penalty is, but what's the point? We'll do it again anyway still believing that it's perfectly okay. At least Freebanding can't crash into and kill somebody.

The issue should be how to fix the problem. If the FCC would just wake up and realize that the Freeband is being used by those of us who want to use the radio with all the professionalism and fun that Ham operators have enjoyed for years, they could assign those frequencies to the CB Radio Service as a tested, licensed, and controlled band, just like the Ham bands. Including the use of AM, FM, and SSB up to 100 watts and with no set channel spacing—the way Citizens Radio should have been all along.

Unfortunately this will never happen because tremendous pressure from Amateur Radio groups has the FCC in the palm of their hands on this issue. Amateur operators have enjoyed the privilege of having almost 230 MHz of the spectrum to play on. And they still are holding a grudge over losing the 11-meter band, with its minuscule 440 KHz, 45 years ago. They look down on us CBers as if we are the commoners and they the royalty. And frankly, we are getting sick and tired of their holier-than-thou, high horse attitudes. The FCC needs to wean themselves from the Amateur special interest cliques.

We are human beings too, and we want to have a little fun with the hobby, just like you enjoy. You have 230 MHz to be King on. All we want is a measly 2 MHz to enjoy the hobby from 26 to 27.990 MHz. Leave the 40 CB channels as the are. They are a lost cause.

And I don't want to hear any of that garbage about a buffer zone between 11 and 10 meters. The other countries on this planet that LEGALLY use the ASSIGNED frequencies down to 26 MHz and up to 27.991 MHz FM have had no problems co-existing with 10 meters.

Let's face it, if it's not illegal any more and becomes FCC-controlled in the same manner as the Ham bands, it will become a fun hobby and not a crime. And everyone is happy, except for the Ham-Clique-Kings of course.

David
Pennsylvania

Airwaves and Afterburners

50 Years Of Airshow Excellence With The U.S. Air Force Thunderbirds

By Gary Palamara

The radio goes silent as a lone F-16 crosses back and forth across the field, at a low altitude. This inspection tour will add 10 more minutes to a flight that's already been more than three hours long. It's a Wednesday afternoon in September with bright blue skies and mild temperatures cover the northern Philadelphia area. Off shore and far out to sea, the remnants of a late season hurricane are now producing strong winds coming from the North. Suddenly, the tower frequency comes back to life...

"Willow Grove Tower, Thunderbird 8, on Uniform..."
"Willow Grove"
"Request a low approach final for runway three, three"
"How low, Sir?"
"300 feet"
"Thunderbird 8, approved for a low approach final, runway three, three"
"Click, Click"

All is quiet once more, as the glimmer of a sleek Air Force fighter can be seen approaching just south of the field. After landing, the tower will switch the jet over to a ground control frequency for taxi and parking instructions.

Normally, meetings and media events follow within a short time after the advance team's arrival, but not today, not this Wednesday. Amid the excitement and anticipation of this air show weekend, a feeling of solemnity hangs over this day. Today, the world is remembering other jets, other flyers, and other cities here in the northeast, for this is not just any Wednesday afternoon in September. This is September 11, 2002, the first anniversary of the attacks on America.

The Willow Grove Naval Air Station is located just north of Philadelphia in Bucks County, Pennsylvania. For the next five days, this community will be the home away from home for one of America's premiere military air demonstration teams, the U.S. Air Force Thunderbirds. On this, the 18th weekend of their 2002 season, it was my pleasure to follow the Thunderbirds, taking a look behind the scenes at the making of a Thunderbird Air Show.

For more than a year, key members of this joint services Naval base and the surrounding community have planned for this weekend. At times it looked as though the long history of aerial demonstrations might have come to an abrupt end after the tragic events of September 11, 2001. But now air shows are back, and the military performances take on an even greater sense of purpose.

As Old As Manned Flight Itself

Aerial demonstrations are an art form as old as the airplane itself, and 2003 marks several milestones in the long history of aviation. On December 17, the world will celebrate the 100th anniversary of powered flight. In the past 100 years, an aviation industry that began with two brothers from Dayton, Ohio, has taken man to the Moon and beyond. During that time, public demonstrations of the airplane have played an important role in both promoting and advancing the science of flight.

In May of 1953, five decades after the Wright brothers triumph at Kitty Hawk, North Carolina, the newly organized U.S. Air Force decided to officially create the 300th Aerial Demonstration Squadron to project Air Force pride and patri-

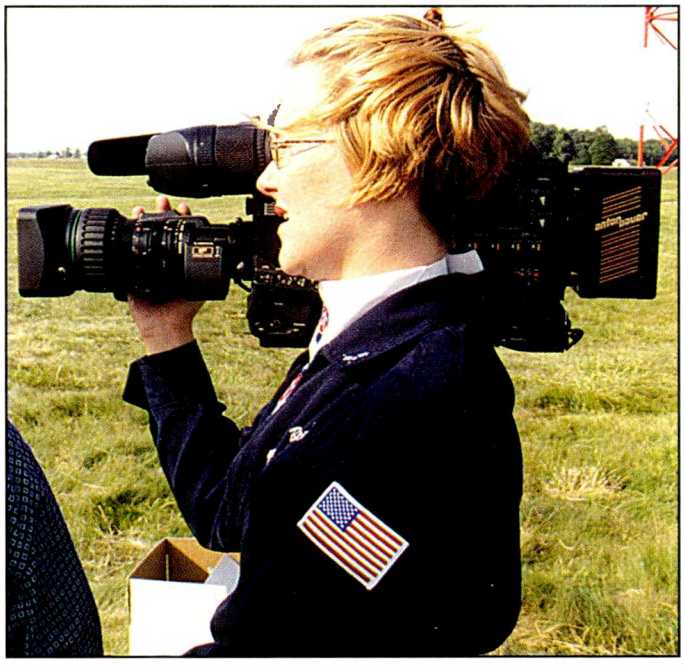
otism around the world. They called the team the Thunderbirds, after the mythical war bird of Native American folklore.

For the U.S. Air Force Thunderbirds, spreading good will and promoting the U.S. Air Force has always been job one. With today's all-volunteer military, recruiting and retaining qualified personnel is also part of the Thunderbird mission. It is estimated that the Thunderbirds are directly responsible for 70 to 80 percent of the new recruits who join the Air Force each year. Before every air show, members of the Thunderbird team administer the enlistment pledge to the local recruits eager to join the Air Force family.

The world famous Thunderbird insignia. (USAF)

Thunderbirds' History

Fifty years ago, the Thunderbirds' first home was Luke Air Force Base, Arizona. The team flew the Air Force frontline fighter of the day, the sub-sonic Republic F-84G. Then, in 1956, the team changed over to the super-sonic North American F-100. At the same time, the Squadron also moved to their current location at Nellis Air Force Base, eight miles northeast of Las Vegas, Nevada. To date, the team has flown six different types of jet fighters and currently flies the Lockheed/Martin F-16C/D. While the Thunderbirds have seen many changes in technology over the past half-century, the one constant through the years has been the Thunderbird people.



Videographer is one of the many career fields required by the USAF Thunderbirds.

More than 120 men and women make up today's Thunderbird team, representing some of the best personnel in the Air Force. The eight pilots assigned to the squadron, the four support officers and enlisted members who make up the team come from more than 25 different career fields throughout the Air Force. As a guard against complacency, officers spend only two years as a Thunderbird. To allow for a smooth transition, 50 percent of the officers change each year. Enlisted personnel are constantly rotated in and out, but spend no more than three to four years with the team.

The normal air show season runs from March through November of each year (see "2003 Thunderbird's Schedule" for a complete listing of all scheduled air show dates). During a normal season, the Thunderbirds will fly at least 65 air shows. While most performances are on the North American continent, from time to time the Thunderbirds have also spread their unique form of patriotism overseas. To date, the team has visited all 50 states and more than 65 foreign countries in the past 50 years.

In addition to the Thunderbirds, the U.S. Navy aerobatic team, the Blue Angels, the Canadian Snowbirds, and countless civilian performers perform in air shows across North America that draw between 15 and 18 million fans annually. While many in the crowd seem content to just watch the fast planes and daredevil aerobatics, others along the flight line get a heightened sense of being "plugged in" to the action. A growing number of air show fans are using multi-band radio scanners to listen in to the aircraft chatter.

Monitoring The Shows

Long before a performer takes "center stage" in the sky, those of us with radios know who will be arriving and when they'll appear at show center. But while air show monitoring may be fun, officially, it's frowned upon by the performers.

Even before 9/11, all three military demonstration teams in North America—the Thunderbirds, the Blue Angels, and the Snowbirds—have had an official policy of not publishing any information about their "private" communications. Unofficially, the coordinating organization for civilian air show performers, the International Council of Air Shows, (ICAS), has had the same policy. The reason sited most often for non-disclosure is the safety of the teams involved. All of that being said, I didn't bother to ask my Thunderbird hosts to hand over a list of specific frequencies used for air shows; the answer would have certainly been, "No."

Actually, there is little reason to discuss specific frequencies with team members because much of the current air show information is readily available from other sources. Bill Hoefer's column, "Plane Sense" has explored air show specifics in the past (see *Pop'Comm* August 2001). Tower frequencies for any airfield, as well as some of the most common frequencies used by the air show performers can also be found on the World Wide Web. In addition to having all of this direct information, those who are new to the hobby soon learn that part of the fun of scanning comes from hunting down new frequencies. Finding elusive transmissions adds an element of excitement while listening in to the traffic. Respecting the team's privacy, my discussions with the Thunderbird's communications personnel were only about general topics.

Good listening starts well in advance of the actual air show dates. Normally all of the scheduled performers and static aircraft are on site by either Thursday or, at the latest, Friday after-

noon. Local tower and approach frequencies are used for the arriving performers and static aircraft. Taxi and coordination frequencies are buzzing with excitement for several days prior to the air show, as the static displays are moved and set up well in advance of opening day.

For a normal weekend air show, the Thunderbird advance team will arrive at the site on Wednesday. The advance team consists of a single, two-seat F-16D flown by the team's narrator, Thunderbird 8. Riding in the back seat of the plane is the luckiest enlisted man in the Air Force, the aircraft's crew chief. The job of this two-man advance team is to check out the field setup and make sure that all of the logistics are ready for the entire team to arrive on Thursday.

Depending on aircraft availability and field location, the support group travels via two C-130 Hercules or one larger C-141 Star-lifter aircraft. They will normally arrive around mid-day on Thursday using the radio callsign "Thunderbird 14." For the Willow Grove air show, the Thunderbird support team numbered more than 70 people! While at first the large number of support personnel who travel with the team might seem excessive, the Thunderbirds have a pretty high standard to uphold. In the 50-year history of the team, no scheduled air show has ever been cancelled due to a maintenance problem.

Once the support team arrives, they hit the ground running and prepare to recover the inbound F-16s. With all the activity on the ground reaching an organized frenzy, a Thursday afternoon "air show" begins once the F-16s are within radio contact. For locations two hours or less from Las Vegas, the Thunderbirds will sometimes perform aerobatic maneuvers upon arrival. But, even without fancy aerobatics, seven red, white, and blue F-16s flying in formation is a special sight.

Normal tower frequencies are used as the Thunderbirds approach and make a quick circle around the field. At military field locations, you can look for the team to use frequencies in the UHF band. One by one the jets will pitch up and enter into their landing pattern after arriving. Once on the ground, the team will taxi to their assigned parking locations, awaiting crew chiefs.

Friday: Media Day!

Although some media events might take place on Thursday, Friday is the official media day for the Thunderbirds. While most of us can only dream of ever taking a flight in a Thunderbird F-16, for several lucky members of the media this dream will become a reality. At most locations, the Thunderbirds pre-arrange to fly one or two reporters on a once-in-a-lifetime, one-hour-long flight in the back seat of either Thunderbird 7 or Thunderbird 8. Reporters must submit applications several months in advance and also pass a physical examination on the day of their flight. But, if all goes well, they will become real members of the Thunderbirds—at least for an hour or two.

Thunderbirds 1–7 at rest on the Flight Line.

WCAU reporter Bill Baldini interviews Left Wing pilot, Thunderbird 2, Maj. Douglas Larson just prior to taking a one-hour media flight.

On Friday the Thunderbirds and other scheduled performers will generally fly a practice air show. Friday is also the first opportunity to hear most of the real air show activity on the radio. Friday activities generally mirror the weekend demonstrations. While a practice air show allows the Thunderbird crew to become familiar with their new surroundings, it also gives air show workers and invited guests a chance to view the Thunderbird demonstration under less crowded conditions.

An Early Day On Saturday

Saturday is the first of two public performances for the weekend and the Thunderbirds' get an early start on the day. At 7 a.m., members of the team meet with representatives of the FAA for a routine safety briefing. Soon after, the aircraft maintainers arrive back at the flight line and continue to polish and prep the F-16s. Hours before the formal show begins, the Thunderbird Communications team is hard at work, fine tuning last minute details and keeping track of the overall air show schedule.

At the heart of any Thunderbird air show is effective communications. Pilots need to be able to talk with each other and to the ground. The support personnel need to communicate among themselves and other key members of the Thunderbirds team need to interface with the Tower, weathermen, and the air show coordinator, or "Air Boss." In addition to the RF communications, the Thunderbird air show also uses

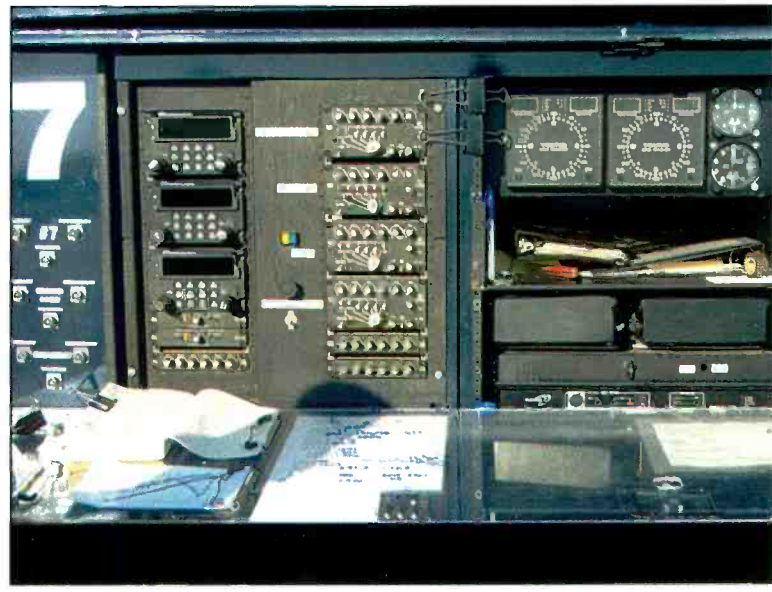
both music and narration to pump up the crowd. With such an important task at hand, the Thunderbirds travel to each location with an 8,000-pound, red, white, and blue communications trailer, affectionately nicknamed "Christine."

The Thunderbird Communications Trailer in action during the show.

Christine has state-of-the-art everything! At most air shows, the crowds can number 100,000 people or more and stand along a half-mile long flight line. The Thunderbirds bring a complete sound system, capable of delivering music, narration, and cockpit announcements to the masses. Three pre-programmed digital mini-disk players provide all of the music used for the tightly choreographed show. The music is mixed-in with live narration and occasional plane-to-plane communications before being sent to the power amplifiers and out to the crowd.

The Com Trailer audio mixing station.

Along with all of the audio equipment, Christine carries wind speed and direction measuring devices for up-to-the minute monitoring right on the flight line. Three combination V/UHF radios allow team personnel to monitor and talk to everyone involved with the air show. Since it takes several operators to work the communications trailer, signal routers allow each operator to select exactly what he or she needs to hear during the show.



(Left to right) V/UHF radios, signal routing, wind speed, and wind direction can all be monitored during a Thunderbird air show.

Cutting Edge Technology

In addition to talking on frequencies for the Air Boss, Control Tower, Ground, and Thunderbird Net, the Com crew also monitors the aircraft communications between the Thunderbird pilots. In the air, Thunderbird 1, the leader of the team, uses a discrete VHF frequency while he calls out each show routine like an NFL Quarterback. At the same time, the two solo pilots coordinate their maneuvers using their UHF radios. All six Thunderbird pilots can hear each other, using their on-board combination V/UHF radios.

Once the show begins the ground crew gives constant feedback to the pilots about current wind and weather conditions, as well as providing a valuable real-time critique of the teams' performance from a show center perspective. In the event of changing weather conditions or an emergency, the communications team can respond immediately with the needed information.

A Data Link system is the newest addition to the communications equipment used by the Thunderbirds. Aboard each of the F-16s are at least two small video cameras: one facing forward, one looking back at the pilot (the two-seat F-16s have three cameras). These video images can be recorded aboard each aircraft using specially designed video recorders, housed on the left side of the plane. Later, the videotapes can be used to review any portion of an aircraft's performance.

In addition to the on-board recordings, each aircraft is capable of digitally broadcasting not only video and audio signals emanating from the cockpit, but they can also provide the ground crew with a complete look at the aircraft's in-flight data. Aircraft speed, altitude, direction, and various other parameters of an

aircraft's attitude may be monitored or recorded on the ground, in real time.

At air shows where local television stations request this service, or at events with large screen TV-type projection, the Thunderbirds can provide an in-cockpit view of any one of the six F-16s used for the show. The Com folks can also switch the video output signal from cockpit to cockpit, all in real time, during the show! This cutting edge technology makes you feel as if you're right in the cockpit with the team!

At take-off time minus three hours, it's time for the Thunderbird maintainers to perform a last-minute flight line check. Each of the aircraft crew chiefs fire up their birds and do a complete engine and communications evaluation. On the rare occasion that even a minor problem develops with one of the six F-16Cs, Thunderbirds 7 or 8 will be called upon to perform their back-up function.

While an F-16 may be one of the best fighter aircraft in the world, it is after all still a machine—not so with the people who fly the plane. Each Thunderbird pilot is specifically trained for a unique position in the Delta formation and no two positions are the same. If a pilot can't fly on a particular day due to illness, with safety in mind the Thunderbird team will fly one jet short, rather than try to substitute a "new" pilot for the ailing comrade.

Squadron Operations Officer, Thunderbird 7, Maj. Glen Lawson perhaps signing an autograph for a future Thunderbird?

Thunderbirds 1–4 wow the crowd with a 36-inch separation "Trail" formation" (USAF)

With all of the final checks out of the way, and with time to spare, the Thunderbirds are ready and so is the crowd. Once the flying begins, the audience loses all sense of time as the six red, white, and blue F-16s soar and dive in perfect synchronization. After 45 minutes of beautifully choreographed and breathtaking maneuvers, the flying is complete. After touching down, the Thunderbirds will taxi to their assigned parking spots at show center with the same precision used in the air. A billow of white smoke comes from the rear of the six fighters as the team leader calls for the engines to shut down. Then suddenly, all is quiet, except for the cheering of the crowd.

After The Show

The pilots exit their aircraft, stand at attention, and salute their audience. The flying may be over, but there is a chance for the Thunderbirds to meet the public as they head for the crowd line. This is when the pilots get to answer questions, sign autographs, or perhaps shake the hand of a future Thunderbird.

Following the crowd line visit, the Thunderbirds gather for a post-flight debriefing. The first show day of the weekend has come to a close, but tomorrow they'll do it all over again. Sunday is another demonstration and another chance to put a smile on someone's face. Again tomorrow, the crowd will sense the pride that is within every member of the Thunderbird team.

The Thunderbirds will generally depart the air show location early on Monday morning, with Thunderbird 14 trailing the F-16s by about an hour. On rare occasions the entire team will fly directly to the next performance site, but normally the team will head back to Nellis for a brief rest. From time to time, one or more of the Thunderbird pilots will make a side trip along the way to scout out a future air show location or to conduct other Air Force business. Tuesday of each week is a down day for the squadron and a chance for the team to relax a little. On Wednesday morning, everything starts all over again—a new location, and a new air show. It's been going on this way for a half a century!

When you are around the Thunderbirds for any length of time one thing becomes clear: they really enjoy doing what they do. If you ask any member of the team if they are heroes, they'll say, "No." They say, "We are not the best—just representing the best." However you look at it, the men and women who make up the current Thunderbird organization, and the thousands of others who have come before them, are an asset to the U.S. Air Force and important to America. For the thousands who will join the team after this historic year, may they always remain forever young.

Catch The Excitement

In 2003, the Thunderbirds will be celebrating their 50th anniversary at an air show near you. Why not join in the fun? For more information about the Thunderbirds and for any last minute schedule changes, you can visit the Thunderbirds website at <www.airforce. com/thunderbirds/index.htm>. An in-

A close-up view from inside the cockpit of Thunderbird 4. (USAF)

depth video, called "Reach for the Sky," featuring the 2000 Thunderbird team is available from Mountain Lake PBS and can be found on the Web at <www.mountainlake.org>.

Special thanks to the following: Lt. Col. Richard G. McSpadden, Jr., Capt. DeDe Halfhill, SSgt. Katherine Garcia, SSgt. Brian Bahret, SSgt. Christopher Gish, SrA. Don Yates, and the entire 2002 USAF Thunderbird team. Also, thanks to the public relations group of NAS Willow Grove and Mountain Lake Public Television.

Editor's Note: Gary Palamara is a freelance writer with a love of aviation. From 1968-72, he worked with the Armed Forces Radio & Television Service while serving with the U.S. Air Force. For the past 30 years, he has been a freelance broadcast engineer. Gary is also an amateur radio operator, AF1US. Reach him via e-mail at <morningstar@monmouth.com>. ■

2003 Thunderbirds' Schedule

March
15-16 Luke AFB, AZ
22-23 Tyndall AFB, FL
29-30 Davis-Monthan AFB, AZ

April
5-6 March AFB, CA
12-13 Wilmington, NC
26 Greenville, SC
27 Patrick AFB, FL

May
3-4 Ft. Lauderdale, FL
10-11 Barksdale AFB, LA
16-18 Andrews AFB, MD
24-25 Pope AFB, NC
28 USAF Academy, CO
31 Myrtle Beach, SC

June
1 Columbus AFB, MS
7-8 Mankato, MN
14 Whiteman AFB, MO
15 Sheppard AFB, TX.
21 Sioux Falls ANGB, SD
22 Grand Forks AFB, ND
25 Eielson AFB, AK
28-29 Elmendorf AFB, AK

July
3 Battle Creek, MI
5-6 Peoria, IL
12 Missoula, MT
13 McChord AFB, WA
17-20 Dayton, OH
23 Cheyenne, WY
26 Selfridge ANGB, MI
27 Grissom ARB, IN

August
9-10 Hickam AFB, HI
16-17 Chicago, IL
23-24 Otis ANGB, MA
30-31 Quebec, Canada

September
1 Toronto, Canada
6-7 Nellis AFB, NV
11-13 Reno, NV
14 Mt. Home AFB ID
18 Andrews AFB, MD
20-21 Wichita, KS
27-28 Janesville, WI **October**
1 Tucumcari, NM
4-5 El Paso, TX
11-12 Ft Smith ANGB, AR
18-19 Salinas, CA
25-26 Edwards AFB, CA

November
1-2 NAS JRB New Orleans, LA
8-9 Daytona Beach, FL

by Gordon West, WB6NOA

Radio Comms That A City Might Want—Just In Case!

Mention "CB radio emergency response team" to many city or county radio communications directors, and they may either yawn or simply roll their eyes. Sad to say, many ham radio operators who have organized into emergency response groups have also been met with a city's lukewarm reception and the proverbial, "...If we need you, we will give you a call."Active CERT team

Yet when I travel the country, I sometimes find the *smaller* cities making the best use of CB radio operators and REACT teams, along with amateur radio operators serving as storm spotters right alongside paid city staff dispatchers. I find it is usually the smaller cities, counties, or boroughs, which might not have an endless communications budget, that make the effort to integrate volunteer radio operators into their emergency communications plan. And when I further analyze the success of volunteer radio operators serving a city, I usually find a city-paid staff member who is either an avid ham radio operator or CBer, or this same person has been tasked with the responsibility of building up a cadre of volunteer radio operators.

Unfortunately, not every city may have a ham within its communications division, nor does every city have a budget for a disaster specialist who can make good use out of all of us in radio land wanting to work side by side with their paid professional communications officers.

Two small FRS radios that also receive 24-hour NOAA weather broadcasts.

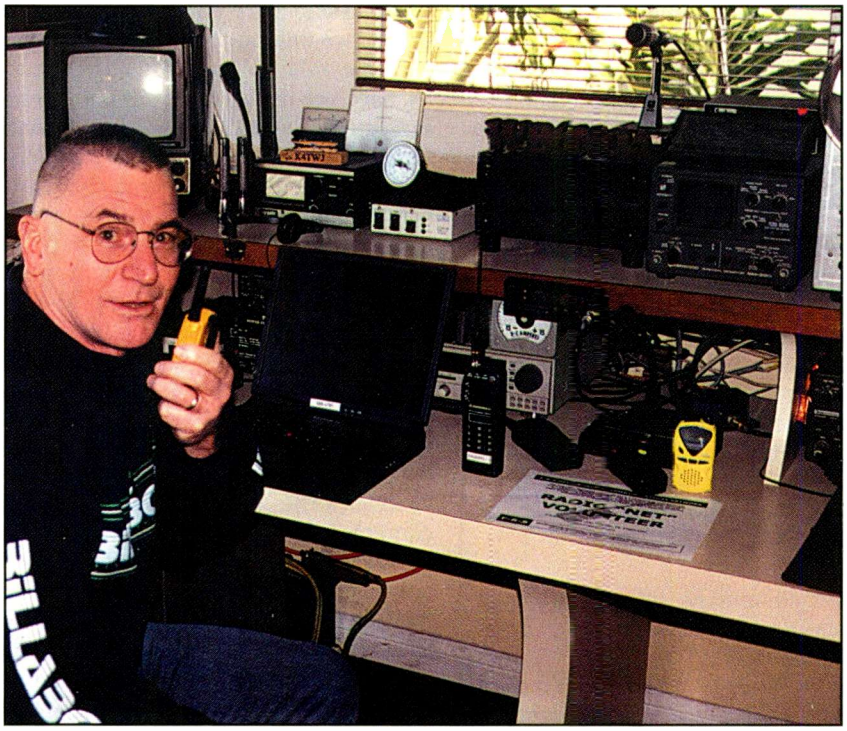
The Citizen's Emergency Response Team Program

Lately, some enterprising city disaster plan coordinators have discovered grant money available from the federal government. The money may be part of Homeland Security, or it may be from FEMA for the establishment of a Citizen's Emergency Response Team (CERT) program. And guess what? Maybe even YOUR city has a CERT ongoing program. This makes for an "easy sell" for your emergency communicators to see some training, certification, recognition, and maybe *action*.

The CERT program is aimed at training a city's residents to become self-sufficient for several days after "the big one." Active CERT teams have recruited volunteer block captains who are involving more homeowners into their local CERT program. They become the link between "the locals" and city emergency personnel who would manage resources to handle a particular emergency, whether it is a California earthquake, Florida hurricane, or Midwest tornado.

The most practical and inexpensive radio to allow residents to talk to their neighbors as well as to get a signal down the street to their block captain would be the half-watt Family Radio Service transceivers. Your neighbors can buy a *pair* of them for under $30. And if they have been given the word to come up on a specific channel after the big incident, the block captain has instant contact to nearby residents that might be buried under rubble or stuck down in their storm shelter. While a particular block may have been decimated by whatever the cata-

Here's a combo GMRS and FRS full-featured handheld radio.



This block captain keeps FRS radios ready for any emergency.

Block captains can map check-ins on an FRS/GPS system. →

strophe was, the little FRS radio may still provide a means for calling out for very local help.

But everyone must agree ahead of time on a specific FRS channel. No tone required—just turn the radio on and see who else might hear your short-range radio call.

In order for the program to work using these little FRS radios, constant drills between residents and their block captain are needed. If they sit idle for more than 6 months, the batteries are drained dead by "soft touch" technology on the turn-on circuit. The inexpensive FRS radio continuously pulls many microamps of current out of the little AA or AAA batteries, even when turned off as part of the on/off transistor turn-on circuit. Plus regular training as part of a CERT program between block captains and local residents with their FRS radios on a certain channel, at a certain day of the month, will help reinforce "radio ready" when the big one hits.

The block captains will need more than a little FRS radio to signal out to REACT or hams using more powerful equipment. The obvious answer is the low-cost, combo GMRS/FRS equipment that is proliferating right now.

Many personal communication experts polled at the recent Consumer Electronics Show indicated that they are dropping many of their "me too" FRS radios and going with the more powerful GMRS/FRS radio sets. The hot topics about GMRS are its dramatic improvement in communications range plus its 22-channel capabilities, over only 14 channels with low-cost, low-range FRS equipment.

The range issue of GMRS equipment is really heating up. Manufacturers first claimed three miles, then five, and now eight miles, made possible by "...combining a new RF circuit and antenna matching system." This extra range is probably because most GMRS sets offer a BNC antenna jack capable of sending the signal up coax to any UHF omni or beam. One antenna company, Antenna World, has a fine line of UHF antennas that would work quite nicely with any GMRS set.

Better Battery Life

Manufacturers of GMRS equipment were also touting better battery life at CES. No doubt they are switching from nickel cadmium over to nickel metal hydride, and the typical GMRS handheld is now bigger to hold larger battery capacity.

Legitimate, licensed GMRS repeater systems would be a smart way for block captains to join up and take part with that repeater user group. Some REACT GMRS repeater systems are actively searching for more emergency communicators, especially those who might serve as block captains and will carry out FRS comms on the interstitial FRS channels.

But the same GMRS-licensed repeater owners and operators are *very* concerned about the proliferation of GMRS radios on simplex frequencies going on the air *everywhere* without proper FCC licensing. When I mentioned the licensing issue to GMRS manufacturers, they all made it clear to me that all their instructional books point out the need for accomplishing the FCC licensing process. Their eyes would then go "half-mast," which is a probable indication of the frustration of trying to deal with the FCC licensing process online, or the fact that these days no one buying "high power FRS" (actually GMRS) is going to go through the license process.

But the best bet is to link up with a REACT group that may have an old grandfathered GMRS license and repeater pair to handle the relay between the low-power FRS equipment, through the block captain, and to a dedicated emergency communicator up the line.

This "up the line" connection is the ultimate step that would then take GMRS simplex or repeater traffic and route it on yet another frequency pair back to a volunteer at the emergency operation center. Many times this is an amateur radio link on either the 2-meter or the 70-centimeter band. It could also be a digital link using ham radio packet or PSK-31 emission. But the ham link is probably one of the best ways to avoid interference from adjacent cities because there are numerous 2-meter and 70-centimeter repeater and simplex frequencies to give

everyone plenty of elbow room when the big one hits and reports start coming in over the air.

An Emergency Scenario

Let's say a water spout spirals in from the Gulf and sucks up one residential block of old homes north of Bourbon Street. The CERT-trained residents are basically okay, brush themselves off, and know to go to FRS Channel 3. They first talk among each other and no one appears injured. However, they hear faint cries of patrons that are underneath the rubble at a popular watering hole one block away.

The block captain comes on the air with a very loud signal on FRS Channel 3, likely coming from the more powerful GMRS radio equipment. The block captain may need to talk further away from the microphone because FRS is only 2-1/2 kHz bandwidth, and GMRS is 5 kHz (plus and minus these values on the air). The block captain receives the faint signals from over a block or two away, collects the condition reports, and then switches the licensed radio system onto a simplex or GMRS emergency frequency monitored by the local REACT team. REACT handles that report, plus others coming in from other block captains, and transmits on ham radio to the emergency operation center two miles away.

Meanwhile, the hams running the center have pre-drilled for multiple incoming reports, and they specify alternate frequencies to go to for further transmissions. This keeps the emergency call-in ham frequency open for new traffic. The 2-meter band is usually the favorite among hams taking part in this type of scenario because anything on 70 centimeters would desensitize little GMRS or FRS receivers. Two meters, 6 meters, or the 222-MHz ham bands would work, as well as 1270 MHz.

Everybody gets in on the action without overloading any one communications channel. The more powerful GMRS equipment on an outside antenna working on the seven authorized FRS interstitial channels for FRS/GMRS use can certainly hold the channel because of their shear signal strength. Responders could even employ a UHF antenna to further increase reception of the private citizens in other directions using inexpensive FRS radios.

The availability of FRS equipment at rock-bottom prices, plus the need for just a little training, can put these tiny communicators in a very special class during an emergency. When the big one hits, I doubt that a couple of kids playing radio down the street are going to be using their equipment to clutter the airwaves. I bet the FRS channels get mighty quiet.

Remember, only FRS Channels 1 through 7 will work with licensed GMRS equipment that may also operate on these interstitial frequencies. GMRS operators must remember to talk well away from their GMRS microphones so as not to "chop out" other receiver pass-band on the narrower RX FRS equipment.

If block captains regularly train with local residents with FRS radios, as well as train with their REACT or ham counterparts in the EOC, the entire communications program will work well.

Get Involved

Find out how you can help be part of the solution when "the big one" strikes. Check out the following websites for more information.

<www.reactintl.org>
<www.rkleef.com>
<www.gmrs-info.com>
<www.crestcom.org>
<www.prsg.org>
<www.antennaworld.com>
<www.fema.gov> ■

FRS No Business Proposed Rulemaking

Emergency communicators working with their community fully embrace the intended purpose of the Family Radio Service: short-range "family type" communications. Certainly protecting a family is well within the FRS scope.

But many emergency groups using short-range FRS may be finding a clear channel more difficult because constant business use on a particular channel is spilling over to the neighborhood a few hundred yards away. This could be a car dealership using FRS like an intercom, or a local supermarket keeping track of employee communications, or maybe a warehouse conducting all of its activities on one of the 14 FRS channels.

Now that FRS equipment may tie into voice-operated headsets and offers drop-in battery recharge pockets, low-cost FRS equipment is fast becoming a business radio alternative to what would be 1-watt equipment in the low-power industrial (LPI) market.

"I can equip 10 of my sales personnel with FRS for the price of one low-power industry handheld," commented a sales manager of a local car dealership. "FRS equipment is also much more sophisticated than a tough-to-get land mobile licensed radio system. Here I have 14 channels, 38 CTCSS full decode tone selection, and a 1/2-watt out on UHF easily covers my five acres of new and used cars," he added. He then showed off his radio "grid" where everybody has specific channel and tone assignments, common channels, an emergency channel, and a channel directly to the sales manager.

But this elaborate business application of FRS may be disrupting the intended purpose of nearby families members employing it for strictly personal use. The problem has become so large that the Industrial Telecommunications Association (ITA) has submitted a petition to the Federal Communications Commission to prohibit regular businesses from using FRS frequencies.

"Overcrowding of FRS spectrum by business use is depleting the usefulness of FRS for family and friends, especially in emergencies," commented the ITA in a story for *Mobile Radio Technology* magazine. "ITA wants the government to prohibit business use because the FCC did not originally envision it in the FRS band," added the ITA. The FCC has released RM-8499 in WT Docket Number 95-102 to amend Part 95, with the comment period already closed.

But I am surprised the issue of the more powerful GMRS on the seven interstitial frequencies did not come up as another major problem plaguing FRS users on those first seven channels. I'd estimate that only one out of 500 handheld GMRS equipment buyers actually completes the FCC licensing process. The online processing for a radio license has become so complex, and requires older search engines, that most end-users simply give up in frustration. Online FCC processing is even frustrating to licensing bureaus when they try to sort out faxed sample paper forms, including instructions, which don't necessarily agree with what is seen at the FCC universal licensing service. With no new business use licensing being accepted for GMRS operation, I wonder what is going to happen next to these valuable UHF interstitial and regular channel pairs.

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When you buy your Bearcat 785D state-of-the art Digital Capable Trunktracker III package deal from Communications Electronics, you get more. The GV means "Great Value." With your BC785D scanner purchase, you also get a **free deluxe scanner headphone** designed for home or race track use. The Bearcat 785D has 1,000 channels and the widest frequency coverage of any Bearcat scanner ever. When you order the optional **BCi25D, APCO Project 25 Digital Card** for $299.95, when installed, you can monitor Public Safety Organizations who currently use conventional, trunked 3,600 baud and mixed mode APCO Project 25 systems. APCO project 25 is a modulation process where voice communications are converted into digital communications similar to digital mobile phones. You can also monitor Motorola, EDACS, EDACS SCAT, and EF Johnson systems. Many more features such as S.A.M.E. weather alert, full-frequency display and backlit controls, built-in CTCSS/DCS to assign analog and digital subaudible tone codes to a specific frequency in memory, PC Control with RS232 port, Beep Alert, Record function, VFO control, menu-driven design, total channel control and much more. Our CEI package deal includes telescopic antenna, AC adapter, cigarette lighter cord, DC cord, mobile mounting bracket with screws, owner's manual, trunking frequency guide and one-year limited Uniden factory warranty. For maximum scanning enjoyment, operate your scanner from your computer running Windows. Order Scancat Gold for Windows, part number **SGFW** for $99.95 and magnetic mount antenna part number **ANTMMBNC** for $29.95. Not compatible with 9,600 baud APCO digital control channel with digital voice, AGEIS, ASTRO or ESAS systems. For fastest delivery, order on-line at www.usascan.com.

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Frequency Coverage: 29.000-54.000 MHz., 108.000-174 MHz., 216.000-512.000 MHz., 806.000-823.995 MHz., 849.0125-868.995 MHz., 894.0125-956.000 MHz.

The Bearcat 895XLT is superb for intercepting trunked analog communications transmissions with features like TurboScan™ to search VHF channels at 100 steps per second. This base and mobile scanner is also ideal for intelligence professionals because it has a Signal Strength Meter, RS232C Port to allow computer-control of your scanner via optional hardware and 30 trunking channel indicator annunciators to show you real-time trunking activity for an entire trunking system. Other features include Auto Store - Automatically stores all active frequencies within the specified bank(s). Auto Recording - Lets you record channel activity from the scanner onto a tape recorder. CTCSS Tone Board (Continuous Tone Control Squelch System) allows the squelch to be broken during scanning only when a correct CTCSS tone is received. For maximum scanning pleasure, order the following optional accessories: **PS001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95; **PS002** DC power cord - enables permanent operation from your vehicle fuse box $14.95; **MB001** Mobile mounting bracket $14.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached $19.95. **CAT895** Computer serial cable $29.95. The BC895XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited Uniden warranty. Not compatible with AGEIS, ASTRO, EDACS. ESAS or LTR systems.

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10 Priority Channels • Programmed Service Search
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Frequency Coverage:
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by Rich Arland, K7SZ

power, and products

MURS: The Final Frontier, Plus Checking Out GPS, Batteries, And More

If you have been following this series since the first of the year you'll realize that there is no single perfect, end-all communications system that addresses *all* of your needs. Rather, you must look to several communications services to provide the communications blanket that you will need to stay in contact with your family and friends and to fulfill any emergency communications commitments you may have during times of crisis. "Mix and match," if you will.

Over the last three months we have investigated several of these communications systems, including ham radio, 27-MHz Citizen's Band, Family Radio Service, and General Mobile Radio Service. There is one more we should look at, MURS (Multi-Use Radio Service), a narrow-band FM VHF service that consists of five channels appropriated from the 154-MHz VHF (FCC Part 90) business band segment of the spectrum. RF power output is limited to 2 watts with no repeater use authorized. Although power output is limited there is no limitation on effective radiated power (ERP), which means you can use gain/directional antennas with MURS equipment. Finally, there is no station or individual licensing requirements involved with this service, making it similar to 27-MHz CB and FRS.

The MURS Evolution

MURS is an "emerging" service that has yet to mature. The FCC only recently approved the reallocation of the five business band channels to MURS, and there are very few people currently using this service. MURS is the "VHF Citizen's Band" with a slant toward the business end user. As more users populate this band, MURS will develop into its own and evolve into a viable option for those not wanting to invest the money into a GMRS license but desiring more communications flexibility and coverage than the 500-mW FRS radios can provide. You should definitely look into obtaining some MURS gear to augment your communications arsenal.

Gadget Freak? Who's A Gadget Freak?

Face it—anyone who plays in the radio hobby is a gadget freak. You all know I'm right. Yeah, okay, try to convince somebody else you're not a gadget freak, but it ain't gonna work on me! One thing I've noticed is that most people involved in the radio hobby also have one or more other hobbies in addition to their radio affliction, such as photography, model railroading, RC model aircraft, or astronomy, all of which are "gadget happy" hobbies. We all collect stuff, no matter which hobby we primarily enjoy.

One gadget that is an absolute must in today's world is a *quality* handheld Global Positioning System (GPS) receiver. GPS is a very accurate way to locate any place on the face of the earth using a series of orbiting GPS satellites and a GPS handheld receiver.

Cobra's microTALK PR4000 WX is their top-of-the-line GMRS handheld transceiver. Is GMRS in your emergency communications box?

For the uninitiated, GPS works likes this: The GPS receiver receives information from several of the orbiting GPS "birds," and by using some mathematical algorithms computes, to within a few meters, the *exact* position of the receiver, including altitude above sea level. Current GPS receiver technology accomplishes this within a matter of seconds!

There are several high-end ham radio handheld transceivers (HTs) and cell phones that employ an internal GPS receiver. However, I prefer a stand-alone HT GPS unit. It provides greater flexibility and is not powered by another piece of gear. You can couple a GPS receiver into a standard V/UHF FM transceiver to provide the precise location of a mobile or portable unit during emergencies. This is called the Automatic Position and Reporting System (APRS), and has been successfully used terrestrially and in near space aboard the Space Shuttle. APRS is gathering quite a following within the Amateur Radio and EMCOMM communities.

The applications for APRS involving emergency communications (EMCOMM) are very broad. APRS-equipped mobile, portable, and emergency landing zone (LZ) sites can assist emergency response teams and planners in positioning their communications assets for the best possible coverage and usefulness. APRS software is freeware and available at various sites on the Internet. Interfacing hardware between the GPS receiver and the transceiver can either be homebuilt or purchased commercially at reasonable cost.

Operation is ultra simple. Hook everything together, turn it on, and get out of the way! At predetermined intervals the GPS unit will transmit information to the transceiver, which will broadcast it to an APRS repeater. Anyone on frequency with APRS software running in his or her computer (which has to be attached to the radio) can "see" the actual location of a

mobile/portable amateur station overlaid on a map. Now, is that cool, or what?

For more information on APRS, consult the ARRL *publication APRS Tracks, Maps and Mobiles, A Guide to The Automatic Position Reporting System* (#7741). Check it out at <www.arrl.org/shop>.

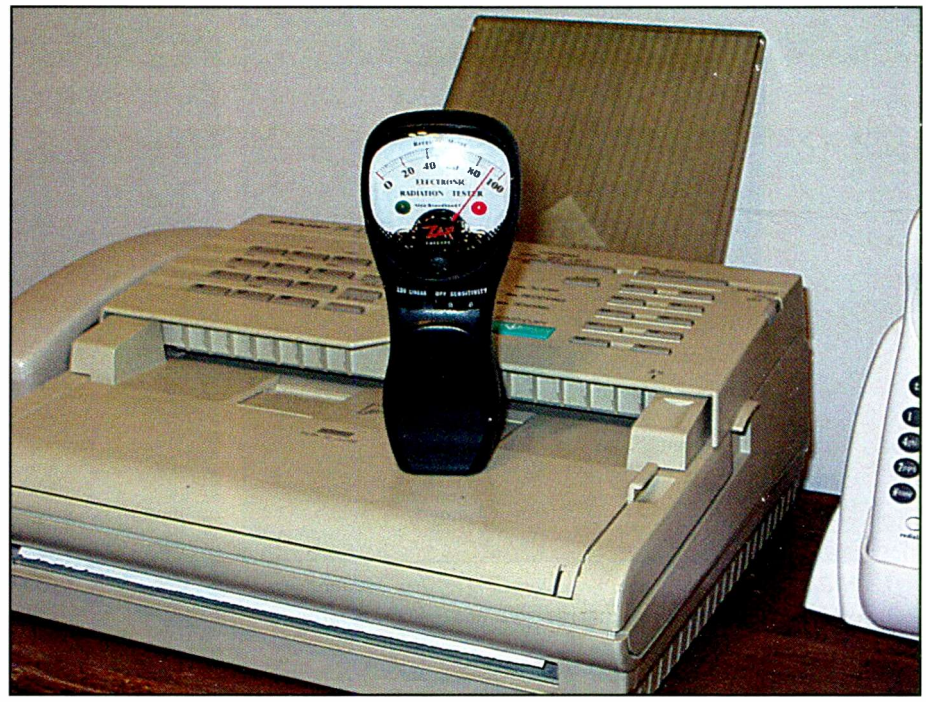
APRS aside, a handheld GPS receiver is one handy gadget to pack along, no matter where you are going. On trips, you can get accurate indications of driving speeds, list waypoints, and track your progress. A GPS unit is essential for anyone with a boat, even on a small lake. Trying to navigate in fog using a chart, map, and compass is "iffy" at best. Setting up waypoints on a GPS receiver takes a lot of the guesswork out of navigating in less-than-ideal conditions. Many of the newer units have a set of maps in software that can show you the actual route you are taking and when and where to turn to make your destination.

Bill McCrory, WB7NLR, e-mailed me the other day saying that a handheld GPS receiver is extremely helpful when reporting fires or suspected criminal activity, especially in rural areas. Many public safety dispatch centers now have computerized maps that will allow a dispatcher to enter GPS longitude and latitude information to get an accurate location of the trouble spot. This allows the dispatcher to guide fire/police/rescue units to a precise location that is being provided by the caller. If you witness an unsafe or emergency situation or criminal act and possess a GPS unit and a cell phone or ham radio/CB set, you can accurately locate the trouble spot for the emergency services folks. Although the Enhanced 9-1-1 (E-9-1-1) system can provide GPS location information on cell phone users via a transparent data stream, this system is not on schedule for implementation for a variety of reasons. Therefore, obtaining a handheld GPS receiver should be high on your priority list.

An Example Of GPS Usefulness

Recently, GPS receivers played a pivotal role locally in identifying and cataloging various LZs for Life Flight helicopters. Each municipality in my area of northeastern Pennsylvania selected a helicopter LZ site in the event that Life Flight had to be dispatched to their area. Then the Luzerne County Emergency Management Agency visited each preselected location with a GPS receiver, logged the coordinates, and provided them to the Pennsylvania State Police and the aircrews on the Life Flight helicopters. Anytime Life Flight is called in, all they have to do is load the proper LZ coordinates into their nav gear and "fly the numbers" on the computer to arrive precisely at the LZ.

Technology has made quantum leaps since I bought my original Garmin GPS unit several years ago. My unit takes several minutes to acquire the satellites and provide location info. Today's GPS receivers acquire the satellites in a matter of seconds and have preloaded map software, computer interface, and all manner of bells and whistles. Prices average about $200. Check Wal-Mart, Best Buy, Circuit City, Sam's Club, and other major outlets for sales. A *quality* GPS receiver should definitely be in your emergency communications kit.



The Zap Checker is a hot new wideband RF detector.

Speaking of Gadgets...

Back in the good old days, any would-be James Bond or Mission Impossible wannabe could mosey into a RadioShack store and walk out with a complete, inexpensive (under $100) "do-it-yourself" spy kit, which would make it possible to tap phones and plant wireless microphones at will. Properly installed, the phone tap could be placed anywhere on a telephone line and connected to an inexpensive cassette recorder (with VOX activation), allowing many calls to be recorded on a single 120-minute tape.

The low-cost wireless mics all worked in the 88- to 180-MHz FM broadcast band (they were, after all, billed as "toys" for kids to talk and play records over their FM radios) with a range of about 40 to 50 yards. With limited range and powered by a 9-volt transistor radio battery, these miniature clandestine transmitters could nevertheless be pressed into service as "bugs," offering suspicious spouses the means to gather some intelligence on a suspected unfaithful mate—or worse.

My, my, how times change. RadioShack got out of the low-end wireless mic business a few years back (although they still offer several versions of telephone taps so you "won't miss any important calls"). However, with a trip around the Internet you can still locate sources of phone taps, wireless mics, actual "bugging" equipment, spike (SPY?) mics, and all sorts of surveillance equipment. You're just going to pay a lot more for some of these spy-toys, and, unfortunately, the quality is not that much better than what RadioShack offered a few years ago. Ain't Capitalism just wonderful?

In the real world of spies and covert surveillance the "toys" are *very* expensive. The government can, after all, afford it! Most of this gear is well above the cost ceiling that the average snoopy neighbor

This NiCd battery pack from a RadioShack HTX-202 amateur transceiver will lose about 30 percent of its charge in a month.

The same is true for newer NiMH battery packs, but NiMH batteries like this one, which powers a Kenwood handheld GMRS, are rated at substantially higher average current than older NiCds. →

or suspicious spouse can afford. The frequencies utilized in high-end wireless surveillance equipment are in the microwave range, which requires some specialized equipment to detect, locate, and neutralize.

Where am I going with all this? In today's world, privacy invasion is a prime concern. Homeland Security begins with individual personal security. No longer something for just the military, governmental, and industrial security agencies to worry about, everyone—and I *do* mean *everyone*—is a potential target for unwanted, unauthorized, illegal, and possibly embarrassing covert surveillance. The world is not a nice place, and it's getting worse by the day.

Identity theft via computers and credit cards is always in the headlines. The privacy invasion encountered by individuals (primarily females) who have had covert videotapes taken of them in compromising situations like restrooms and showers is rampant. Unwarranted and/or criminal audio/visual surveillance conducted by unauthorized individuals for the purpose of gathering personal, confidential, or possibly embarrassing information on select targets has attained epidemic proportions. Anyone with a palm-corder has the potential to become a spy. Amazingly, in many states it is illegal to covertly record audio conversations, but perfectly legal to covertly videotape the same individuals without their knowledge, as long as there is no sound track! Talk about a wide open door.

What can you, as a concerned individual, do to insure your privacy is not in jeopardy? Short of hiring a professional Technical Services Countermeasures (TSCM) expert to periodically "sweep" your home and office, there are a couple of things you can accomplish with only a small investment in time and at little or no cost.

1. Always be aware of your environment. Notice things. Look for things that are out of place or new in your neighborhood. Make inquiries. If you spot a previously unrecognized mini-van or panel truck parked on your street, make an effort to find out who owns it and what it is doing there. Keep track of your neighbors' schedules and ask them to reciprocate. That way if someone is snooping around your house or property when you are not home, there is a good possibility one of your neighbors will pick up on that and inform you. Join and become actively involved in a Neighborhood Watch group. These folks provide a great service at the grassroots level and they deserve your support. Two words: "*get involved*"!

2. Do not let anyone into your home or onto your property without *POSITIVE* identification. Remember, any repairman from a public utility, cable, satellite, or telephone company will have a photo ID and a phone number you can call to validate the presence of the repairman. The same goes for cops, fire inspectors, code enforcement officials, and other local/state or federal government officials.

3. If you let someone into your home or onto your property, *WATCH* them! Do not leave them alone and go about your normal chores. They are a potential security threat. Treat them that way!

ZZZZZZaaaaaappppppp!

4. Buy a Zap Checker! What, you ask, is a Zap Checker? This little device, manufactured by Alan Broadband Company (www.zapchecker.com), is a wideband radio frequency (RF) detector capable of detecting RF signals between 10 MHz and 4.5 GHz. The Zap Checker costs only $89 (plus $7 s/h) and can be used as an extremely sensitive field strength meter (FSM) for ham radio and CB. It can be used to check antenna patterns on rotatable arrays, to sniff for RF in a piece of gear, or to detect covert wireless bugs used in surveillance work.

There are several devices on the market for about $50 that will detect wireless camera systems, but you have to be within one to two feet of the transmitter to get the bug detector to fire. The Zap Checker, on the other hand, will give both a visual and vibrating indication of an RF source

20 feet away from a 2.4-GHz surveillance transmitter. A 2-watt UHF HT will set the Zap Checker off at over 80 feet. A remote vehicle entry transmitter (the kind that unlocks your car doors as you approach the vehicle) can trip the Zap Checker at over 25 feet! Some cell phones set it off at 30 feet. Basically, if it radiates between 10 MHz and 4.5 GHz, the Zap Checker will tell you about it!

The Zap Checker offers an analog meter readout plus green and red LEDs and a selectable vibrator sensor for clandestine use. There are dual sensitivity settings: a linear mode for measuring very weak signals and a logarithmic mode for a 1000:1 dynamic range that lets the user zero in on an RF source. I have successfully used my Zap Checker to detect and neutralize clandestine emitters. The unit is very small and unobtrusive, lending itself well to covert electronic surveillance countermeasures operations. Will it replace a $40,000 counter-surveillance receiver? I hardly think so, but it only costs $90 bucks, and is well within reach of the average individual who wants to relieve a bit of paranoia. A casual sweep of your abode on a non-scheduled basis should be sufficient to eliminate any sleepless nights.

Like anything else, it will take some experimentation and actual use to get the feel of how the Zap Checker works and how best to employ it in various situations. However, with a bit of practice, you will soon learn how to quickly sweep your home or office for clandestine electronic surveillance equipment. Zap Checker: Don't leave home with out it! Contact Alan Broadband Company, 93 Arch Street, Redwood City, CA 94062; Phone: 888-369-9627. Don't forget to tell them where you heard about their Zap Checker.

Power, You Gotta Have Power!

How many times have you grabbed your favorite HT, turned it on, and started transmitting only to have the transceiver indicate that the batteries were exhausted? Happens to me all the time. It became such a common occurrence that I swapped out all my Nickel Cadmium (NiCd) packs for "AA" alkaline cell battery packs. After all, you can find "AA" cells almost anywhere on this planet and by converting to alkaline cells I circumvented the dead battery pack syndrome.

As long as we're talking about portable power sources, we might as well have a brief review of what is currently available for portable comms gear.

NiCd is a mature technology that has been the mainstay (and the bane) of portable power for handheld radio gear for over 30 years. As with most things, there are pros and cons involved. The pros for using NiCd power packs are long usage life, high discharge rate, and moderate pricing. One cons is they're relatively short shelf life (fully charged NiCd battery packs lose approximately 1% of their charge each day they sit idle. At the end of one month of non-use, the NiCd pack has only a 70 percent charge remaining). This is the main reason that you should "top-off" your NiCd battery packs on a regular basis. They tend to develop a "memory" when not maintained properly and discharged regularly, resulting in a rapid discharge under heavy use.

Another con is that they are current sensitive, meaning you must maintain the charge current within manufacturer's recommended parameters. Fast-charging a NiCd pack can greatly shorten the useful life of the pack. All too often NiCd batteries are left on the charger and end up being overcharged. While these batteries can tolerate moderate overcharging, continued abuse will definitely shorten the life of the battery pack. On the other hand, NiCd batteries can be recharged between 500 to 1,500 times during a normal life cycle, making them very attractive for the long term.

Thankfully, battery technology has improved by several orders of magnitude since the 1970s. NiCd packs still have a place in today's battery technology, but improved battery technology no longer limits the user to NiCds.

Nickel Metal Hydride (NiMH) technology has been around for over 13 years. These battery packs have become very popular with the EMCOMM crowd simply because they have a much larger power density in a similarly sized package to NiCds. Whereas a "standard" NiCd battery pack for an HT might be comprised of 450 mA/hr AA cells, a similar sized NiMH pack would provide the same terminal voltage at 1000 or 1200 mA/hr! This makes a tremendous difference when it comes to battery life and usefulness. Not only are the NiMH packs rated at substantially higher average current, they recharge quite similarly to NiCds, and you can use a NiCd charger to charge a NiMH pack in a pinch. NiMH batteries lose about 25 to 30 percent of their total charge each month (provided they are idle), very similar to NiCds.

About the only major drawback to NiMH battery packs is that they can only be recharged about 500 times before ending their life cycle. The trade-off of the total number of recharging cycles versus the tremendous current gain using NiMH battery packs is a no brainer for me. Give me the extra current capacity every time!

Lithium Ion (Li-Ion) is an emerging technology that is picking up a following in the cell phone industry along with other portable comms and photographic gear. However, even though they are quite popular, there are some things you need to know before dumping all your NiCds in favor of Li-Ion packs. First is cost. Lithium Ion packs are very expensive. In addition, they suffer from a very low tolerance to overcharging. As a matter of fact, charging current and over voltage along with discharge rate have to be closely monitored to keep the Li-Ion pack in good shape over its standard life cycle.

On the pro side, Li-Ion packs have a much higher power density than either NiCd or NiMH packs. They can be recharged very quickly and offer a lifetime of between 500 to 1,000 charge cycles. Shelf life (self-discharge) over a 30-day period is only about 10 percent, which is excellent compared to NiCds and NiMH battery packs. Expense and touchy recharging criteria aside, Li-Ion battery packs are *the* emerging battery technology for current and future portable communications equipment.

Gel-Cell technology, more commonly known as Sealed Lead Acid or SLA batteries, have been used for many years where high current output is needed. These Gel-Cells are large and heavy (much like their distant cousin, the lead-acid battery), but they offer a lot of current and can be recharged between 200 to 500 times over the life of the battery.

SLA batteries have been the mainstay of the medical equipment and security industry for many years. As a matter of fact, a great source of SLA batteries are "pulls" from medical/security equipment. Check your local hospital or a security company in your area and find out if they have any SLAs that have recently been pulled from service as part of a preventive maintenance program. Most likely they will be more than happy to give you some of their pulls since it saves them from having to dispose of the batteries. The nice part about this is most of these batteries have a lot of life left in them, they are well suited to emergency communications power supplies, and the cost is either free or minimal. A win-win situation all around!

Reusable alkaline, a relative of the disposable alkaline cells, is an alternative source for low-power applications. Their power density is on par with NiMH and Li-Ion batteries and they can be recharged about 10 times during their life cycle. This technology has been around a few years, but has yet to really catch on with the communications folks.

Finally, my favorite source of portable power: the alkaline AA cell. For powering handheld radio gear, GPS units, low-powered (QRP) HF radio gear, and small worldband receivers, alkaline cells are hard to beat. First of all, they have a decent power density for their size. Second, they can be procured almost anywhere on the planet. Although they *cannot* be recharged, alkaline cells offer a good useful lifetime and can be stored almost indefinitely without losing a portion of their charge. In my EMCOMM duties, I prefer alkaline batteries simply because they are utterly dependable. Unlike NiCd or NiMH power packs, there is no guessing about the status of an alkaline battery pack. Several blister packs of spare AA cells can provide a lot of communications stamina for your portable comms gear during times of crisis.

Powerful Choices

So there you have it, a brief run down of the most popular battery technology for portable communications equipment. As you can plainly see, there are several viable alternatives regarding rechargeable battery packs, as well as the old standby, non-rechargeable alkaline cells. Whatever source you pick, you can't really go too wrong.

That's a wrap for this month. Until next time, remember:

Preparedness is *NOT* an option. ■

the wireless connection

a look behind the dials

by Peter J. Bertini <radioconnection@juno.com>

The Zenith Console Restoration Continues

Our Zenith 10S464 console concludes in this column. The refinished Zenith console cabinet is shown in **Photo A**, and the fully restored radio is shown in **Photo B**.

A 10S464 is worth between $100 and $400 in restorable condition. It all depends on the condition and your location. A Zenith that won't sell in Pennsylvania, which is glutted with old radios, may bring in top dollar in Los Angeles. A full professional restoration of the electronics and cabinet can add another $500 to $600 to the cost. I've seen dealers offering restored 10S464 consoles in the $850 price range. One dealer is asking over $1,100 for a fully restored 11S474 console (mine was pictured in an earlier column) on his Internet Web pages.

By the way, the Zenith console was my first major refinishing effort using a new compressor and spray gun. I was very pleased with how it came out. The best reward was the look on the owners' faces when they came to pick up their newly restored radio in time for Christmas.

Tube Replacements

Many collectors try to keep their radios in their collections as original as possible. This often means supplying the set with tubes that are as close to the styles supplied by the factory. Collectors of the bigger brand name sets, such as RCA, Zenith, and Philco, often seek out tubes labeled with the appropriate RCA, Zenith, or Philco company logo. For the Zenith 10S464, ST-shaped (shouldered glass) Zenith brand tubes would be appropriate. But, for a set intended for "Polite Society"—people with no electronics or radio background—the scales tip in favor of reliability versus fanatic authenticity.

Photo A. The refinished 10S464 cabinet with a hand-rubbed piano finish. The replacement grille cloth came from John Okolowicz's Grille Cloth Headquarters. (See ***Reference 2****.)*

Photo B. The 10S464 after restoration. The radio was run for a few weeks to burn it in and to make sure no problems would surface after it was returned to its owners.

For example, **Photo C** shows three versions of the 80 rectifier (manufactured for eons and very popular) full-wave rectifier tube. **Photo D** shows some of the original ST-shaped tubes found in the Zenith 10S464 chassis (note the neat Zenith lightning bolt logo engraved on the tube bases!). Even used, these Zenith tubes are dearly priced, they just "look right" on the chassis and are sought after! Many vintage tube dealers will provide brand and style specific tubes for an additional charge if you ask.

Pitfalls

We've covered solutions to the problems inherent in the 6X5 rectifier design. So, let's look at some other potential pitfalls when replacing tubes. A good example is the 6A8 first con-

Photo C. Arguably, few tubes can boast having as long a production as was enjoyed by the 80 full-wave rectifier. Here are three examples spanning the decades. The globe-shaped early 80 was introduced in the late 1920s, the ST-shaped in the late '30s, and the tubular version continued until production ceased. The "modern" electrical equivalent for the 4-pin 80 would be a 5Y3G(T) octal.

Photo D. These Zenith ST-shaped tubes are typical of what was supplied with circa-1940 Zenith consoles. It's a thrill finding the original Zenith tube set in a radio! The 7G7 RF amplifier tube in front is an example of a Loctal base tube.

verter. Looking up the 6A8 in a tube dealer's price list can be confusing. A 6A8 might be listed as a 6A8, 6A8G, or 6A8GT in different price columns. The 6A8G is a glass ST-shaped tube, and the GT suffix denotes the newer Glass Tubular design.

RCA's Better Idea

So, what's with first tube listed, the 6A8 sans suffix? In 1935 RCA introduced the first octal-based tubes, all of which were all metal tubes. The 6A8 was one of the RCA metal tubes. When you see an octal-based tube listed without the suffix, it is probably a metal tube. Of course, the lack of a suffix doesn't guarantee it's a metal tube; Loctal tubes are glass and are shown without a letter suffix.

The metal tubes were very popular in RCA and GE sets (both companies shared proprietary rights and also cross-manufactured sets for each other during the '30s.) While some companies adapted the RCA metal tubes in their latest designs, other companies, most notably Philco, steadfastly refused to use metal tubes, and even advertised that "their" glass equivalents to the RCA metal tubes were more reliable. The metal tube *did* offer some advantages. They are self-shielding, thus avoiding the added manufacturing costs of tube shields and their associated special sockets. The RCA tubes were truly all metal except for the glass seals, while some Sylvania "metal" tubes were glass tubes encased in an outer metal shell.

Eventually Philco countered by introducing the eight-pin Loctal tubes. These had improved high-frequency performance (lower lead inductances). A Loctal Zenith tube is shown in **Photo D**. The metal center pin "locked" the tube in the socket, making it ideal for use in high vibration areas. The correct way to remove a Loctal is to slightly rock the tube to free it. Pulling it straight up invites damaging the socket.

There's a problem with arbitrarily using metal tubes, however. For the uninitiated it can lead to some big surprises! Pin 1 of the RCA metal tubes is connected to the metal shell, and RCA intended that pin 1 on the socket be grounded. Pin 1 of the equivalent glass versions was not used. So far so good, but manufacturers who used the glass versions of the RCA metal tubes often used pin 1 of the sockets for a convenient tie-point—a real safety issue if high-voltages are on the pin! Or, the octal sockets may not even have pin 1 installed!

Oddly enough, my large Philco 38-2670 tombstone radio did have pin 1 grounded on all of the octal sockets, allowing me to substitute metal tubes without modifications. **Photo E** shows the popular 6J5 triode in the RCA metal, glass ST (G), and tubular (GT) styles.

Using Metal Tubes In The Zenith 10S464

Many of the tubes used in the 10S464 chassis had metal equivalents, and quite often the metal versions are the cheapest option when re-tubing radios. Since the set's owners had requested new tubes, I opted for the metal versions, especially for those tubes hidden inside tube shields. I also strongly suggested that the original tubes be kept with the radio and not thrown out or lost!

A quick check of the Zenith chassis showed that Zenith didn't use pin 1 on the sockets for tie-point connections. Indeed, pin

Photo E. Three versions of the 6J5 triode are shown here: ST (or shouldered glass), tubular, and a metal Sylvania brand 6J5 tube.

I was missing on the octal sockets. This problem was resolved by adding the missing pins. I found a matching donor socket in the junkbox and removed the pins. The Zenith sockets had openings for the tube #1 pins, but the Bakelite bases weren't fully opened through the entire socket. Punching through a small miniature screwdriver easily removed the thin layer of Bakelite, permitting the missing #1 pins to be added to the appropriate sockets. That includes the 6A8 converter, 6K7 IF amplifier, the 6V6 audio amplifiers, and the 6J5 audio inverter—all of which have metal tube equivalents.

Finding 6V6 glass tubes at a reasonable price is a challenge: because they're used in guitar and audiophile amplifiers they're in demand. Certain 6V6 variants are held in high sonic esteem by *audiophools*! I ended up ordering a set of NOS (New Old Stock) Russian military 6V6GT equivalents from a dealer in Lithuania to get the best price!

Why go through this much work? Well, once the set left my hands I'd have no control over what replacement tubes were used in the future. It's logical to assume that "Polite Society" might use any available version of a tube in the set; after all many collectors don't know the differences! It's also probable that many now-common tubes will become scarce as time goes on. The aforementioned 6V6 is a good example. Ten years ago they were dirt cheap, today they are getting costly. The RCA metal tubes remain commonplace and comparatively inexpensive, and will likely remain so for some time.

Most collectors like the warm glow of glass tubes, and many disdain the passive appearance of the metal tubes. I like to use the cheap metal tubes in daily players and save the "show" tubes for the display sets. GE and RCA both offered all-metal tube chassis sets during the 1930s, but eventually RCA was also using glass tubes.

One caveat: a set designed for metal tubes probably requires metal tubes at least in the in RF and audio stages that use grid-capped tubes. Otherwise the lack of a tube shield will cause instabilities or hum when a glass version of the tube is substituted.

Self-Shielding

I tried using the metal tubes in the converter and IF amplifier sockets (these have metal shields), with pins 1 ungrounded and the Zenith tube shields in place, and the set had problems with self-oscillation and instabilities. Pin 1 had to be grounded. Surprisingly, the presence of the shield alone wasn't effective. Here you can run into another pitfall: the early ST glass tubes are taller than the RCA metal tubes and the newer version GT glass tubes. This often means those tubes with grid caps (i.e., the 6A8 and 6K7 in the Zenith) usually need longer leads installed on the flying leads going the grid cap connectors, or they won't reach! This means the first IF transformer must be opened, and a new, longer lead attached.

Here's a service tip: if you ever find a set missing the grid cap connector, substitute one end of pc board-style mount fuse holder (two are used for AGC style fuses) for the missing connector. They fit receiver-tube sized grid caps just fine!

While we're discussing it, here's another problem you might find in those Philco radios using octal tubes and square metal tube shields. These sets were made for ST (G suffix) tubes, and the newer GT octal base diameter will be too wide to clear the

opening in the raised metal chassis part to which the tube shield mounts. I'll show some examples when we cover Philco restorations in future columns.

Tuning Eye Tube Replacement

Another RCA invention was the tuning eye tube. Again, not surprisingly, many manufacturers refused to use a tuning eye system in their radios, most notably Philco. Notice a trend here? Instead Philco continued using their electrical-mechanical "Shadow-Graph," or "Shadow Tuning Meter," tuning indicator in their higher-end sets until 193[X] and never used the tuning eye tube in any of their models. Shadow Meters were crude S-meters. Instead of a moving needle, they used a moving vane to vary the width of a beam of light (from a panel lamp) projected on a small translucent celluloid panel. The meter monitored the IF tube plate current which varied according to the AGC signal level.

Early high-end Zeniths also used shadow-graph tuning meters, but unlike Philco, Zenith quickly adopted the new tuning eye tubes in their sets. For the first year, Zenith used an odd-ball design, the 6T5 tuning eye tube. The 6T5 used a full annular ring display—the width of the ring changed with the signal strength. Since the 6T5 was used for one model year they are very, very scarce, and an NOS 6T5 tube can command hundreds of dollars! They are used in the popular Waltons (so-named since it was the style of tombstone radio featured in the TV series) Zenith tombstones and in some of the more desirable Zenith shutter-dial consoles. If someone is serious enough to pay the $3,000 dollar average going price for a Zenith Walton tombstone, a few hundred more for the proper 6T5 tuning eye display is not going to be a deterrence. I'd love to own one, and if you have a restorable basket-case for a reasonable price I'd like to hear from you! Heck, its restoration would make a great column or two. I'm even hoarding a 6T5 for the day I find *my* Waltons radio.

The Zenith 10S464, and many other Zeniths, used the 6G5/6U5 tuning eye tube. These may have been two different tubes at one time, but the ones I've seen bear the shared 6G5/6U5 marking. Apparently they were electrically identical and the manufacturers eventually just sold one tube bearing both designations. This tube produced the more popular Vee pattern eye display. Tuning eye tubes operated by measuring the AGC voltage. As the grid voltage goes more negative, the eye opening, a Vee shape, closes until the ends meet.

Photo F. The "ironing board" key assembly for the station presets was missing. A replacement was made by modifying a tone control panel for the 1005 Zenith chassis. This part was purchased from Joann Frush. (See ***Reference 2.****)*

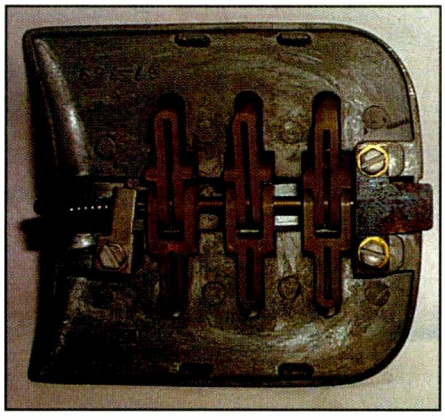


Photo G. Rear view of the preset station selector keyboard assembly. This set comes from the author's 11S474.

Since the Zenith used a remote cut-off pentode in the IF, the 6G5 (with its -21-volt grid rating for full closure) was the best match. NOS 6G5/6U5 tubes are going for $30 or so, depending on local market conditions and how carefully you shop. The 6G5 comes in ST and tubular styles. Either will work, but the correct tube for the 10S464 is the tubular style since it fits the Zenith bracket mount properly. To install the ST style requires a bit of finagling. Unfortunately, as far as tubes go, all of these have comparatively short life-spans; electron bombardment damages the phosphor coating causing the display to slowly fade away long before the tube loses emission or the filament fails. I rarely find bad tubes in old radios, and I rarely find a good eye tube in one.

*Photo H. The original concentric knobs for the volume and tuning were warped beyond use. This is a common problem. A used set in good condition was ordered from John Frush. (****See Reference 3.****) Other dealers make excellent reproductions of these knobs.*

A Common Failure

Here's another service tip for a very common problem: If you ever encounter a radio where the tuning eye phosphor illuminates green, but the Vee pattern doesn't respond to AGC voltage variations, chances are the tube is good! The problem is caused by the failure of a large value resistor between the eye tube plate and target anode. The resistor value is determined by the supply voltage, and normally runs between 500 k-ohms and 1 megohm (Zenith typically used a 1-megohm resistor). These resistors are usually located in the sealed eye tube socket assembly and commonly fail open, causing the eye tube to be unresponsive to grid voltage changes. The fix is to open the sealed socket, and replace the defective resistor with a new one of the same value.

A Cheaper Alternative

The 6E5 tuning tube is a bit more common and also uses the vintage 6-pin base connections—or "pin-out"—as the 6T5, or 6G5/6U5 eye tubes. It also displays the popular Vee pattern display. Designed for use with AGC systems controlling sharp cutoff pentodes, its eye fully closes at –7 volts grid bias. As NOS, this tube typically sells for $15 or $20 average.

Here's the best part: you can use the 6E5 in your Zenith "as-is"; its display will

act a bit more "lively" than the 6G5/6U5, and many folks prefer the more active display action on weaker signals. Just plug it in and enjoy!

An Even Cheaper Replacement!

The most common, readily available, and inexpensive NOS eye tube is the 1629. It's electrically similar to the 6E5, except it uses a 12-volt filament and an octal base. These are cheap: you can find them selling in the $5 to $10 range with a little searching. Better yet, $16 postpaid will get you a 1629 tube and a special adapter delivered to your door that directly replaces the 6E5, 6T5, or 6G5/6U5 eye tubes! Ordering information is shown at the end of the column (see **Reference 1**).

The adapter has a circuit that converts the 6 VAC to the 12 volts needed for the 1629 heater. It does add 1-3/4 inches to the overall length of the tube. I'll show how this is done when we do the add-on tuning eye project for the Hallicrafters radios. A hint: no expensive transformers are involved!

Finishing Details

When the radio arrived, it was missing the station preset "ironing board" keyboard assembly. They are so-named since the keys resemble miniature ironing boards. Similarly, the black rectangular Zenith keys used in later models were nicknamed "Piano Keys." See **Photos F and G**. Two keyboard panels are used on the radio: the set at left is for various tone settings; the set at right is for selecting the automatic presets for pretuned radio stations (both are seen in **Photo B** either side of the tuning dial). While both can be lifted off, the tone controls are fixed wired to the chassis, while the preset panel is fully removable. Unfortunately, over the years these panels are often removed and lost. Whatever scrap units are recovered from donor sets are quickly scoffed up at serious prices! The knobs were also warped and unusable. See **Photo H**.

I was able to locate a spare keyboard and switch assembly for the tone controls from a vintage parts dealer. With a little reworking, which involved some aluminum strips and epoxy, I was able to improvise a workable station selector panel. Both the keyboard and knobs were located at the resource listed in **Reference 2**. These parts weren't cheap, but when you need them there is little choice. I replaced the original tattered and rotted grille cloth with a replica grille cloth from the Grille Cloth Headquarters (see **Reference 3**).

Last month I discussed lacquer stick cabinet repairs (to be precise, they are called "burn-in sticks" by the trade). The dial bezel had lost much of the original factory finish, and I refinished them using some lacquer toners, followed by a final coating of high-build spray lacquer (also available from **Reference 1**.)

Till Next Time

I've been investing a lot of free time learning the basics of cabinet restoration: stripping the old finishes, repairing veneer and structural damage, and the most practical and best methods to apply nitrocellulose lacquer at home. It's been quite a learning experience! I'll share what I've learned once I've better mastered some of the techniques; unfortunately woodworking is not one of my innate talents, so many of you will become far more proficient than I am in short order.

That's it for this month. See you in May with more vintage radio topics!

References

1. Tuning eye adapter with 1629 tube, $16.00 ppd. Bill Turner, 1117 Pike Street, Saint Charles, MO 63301; Phone: 636-949-2210; E-Mail: <dialcover@webtv.net>.
2. David and Joann Frush, 1025 Grandview Ave., Sykesville, MD 21284; Phone: 410-795-5262 (after 6 p.m.); E-Mail: <Parts2Many@aol.com>.
3. Grille Cloth Headquarters, John Okolowicz, 624 Cedar Hill Road, Suite 100, Ambler, PA 19002; Web: <www.GrilleCloth.com>; E-Mail: <john@grillecloth.com>. ■

by Bruce Conti <baconti@aol.com>

Broadcast DXing Goes High-Tech

In a meeting of the minds, four Grayland, Washington, MW DXpedition veterans have combined efforts to publish "Emerging Techniques of High-Tech DXpeditioning" on the Internet. Written by Guy Atkins, John Bryant, Nick Hall-Patch, and Don Nelson, it represents the culmination of years of experience with various software applications using laptop computers at home and in DXpedition environments. They hope that by sharing their accumulated knowledge, they will stimulate others to do the same for the benefit of all DXers.

Geoclock

The high-tech revolution began with Geoclock, the popular "standard" among DXers for sunrise/sunset maps. The Grayland group writes,

Geoclock utilizes multiple maps to illustrate sunrise/sunset and twilight in real time or at any other time that the user cares to specify. If you wish to know more, we suggest you download a shareware version and then make a paid version your first investment.

By monitoring sunrise/sunset in real time while DXing, it's easy to follow European sunrise for transmitter site dawn enhancement of transatlantic signals, or to track sunset across the Caribbean and South America to catch Brazil and the easternmost islands before Cuba and Venezuela become dominant across the AM dial. Maps can be customized to zoom in on a particular region and indicate transmitter locations for an accurate view of the day/night terminator as it passes through. *Geoclock* is available at <http://home.att.net/~geoclock/>.

B-Log Semi-Automated Reception Logging

Available as freeware, B-Log has become the standard logging software of the Grayland DXpeditioners. First introduced to the Graylanders by Guy Atkins, he later assisted designer Tom Lackamp, AB9B, "in tweaking it for SWBC and MW DXing." Features include support for multiple styles of logging, file and URL links, a report generator, and easy export into any database or spreadsheet. The Grayland gang is especially impressed with its ease of use, saying,

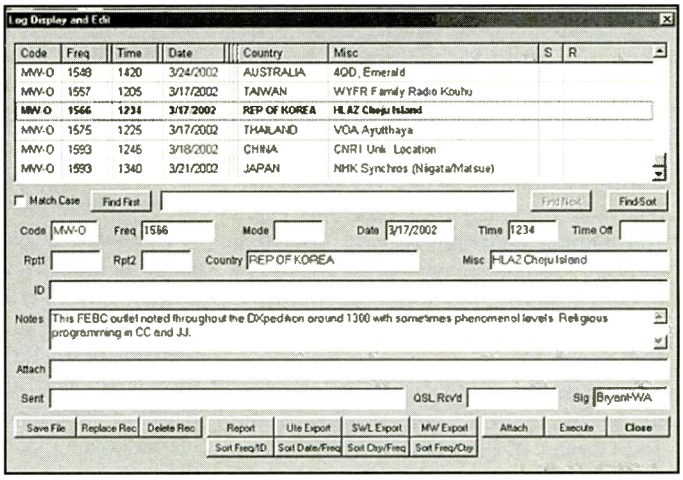
We find it greatly simplifies the process of sorting and formatting loggings for submissions to club bulletins, electronic newsletters, and other publications. The UTE Export, SWL Export, and MW Export formats are useful "right out of the box."

B-Log is available as freeware at <www.qsl.net/ab9b/freeware/B-Log.html>. Designer Tom Lackamp is also the author of the Scan 320 PC-control software for the Ten-Tec RX-320.

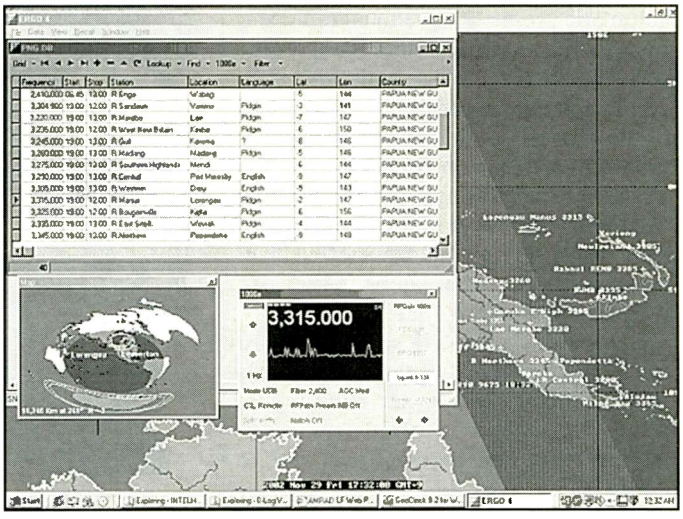
Total Recorder

For many, the old-fashioned analog cassette recorder was, and remains, an indispensable DX tool. Then came the digital age and MiniDisk recorders. Although MiniDisk recorders have been miniaturized, like the analog cassette, it's still one additional piece of equipment. The ultimate challenge was to eliminate the need for a separate recording device altogether. As CD-burners and huge hard drives have become the norm in home and laptop computers, so has the ability to record DX directly on the hard drive. Still one issue remained: most audio recording software was unnecessarily complex for DX purposes. Then Don Nelson discovered Total Recorder. "It did everything that we, as DXers, needed and little that we did not."

In addition to providing basic recording functions, Total Recorder is easily programmed for timed recording. This is especially convenient for automated overnight recording. Just tune your receiver to the desired frequency and set the Total



The DXer customized fields of the B-Log editing and output window.



ERGO 4 receiver computer control displays a database and azimuth map with Geoclock in the background.

PENDING

New Call	Location	Freq.	Old Call
KHMY	Pratt, KS	93.1	KDGB

CHANGES

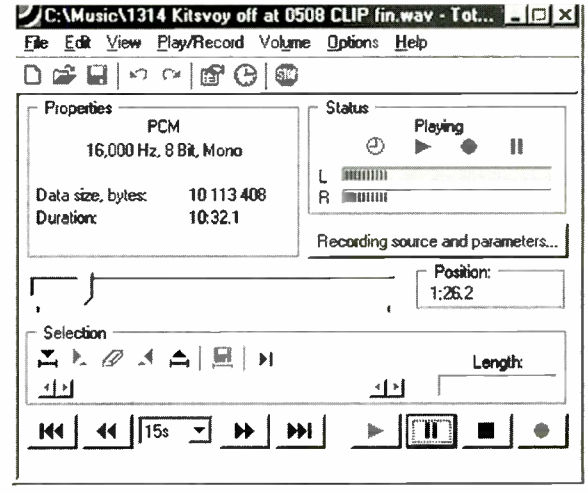
New Call	Location	Freq.	Old Call
WTKI	Huntsville, AL	1450	WHOH
KMIA	Black Canyon City, AZ	710	KUET
KSPN	Los Angeles, CA	710	KDIS
KDIS	Pasadena, CA	1110	KSPN
WJNA	Boynton Beach, FL	1040	WLVJ
WLVJ	Royal Palm Beach, FL	640	WJNA
WSRO	Ashland, MA	650	WJLT
WAZN	Marlborough, MA	1470	WSRO
WABY	Mechanicville, NY	1160	WMVI
WZRH	Dallas, NC	960	WAAK
WRMR	Cleveland, OH	1420	WCLV
WLEO	Ponce, PR	1170	WZUR
WDEP	Ponce, PR	1490	WLEO
KNWX	Auburn-Federal Way, WA	1210	KTTH
KTTH	Seattle, WA	770	KNWX
WQOQ	Durand, WI	1430	WRDN
CHMJ	Vancouver, BC	730	CJNW
CFMJ	Richmond Hill, ON	640	CFYI
WANZ	Northport, AL	100.7	WLXY
KRRN	Kingman, AZ	92.7	KQRT
KBZR	Harrisburg, AR	95.9	KKEY
KSOL	San Francisco, CA	98.9	KEMR
KEMR	Santa Clara, CA	105.7	KSOL
KSQL	Santa Cruz, CA	99.1	KZMR
WMIB	Fort Lauderdale, FL	103.5	WMGE
WSYR-FM	Gifford, FL	94.7	WAVW
WAVW	Stuart, FL	92.7	WZZR
WWXC	Albany, GA	90.7	WGNP
WWDV	Zion, IL	96.9	WTNX
WTMK	Lowell, IN	88.5	New
WCJL	Morgantown, IN	90.9	New
KLOX	Creston, IA	90.9	New
WKVY	Somerset, KY	88.1	New
WWKM	Goodland Township, MI	88.1	New
WJKN-FM	Spring Arbor, MI	89.3	New
WHAL	Olive Branch, MS	95.7	WOTO
KQRT	Las Vegas, NV	105.1	KRRN
WWDG	De Ruyter, NY	105.1	WXBB
WZRI	Spring Lake, NC	89.3	New
WZZZ	Portsmouth, OH	107.5	WNPM
KDIM	Coweta, OK	88.1	New
WZXQ	Chambersburg, PA	88.3	WZZQ
WAMT	Freeland, PA	103.1	WBZH
WDMT	Pittston, PA	102.3	WBZJ
WRVH	Williamsport, PA	107.9	WSFT
WCSQ	Manning, SC	92.5	WHLZ
WHLZ	Marion, SC	100.5	WFSF
KKLM	Corpus Christi, TX	88.7	KWRC
KEQX	Stephenville, TX	89.7	New
WSNV	Salem, VA	93.5	WJLM
WLWR	Fond Du Lac, WI	91.7	New
KOHR	Sheridan, WY	88.9	New
KWCF	Sheridan, WY	89.3	New

Recorder timer to record at regular intervals, such as at the top of each hour. Then burn a CD and listen in the car on your way to work the next morning! Visit <www.highcriteria.com/> to download a trial version of Total Recorder.

ERGO Computer Control

Don Nelson calls ERGO "one of the best, reasonably priced receiver programs available." ERGO could be called the Swiss Army knife of DX software tools, providing for database access, logging, audio recording, DSP filtering, dual receiver control, scanning, and remote receiver control capability. If your receiver has an RS-232 serial port, then it can be linked to your computer via its serial port or by USB with a serial port converter. Don recommends checking <www.aa5au.com/usb> for radio-related reviews of USB/serial adapters. There are two versions: ERGO 3 and the more recently released ERGO 4. ERGO 3 supports the AOR AR7030, JRC NRD-535/D, Drake R8A/B, Watkins-Johnson HF1000, and Ten-Tec RX-320. In addition to these receivers, ERGO 4 supports the ICOM R75, Ten-Tec RX-340 and RX-350, and JRC NRD-545, with drivers for more receivers under beta test. ERGO 4 allows for receiver control and listening over the Internet. Although he hasn't tried it yet, Don imagines, "DXpeditioning from the comfort of one's own home using remote receivers and antennas." Software designer John Fallows is continuously working on improvements and takes user suggestions seriously. A 30-day ERGO 4 demo version is available at <http://swldx.com/>.

More high-tech innovations and their applications are described in the article, "Emerging Techniques of High-Tech

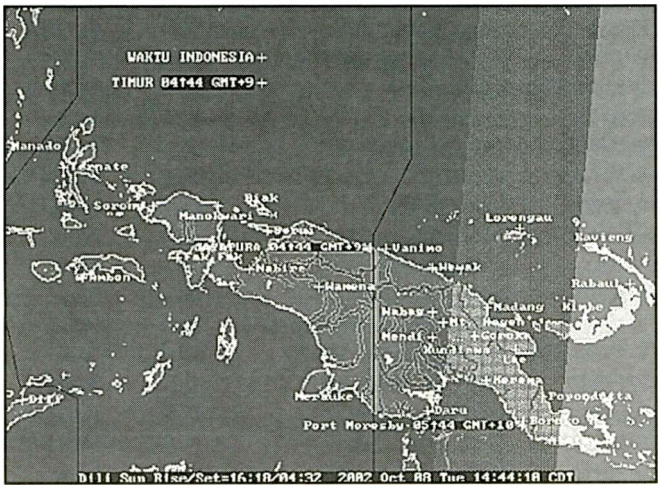


The main window of the Total Recorder is totally intuitive.

DXpeditioning," including Nick Hall-Patch's DX Radar signal strength scanning tool and the economical Cybiko PDA wireless communicator. The entire article and report are available at <www.dxing.info/ articles/hitech.dx>.

AM IBOC Under Test

Fellow broadcast DXer Robert Nichini has been in touch with Chief Engineer Tom Ray at **710 WOR New York** about their



This customized Geoclock map clearly indicates the approaching sunrise over Papua New Guinea, Timor, and eastern Indonesia.

new AM IBOC (HD Radio) digital signal. Robert passes along the following excerpt from one of his messages.

Our signal is completely free (versus subscription satellite digital radio) and the frequency is 710. The HD signal actually rides alongside the analog signal. The analog audio bandwidth is about 5 kHz. The digital carriers start a tad over 5 kHz and extend to 15 kHz. They ride, at full power, 30 dB under the main 710 carrier level.

All the research over the past few years has gone into perfecting the FM version of HD. We are somewhat premature with putting the AM HD signal on the air, but our participation is helping to write the FCC rules, and also develop the interference models for nighttime operation of the HD signal. Right now, the digital sounds pretty good. iBiquity is presently burning in their newest version of software. The new software sounds much better than the software we are running right now, and boasts stereo separation of 60 dB. As you can imagine, we are cramming a lot of digital data into very little space. I'm amazed with the audio this AM transmitter produces in HD. You can check out our "industry" site at <www.wor710.com/Engineering/iboc/hdindex.htm>.

AM IBOC Under Fire

AM IBOC digital radio has been the hot topic of debate among broadcast professionals and DXers alike. Some expect that it will place AM on an even par with FM in terms of audio and reception quality, while others fear the worst in terms of digital interference to legacy analog DX signals. While AM IBOC has yet to receive FCC authorization for nighttime operation, it is approved for critical hours, during the pre-dawn and post-sunset drive times. As AM IBOC receivers become available, DXers just might be "the canaries in the coal mine" with sunrise and sunset skip analog and digital reception reports. Some are already singing about digital interference to long distance analog signals. Stay tuned!

QSL Information

1060 KTNS Oakhurst, California, full detail QSL letter in 70 days from DX Test, signed Larry Gamble-Owner/GM and Wayne DuBois-Studio Engineer. Address: PO Box 2020, Oakhurst CA 93644. Mentioned they run 5000 watts day and 23 watts night. (Martin, OR)

1070 KFTI Wichita, Kansas, confirmation and signature written on my report plus several bumper stickers and business card in 20 days for report and $1 (returned), signed Jeanenne Cullop, Executive Administrative Assistant. Address: 4200 N Old Lawrence Rd, Wichita KS 67219-3299. (Griffith, CO)

1080 KASL Price, Utah, handwritten verification and stickers in 75 days, signed Hazel Powell-Off. Mgr. Address: 163 East 100 North, Price UT 84501. (Martin, OR)

1420 KJCK Junction City, Kansas, partial data letter in 10 days for report and $1 (returned), signed Gary McIntyre, Operations Director. Address: PO Box 789, Junction City KS 66441. (Griffith, CO)

1470 WLCR Louisville, Kentucky, full data form letter confirming DX test in 21 days for report with cassette recording and $1. Letter states the test was performed at 760 watts non-directional. Signed David L. Peppers, CE. Address: 3600 Goldsmith Lane, Louisville KY 40220. I'm very pleased with this. At 1,044 miles, that works out to about 1.37 miles per watt. (Griffith, CO)

1620 KOZN Omaha, Nebraska, partial data letter and *The Zone* window stickers in 28 days for report and $1 (returned), signed Neil Nelkin, Program Director. Address: 5011 Capitol Ave, Omaha NE 68132. X-band #38. (Griffith, CO)

1660 WWRU Jersey City, New Jersey, form letter on WNMA 1210/WJCC 1700, Miami Springs, Florida, WWRU 1660 Jersey City, New Jersey, letterhead, and business card, from reception report sent back on April 16, 1999! Signed George D. Butch-CE. Address: Radio Unica, 8400 NW 52 St, Suite 101, Miami FL 33316. He said sorry for the delay, but he has so much to do. Apparently WWRU is still U1 10/1 kW according to the QSL, broadcasting from one of the towers in the WLXE array in Carlstadt, New Jersey. (Martin, OR)

Broadcast Loggings

All times are UTC.

530 R. Vision Cristiana, Turks & Caicos, at 0400 with triple ID for WWRV-1330, WVIP-1310, and RVC-530; excellent to very good; barely 10 minutes later back to excellent as the neighbor had shut down their computer, so the reception became really entertainment quality. (Chiochiu, QC)

540 CBK Watrous, Saskatchewan, at 1345 during a great sunrise skip opening, heard the "Snap, Crackle, and Pop" program with Paul Grant and Roy Forbes on the CBC Radio One network, featuring nostalgic music by Canadian artists. In tight null of local TIS at DIA airport. (Griffith, CO)

600 CMKV R. Rebelde, Urbano Noris, Cuba, at 0353 good for 2 to 3 minutes with an old-fashioned Cuban song, at 0448 with Spanish disco music, parallel 620, good-fair signal with some WICC interference. CKAT North Bay, Ontario, occasionally in too (even when nulled), but much weaker. (Chiochiu, QC)

620 WKHB Irwin, Pennsylvania, at 2021 fair with ethnic programming and "KHB" IDs. (Ressler, OH)

640 R. Guadeloupe, Pointe-a-Pitre, Guadeloupe, at 0442 briefly very good with "France Info" newscast, lost to heavy interference from nulled CFMJ "Mojo Radio" Toronto barely 30 seconds later. (Chiochiu, QC) An indication of just how volatile MW DXing can be. Sometimes it really is simply a matter of being in the right place at the right time.

680 WPTF Raleigh, North Carolina, at 0515 a good signal, news/talk, listened to a rebroadcast of "The Rush Limbaugh Program." (Ressler, OH)

750 YVKS *RCR* Caracas, Venezuela, at 0348 a good peak with "Radio Exterior de Espana" cultural program. This is by far the strongest YV in the Montreal area. (Chiochiu, QC)

820 WBAP Fort Worth, Texas, at 0400 fair, joining "The Jim Bohannon Show" in progress after the news. (Ressler, OH)

830 WCCO Minneapolis, Minnesota, heard at 0657 on a strong signal, listened to CBS News, local weather, and talk. (Ressler, OH)

1130 R.Ideal, Maiquetia, Venezuela, at 0353 good with a clear "Radio Ideal" jingle slicing through nulled WBBR and unidentified sports talk likely from WDFN. (Conti, NH)

1250 WEAE Pittsburgh, Pennsylvania, at 0149 weak with "ESPN Radio 1250" ID and sports talk. (Ressler, OH)

1430 CHKT Toronto, Ontario, at 2345 fair with an interview program in Chinese, "A Fairchild Broadcasting station" ID, then an Indian music program in Hindi. (Ressler, OH)

1520 WWKB Buffalo, New York, at 0515 fair to good with "The Food and Wine Radio Network" program. (Ressler, OH) Rumors abound that WWKB will return to the once popular "KB" music format of WKBW.

1600 WWRL New York, New York, at 0428 a weak signal, with station ID and calypso music. (Ressler, OH) At 1745, nice signal with soca music, promo, "...right here at New York's Urban Mix WWRL," broadcasting live from Barbados. (Conti, NH)

1620 WDHP Frederiksted, St. Croix, U.S. Virgin Islands, at 0406 caught three WDHP IDs at a poor, somewhat fair level, then 0407 to 0409 fair to strong with a man and woman in accented English. New for me and my first foreign reception in the 1600 to 1710 extended dial! (Chiochiu, QC)

1660 WQSN Kalamazoo, Michigan, at 0415 a fading signal with station ID and "Fox Sports Radio" talk. (Ressler, OH)

Many thanks to the Grayland DXpedition crew of Guy Atkins, John Bryant, Nick Hall-Patch, and Don Nelson, as well as these fine DXers: Bogdan Chiochiu, Patrick Griffith, Patrick Martin, Robert Nichini, and Lawrence Ressler. 73 and Good DX! ■

on-the-go radio

around the block, around the world-personal radio keeps YOU in touch

by Alan Dixon, N3HOE / WPUC720 / KST8678

"Midland 1 Listens!" It's New And YOU Are The Key

What a month we have before us! Just when I thought that things *might* simmer down to only a medium boil here at the *Pop'Comm* offices, a couple of red hot items in the world of personal communications, including 11-meter CB radio, jumped right up. Did I say, "including" 11-meter CB radio? I should have said, "*especially*" CB radio! Get ready for a *paradigm* shift in the way you think of CB radio.

"Paradigm"—isn't that what we have when we rub two 10-cent pieces together? If you're not familiar with the term, then simply imagine that's how big a change we are seeing in CB radio. It's so different, that we may not understand all of its implications at once. As if a new concept of CB radio operation isn't enough to digest right now, we have mounting concern as to why you seriously need to consider becoming involved with or to getting back into mobile CB radio. Yes, I said, "*need* to." Hang in here with us.

I knew something big was cooking when Harold called me into the *Pop'Comm* "Hot Ideas Room." Billows of steam wafted upward as I cautiously nudged the door open. Either the basement presses just below the room were running way past full tilt, or Harold was working up quite a sweat over this. Or both. Harold's eyes were alight with excitement as his burly arm anxiously beckoned me into the room. A new concept had been brewing for a while, and it has become prime time for implementation. You see, CB radio sales continue to be healthy, yet outside of truckers' on Channel 19 and sidebanders on the Upper 40, there isn't a whole lot of activity on the 27-MHz band. What could we do to bolster folks' urge to actually pick up that mic? Hmmm....

Those fine folks at **Midland Radio Corporation** have come up with the **"Midland 1 Listens!"** campaign, and *Pop'Comm* has jumped on board to bring it to you, our readers. As you read, imagine the possibilities. And put them to work for yourself. To be sure, this concept is intended for all of our Personal Radio Services: CB, FRS, and GMRS. Midland reminds us that, "Everyday CB and two-way radio users throughout the country in cars, SUVs, pick-up trucks, RV vehicles, and even those enjoying the 'great outdoors' will be able to reach out and contact someone for help or conversation as the result of a new initiative just announced." And *initiative* is exactly the word to describe this happening. As simple as this concept is, it took insight and imagination not just to conceive it, but to take real, positive steps to make it happen.

The fabulous Midland 79-290 Sideband mobile CB rig. Touch button M1 to go directly to "Midland 1 Listens!" (All photos courtesy of Midland Radio Corporation.)

The Crux Of The "Midland 1 Listens!" Concept

It's as simple as the number "one." Whichever Personal Radio Service you use, think *one*—Channel 1! Participants in the **"Midland 1 Listens!"** initiative will voluntarily adopt CB Channel 1 as well as Family Radio Service (FRS) Channel 1 for all types of "meet 'n' greet" contacts. This will also include, "travel assistance as well as emergency use" according to Midland. **"Midland 1 Listens!"** also specifically includes licensed GMRS radio operators on the shared-service frequency that is also FRS's Channel 1, 462.5625 MHz. (I have more information that is important to GMRS licensees, so please keep reading!) Midland is doing its part by including pertinent information in their advertising and tucking it into their product packages, as well. They will be providing in-store dealer displays and promotional material specifically to inform *you*, the conscientious and demanding CB radio operator, about the **"Midland 1 Listens!"** campaign.

And that's not all. Midland tells us that their dealers are being enlisted to monitor FRS and CB Channel 1, "to assist users and travelers in their local area(s)"! Midland Senior Vice President Tony Lane insisted that, "This is simply the right thing to do to elevate the usefulness of these very popular consumer communications technologies." Lane graciously conceded that, "Obviously you won't need a Midland radio to enjoy using all that Channel 1 will have to offer, and that's just fine with us. Spread the word!" And he hastened to add, "Of course, we'll always welcome you as our customer...whether you're looking for a good pancake restaurant while traveling or you're lost or you're lonely on the road, now there will be a new place to tune with **'Midland 1 Listens!'** "

I really need to point out that if this isn't a fine model of corporate citizenship, then nothing is. I can see that Midland is clearly—to use a very good pun—"putting their money where their mouth is." You just can't beat that.

You know, gentlemen's agreements are the longstanding, traditional way that our CB band plan has historically evolved. Were you around in the mid-1970s when truckers nationwide switched to Channel 19, virtually overnight? Were you there in the early 1960s when Channel 9 in actuality became the recognized emergency channel, years before the FCC codified it as law? Well, here's your chance to get in on the ground floor of the latest nationwide gentlemen's agreement for the Citizens Band. Consider yourself a

Here is the Midland G-28 handheld GMRS radio, with detachable antenna.

charter member of this movement right now, just for being among the very first to hear about it and know the details of this great voluntary initiative. You're in!

Switch to Channel 1 and spend some time listening. Make a contact and chew the fat about **"Midland 1"** and the Channel 1 concept. For SWLs, that's 26.965 MHz, AM mode. Owners of the premium Midland model 79-290 mobile SSB CB will find that the memory button M1 default is preset to Channel 1. It is also gratifying to see that the choice of CB Channel 1 for this campaign does not preclude owners of vintage 23-channel CB sets from participating. This is all-inclusive, for those who wish to participate.

FRS And GMRS, Too

As we noted, **"Midland 1 Listens!"** is for FRS and GMRS two-way users as much as it is for 27-MHz CB radio. Regular *Pop'Comm* readers and others close to the Personal Radio Services scene will remember FCC Docket RM-10019 from just a couple of years ago. That FCC petition sought to have FRS Channel 1 designated as this radio service's official *Common Calling Channel*, by law.

The motion was initiated by telecommunications professional and hobbyist Bob Leef (like me, both an amateur and a GMRS licensee) and myself. It's basic. It's simple. Start at the beginning, at number one. That, and the fact that every FRS unit we have seen defaults to Channel 1 when first powered up, was some of the inspiration for our own joint petition. The remainder of the inspiration came from an early movement within the REACT organization to consider promoting FRS Channel 1 as a sort of calling channel. As it happened, the FCC nixed RM-10019. But the movement had already started on its own merits, and that was just as well with the Commission.

Given this, we can see that the *idea* of using FRS Channel 1 as a calling channel is not new, itself. What *is* new is getting more folks to actually *use* FRS-1 as a calling channel. Of course, this is precisely where the **"Midland 1 Listens!"** initiative fills in the missing piece of the pie. If the FRS-1 concept wasn't already universal, it certainly is now.

"Midland 1 Listens!" is specifically for GMRS licensees, in addition to FRS and 27-MHz CB. This has the potential to become confusing, since there is no numbered channel plan in the GMRS. Many new GMRS users are coming on the air with the new generation of "bubble-pack" GMRS radios and GMRS-FRS hybrid bubble-pack models. It appears that *most* models of this class of radio have FRS Channel 1 set to the "Channel 1" position in these radios' memory and digital display components. In this case, regardless of whether the radio user desires FRS, GMRS, or GMRS-FRS shared operation, "Channel 1" on these radios is typically the very frequency that *is* FRS Channel 1.

This presumption—along with the logic that a radio programmed with FRS Channel 1 as well as any or all GMRS channels *still* has only one *officially* designated "Channel 1"—naturally leads us to the only probable conclusion: GMRS licensees choosing to participate in **"Midland 1 Listens"** should use 462.5625 MHz, the simplex frequency that is FRS Channel 1. Remember now, this is a *calling* channel, primarily for "meet 'n' greet" communications. GMRS licensees have their own well-established emergency calling procedures, including frequency and tone use, and most such users are well familiar with them. (GMRS usage has been presented in very recent editions of *Pop'Comm*, so I will not rehash it here.)

The FRS Channel 1 frequency is one of the seven authorized low-power, interstitial GMRS channels. They are not paired; they are for simplex use only. And these are shared with the Family Radio Service as Channels 1 through 7 on FRS radios' channel indicators. Interservice communications between FRS users and licensed GMRS stations is not prohibited by the FCC and has become common practice. But let's think about this for just a moment. Which would you rather be when operating on the very popular FRS Channels 1 through 7, an FRS user limited to just a 1/2 watt of transmit power or a licensed GMRS radio station operator authorized for 10 times that much on those same channels? Hah! That's an easy one.

Any GMRS licensee living in a house where exterior antennas are feasible can set up an especially neat and effective FRS-1 operating station at home. As a GMRS operator, you are permitted up to 5 watts Effective Radiated Power (ERP) on these interstitial channels (unlike the

repeater output channels where 50 watts transmitter power is allowed), Setting up a station with a specific ERP does take a bit of calculating. But with the right rig, feedline, and antenna it is quite doable. Antenna height is also limited on these splinter channels, but as compared to handheld, mobile, or even consumer-grade FRS base station units your station will be a monster! And it won't cost a fortune to assemble. We may want to examine further just such *a small base station* in a future column, perhaps.

Why Get Back Into Mobile CB When You've Got A Wireless Phone?

There is growing concern as to why you seriously need to consider becoming involved with or getting back into mobile CB radio, or other alternative communications means, in addition to your wireless phone. For those who depend upon wireless telephone service in the delivery of disaster mitigation logistics support, and especially for the vast majority of us who simply need access to emergency communications in the event of a disaster, the reason is obvious. Remember, we are at war. As we have already seen, just about anything can happen. And, we are just beginning. It is too soon for any end to be in sight, and our president has said plainly that the War on Terrorism will be a long one. So then, is there a problem with our commercial radiotelephone services?

Those of you who stay close to happenings in the telecommunications industry have likely heard the various stories of wireless phone service faults in New York City on the infamous September 11. In the case of lower Manhattan that day, two factors were at work disrupting wireless phone service. One was physical damage to the networks. Numerous cell site base stations were located in and near the World Trade Center towers. Additionally, a nearby landline telephone central office switching facility sustained damage. The mere potential for service disruption is obvious. The second factor was simply sheer overload by massive call volume. When several downtown blocks of one of the world's largest and most important cities were blown away in a matter of hours, masses of distressed people made innumerable desperate cell phone calls.

Regular *Pop'Comm* readers have read repeatedly that emergency backup mobile communications—in *addition* to having a wireless phone—is essential in case of disaster or widespread emergency. If nothing else, the commercial wireless phone networks (cellular, PCS, SMR, and such) can overload with traffic. I have observed that this takes only a snowstorm or a major rush-hour freeway pileup. Likewise, regular readers of "O-T-G Radio" and "Homeland Security" understand well the options available to them and how 11-meter CB radio fits into emergency preparedness.

Recently, I became aware of an incident in which a motorist in my own small city became alarmed when he was unable to gain access to his wireless phone service provider's network. It was the thick of the Christmas season shopping rush on a sunny weekday morning. While out and about, he came upon a traffic accident blocking perhaps two lanes of a major boulevard in a commercial district. Offi-cials already had the scene under control, so our motorist had no need to call 911.

However, our motorist did have a somewhat pressing need to phone ahead to a local merchant to check if that particular shop had an urgently needed item in stock. He became frustrated as repeated attempts to connect, while inching ahead in traffic, were met with the same result: mobile reorder, all circuits busy. Twenty minutes and about two miles later, he finally managed to connect. He was troubled, however, by the thought that *what if* he, or anybody else, had actually needed to dial 911, or to place any other extremely urgent call. Emergencies are not always single, isolated incidents. This is not isolated—often enough, a rash of incidents, related or unrelated, occurs within a given locality.

What had happened here? Without access to that particular service provider's switching statistics for that hour, we can only speculate. It appears likely that the traffic tie-up that resulted from the collision hindered many folks' plans for the day. Further, it appears that a large number of these same folks decided to call ahead to their respective destinations, or to home, or the office, or wherever. Likely then, the cell or the cell sector in that locality, on that service provider's network, had all RF logical (*discrete*, essentially) channels busied-out. If that carrier's network switch in that region was set to the default disable *directed retry*, then that would be the end of the call attempt. If directed retry had been enabled, then call attempts would be redirected to other, specified cells within range, if any.

Get into "Midland 1 Listens!" with these colorful Midland F4 14-channel FRS radios.

In this anecdotal case, we simply don't know what the directed retry situation happened to be. Further, there are dozens of engineering factors behind it all, which would require an entire textbook to just roughly describe. What we *do* know is that during this incident, and subject to that one wireless service provider's switch algorithm translations, all available logical channels were either busy or out of service. Now, this is a single incident in time, within the entire country. But for this particular motorist, the incident festered with a jab of seemingly twisted irony. He could not get a cellular circuit for some 20 minutes. But, in order to adequately hear the call that he had hoped to make, he had to turn off his CB radio to quiet the chatter of all the truckers from a nearby interstate highway. What's wrong with this picture?

Better yet, what's *right* in this picture? Sometimes—certainly not always, but sometime—*simple* is better. So, for better or for worse, when the more complex

fails, we find ourselves left with that which is simpler. Quite logically, given that all other factors are roughly equal, complex is more likely to fail than *simple*. When all that is more complex fails utterly, we then find ourselves reduced to the lowest common denominator in essence. And I doubt that very many people, whether they love or hate the mode, would dispute that in the world of radio communications, 27-MHz CB radio is indeed the *lowest common denominator*. Realize then that we can look at this either way, bad or good. When it works, which is more often than not, then it is definitely good.

Now ask yourself these questions: Is occasional cellular system blockage due to emergency situations a condition that is either more or less likely to occur in your locality over the next several years? Will disaster situations, including homeland defense deployment operations, the presence or abeyance of enemy or terrorist attack notwithstanding, increase? How important to you is the protection of your family, your neighborhood, or your community, and how much of this depends on divergent communications capabilities? What are the vulnerabilities of the radio services and modes you use? There really are quite a few factors that come into play but, when facing the probability of catastrophic system failure, consider keeping it *simple*.

Actually, we want as many different radio communication services at our fingertips as is feasible or practical. Those among us who are licensed radio operators will certainly want whatever radio service or services for which we are licensed with us when we are mobile. Of course, not everyone needs or wants to be licensed. Now, those of us in this much larger group can have our commercial wireless service, of course, if we want or need it.

In lieu of this, or to back up our commercial service, we have CB radio and FRS available. Both are exciting and useful radio services, each with a steady stream of cool new products coming to market. As we can see, both services are currently in a state of flux, improving as time goes on. And the *Pop'Comm* editorial staff will be keeping a close eye on these particular services, and on the world of personal communications in general.

Spreading The Word

The **"Midland 1 Listens"** initiative is effective as you read this. It is now in the startup phase, and is planned to gain real momentum this coming summer as Midland ratchets up its promotional campaign. That is when the bulk of hobbyists and consumers will be made aware of **"Midland 1."** You can find additional information at the Midland website at <www.midlandradio.com>.

So, spread the word. *Pop'Comm* is doing its part. Not only are we telling you all about it right here, but "On-The-Go Radio" will remain your central point of information on **"Midland 1 Listens"** as the basic Channel 1 *Common Calling Channel* concept gains acceptance in the hobbyist and consumer world beyond even Midland's formidable realm. "O-T-G Radio" *is* your number one source of news about the 11-meter CB scene!

Always be prepared to care for yourself and for those you love. And, be sure to say a prayer for all of our uniformed service personnel: military, law enforcement, and fire-rescue-EMS services. We'll meet in these pages again next month, when the days are a bit longer and, hopefully, warmer. ■

Popular Communications April 2003 Survey Questions

When traveling I regularly use the following mobile radios:

CB 1
Ham HF 2
Ham VHF/UHF 3
GMRS 4

My mobile radio setup is:

A permanent installation 5
A semi-permanent installation - radio is bracketed to vehicle and antenna is a magnet or trunk-lip mount 6
A semi-permanent installation - antenna is bracketed to vehicle and radio is on a slide-mount 7
Completely portable - a handheld radio and small mag-mount antenna....8

My mobile radio is connected to:

The battery 9
Cigarette lighter receptacle.....10
Self-contained DC power pack 11

My mobile ham transceiver is:

Multi-band high power rig 12
Single band rig 13
Handheld 2-meter radio.....14
Handheld dualbander 15
Converted 11-meter radio.....16

My favorite mobile operating mode is:

Sideband - CB 17
AM - CB.....18
Sideband - ham.....19
AM - ham 20
FM 21
CW 22

I use my mobile CB mainly for:

Exchanging travel info 23
Listening only to Ch 19 or 9 24
DX while traveling.....25

ham discoveries

connecting as a radio amateur

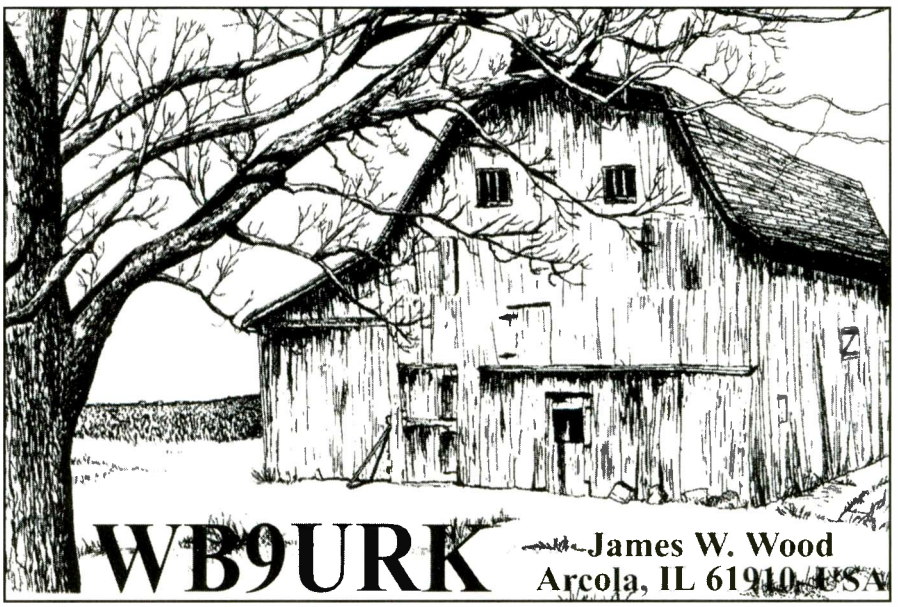
by Kirk Kleinschmidt, NTØZ

What Do Antenna Tuners Tune, Anyway?

After writing a recent antenna tuner construction article for *QST* magazine (photos appeared in this column last August), I've been inundated with a steady stream of e-mails from hams of virtually every level of radio experience, all asking pretty much the same basic questions. Now, I'm not an RF engineer, but I've acquired a lot of seat-of-the-pants tuner expertise during my 26 years as a ham, most of which I wish I knew when I was just starting out!

As the e-mails illustrate, antenna tuners are as popular as ever...and as confusing. New types and new applications make choosing and using an antenna tuner—or choosing not to use one—potentially confusing, especially for newcomers.

There's a lot of hype and folklore surrounding antenna tuners, especially when it comes to what they can and can't do. Figuring out whether your station really needs one is half the battle. The other half is finding an antenna tuner with the right features at a price you can afford.



Pop'Comm *reader James Wood, WB9URK, of Arcola, Illinois, sent along a copy of his new QSL card, which shows the barn on his family farm. A local student turned a collection of photos into the QSL card artwork. James, a self-proclaimed packrat, collects vintage and "interesting" computers and communications gear.*

Where to begin? Basically, your transmitter "wants to see" an antenna that's as close to an impedance of 50 ohms as possible. If you're like most hams, a length of 50-ohm coax connects your antenna to your transmitter. When an antenna is properly matched to your transmitter (meaning that the antenna is *resonant* or nearly so), most of the power sent through the transmission line reaches the antenna and is radiated into space (good!). If the antenna isn't properly matched, some of the energy in the transmission line bounces back and forth between the antenna and the transmitter instead of being radiated (not so good!). Serious mismatches can *greatly* reduce your transmitted signal and might even damage or destroy your transmitter or transmission line! The greater the mismatch, the less power your antenna radiates.

The term for measuring this match (or mismatch) is called SWR (standing wave ratio), and it's measured with an SWR meter (of course!). Simply, a ratio of 1:1 (or close to it) is best; 2:1 is usable; and 3:1 or greater probably indicates a serious mismatch, for antennas fed with 50-ohm coax, anyway.

Cutting a wire antenna (or tuning a beam antenna) so it presents a 50-ohm load to your transmitter is pretty easy—if you're interested in operating on a narrow range of frequencies on one band! If you want wider coverage from the same antenna you can insert an antenna tuner between your rig and your antenna. Most operators put the tuner at the shack end of the transmission line, but much better results are usually achieved by putting the tuning network at the antenna feed point, but more on that later.

By adjusting the tuner's controls, you can "trick" your radio into putting out full power (and be "happy" in the process). When properly adjusted, there's a nearly perfect match between your rig and the tuner (1:1 SWR). There's *still* a mismatch between the tuner and the antenna, but if you're using a good quality transmission line, most of your precious radio energy makes it to the antenna and is radiated happily into space.

In this simplified scenario, a shack-mounted antenna tuner works best at HF—the lower in frequency the better, as coax losses increase with frequency. Also, the antenna being "tuned" should be reasonably resonant, meaning that the impedance at your operating frequencies is pretty close to 50 ohms, which often rules out operation on a large variety of bands.

Using your antenna tuner to tweak a dipole that's resonant on 7.0 MHz to work at 7.275 MHz is a good idea. So is using a tuner to load a 40-meter dipole on 15 meters (or an 80-meter dipole on 10 meters). That's because the bands are harmonically related in a way that results in reasonable feed line SWRs. Using your shack-mounted tuner to load a 40-meter dipole on 80 meters (or an 80-meter dipole on 160 meters, etc.) is a *terrible* idea. Although the SWR between your rig and your tuner might be 1:1, the SWR on the coax that runs between your tuner and your antenna will be extremely high, which results in *horrible* losses.

To get around the punishing SWR losses that result from high feed line SWRs you'll have to feed your antenna with 450-ohm ladder line (which is nearly lossless compared to coax) or mount your antenna tuner at the feed point of your antenna. Completely automatic tuners designed to be mounted at the antenna feed point are available from SGC (<www.sgcworld.com>), LDG Electronics (<www.ldgelectronics.com>), and others. Once prohibitively expensive, auto-tuners, especially those that mount at the antenna feed point, are an excellent, often the best, way to feed a single antenna on multiple bands.

Tuner Good...

• You want to feed your antenna with 450-ohm ladder line. Ladder line is almost lossless at HF (much better than coax). The problem is, ladder line is *balanced*, while your rig (and your coax) is *unbalanced*. To bridge the gap, you need an antenna tuner with a built-in *balun*, a special *balanced* to *unbalanced* transformer. For a more "deluxe" experience, acquire or build a tuner that's designed for balanced lines.

• You want to use your antenna on frequencies for which it isn't designed. If you try, for example, to use your 40-meter dipole on 10 meters, the SWR will be very high, and poor performance will result. With an antenna tuner in-line, you'll probably be able to create a 1:1 SWR between your transmitter and your antenna tuner, permitting operation. (Some mismatches are too great for every—or any—tuner to handle.)

• Your antenna has a narrow SWR bandwidth on some bands. Some multiband antennas don't offer low SWR from one end of a band to another. With your antenna tuner, you can operate anywhere in the band and still put out full power from a happy radio.

Tuner Bad...

• Your SWR is 1.5:1 or less on the frequencies at which you operate. Most modern rigs will tolerate an SWR of 1.5:1 or less with no difficulty and still put out full power.

• You have a high SWR at VHF or UHF. Because feed line losses increase rapidly at these frequencies, antenna tuners are generally not useful. The only real remedy is to use a high-quality feed line and a properly matched antenna. No shortcuts here!

• You're interfering with TVs, telephones, or other electronic equipment in the neighborhood. Despite what you may have heard, antenna tuners don't usually do a good job cleaning up these problems. Some designs reduce *harmonic radiation*, but most of the previously mentioned interference is caused by RF overload at the fundamental frequency. Tuners do nothing to reduce this (and may actually make it worse by helping you radiate an even stronger signal!).

Goodies

Useful antenna tuner features include the following:

• A built-in SWR meter (otherwise you'll have to use an external meter or the one built into your rig);

• High-quality inductors, roller or tapped (your antenna tuner is not the place to skimp on component quality!);

• A built-in balun (for using open-wire line);

• A built-in antenna switch (your antenna farm will likely grow). Some tuners are totally automatic—just push a button or key your transmitter and you're at 1:1 SWR.

A tuner rated at 300 watts will probably serve your 100-watt (or less) station just fine. At certain frequencies, and when trying to match certain transmission-line impedances, RF voltage soars and can even cause sparks or arcing! This can destroy your tuner and/or your rig, so when it comes to buying antenna tuners, the greater the power rating the better! If you're planning to feed a single antenna with ladder and tune it on multiple bands, use the beefiest tuner and balun that you can get your hands on.

Tuner Efficiency

A tuner topic that's not frequently addressed is tuner efficiency. Although a particular tuner can effect a match on a certain frequency with a certain antenna, the losses *inside the tuner* can be less than desirable. The ratio between tuner input power and tuner output power defines its efficiency (its internal losses). Good tuners usually have losses in the 5- to 15-percent range, but losses can soar to 50 and even 60 percent in certain models (usually when matching antennas on 160 meters or other *more extreme* frequencies). That's a lot of heat! To explore this interesting and relevant topic, check out the excellent two-part article, "How to Evaluate Your Antenna Tuner," in the April and May 1995 issues of *QST*. ARRL members can point their Web browsers to <www.arrl.org/members-only/tis/info/pdf/9504030.pdf>.

The Bottom Line

So what tuners do I recommend? I have a couple of conventional tuners, a few that I've built myself, a home-brew balanced line tuner (nice), and an auto-tuner that mounts at the antenna feed point. And although each tuner is useful in various applications, I love the speed and performance of putting an auto-tuner at the antenna end of the feed line instead of in the shack. Band changes are instantaneous, feed line losses are essentially zero and the thing just works like a champ. Yes, it was a bit of a hassle to mount and power, but the benefits far outweigh the hassle factor. If you want to use a single antenna from DC to daylight, there are a few solutions that work better—and none that are more convenient.

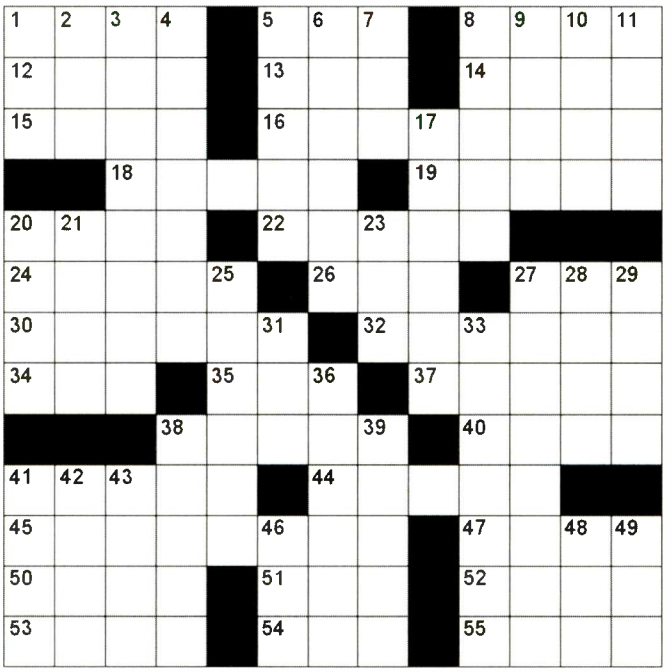
See you next month. Send your QSL cards, questions, and letters to me at "Ham Discoveries," *Pop'Comm*, 25 Newbridge Rd, Hicksville, NY 11801. ■

the Pop'Comm puzzle corner

test your radio knowledge

by Eric Force <eric@dobe.com>

(RevSp = Reverse Spelling – e.g. "SPELLING" = "GNILLEPS" in puzzle)



ACROSS
1 AM 940, Montreal, CA
5 Type of RTTY terminal mode
8 Grand
12 Telephone key left of "0"
13 aka GMT
14 Music genre known to affect this (RevSp)
15 West African country
16 Martin Truck Company's truck (CB Slang) (RevSp)
18 Phonetic "I"
19 Pre 1925 radio manufacturer
20 AM 730, Vancouver, BC
22 5 Down (RevSp)
24 Young owl
26 Body language, "OK"
27 Fading prevention circuit
30 Containing iridium
32 Flat cable (RevSp)
34 Acronym, Linux User Groups
35 MO home of AM 1430, KKOZ
37 Phonetic dah
38 Resistor color code 1 (RevSp)
40 These tables use a hashed index
41 Known as "Paradise of the Pacific"
44 ITC Prefix TRA-TRZ (Country) (RevSp)
45 MA home of AM 1460, WBET
47 Plug's gender
50 Police (CB Slang)
51 Airport code, Cleveland, OH
52 Broadcasts airport weather conditions
53 Securely confined
54 CW abbr, Address
55 dit dit dit, dit, dit, dah dit dit

DOWN
1 Std Timezone, UTC -6
2 Airport Code, Hilo, HI
3 Pop' Comm Operations Mgr. (RevSp)
4 Treated unfairly
5 15 Hz to 20 KHz these frequencies
6 Type of (cable) relief
7 Radio Canada International
8 Swelling
9 Dispense liquid
10 KS home of AM 1370, KALN
11 AM 910, Guanabacoa, CU
17 Five-bit digital code
20 Wire in a spiral
21 AM 940, Fresno, CA
23 Phonetic "D" (RAF 1924-42)
25 ITC Prefix 9KA-9KZ (Country) (RevSp)
27 Renounce
28 Metric prefix for one million
29 Extract portion of image/photo
31 Christian Voice, abbvr.
33 FCC Country Code: BF
36 Pop' Comm's Advertising Mgr. (FN)
38 Mother-of-pearl
39 Capt. Kirk's medical sidekick
41 Packet Bulletin Board System (abvr)
42 Length times width
43 Baked bread unit
46 Now called Class B airspace
48 False statement
49 Lightning is this

THIS MONTH IN RADIO HISTORY - Word Jumble

(Hint: "The quick brown fox jumps over a lazy dog" the key.)

On April 26, 1949 ...

" "
"W X X O" N T C T G B F U T F F X A F E U Q

P T Q B X Z T S Q X X N U Q T F Q

Z B V K B F V K P U U D U T P S, H U

E X N J W U V U W D X L U P S K T Q X Z U Q

H D V L.

Solution: "LOOK" MAGAZINE ANNOUNCED RADIO WAS DOOMED AND, WITHIN THREE YEARS, BE COMPLETELY OVERSHADOWED BY TV.

Pop'Comm Trivia...

As reported by L.M. Cockaday in "Radio News", August 1935, I had 2000 loud speakers, stood about 7 feet high and was 50 feet long. My home was in a luxurious hotel six stories above the streets of New York City. What was I?

Ans. The "WORLD'S LARGEST ALL-WAVE SET"
More Info at: http://www.antiqueradios.com/allwave.shtml

Got a good Trivia question? Send it in and win a FREE Pop'Comm subscription if we publish it. E-mail your trivia question (and answer) to: trivia@dobe.com

Tap into *secret* Shortwave Signals

Turn mysterious signals into exciting text messages with the MFJ MultiReader™!

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

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

You'll *read* interesting commercial, military, diplomatic, weather, aeronautical, maritime and amateur traffic . . .

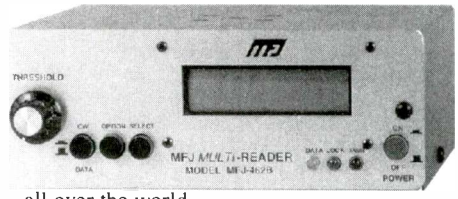
Eavesdrop on the World

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

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

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

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime



-- all over the world -- Australia, Russia, Japan, etc.

MFJ-462B **$179.95**

Printer Monitors 24 Hours a Day

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.

High Performance Modem

MFJ's high performance *PhaseLockLoop*™ modem consistently gives you solid copy -- even with weak signals buried in noise. New threshold control minimizes noise interference -- greatly improves copy on CW and other modes.

Easy to use, tune and read

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

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

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

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

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, $14.95. 5¼Wx2½Hx5¼D inches.

No Matter What™ One Year Warranty

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

Try it for 30 Days

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

Super Active Antenna

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

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

Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED. Switch two receivers and auxilary or active antenna. 6x3x5 inches. Remote has 54 inch whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, $14.95.

MFJ-1024 **$139.95**

Indoor Active Antenna

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

MFJ-1020B **$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, $14.95.

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-200 MHz including low, medium, shortwave and VHF bands.

MFJ-1022 **$49.95**

Detachable 20 inch telescoping antenna. 9 volt battery or 110 VAC MFJ-1312B, $14.95. 3⅛x1¼x4 in.

Eliminate power line noise!

MFJ-1026 **$179.95**

New! 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

MFJ-959B **$99.95**

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

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, $14.95.

Dual Tunable Audio Filter

MFJ-752C **$99.95**

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

High-Gain Preselector

MFJ-1045C **$99.95**

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, $14.95.

CW, RTTY, ASCII Interface

MFJ-1214PC **$149.95**

Use your computer and radio to receive and display brilliant full color FAX news photos and incredible WeFAX weather maps. Also RTTY, ASCII and Morse code. Frequency manager lists over 900 FAX stations. Auto picture saver.

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

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 inches.

MFJ-956 **$49.95**

Super Passive Preselector

MFJ-1046 **$99.95**

New! **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.

Easy-Up Antennas

How to build and put up inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before. Antennas from 100 KHz to 1000 MHz.

MFJ-38 **$16.95**

MFJ Antenna Switches

MFJ-1704 **$64.95** 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.

World Band Radio Kit

Build this regenerative shortwave receiver kit and listen to signals from all over the world with just a 10 foot wire antenna. Has RF stage, vernier reduction drive, smooth regeneration, five bands.

MFJ-8100K **$69.95** *kit*
MFJ-8100W **$89.95** *wired*

21 Band World Receiver

MFJ's new 21 Band World Receiver lets you travel the world from your armchair! Listen to BBC news from London, live music from Paris, soccer matches from Germany and more! Covers 21 bands including FM, Medium Wave, Long Wave and Shortwave. *Sony*® integrated circuit from Japan, multicolored tuning dial, built-in telescopic antenna, permanent silkscreened world time zone, frequency charts on back panel. Carrying handle. Operates on four "AA"s. Super compact size!

MFJ-8121 **$39.95**

Free MFJ Catalog

and Nearest Dealer . . . 800-647-1800

http://www.mfjenterprises.com

• 1 Year *No Matter What*™ warranty • 30 day money back guarantee (less s/h) on orders from MFJ

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FAX: (662) 323-6551; **Add s/h**
Tech Help: (662) 323-0549

world band tuning tips

your monthly international radio map

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

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

UTC	Freq.	Station/Country	Notes
0000	15110	Radio Australia, via Taiwan	
0000	17615	BBC relay, Thailand	
0000	15060	Family Radio, via Taiwan	unid
0000	17570	Radio Netherlands via Russia	unid
0000	17510	KWHR, Hawaii	
0030	6055	Radio Exterior de Espana	
0030	17820	VOA relay, Philippines	
0030	6145	Radio Japan, via Canada	
0030	6165	Radio Netherlands relay, Bonaire	
0030	7400	Radio Bulgaria	
0100	5175	Voice of Vietnam via Canada	
0100	4830	Radio Tachira, Venezuela	SS
0100	9810	Radio Ukraine Int'l	
0100	12000	Deutsche Welle, Germany, via Portugal	GG
0100	11800	RAI Int'l, Italy	
0100	11880	Radio Japan/NHK, via Sri Lanka	
0100	11620	All India Radio	
0100	4052.5	Radio Verdad, Guatemala	SS
0100	5930	Radio Slovakia Int'l	
0130	6155	Radio Telefis Eireann, Ireland, via England	
0130	15375	Voz Cristiana, Chile	SS
0130	5010	Radio Pueblo, Dominican Republic	
0130	9870	Radio Austria Int'l	
0200	7130	Radio Yugoslavia	
0200	9650	Radio Korea Int'l, S. Korea, via Canada	
0200	9745	HCJB, Ecuador	
0200	17675	Radio New Zealand Int'l	
0200	4845	Radio K'ekchi, Guatemala	SS
0200	9765	Voice of Russia	
0200	4819	La Voz Evangelica, Honduras	SS
0200	4782	Radio Oriental, Ecuador	SS
0200	7345	Radio Prague Int'l, Czech Republic	
0200	11690	Radio Okapi, Congo (Dem. Rep.)	
0230	9495	Radio Sweden	
0230	7460	IBC Tamil, clandestine, via Russia	unid
0230	11675	Radio Kuwait	AA
0230	11655	RDP Int'l, Portugal	PP
0230	11585	Kol Israel	
0230	4832	Radio Litoral, Honduras	SS
0230	9515	Voice of Islamic Rep. of Iran	SS
0230	9580	China Radio Int'l, via Cuba	CC
0230	9525	Channel Africa, South Africa	
0245	6265	Zambia Broadcasting Corp., Swahili	
0300	4976	Radio Uganda	
0300	12005	RTT Tunisienne, Tunisia	AA
0300	11880	Radio Exterior de Espana, Spain	SS
0300	9475	Radio Cairo, Egypt	
0300	4960	Radio Cima Cien, Dominican Republic	SS
0300	7175	Radio Free Europe	various
0300	7180	Voice of Russia, via Moldova	
0300	3255	BBC via South Africa	
0300	9400	Radio Bulgaria	
0300	4885	Radio Clube do Para, Brazil	PP
0300	7255	Radio Botswana	
0330	7300	Voice of Turkey	TT
0330	7270	Radio Tirana, Albania	
0400	6185	Radio Educacion, Mexico	SS
0400	9705	Radio Mexico Int'l	SS
0400	7470	Norwegian domestic service, Norway	NN
0400	9435	Kol Israel	EE/FF
0400	9435	Radio Prague Int'l, Czech Republic	
0400	5019	Ecos del Atrato, Colombia	SS
0400	9625	CBC No. Quebec Service, Canada	
0400	11780	Radio Nacional, Brazil	PP
0400	11985	Radio Vlaanderen Int'l, Belgium, via Bonaire	
0430	12060	Voice of Hope, via Madagascar	AA
0500	9460	Voice of Turkey	TT
0500	11625	Vatican Radio	
0500	7255	Voice of Nigeria	
0500	4770	Radio Nigeria, Kaduna	
0500	9580	Africa Number One, Gabon	FF
0500	6080	VOA relay, Sao Tome	
0500	9530	Magadan Radio, Russia	RR
0530	12689	Armed Forces Radio, Florida	USB
0530	10320	Armed Forces Network, Hawaii	USB
0545	9925	Voice of Croatia, via Germany	
0600	4845	Radio Mauritanie, Mauritania	AA
0600	7125	RTV Guineenne, Guinea	FF
0600	15255	RFE/RL via Greece	various
0600	4760	ELWA, Liberia	
0600	4915	Ghana Broadcasting Corp.	
0600	5030	Radio Burkina, Burkina Faso	FF
0600	7210	ORTB, Benin	FF

UTC	Freq.	Station/Country	Notes
0630	9895	Radio Netherlands	DD
0630	9420	Voice of Greece	Greek
0700	6010	Radio Mil, Mexico	SS
0700	6070	CFRB/CFRX, Canada	
0730	9675	NBC, Papua New Guinea	
0730	6045	Trans World Radio via Germany	
0730	6005	Deutschlandradio, Germany	GG
0800	7260	Radio Vanuatu, Vanuatu	EE/vern
0830	7285	RTV Malienne, Mali	FF
0900	4940	Radio Amazonas, Venezuela	SS
0930	3315	Radio Manus, Papua New Guinea	pidgin
0930	4996	Radio Andina, Peru	SS
0930	4001	Nei Menggu PBS, China	CC
1000	4747	Radio Huanta 2000, Peru	SS
1000	6115	Radio Union, Peru	SS
1000	3220	Radio Morobe, Papua New Guinea	EE/pidgin
1000	4389	Radio Imperio, Peru	SS
1000	2410	Radio Enga, Papua New Guinea	
1000	3290	Radio Centro, Ecuador	SS
1000	6035	La Voz del Guaviere, Colombia	SS
1030	4824	La Voz de la Selva, Peru	SS
1030	4914	Radio Cora del Peru	SS
1030	9505	Radio Tacna, Peru	SS
1030	4960	Radio Federacion, Ecuador	SS
1030	3280	La Voz del Napo, Ecuador	SS
1030	4815	Radio El Buen Pastor, Ecuador	SS
1100	6324	Rdf. Comercial/LV del Vecino, Peru	SS
1100	5010	Radio Misiones Int'l, Honduras	SS
1100	4780	Radio Coatan, Guatemala	SS
1100	5010	Radio Cristal Int'l, Dominican Republic	SS
1130	4754	Radio Republik Indonesia, Makassar	II
1130	9525	Voice of Indonesia	JJ
1130	4830	Radio Barahona, Ecuador	SS
1200	7235	Radio Singapore	
1200	4725	Radio Myanmar, (Burma)	vern
1200	12105	BBC, England, via Russia	
1200	5880	Shijiazhung PBS, China	CC
1200	11785	Voice of Indonesia	
1230	9830	Central Peoples Broadcasting Station, China	CC
1300	13640	Radio Sultanate of Oman	AA
1300	11785	VOA relay, Thailand	
1300	9335	Voice of Korea, No. Korea	KK
1300	9740	BBC relay, Singapore	
1300	15400	YLE/Radio Finland	Finnish
1300	15115	HCJB, Ecuador	
1300	15575	BBC relay, Cyprus	
1315	11645	Central Broadcasting System, Taiwan	CC
1330	18690	Radio Sweden	
1330	17720	Radio Romania Int'l	PP
1330	15435	Radio Jamahiriya, Libya	AA
1330	11950	Voice of Islamic Rep. of Iran	Farsi
1330	11580	KFBS, Saipan, No. Marianas	CC
1330	5765	Armed Forces Network, Guam	USB
1330	15190	BBC, England	
1330	13780	Deutsche Welle, Germany	GG
1330	9490	Abkhazia Radio, Georgia Rep.	local
1330	12130	Trans World Radio/KTWR, Guam	CC/EE
1330	17660	YLE/Radio Finland	Finnish
1330	17675	Egyptian Radio	AA
1330	11540	Radio Free Asia, USA, via Russia	unid
1330	17745	Bc. Service of Kingdom of Saudi Arabia	AA
1330	17600	Radio Rossii, Russia	RR
1400	17885	Radio Kuwait	AA
1430	9715	Radio Tashkent, Uzbekistan	
1430	9965	KHBN, Palau	CC
1430	17620	Radio France Int'l	
1500	9975	Voice of Korea, North Korea	
1500	18940	Radio Afghanistan, via Norway	Pashto/Dar
1500	21640	Radio Jamahiriya, Libya	AA
1530	11600	FEBA, Seychelles	
1600	13675	UAE Radio	EE
1600	11570	Radio Pakistan	
1600	11850	Radio Free Asia, Northern Marianas	unid
1600	11690	Radio Jordan	
1600	15605	Radio France Int'l	
1600	15315	Bc. Service of Kingdom of Saudi Arabia	AA
1630	11655	Radio Netherlands relay, Madagascar	
1630	17545	Kol Israel	FF
1700	21470	BBC relay, Seychelles	
1730	11735	Radio Africa Int'l, via Germany	
1800	9780	Republic of Yemen Radio	AA/EE
1800	15240	VOA relay, Morocco	
1800	15705	Norwegian Domestic Radio, Norway	NN
1800	11990	Radio Kuwait	
1900	17660	Swiss Radio Int'l, via French Guiana	AA
1900	15120	Voice of Nigeria	
1900	15190	Radio Philipinas, Philippines	EE/vern
1900	17860	Deutsche Welle, Germany, via Rwanda	unid
1900	17895	VOA relay, Botswana	
1930	9745	RAI Int'l, Italy	
1930	11695	Voice of Islamic Rep. of Iran	Farsi
2030	11734	Radio Tanzania-Zanzibar	Swahili
2045	9960	Voice of Armenia	
2100	12085	Radio Damascus, Syria	
2100	11855	Radio Japan/NHK, via Ascension Island	
2200	11760	VOA relay, Greece	
2200	9835	Radio Farda, USA, via Morocco	AA
2230	11655	VOA relay, Morocco	
2230	17810	Radio Japan/NHK	Malay
2230	6458	Armed Forces Radio, Puerto Rico	USB
2230	11975	China Radio Int'l, via Mali	CC
2300	11820	Radio Veritas Asia, Philippines	II
2300	13605	All India Radio	
2300	17735	VOA relay, Philippines	
2300	9900	Radio Cairo, Egypt	
2300	13800	Music Jammer, China	
2300	6715	Full Gospel Las Palmas Church, Canary Is.	KK, USB
2300	4775	Radio Congohas, Brazil	PP
2300	4875	La Cruz del Sur, Bolivia	SS
2330	9885	Swiss Radio Int'l	
2330	11965	Deutsche Welle, Germany, via Sri Lanka	RR
2330	17820	VOA relay, Philippines	
2330	6973	Galei Zahal, Israel	HH
2330	9875	Radio Vilnius, Lithuania	
2330	11715	Radio Algiers, Algeria	

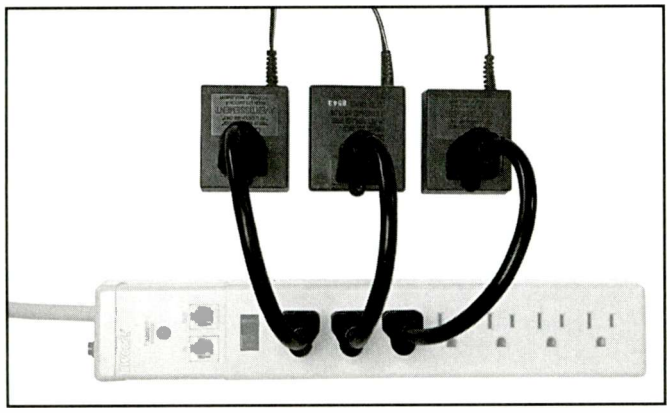
power up:
radios & high-tech gear

by Harold Ort, N2RLL

review of new, interesting, and useful communications products

Liberate Your Powerstrips!

We've found a quick and *easy* way to make full use of your powerstrip sockets! How many of those wall wart adapters do you have? And when they're plugged into your powerstrip they typically cover another outlet or two. The answer is to simply plug your power adapters into one of these handy adapter Powerstrip Saver cables, then plug the cable into any powerstrip socket! In just a few minutes you'll be able to liberate all of your powerstrip sockets and clean up your "power box clutter"!



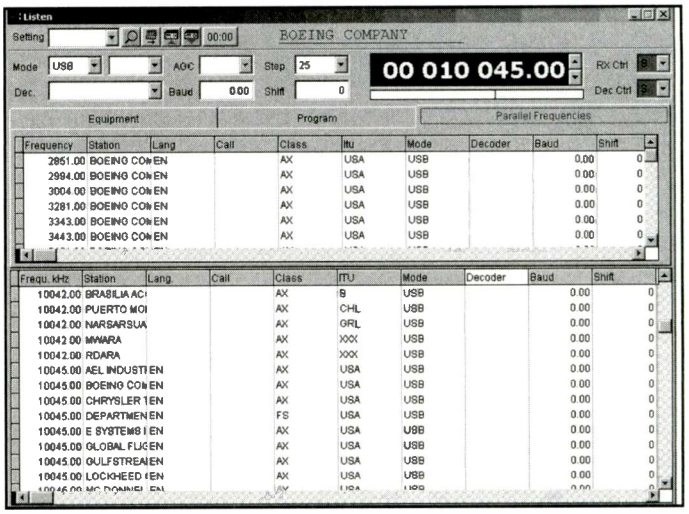
The 12PS1 Powerstrip Saver frees up your powerstrip for other plugs—and it's priced right!

This great new product is rated at 125 Vac at 10 amps (1250 watts) maximum and is for indoor use only. Bill Carpenter, Jr., the President/CEO stated, "Power strip Savers are so simple and useful. Everyone needs a few—it's a 'why didn't I think of that' kind of product." The suggested retail price on the 12PS1 (which allows the user to plug in one wall wart adapter) is $1.79. The 12PS2 retails for $2.79 and allows you to plug in two adapters!

"Powerstrip Saver" is a trademark of The Carpenter Group USA LLC. U.S. Patent Pending. Visit them on the Internet at <www.powerstripsaver.com> or write to the company at The Carpenter Group USA LLC P.O. Box 5698 Auburn, CA 95604. The Powerstrip Saver is available at all Fry's Electronics and J&R Computer World retails locations. Please remember to tell them you read about the Powerstrip Saver in *Popular Communications*.

shoc RSM5 5.3 RadioSpectrumManager

This super monitoring tool now includes a new database (BC, Utility, VHF/UHF). The S-Version will include the decoder drivers for amateurs, such as W40PC and W4100DSP, and the P-Version will include the decoder drivers for professionals, such as W4IPC, W41USB, and W5IPC. Additionally the W5IPC decoder is a new version and includes the following changes: HF ACARS, W2000 Service Pack 3, Windows XP, G-TOR with different code tables and ITA5 Chinese.



New features abound with the RadioSpectrumManager monitoring too!

For additional information, contact shoc R. Haenggi, Inc., The Radio Monitoring Company, at P.O. Box 128, CH-8499 Sternenberg, Switzerland, or visit them on the Web at <www.shoc.ch>. E-mail them with your questions about their RadioSpectrumManager at <hgr@ shoc.ch>.

New Cobra Products!

Cobra Electronics Corp. just introduced several new radio products to its well-established microTALK line of General Mobile Radio Service (GMRS) and Family Radio Service (FRS) radios offering increased range, increased channels, and increased features without increasing the price to the consumer.

The user-friendly, premium two-way radios include four high-power models. The first true 3-watt, 22-channel radio, the **PR 4000 WX,** provides X(3) Power technology that enables users to stay connected for up to a seven-mile range. The **PR 3000 DX** provides X(2) Power technology that, driven by 2 watts of power, delivers up to a six-mile range. The **PR 350 WX** and

The new Cobra PR 240-2 VP includes two radios, two NiMH rechargeable batteries, battery charger, and two earbud speaker/mics.

PR 240 both offer up to a five-mile range. In addition to the four high-power models, the entry-level PR 135 offers 22 channels with 38 privacy codes and up to a two-mile range.

"We are energizing the two-way radio market in 2003 with four high-power models that hit the consumer sweet spots of superior performance and remarkable ease-of-use," said Tony Mirabelli, senior vice president, marketing and sales for Cobra Electronics. "These models may be compact, but they pack a punch that delivers impressive range and numerous advanced features. And every single one of our new models, including the entry-level PR 135, offers a full 22 channels with 38 privacy codes."

Cobra's new professional PR 4000 WX transceiver has lots of bells and whistles.

Designed for the sophisticated consumer looking to take communications to the next level, Cobra's **PR 4000 WX and PR 3000 DX** provide a professional grade of power. Several features, including VOX hands-free communications, water resistance, and VibrAlert silent call alert, will be particularly appreciated by fishermen, hunters, and other outdoors enthusiasts. The PR 4000 WX also offers a 10-channel NOAA All Hazards Alert Radio, Digital Compass, Clock/Stopwatch/ Alarm, and enhanced water resistance.

Cobra's **PR 350 WX and the PR 240** are also water resistant and feature 10 Call Tones, allowing people to differentiate between up to 10 different parties on incoming calls. In addition, the PR 350 WX will feature a 10-channel NOAA All Hazards Alert Radio and a comfortable soft-grip design.

Cobra's 1/2-watt model, the **PR 135**, has an ultra-compact design, a two-mile range, and an extraordinary number of features for an entry-level product.

All of Cobra's two-way radios provide a fun, easy way for families and friends to stay connected and safe at shopping malls, amusement parks, sporting events, or around the neighborhood. Because of their exceptional range and lightweight yet durable designs, these radios also prove useful for outdoor activities, such as camping, hiking, fishing, and skiing. The radios are ideal for car-to-car communications, allowing caravanning friends and families to coordinate rest stops or to get someone who has taken a wrong turn back on course.

The five microTALK models are available in various configurations, including value packs featuring rechargeable batteries and chargers.

The new Cobra microTALK two-way radios range in price from $49.95 to $119.95. For more information, visit the Cobra Electronics Corporation's website at <www.cobra.com>.

by Shannon Huniwell

Shannon's Broadcast Classics

a look back at radio & TV's golden years

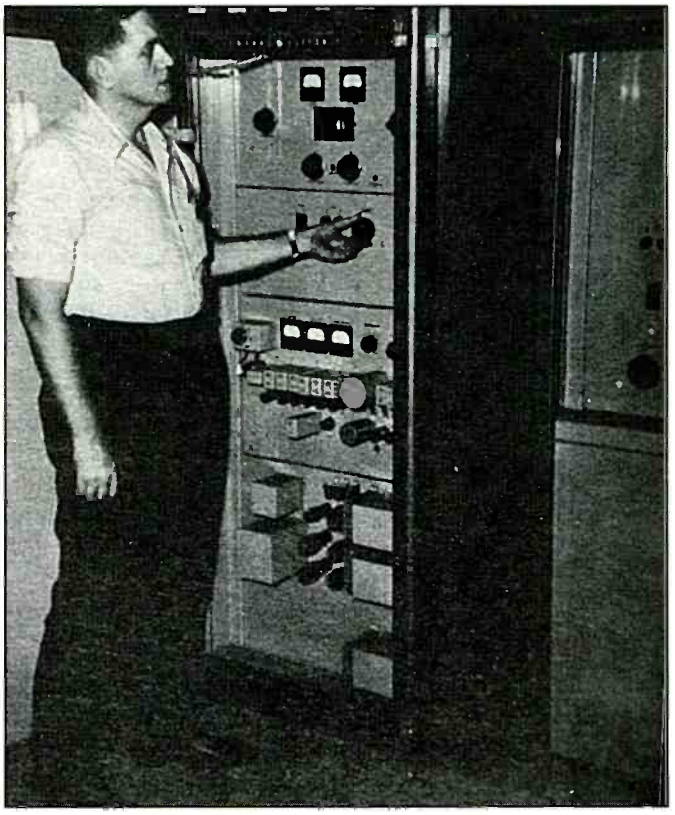
Albany's X-File AM Station

When a 1950s, high-powered, AM network affiliate in a major state capitol vanishes without a trace during amplitude modulation's heyday, it's really time to open our "Kilocycle X-File"! Witness the strange tale of WXKW 850, formerly of Albany, New York. It's a story that would never had made these pages had not a thoughtful friend found what I believe to be one of the only surviving promotional documents from this doomed 10,000-watt operation.

"I think it said *WX-something*," Jennifer, my old college sorority sister remembered. We were on the phone enjoying one of our annual catch-up sessions when she told me about a faded brochure that she spotted while hunting for antiques with her husband in some quaint Massachusetts Berkshire Mountain curio shop. "Aren't you doing some writing for a radio magazine?" Jen asked, and then surprised me when that vintage flyer arrived in the mail a week later. Her note suggested that I might be able to come up with an article from it.

By the middle of my first glance through the 1948 booklet, I knew that the brief frustrating life of WXKW 850 should be chronicled. Actually, the brochure was very upbeat, even featuring a picture of an 'XKW engineer happily mowing the transmitter site's lawn. But any big station in New York's Capital District that only managed a five-year existence must have intrigue woven into its saga.

As a bonus to the WXKW 850 mystery are stories about an equally short-lived FM outlet and UHF-TV project, as well as a smaller, daytime-only successor that also seemed to be cursed with misfortune.



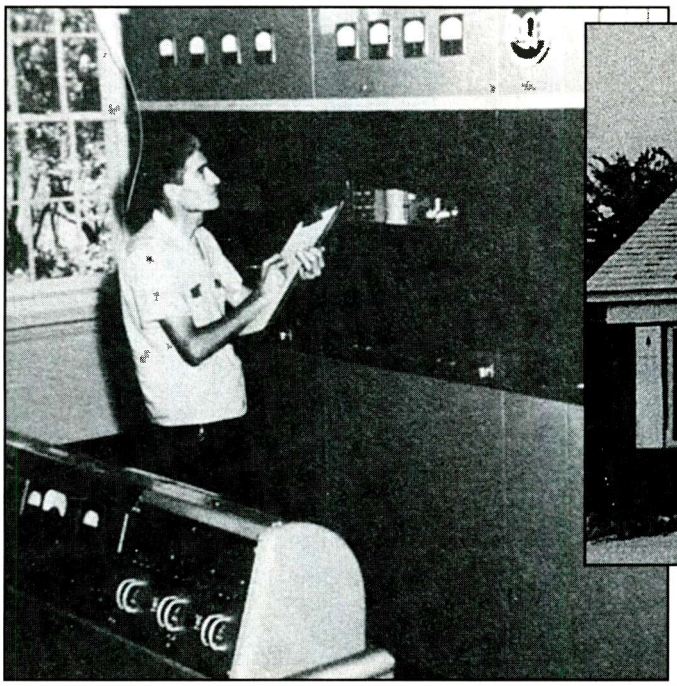
An Albany newspaper reported that WXKW's frequency modulation outlet, WRWR-FM, was to be built in the Helderberg mountains "near the GE television transmitter." This shot of engineer Bill Spratt, though, doesn't indicate where he's adjusting the WRWR-FM transmitter. Nor does the original caption confirm Broadcasting Yearbook *listings that WRWR-FM (later dubbed WXKW-FM) generated 9 kW on 95.5 megacycles. Reportedly, parts of this GE, serrasoid-modulated FM unit were donated to Rensselaer Polytechnic Institute when RPI installed an FM station on campus in the early 1950s.*

Going To The Historical Source

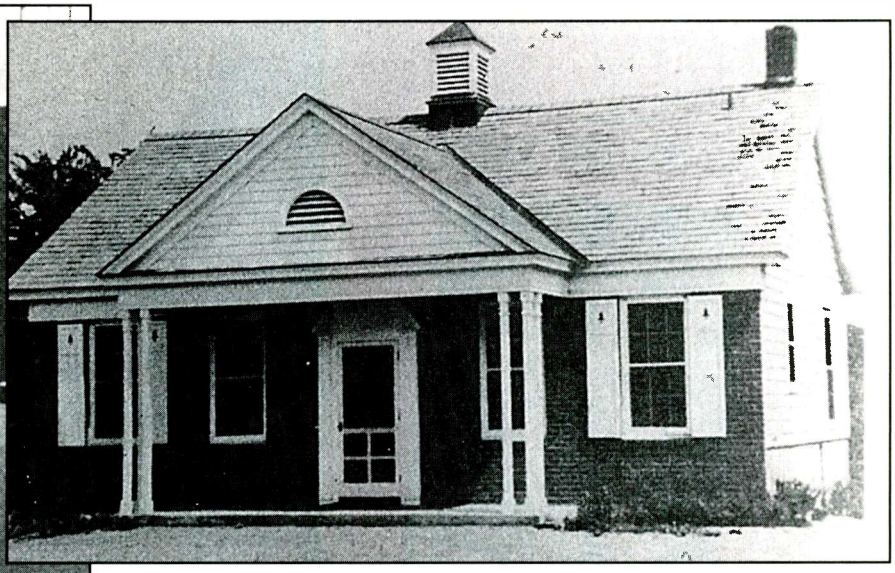
Our good friend Jan at *Broadcast Pro-File* dug into vintage FCC paperwork detailing WXKW's origins. He uncovered the station's construction permit dated April 28, 1947. It was assigned to the Champlain Valley Broadcasting Corporation and granted permission to build a 10-kW, directional daytimer on 850 kilocycles. At first, principal owner Stephen Rintoul requested the call letters WRWR for this new venture. His company already held a CP for WRWR-FM (95.5 megacycles), also licensed to Albany.

Two days after the Commission's grant, an *Albany Times-Union* piece appeared, entitled *FCC Permits New Station for City*. Readers learned that in 1946, Champlain Valley Broadcasting (highly confident of receiving an FCC go-ahead) had made the $18,000 purchase of the Steven Miller Farm in Selkirk, New York, some 10 miles south of Albany. There, "a large brick farmhouse [was slated] to be used for the engineers' quarters [and] a smaller house [would] be used for generator equipment." The famed Blaw-Knox tower company was said to be sending a crew to the farm with plans to begin erecting a line of six "sticks" for the new facility's antenna array during early May of 1947. ABC Network officials readied the paperwork for an affiliation agreement with the soon-to-be-unveiled big AM.

Also bubbling behind the scenes was a Modification of CP application seeking FCC permission to convert the daytime-



WXKW's Mike Capri logs a reading from the station's big 10-kW RCA transmitter. Figures from its related antenna phasing equipment were the numbers management most dreaded.



According to press reports, Champlain Valley Broadcasting converted its transmitter building from "a large brick farmhouse" it had bought with the 125-acre Selkirk, New York, spread months before the FCC granted the company a construction permit.

only outlet (then still under construction) into a full-time operation. Commission engineers agreed with Champlain Valley Broadcasting's request, though on a conditional basis—conditions that, when subjected to politics and physics, were difficult at best. Government regulators warned that the new station's hefty 10-kW output had to meet the satisfaction of Boston's WHDH, which was also authorized for critically directionalized high power (50 kW) on 850 kilocycles just a state away.

With the okay to roam the airwaves over "the upper Hudson Valley towns of Catskill, Saratoga Springs, Glens Falls, Hudson Falls, Gloversville, and Amsterdam, as well as Albany-Schenectady-Troy," day *and* night, management decided to tout its 10,000-watter with some mnemonically suitable call letters. Not long before debuting on August 9, 1948, the WRWR moniker (albeit having only been known on paper) was switched to WXKW, denoting via Roman numeral and abbreviation *10 kilowatts*. WRWR-FM was retained, however, for the company's frequency modulation identity through 1949. Early 1950s listings show it as simply WXKW-FM.

Problems In The Air

From the looks of WXKW's brochure, it sure appears like the station hit the ground running. Studios for "The Quality Station" were at the well-appointed First Trust Building in Albany's high rent district, around 444 Broadway. An aggressive mix of ABC and local programming got embedded into WXKW's signal. My guesstimate is that WRWR-FM served as a simulcaster for much or all of this fare.

Though the promotional literature did nicely feature the station engineering staff, one can assume that the techs' smiles for the camera quickly faded as soon as the photographer left. That's because the General Manager was no doubt on the Chief Engineer's case about charges of interference. Of course it wasn't the CE's fault, as he was simply trying to get the six-tower directional array to do what Champlain Valley Broadcasting's original application promised to the FCC. But things weren't performing as proposed. It's unlikely that WXKW clearly blanketed all of the communities previously listed and pledged to advertisers via its coverage maps.

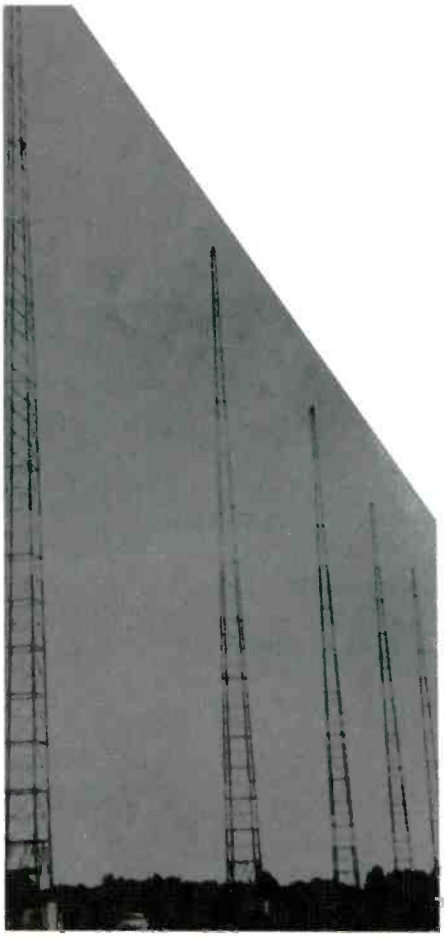
Although a challenge to any new radio ad sales operation, some hinterland housewife's static-laden reception wasn't management's biggest burden. As soon as Champlain Valley's first FCC application had come to the attention of WHDH, the Boston station's top echelon worried that another 850 so close by would negatively impact 'HDH's fringe areas. Truth be told, WHDH was rather sensitive about its less-than-perfect coverage. And these Bean Town bigwig broadcasters weren't the only established radiomen angered over added competition.

Folks at General Electric's WGY 810 on the dial (in Schenectady) had major concerns about an additional station cutting up the Albany marketplace pie, especially a large AM cranking out 10,000 watts a mere 40 kilocycles away from the venerable GE giant. While FCC rules generally considered such spacing (WGY 810 to WXKW 850) acceptable, some say General Electric employed its Denver-based KOA 850 to declare war on even the smallest interference levels. Apparently the problem was in KOA's long-range, secondary skywave service then afforded to the dominant facilities (like KOA) on a given AM clear channel.

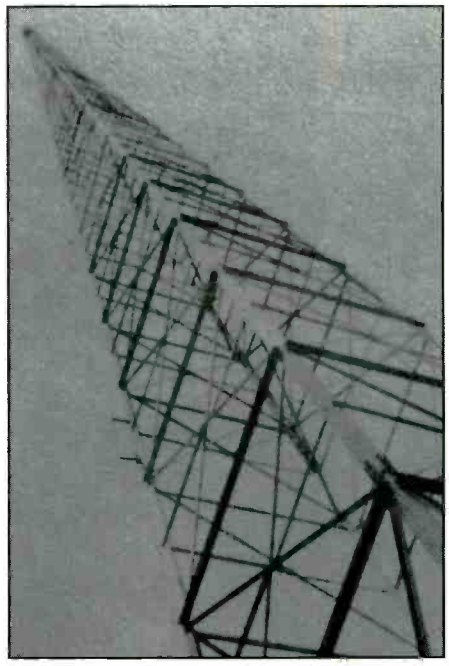
QRP Peanut-Power On The Hour

In an exposé about WXKW on the website <www.capitalgold.org>, Dan Strassberg recalled,

To answer the alleged interference, "the FCC required WXKW to install monitoring units at three (coverage pattern) null points [that protected WHDH and KOA]. In the nulls the unattended ground wave field [measurement] at 1 mile [from the transmitter] was supposed to be equivalent to [only] 15 watts non-directional. Three times a day, at 8:00 a.m., 10:00 a.m., and 12:30 p.m., WXKW was required to cut its



Here are the culprits! Six square-base Blaw-Knox towers were erected to properly distribute WXKW's 10 kW signal. Because they failed to keep from affecting the coverage of Boston's WHDH, they were only allowed to be active for a short time. In the "doghouse" of tower #3 was a flea-power (15-watt) transmitter that the FCC required WXKW to briefly substitute for its main transmitter several times daily.



Simply labeled "tower number six," this picture from the WXKW 850 files was probably proudly snapped shortly after the big Albany station's antenna array was erected circa 1947. An eagle eye can spot something that looks like a towel rack about one-quarter of the way up the "stick's" left leg. That's one of the "sampling loops" used for antenna current measurements.

main [10-kW] carrier for 10 seconds and switch on a 15 watt transmitter at the base of the #3 tower. Battery-powered receivers at the three monitoring points were then switched on by timers, and a battery powered strip chart recorder at each point ran off a tracing of the [main] 10 kW and then of the 15 watts non-directional."

Understandably, all the testing and resulting antenna phasing trial and error adjustments added up to a frustrating procedure that never seemed to satisfy the accusing stations and really annoyed listeners and advertisers who wondered why WXKW kept cutting out everyday.

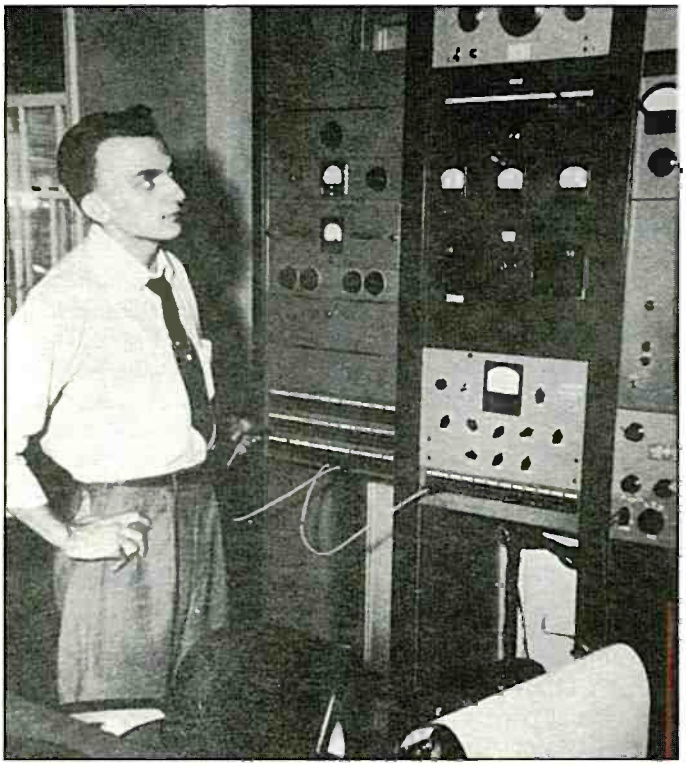
On The Critical List

Though KOA's Schenectady-instigated complaints presented problems, WXKW's most ardent detractor was obviously the closest co-channel "neighbor": WHDH. It kept Commission officials from upgrading the WXKW "Program Test Authority" Construction Permit to an actual station license.

Such a stressful limbo ultimately took the wind out of the WXKW ownership's sails. By late 1952, rumors began spreading through the Albany region broadcast community that 'XKW was technically on its last legs. Some remember hearing that, in order to quit throwing good money after bad, the station had abandoned its swanky downtown digs and set up in a small transmitter site studio.

Still the Capitol District's ABC Network outlet, WXKW must have surprised its remaining listeners on the last day of July, 1953, when an announcer indicated that the station was about to cease operation. Seconds later, a disappointed WXKW engineer clicked off the big RCA transmitter for a final time. Seldom had such a major AM broadcasting facility given up the ghost in such a short time.

Included with the returned WXKW authorization was an explanatory letter to



Jim Palleschi, one of WXKW's staff of at least six engineers, puts a few fingers on a patch bay cord plug to pose for this publicity shot. In fact, he and his colleagues all had their hands full trying to make WXKW's directional antenna pattern keep other stations on 850 kilocycles from complaining. The paper protruding from the typewriter (lower right) contained a record of all program matter—such as individual commercials—as logged by those busy technicians.

Host of WXKW's "850 Club," DJ Bill Chambrun spun pop tunes weekday afternoons. Using the era's vernacular, he called his program of recorded music a "platter show." Most disc jockeys of the late 1940s/early '50s strove for a "wild and crazy about playing lots of personally selected pop records" image. That's why Chambrun is mugging an incredulous look while posing with a lapful of an unrealistic number of "platters." Yes, those are 78-rpm discs!

the FCC citing (as indicated by *Broadcast Pro-File*) "chronic interference with WHDH Boston."

A TV CP Provides The Way Out

With no sister to provide lodging and programming, WRWR-FM (by then, WXKW-FM) bit the dust too. There was also the matter of an authorization for a yet unbuilt WXKW-TV. The Channel 23 UHF construction permit had recently been secured by Champlain Valley Broadcasting with high hopes for expansion, and it was earmarked by ABC to televise its fledgling video network shows. Even in the early 1950s, UHF frequencies were at a premium in the Albany market, as the FCC had only allocated a single VHF channel there, and that one was held by GE's WRGB-TV.

Fortunately, WXKW-TV provided WXKW principal Stephen Rintoul with a way to retrieve something from his sunken media venture. Another large and rather new Albany AM, WPTR, and a group it had been battling in order to acquire a mutually exclusive UHF-TV (Channel 35) construction permit, joined forces to offer Rintoul $300,000 for WXKW's physical assets and the Channel 23 television CP. With the proposed WXKW-TV out of the way, that would give both of the previously warring Albany television applicants a channel. The resulting WPTR-TV 23 never hit the air, but WTRI-TV 35 evolved from the deal and eventually morphed into Albany's present day WNYT (TV) 13. Meantime, Mr. Rintoul quickly showed up as WPTR's new General Manager.

In a downtown Albany WXKW studio, engineer Paul Krutz runs a cutting lathe that is recording a program for later broadcast. A year or so after WXKW signed on, companies like Magnecorder and Ampex began marketing tape recorders that made radio station disc transcribing machines obsolete.

v.i.p. spotlight

how you got started in radio

Congratulations To Doug Schumpert Of Missouri

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

Each month, we'll select one entry and publish it here. Submit your entry only once; we'll keep it on file. All submissions become the property of *Popular Communications*, and none will be acknowledged or returned. Entries will be selected taking into consideration the story they relate, and if it is especially interesting, unusual or even humorous. We reserve the right to edit all submitted material for length, grammar, and 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>, letting us know if you're sending photos. Please print your return address on the envelope if using the postal mail system. Not doing so will delay your submission being processed. If you're e-mailing photos, please send them in a separate e-mail with your name in the "subject" line.

Our March Winner: Doug Schumpert!

Pop'Comm reader Doug Schumpert of Ozark, Missouri, says,

My wife Melissa, daughter Sarah, and I live in rural southwest Missouri in Ozark. My grandfather gave me a RadioShack Patrolman 3 receiver when I was 10 years old. After shoveling driveways in the winter, my first scanner purchase was a Realistic four-channel crystal pocket scanner. That got me started in a lifetime of radio scanning.

I earned my Amateur Radio license in 1994, and it's been the best hobby and the most interesting that I have ever found. I am a member of the Christian County Amateur Radio Emergency Service, and an instructor for the Amateur Radio Emergency Communications Course. I'm a trained National Weather Service Skywarn Spotter, and I enjoy volunteering for my community in many different ways. I am active on VHF and UHF.

I have 12 different scanners in my shack that I have programmed for different agencies. I love shortwave listening, scanning the bands, and ham radio. If you need any scanner frequencies for Southwest Missouri please visit my homepage at <http://www.angelfire.com/dc2/spfldradiofreqs/> or send me an e-mail at <K0DPS@aol.com>. Have a wonderful year and Happy Scanning! ■

Doug Schumpert standing with his great collection of radios in Ozark, Missouri.

He passed away about five years later at only age 55.

Reportedly, another Albany outlet, WROW, fiscally sweetened the pot for Rintoul taking WXKW "dark." Limping along with Mutual network content, WROW had coveted WXKW's livelier ABC offerings. The shaky 850's demise paved the way for 'ROW to get ABC ties for both its radio division and fledgling WROW-TV. During the 1960s, WROW-FM took the old WXKW-FM 95.5 megacycle slot. (A circa 1950 WROW-FM ran 2.1 kW at 93.9 before succumbing to the period's FM malaise. Sketchy memories seem to recall that WROW appropriated some of the WXKW AM & FM equipment.) Interestingly, WROW was the genesis of Capital Cities Communications, the firm that eventually bought the entire ABC network.

Danger, Will Robinson!

WXKW 850 evaporated from the Capitol District ether in 1953, but about a decade later, someone in nearby Troy thought enough of the station's heritage to bring back its callsign. Oddly, the holders of a construction permit for a non-directional daytimer there drafted the old Albany 10-kW outlet's moniker for their 1/2-kW peanut whistle way up at 1600 on the dial.

More than a few Albany radio buffs speculate that the calls—retried so close to the original's old ethereal haunts—were cursed. Troy's WXKW 1600 would go silent after only about four years of struggling to attract a sufficient audience with its short reach and frequently shifting formats. A strange 1966 studio fire whacked the Troy WXKW off air, and attempts at makeshift broadcasting from the tower site sputtered out quickly. And then, like the ephemeral WXKW 850, its deteriorating transmitter building and tales of jinxed equipment warned prospective station owners that it would be wise to look for opportunities elsewhere.

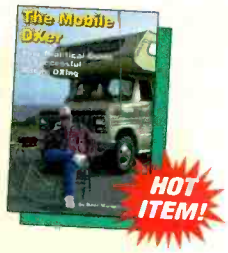
Till Next Time...

I always welcome your questions and comments about old-time radio. Also, if you've got any old articles, QSLs, or station material you'ld like to share with our readers, please send them to me at *Popular Communications*, "Shannon's Broadcast Classics," 25 Newbridge Rd., Hicksville, NY 11801.

And so ends another day of broadcast history at *Pop'Comm*. ■

books calendars videos

The Mobile DXer



by Dave Mangels, AC6WO

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Getting Started in VHF ..... *Order No. VVHF*
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Getting Started in Packet Radio ..... *Order No. VPAC*
Getting Started in Amateur Satellites .. *Order No. VSAT*
Getting Started in Contesting ..... *Order No. VCON*

Keys, Keys, Keys

by Dave Ingram, K4TWJ

You'll enjoy nostalgia with this visual celebration of amateur radio's favorite accessory. This book is full of pictures and historical insight.

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Do-it-yourself electronics projects from the most basic to the fairly sophisticated. You'll find: station accessories for VHF FMing, working OSCAR satellites, fun on HF, trying CW, building simple antennas, even a complete working HF station you can build for $100. Also includes practical tips and techniques on how to create your own electronic projects.

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Inexpensive, practical antenna projects that work! Guides you through the building of wire, loop, Yagi and vertical antennas.

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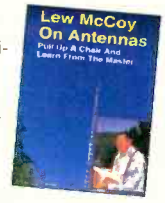
McCoy on Antennas



by Lew McCoy, W1ICP

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plane sense

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By Bill Hoefer <flacap388@hotmail.com>

It's Air Show Time Again!

The column is being written the day after the U.S. Airways Express disaster in Charlotte, North Carolina. The Beechcraft 1900D went down during takeoff maneuvers, killing all 21 aboard. I've flown on this type of aircraft numerous times and have found it to be quite reliable. There have been reports that the flight crew were able to transmit they were having an emergency. As such I recommend you maintain a continuous monitor on the local aviation frequencies, especially 121.5 and 243.0 MHz, the allocated aviation emergency frequencies.

The same day, another Beechcraft, a King Air 200, was shown live on local TV here on the west coast of Florida making an emergency landing. The aircraft could not lower its landing gear. Despite this, the pilot showed his proficiency by making a perfect landing. Damage was minimal and the plane will be up and flying shortly. There's an aviation adage, "Any landing you can walk away from is a good landing. Any landing you can walk away from and reuse the aircraft is a great landing."

Answering Jim's Question

Before I give my monthly trivia question let me answer an e-mail sent to me by Jim in New Jersey. Jim wrote,

I see you have a listing under "Deleted" for McGuire approach frequency of 120.25. When is this supposed to take effect and do you know the new frequency? I live about five miles from McGuire AFB and am in the process of programming my new AR8600B Mark III for as many McGuire and refueling aircraft frequencies as I can find. As of the time I write this (02:38 UTC December 31, 2002), 120.25 is working just fine, thank you. In fact a heavy just departed from runway 24 and flew over my house.

I reviewed my listing. What it meant was that McGuire Approach was no longer using that frequency for aircraft departing and landing at Matawan's Marlboro airport (2N8). This may mean that Marlboro airport may be under a different approach control (though I've not found that), or perhaps it's now under the control of New York Center. I'm not sure about the reasoning. Sorry if I was unclear on this and thanks for the e-mail.

April's Trivia Question

Many of you remember when passenger jets first started flying in the U.S. The first three were the deHavilland Comet, the Boeing 707, and the Douglas DC-8. Boeing of course pretty much rules the jet traffic in the U.S. (I'm not disparaging Canadair or Airbus). The Boeing jets have followed the A700 series, starting with the 707, followed by the 720, 727, 737, 747, 757, 767, and 777. The question is: Why no 717? The answer is at the end of the column.

Air Show Season

April pretty much starts the air show season in North America. These shows are found all over the country, both at civilian and military air fields. Hopefully you'll be able to catch one this year. Unfortunately the air show held at MacDill AFB (MCF) here in Tampa, Florida, was canceled for the second year in a row. It was not held in 2002 following the attacks against us in September 2001. Again it is off for this year. The reason is for security concerns as MacDill happens to be home to U.S. Central Command (USCentCom) where the fight against terrorism is being coordinated. In April 2001 over 900,000 visitors attended the two-day event. It was difficult under ideal conditions. Right now it would be extremely difficult to provide security were there an air show.

So I won't be seeing the Blue Angels, the Thunderbirds, the Snow Birds, or the Red Arrows here this year. Hopefully you will, however. And since I'm talking about the demo teams, let's look this month at the Navy Blue Angels.

The Blue Angels

The end of WWII saw the phasing out and winding down of much of the military aviation inventory and the releasing of pilots. Admiral Chester W. Nimitz, the Chief of Naval Operations, decided the American public should remain inter-

Blue Angels' 2003 Schedule

March
15 NAF El Centro, CA
22–23 Punta Gorda, FL
29–30 Huntsville, AL

April
5–6 NAS Corpus Christi, TX
12–13 Vidalia, GA
26–27 Knoxville, TN

May
3–4 MCAS Cherry Point, NC
10–11 Topeka, KS
17–18 Millville, NJ
21 U.S. Naval Academy, Annapolis, MD
23 U.S. Naval Academy Graduation Flyover
24–25 NAS Patuxent River, MD
31 Millington, TN

June
1 Millington, TN
7–8 Davenport, IA
14–15 New Windsor, NY
21–22 La Crosse, WI
28–29 North Kingstown, RI

July
5–6 Muskegon, MI
11–12 Pensacola Beach, FL
17–20 Dayton, OH
26–27 Arco, ID

August
2–3 Seattle, WA
8–10 Abbotsford, CAN
16–17 Westfield, MA
30–31 Cleveland, OH

September
1 Cleveland, OH
6–7 NAS Oceana, VA
13–14 Indianapolis, IN
20–21 Duluth, MN
27–28 Fort Worth-Alliance, TX

October
4–5 Long Beach, CA
11–12 San Francisco, CA
18–19 MCAS Miramar, CA
25–26 Jacksonville Beach, FL

November
1–2 Randolph AFB, TX
7–8 NAS Pensacola, FL

Blue Angels' Frequencies

Maintenance

A	142.0	E	143.6
B	143.0	D	142.025
C	142.625		

In Flight

241.4	302.1	362.6
250.8	302.15	384.4
251.6	307.7	391.9
263.35	319.8	395.9
263.5	345.9	
275.35	360.4	

ested in Naval aviation, however. As a result, the Blue Angels performed their first demonstration at their first home base at Naval Air Station Jacksonville in June, 1946. Lt. Commander Roy "Butch" Voris led this first team flying the WWII fighter Grumman F6F Hellcat. This propeller-driven aircraft was only used for a scant two months when, in August of that year, it was replaced with the Grumman F8F Bearcat. This was the last of the propeller aircraft used by the Angels.

The first jet aircraft used by the Blue Angels, the Grumman F9F Panther, was introduced in the late 1940s. Like all the demonstration aircraft used by the Blue Angels and the Air Force Thunderbirds, with the exception of the T-Bird T38 Talon, the F9F was a frontline fighter. During the Korean War, the Blue Angels were reassigned to the *USS Princeton* aircraft carrier as the center of Satan's Kittens, Fighter Squadron 191 (VF-191).

After their return to the states in 1951, the Angels moved to NAS Corpus Christi, Texas. They upgraded to a faster F9F-5 Panther. In 1954 they moved to their current home at NAS Pensacola. It was here that they moved into their first swept-wing aircraft, the F9F-8 Cougar.

However, it was the next aircraft that brought the Blue Angels to the attention of people all across the country. In 1957 they took control of their last Grumman fighter, the F11F-1 Tiger. This aircraft was shown extensively on the TV program entitled, appropriately, *The Blue Angels*. There were 39 half-hour shows filmed in black and white and aired in syndication from September 1960 to July 1961. Information on the series can be viewed on line at <www.geocities.com/TelevisionCity/Stage/ 2950/epg/BlueAngels.htm>.

The F11 remained the demo aircraft until it was replaced in 1969 by the ven-

NEW/CHANGED/DELETED FREQUENCIES

NEW

AL
Andalusia/Opp (79J)
ASOS 134.875

AK
Fairbanks, Moen's Ranch Airport (AK52)
Unicom 122.8

AR
Eureka Springs, Silver Wings Field Airport (5A5)
CTAF 122.9

CA
Davis, University (0O5)
AWOS-3 119.025
Oakland AFTCC (ZOA)
Coaldale, NV High RCAG 127.175/323.175

CA
Point Mugu NAS (NTD)
LC 135.75

CO
Steamboat Springs, Bob Adams Field (SBS)
AWOS-3 118.325

FL
Clewiston, Airglades (2IS)
AWOS-3 124.175
Gainesville AFSS (GNV)
CEW RCO 255.4
Marathon, The Florida Keys Marathon (MTH)
ASOS 135.525
St Augustine (SGJ)
ILS/DME Rwy 31 (I-GUH) 111.1

MS
Granada Municipal (GNF)
AWOS-3 118.025

NC
Camp Mackall AAF (HFF)
GC 251.05
Opns 395.225
Fort Bragg, Simmons AAF (FBG)
Basops 245.5

OK
Idabel, McCurtain County Regional (4O4)
Ft Worth ARTCC Apch 133.95/263.05

PA
Quakertown Municipal (UKT)
AWOS-3 119.45

SC
Camden, Woodward Field (CDN)
AWOS-3 119.975

TN
Memphis International (MEM)
GC 121.0

WI
Burlington Municipal (BUU)
AWOS-3 114.5
Lake Geneva, Grand Geneva Resort (C02)
Apch 120.15

CHANGED

AL
Fort Rucker Ozark, Hanchey AHP (HEY)
LC was 365.4, now 225.575
GC was 373.3, now 387.7

CA
Fort Irwin/Barstow, Bicycle Lake AAF (BYS)
Opns was 41.25/319.25/279.55, now 41.0/339.85/302.3
Point Mugu NAS (NTD)
LC was 135.75, now 135.175

FL
Gainesville AFSS (GNV)
CEW RCO was 122.1, now 122.0
Pensacola Regional (PNS)
Apch was 343.65/398.95, now 372.0/351.825

GA
Columbus, Fort Benning (LSF)
LC was 126.2, now 119.05
Base Ops was 128.15, now 134.1
Marietta, Dobbins ARB (MGE)
LC was 397.2, now 370.875

MO
Ava, Bill Martin Memorial Airport
Unicom/CTAF was 122.7, now 122.9

NJ
Lakehurst NAES (NEL)
GC was 121.0, now 118.375

NC
Camp Mackall AAF (HFF)
LC was 304.6, now 254.4
Range Cntrl was 246.0, now 249.9
Fort Bragg, Simmons AAF (FBG)
LC was 241.0, now 240.625

ND
Minot AFB (MIB)
ATIS was 375.8, now 278.8

OH
Cleveland ARTCC (ZOB)
Wayland NY RCAG was 257.675, now 356.35

SC
Andrews Airport (PHH)
NDB was 225 kHz, now 255 kHz

TX
Houston, William P. Hobby (HOU)
Apch 257.7, now 316.15

VA
Fort Eustis, Felker AAF (FAF)
LC was 241/0/248.2, now 269.25
Upperville Airport (2VG2)
Unicom was 122.72, now 122.725

DELETED

AR
Dumas (DZM)
NDB 305 kHz
Ozark (OZZ)
NDB 329 kHz

FL
Pompano Beach (PMP)
VOR 114.4

IL
Gibson City, Schertz Field Airport (9IS2)
Unicom/CTAF 122.8

KS
Olathe, Johnson County Executive Airport (OJC)
Multicom 131.5

OH
Cleveland ARTCC (ZOB)
Moon Township PA RCAG 319.2
Warren PA RCAG 126.725/134.475/291.65

OK
Chandler Municipal Airport (CQB)
Unicom 123.05
Thomas Municipal Airport (1O4)
Unicom 122.8

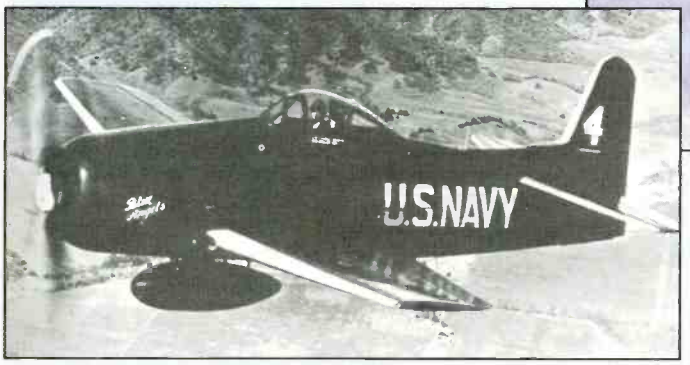
TX
Houston Gulf (SPX)
Houston Apch 134.45/284.0
CD 127.25

WA
Goldendale, Hillcrest Airport (2WN9)
CTAF 122.75

The F9F was a potent fighter and saw plenty of action in the Korean Conflict.

The old F6F Hellcat of World War II fame.

The U.S. Navy Blue Angels performances are always a crowd-pleaser.



The F8F Bearcat was the last of Grumman's piston-engined carrier-based fighters.

erable and battle-proven McDonnell Douglas F-4J Phantom II. The F-4 was, and remains, the only aircraft used by both the Blue Angels and the USAF Thunderbirds. The great things about the F-4 were its size, its sound, and its smoke—you could see and hear it from a great distance.

Both the Angels and the T-Birds replaced the F-4s in the mid-1970s for aircraft a little less fuel thirsty. In 1974 the Angels started flying the A-4F Skyhawk II, manufactured by McDonnell Douglas. The official name was changed from the Navy Flight Demonstration Team to the Navy Flight Demonstration Squadron.

In November, 1986, the Blue Angels celebrated their 40th anniversary by unveiling their current demo aircraft: the McDonnell Douglas F/A-18 Hornet. The largest aircraft the Blue Angels have in their inventory is a C-130, affectionately called Fat Albert. It's fun to see such a big bird taking off with jet assistance.

The Blue Angels have flown in front of over 300 million aviation fans over the years. See "Blue Angels' 2003 Schedule" for a list of their appearances. Hopefully you'll get a great view of them this year. I'll be placing their schedule in each column this year showing any changes.

And, since this *is* a communications magazine, you'll also want to monitor the action. See "Blue Angels Frequencies" for those that I'm aware of. If you know of any more, please contact me at <flacap 388@hotmail.com>.

Trivia Answer

Now, the answer to this month's trivia question. Well, it *is* April and this could be classified as an April Fool's joke. Yes, Boeing *has* a 717. And it is flying. The 717 looks quite a bit like the old rival Douglas DC-9 because, basically, it *is* a DC-9. The original DC-9 has gone through numerous changes over the years, morphing into the DC-9 Super-80 and Super-90, then into the MD-80 and MD-90 series.

Just a few years ago Boeing and McDonnell Douglas merged, or should I say Boeing bought McDonnell Douglas. The aircraft that were being built by McDonnell Douglas that are still being built by Boeing today may be given a new designator. Thus the DC-9 changed into the MD-80/90 and is now the Boeing 717. Happy April Fool's Day.

See you next month. ■

overheard

by Ken Reiss <radioken@earthlink.net>

strategies and techniques to keep YOU informed

Getting Back To Basics

I get a lot of letters that ask what most scanner nuts would consider beginner questions: things we all know after scanning for a while, but things that are a mystery to someone just starting. Some folks are just joining the hobby, while others have decided to find out why their shortwave receiver dial stops at 30 MHz. I certainly want to encourage you to continue asking all forms of questions from beginner to advanced. Your letters determine a lot of the topics for this column!

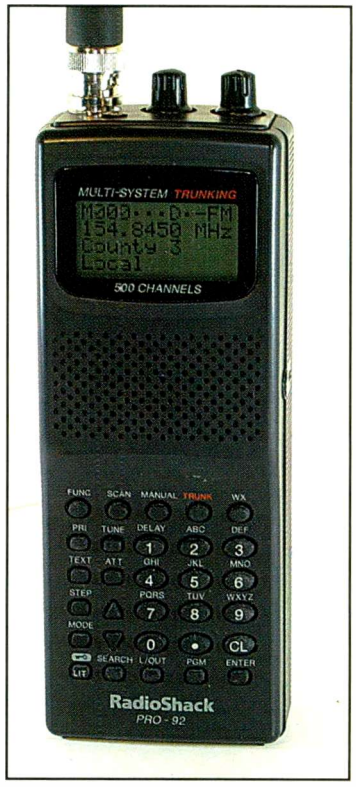
On that note, let's take a quick look at a few questions that I've seen several times recently. Sometimes it's a good idea to review, even if you've been scanning for a while. If you're an expert and already know all this stuff, you can skip down to the frequency of the month and save yourself a lot of reading.

What Kind Of Scanner Do I Need?

One question that never seems to get answered completely is, "Which radio should I buy?" We've all been through this problem at least once, unless you're just getting started. And if you are just getting started, you've come to the right place!

Scanners generally get split into three categories...well, sort of. Portable scanners are easy to carry around, are generally small, and don't need much space. Base and mobile scanners these days are pretty much the same thing. The only question here is do you mount it in the car or plug it in at home? The third type is the communications receiver generally reserved (and recommended) only for those people who need peak performance from the receiver itself. If you're just getting started, I don't recommend these at all. Having said that, it's worth noting that some of today's portables approach "communications receiver" price and performance.

Probably the first question you should ask before you ever go shopping is, "What am I going to do with this radio?" Do you want a portable that's convenient to carry around, or would a base or mobile unit serve your needs better? All factors being equal, you should get slightly better performance from a base or mobile. The key word there is "should." In theory, because of the additional power available and a steadier source of power, as well as the possibility of better performance from the antenna system, it "should" work that way. Having said that, the reality is that there are many handheld radios that can perform just as well or better than their base/mobile counterparts. It probably shouldn't be much of a factor in your decision making process. Concentrate on *how* you want to use the radio, and then make your selection accordingly.



This is a trunking-capable radio that includes many advanced features for both trunking and conventional scanning. Probably my favorite is the alpha tags, which offer the ability to name each of the 500 channels with a label that makes sense! This one has been replaced in the RadioShack lineup by the PRO-95, a 1,000-channel version!

Probably the next question you need to answer is about trunking. If you live in an area where the things that you want to listen to use a trunking system, you'll want a trunking scanner. Increasingly this is causing folks to start searching for new receivers and is becoming a key factor in picking that new radio.

Trunking is a way of managing frequencies with a computer system to give an agency the appearance of having many more channels than it actually has. It is important to understand that this is done on the transmitter end and is not under your control. Trunking systems are very difficult to listen to unless your scanner can follow that particular type of system.

How can you tell if you need trunking? The best way is to ask another listener who's been at it for a while. If you can't find anyone to ask, there are a couple of ways to get indications at least about whether or not you should be thinking about a trunked scanner. The first thing to do is get a list of frequencies (buy a copy of *Police Call* at your local RadioShack if you can't find a proven list from a local source). Look up the city

Base units are great if you do most of your listening in one place. With the exception of the new communications receivers, most base/mobile units are about this size, making them practical for either application.

Perhaps this one belongs more in a specialty category, but I find it's quite handy for those times when I really don't know what I'll have time to do. This radio is not particularly convenient as a scanner because of its bank structure. While its limited controls make it somewhat awkward to learn, its television capabilities make it a great radio to have in your pocket! I'd probably not recommend it for a beginner, but it's an excellent extra radio for those more experienced.

you're interested in listening to and then have a look at the frequencies. *Police Call* can sometimes tell you which frequencies are used for police/fire/ambulance activity, but sometimes it does not have that information.

If the frequencies are in the **861 to 869 MHz** range (designated as output frequencies for trunked systems) there is a strong possibility of trunking. If the frequencies are in other ranges, you're probably safe—for now anyway. Additionally, if they are in the **800 to 900 MHz** range, and if there is a group of them (5-60 will be listed in *Police Call*), there's a very good chance that the system is trunked. Now you will have to find someone to ask, or make sure you buy your scanner someplace that will accept a return if it's not compatible with your local system.

The other thing to realize is that not all trunking systems are the same. The most common systems in use are Motorola (type I and II), Astro, Ericson's EDACS, and Johnson LTR. Johnson LTR is very rarely used for public safety, although that may change if the agency upgrades to the LTR system. Motorola type I and II can be followed with a number of radios, but still a limited number. They include the newly introduced Bearcat 780 and 245 and the RadioShack PRO 92, 94 and 2052 and 2067. There are other combinations of radios, computer interfaces, and software that will also accomplish the task, but you'll have to know enough to assemble all the pieces and make it work. The systems I mentioned above are self contained and complete from the manufacturer.

The Latest On APCO 25 And Digital Decoding

One of the newest developments in scanners is the ability to follow the APCO 25 protocol. By the time you read this, the new scanners from Uniden Corp. should be available with digital decoding (stay tuned for more information on what these radios are capable of). In the meantime, having the option to go digital will give you a more versatile radio with a longer lifespan.

If you don't have a trunking system to contend with, your choices are much more extensive. Don't rule out the trunktracker scanners just because you don't have a trunking system in your area yet. They are all above average conventional scanners as well, and, if a trunking system ever arrives, you'll be all set.

Other Features

If you live in an "an RF rich environment," that is an area with a lot of radio users around you, then the **selectivity and dynamic range** of the radio will be important considerations. With the proliferation of pagers and cell phones, there are not many places left in any size city that aren't RF rich. Out in the country, it's better, but still not RF free! (Of course, if it was really RF free, there wouldn't be anything to listen to!)

What all this means in English is that if you don't want to listen to a bunch of interference from pagers, commercial users, and cell phones, you'll want a radio that's fairly high end. In the extreme, you'll need something called CTCSS or DCS in order to effectively cope with the interference.

How high end? Well, that's a very difficult question to answer. In fact, while the high-end scanners tend to be built a little better and be more resistant to interference, it might be that in your particular situation some other radio works better for some reason. If you're unsure, it's best to buy from someone who will let you return it in a few days so that once you get it home you can do some actual scanning and find out how interference-prone your area really is. If that radio doesn't work quite right, try another model. Design differences often allow one model to perform in one place while another model might be much better only a few blocks away.

Of course, the more expensive the radio, the less likely you are to have the problem in the first place. It's also worth noting that there is no "perfect receiver" that won't get interference at any time on any frequency. Don't waste your time looking. Just find something that's acceptable to you on the frequencies you listen to and enjoy the hobby.

Generally speaking, having more **memories** is a good thing, but there is a point of too much. Really, it's not memories you need as much as **banks**. Banks help to organize groups of things that belong together. All the police, or all the fire channels, or perhaps all the south side and all the north side can be grouped together for easy switching in and out of the scan list.

Most scanners on the market today (except for the very few that have less than one hundred channels) will be divided into at least 10 banks. A 200-channel scanner is likely to have 10 banks of 20 channels each. A 1,000-channel radio is very likely to have 10 banks of 100 channels, which is not as convenient as 50 banks of 20 each. That's probably enough for most applications. Twenty banks of 10 channels would be more versatile than the 10-bank system we were discussing, but you can't always have everything at a price we're willing to pay for a scanner.

Frequency coverage is another thing to watch for, particularly on the introductory models. Most of the high-end radios will include the standard VHF-Lo, High, UHF, and 800-MHz ranges. Some offer continuous coverage from the shortwave bands through 1 or 2 GHz. However, some of the introductory models leave out an area or two, usually at the high or low end to cut costs.

It's also worth noting that we will begin to see some public safety frequencies being assigned in the 764- to 806-MHz range in the not too distant future. The FCC has approved the allocation, and a

This Uniden BC245 trunktracker is probably one of the most capable trunktrackers on the market and it's relatively easy to use (once you get used to it). Learning to program any trunking radio can be a challenge!

few stations have been licensed. In many areas of the country, it is simply a matter of waiting for an existing service to relocate. Currently, only the continuous coverage scanners include this range. It is also likely that trunking will be the normal mode of operation in this range, although conventional operation is also permitted. No doubt new models will appear as soon as the band becomes common, but if a service you're interested in moves, that won't be much help.

Some of the newer radios include the ability to store an **alphanumeric label** (or alpha tag as they're called) with some or all of the memories. This feature tends to appear mostly on the higher end models, but it can be well worthwhile in a larger scanner. Remembering what frequency goes with which of over 500 or 1,000 channels is downright difficult, even if you *do* have a good memory. It's also available on computer systems for any of the computer-controlled scanners, which makes data entry much easier.

Another extremely useful feature is **selectable delay**. Almost all scanners today have a delay function that will cause the radio to pause for a few seconds before continuing the scan to see if a reply is received on that same channel. On many radios, this feature is either "on" for all channels or "off." Again, on the high-end units, you can turn this feature on and off per channel so that you can customize your scanning to the agencies you're listening to and to your monitoring preferences.

Antennas

Once you've got the radio, don't forget the other important piece of the puzzle. How much antenna you need depends largely on where you are located and what you are trying to listen to. It's beyond the scope of this article to explain much in the way of antenna theory or even specific recommendations, but we can give you a few things to experiment with.

If you're located in an "RF rich environment" and already having trouble with overload or interference, increasing the antenna performance will only make things worse. The first thing you should do, particularly if you are just getting started in scanning, is to see what the radio can do right out of the box. Almost all scanners, even base units that are intended to be used with larger antennas, come with some sort of small, easily attached antenna. Sometimes these mount right on the back of the radio and are easy to set up. Give it a try. You can always upgrade your antenna situation later if you're not hearing the things you want to.

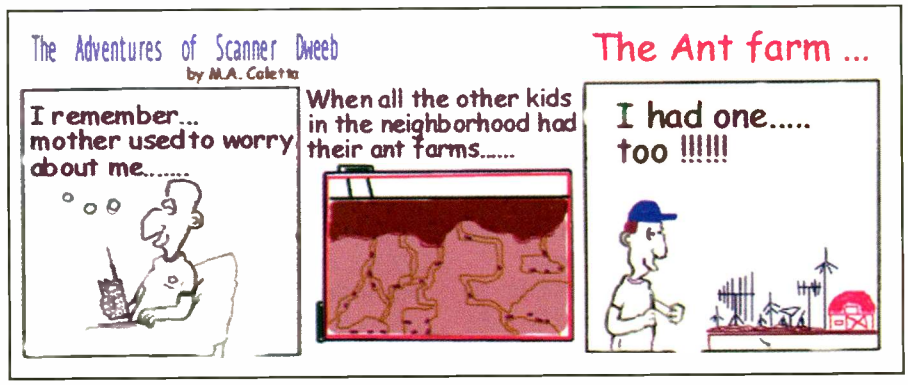
Of course, most handheld radios come with an antenna from the manufacturer. On most radios you will do well to replace it. The manufacturer includes the antenna as a convenience, not as a performance enhancement, and the antenna is likely to work the same across the range of frequencies that the scanner covers: equally poorly. If you only listen to frequencies in one or two of the bands, you should probably replace the antenna with something more specific to those bands, or with a better grade of "all-band" antenna. I put all-band in quotes because there is no such thing as a truly all-band antenna. You'll have to do some experimenting and see what works best on the frequencies you listen to on your radio. Once in a great while, you'll find that the antenna that came with the radio does in fact perform better than the aftermarket ones on a particular radio.

Frequency Of The Month

Our frequency this month is **467.5875**. Let me know what you hear, or don't hear, and we'll enter your name for our quarterly drawing. Speaking of which, our winner this time is Ed Campbell from Essex Junction, Vermont. Ed writes that this frequency is used by the Underhill/Jericho Fire Department in his area. Congrats to Ed! Your subscription is one year longer.

Let me also take a minute to thank those of you who send in your entries on a regular basis. I don't always have the time to respond to all of them, but I do read every one. As space permits, we run a few here in the column, but your input is valuable! Please keep them coming—and your questions too! Send them to me via e-mail at <radioken@earthlink.net>, or via more traditional methods at Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126-2220.

Until next time, good listening! ■



pirate & alternative radio

free radio broadcasting

by Edward Teach

Pirates: True Beacons Of Free Speech?

Even though I've been on "vacation" off and on lately that hasn't stopped a couple of you from sending in logs. William Hassig in Illinois and Joe Wood in Tennessee have really been raking in the logs. Here's what they've been hearing:

WMFQ, 6952.68 at 0210 with digitally altered pop tunes and QRM from an unidentified on 6955. (Hassig) **6927** at 0128 with various old pop songs and comments about Sal Ammoniac. Providence address. Also at 0248. (Wood)

WHYP, 6925 at 0304 bad-mouthing WBCQ and claiming that pirates are the "true beacons of free speech." Also heard at 0102 with the song "California Uber Alles," a prayer for various people in the pirate community and recordings of Steve Anderson. (Hassig) **6955** at 0306 with "Who Wants to be a Pirate Operator" with Radio Bob. Off at 0340. Also on **6953** at 0123 with ID by Moe Howard and mention of the program being their 4th anniversary special. Off at 0154 with "Secret Agent Man" theme. Also caught on 6955 at 0140 with various songs, mentions of Maharishi, George Zeller, Allen Maxwell. Off at 0157. Also heard at 0008. (Wood)

Hippie Radio (unsure of name) **6955/ 6050 USB** at 0205 with "In-a-gadda-da-vida" and CD player skipping. Shifted to 6950 after announcement. (Hassig)

Indira Calling, presumed, **6953** at 2109 with Indian or Mid-eastern music to 2118 sign off. Gave an address of P.O. Box 28413, "Calcutta." (Wood)

VOX America, 6955 at 0138 with "You are listening to the debut broadcast of VOX (maybe Fox) America. Then a parody of "Cajun Ugly Stories." No address noted. (Wood)

Captain Morgan, 6950 at 0036 with ID "This is Captain Morgan. You are in the pirate zone." Also mentions of QSLs for reports to FRW/FRN. Also "Celebrity Jeopardy," several phone calls from DXers, songs by Soul Brother Number One, Jimi Hendrix, and Steppenwolf. Also heard at 0214 with various songs and "You're in the party zone with Captain Morgan." (Wood)

Radio Azteca, 6955 at 0126 with Brad Stoker and comments such as "It's commode hugging time in the valley," "This is Radio Azteca," and "everything gross but tasteful," as well as stories about the lovely Monique and the Top Ten DXing list. Gives the Belfast, New York, address. (Wood)

Radio Pigmeat International, 6951 at 0043 with selections from "Tommy" and other Who songs as well as mentions to QSL through FRN. Lost the signal at 0105 after a series of tones. Also heard at 0117 with Belfast address, ID, and various songs. (Wood)

WMPR, 6955 heard at 2235 with techno-pop, ID, woman with frequency announcement. Also at 0006 with similar programming. (Wood)

Oxycontin Radio, 6955 heard at 0141 with IDs at 0142 and 0145. Uncle Schlekstein talking about escapades at last year's Winterfest. (Wood)

Radio Jawbox/Totally Awesome Radio/Bogus Radio 3, 6953 at 0131 with various IDs, such as "Totally Free Radio Gary Moore," "Radio Java," and "Radio Joe Bob," but other informed sources say it was "Radio Jawbox." Also heard various pop songs and recordings of other pirate broadcasts as well as several mentions of Sal Ammoniac. Also heard at 0118 with various songs and IDs for "Totally Awesome Radio" and "Radio JTA." (Wood)

This color QSL from the Voice of the Tiki probably hasn't gone out to many people as the station isn't reported very often.

Radio Tornado Worldwide, 6955 at 0038 during sign off with "Secret Agent" theme and ID before 0039 close. (Wood)

Radio Free Euphoria, 6953 at 2336 with several IDs and mention of several prizes one could win by listening. Several songs and parodies. (Wood)

Betty Boo Radio, 6953 monitored at 2309 with announcer named Kiel Overanddy. IS of "Boop, Boop de Boop" and pipe organ fanfare. Hosted by James and Ravi Brownyard with several songs and IDs. (Wood)

WPUP, 6953 at 2212. Apparent rebroadcast as there were mentions of Y2K, Monica Lewinski, and WTCG. Additional IDs were for "Voice of the Runaway Puparishi," "Cat Eater Radio," and several others. Announced the Belfast address. Various songs and commercial parodies. (Wood)

Radio Clandestine, 6925 at 0137 and R.F. Burns hosting music and novelty songs. (Wood)

WMTL, 6925 (or **WMCR, 88.1**) at 0200 with two announcers yakking,various songs, and ID "This is 88.1 WMTL (or WMCR)—we are done. Goodnight." (Wood)

Voice of the Abnormal, 6950 USB heard at 0658 with Yukon Jack. Perhaps a relay by KIPM. Also on **6950 USB** monitored at 0000. (Hassig)

KIPM still has to be one of the most active pirates. Hassig included nine logs taken over a month's time at various evening and early morning hours. All were heard on 6950 USB. ■

global information guide

listening to what your world says every day

by Gerry L. Dexter

Around The Corner: A New Station From The Marshall Islands!

It's beginning to look like a major DX event will take place sometime within the next year or so. You could even call it historic. It has been well over half a century since any shortwave broadcasts were beamed from the Marshall Islands. But WJIE, Louisville, Kentucky, part of a rapidly expanding religious broadcast group, is getting set to change that by putting a station on the air from this former U.S. trust territory in the central Pacific. WJIE made a deal with the government-owned Marshall Islands Broadcasting Co. to fund some improvements at their mediumwave station in return for approval to build the shortwave station.

My references don't go back far enough to be certain, but I'd guess the last shortwave broadcast activity here was from U.S. Armed Forces Radio, which closed down fairly soon after the end of the Second World War! Stand by for further news on this exciting prospect!

HCJB-Australia was due to have taken to the air in early January with this initial schedule: 0700 to 1200 to the South Pacific on **11755** and to Asia from 1230 to 1330 on **15135,** and 1430 to 1730 (also to Asia) on 15135. But that schedule wasn't chiseled on stone tablets and may well have been adjusted before the station began operations. The mailing address is HCJB-Australia, P.O. Box 291, Kilsyth, Victoria 3137.

Togo is back! Radio Lome, long a regular and stable 60-meter occupant, has been reactivated on its old **5047** spot and is being heard by ESTers around 2200. The rest of us need to wait for their "morning" sign on at 0500.

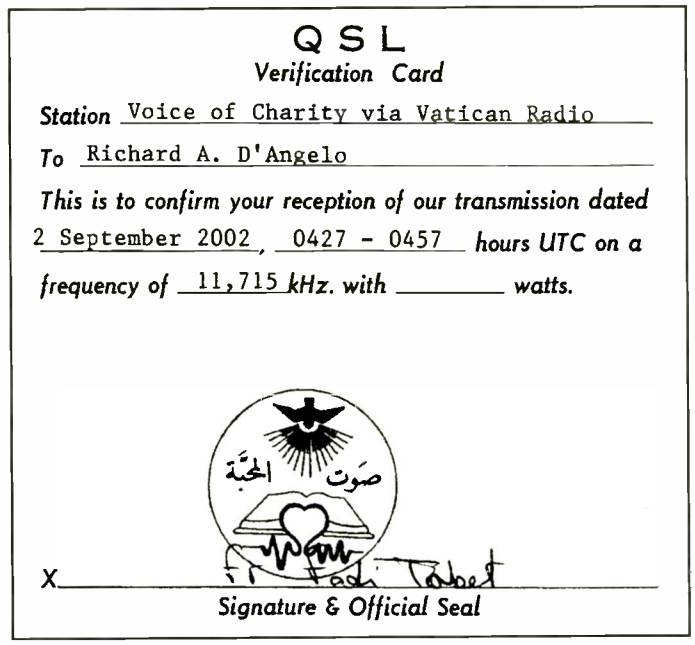
During 2003 QSLs from Deutsche Welle will commemorate the station's 50th anniversary (officially in May). And they plan to kick off year 51 with the introduction of digital shortwave broadcasts to Europe and the Middle East, via their Sines (Portugal) relay, running for about eight and a half hours per day, in English, German, and Arabic.

The next step will be to expand those hours and make the necessary technical modifications at the Sri Lanka relay site, also adding additional Asian languages. The plan is to have digital service to North America in operation in 2005.

Latvia has never been an easy one to pick off, but it may be slightly easier now. **Laser Radio** is now using the 100-kW site at Ulbroka on Sundays and is running until 2300 on 5935 kHz. Many in EST-land have heard this, and it may just be possible in the Midwest for a little while longer—before the added hours of daylight prevent afternoon signals in that frequency area from getting through. This Laser Radio, by the way, has no connection to the Euro-pirate with the same name.

By now Radio Ukraine International should have expanded its hours and re-instituted the use of its sites at Kyiv and Mykolaiv, including a 1-mW monster beaming to North America on **9810** from 0000 to 0500.

Political unrest in the Solomon Islands has created a tenuous situation for the SIBC there. Advertising is off and the government, unhappy with SIBC's efforts at remaining neutral, has cut off funds. So, for the present anyway, the "Happy Isles" aren't so happy.



Q S L

Verification Card

Station Voice of Charity via Vatican Radio

To Richard A. D'Angelo

This is to confirm your reception of our transmission dated 2 September 2002, 0427 - 0457 *hours UTC on a frequency of* 11,715 *kHz. with* _____ *watts.*

صوت المحبّة

X _____

Signature & Official Seal

One of the few broadcasts Vatican Radio airs but doesn't produce is the Voice of Charity. Rich D'Angelo recently received this QSL from VOC, via Vatican Radio.

Joe Kenneth Wood (PA) is our book winner this month. Joe adds the *Shortwave Listening Guide* by Harry Helms to his listening tools, courtesy of CRB Books, P.O. Box 56, Commack NY 11725. You should check out their fascinating catalog of books for radio nuts like us, as well as titles on espionage and other intriguing subjects. To get a copy write 'em at the above address or e-mail them at <sales@crbbooks.com>.

Special Note: We continue to be starved for photographs of listeners and their shacks—and completely mystified as to the reason(s) behind this reluctance. In the "good old days" getting your shack photo in a magazine was a real feather in one's cap. So once again, what's the problem? Send in your photos!

Special Note 2: It's been our custom over the past several years to send thank you notes each month to those who report to this column. We've been unable to do that recently thanks to a computer glitch which ate names and addresses. We are slowly rebuilding the list. In the meantime, next time you send us logs or whatever, be sure to include your USPS mailing address. Thanks.

Remember, your shortwave broadcast logs are always and forever sought after and welcome. Please list your catches by coun-

try, double or triple space between each one, and add your last name and state abbreviation after each. We're also looking for spare QSL cards we can use as illustrations. Also station schedules, station photos, shack photos (don't be so shy!), pennants, schedules—anything and everything you'd care to lay on us! As always, deepest thanks for your continued interest and support!

Here are this month's logs. All times are in UTC, which is five hours ahead of EST, i.e. 0000 UTC equals 7 p.m. EST, 6 p.m. CST, 5 p.m. MST and 4 p.m. PST. Double capital letters are language abbreviations (FF = French, AA = Arabic, SS = Spanish, etc.). If no language abbreviation is included the broadcast is assumed to have been in English.

AFGHANISTAN—Radio Afghanistan, tentative, **18940** via Norway with Mideast music at 1518. (Barton, AZ) 1500 in unid. language. Language. (Paradis, ME)

ALASKA—KNLS, **7355** with gospel in CC heard at 1238. (Newbury, NE)

ALBANIA—Radio Tirana, **6115** at 0353. (Moser, PA) 6115// **7160** at 0330 with ID, schedule, news. (Burrow, WA) **7270** in Albanian at 0330. (Brossell, WI) **9540** at 2245 with ID, news. (Newbury, NE) Trans World Radio via Albania, **6235** at 0558 with IS, and sign on in a Slovak language. (Montgomery, PA)

ALGERIA—Radio Algeria, **11700** requesting reception reports at 2353. (Dybka, TN) (*New frequency? Nominal **11715**.—gld*)

ANTARCTICA—Radio Nacional Arcangel San Gabriel, **15475** at 2040 with SS pops and ID at 2102. Sign off at 2103 on day, 2111 the next. (Alexander, PA)

ANGUILLA—Caribbean Beacon, **6090** with Dr. Gene Scott at 0026. (Newbury, NE) **11775** at 1212. (Moser, PA) 1320. (Brossell, WI)

ANTIGUA—BBC, **5970** at 0004. (Newbury, NE) (*Not 5975?—gld*) **5975** at 0111. (Moser, PA) Deutsche Welle relay, **9700** at 0337. (Moser, PA) **12045** in GG at 2340, **//13780** via Russia and **17860** via Rwanda. (MacKenzie, CA)

ARGENTINA—RAE, **11710** with IS, time pips, frequency anmt at 0158. (Wood, TN) 0201 "Welcome to the program of learning." (Newbury, NE) 0300 with IS, IDs in EE, SS, and FF and into FF at 0310. (Linonis, PA) 0359 in FF with IS, ID, time pips at 0400. (Burrow, WA)

ARMENIA—Voice of Armenia, **4810** at 2046 with EE segment including ID: "You are tuned to the Voice of Armenia." Into news headlines. Poor here but fair to good on //9960. (D'Angelo, PA) 2049 with talks. Stronger on **9960**. (Montgomery, PA) 9960 at 2039 with anthem, ID, schedule. (Burrow, WA) 2045 with news to closing at 2100. (Paradis, ME)

ASCENSION ISLAND—BBC relay, **12095** at 0008. (Newbury, NE) 0247. (Moser, PA) **15400** at 2000. (Jeffery, NY)

AUSTRALIA—ABC Northern Territory Service, Tennant Creek, **2325** at 0926 with news items. Better at 0950 recheck. (Montgomery, PA) Radio Australia, **6020** with national news at 1200. (Becker, WA) **9580** with news at 1100. (Quinby, PA) 1145. (Northrup, MO) 1158 with news from New South Wales. (Moser, PA) 9580//**9710** at 0850. (Barton, AZ) **11650** with news and classical music at 1500. (Paradis, ME) **15515** at 0539. (Newbury, NE) 0633 with Australian music show. **//12080**, **15240**, **15415**. (Dybka, TN) 21740 at 2200. (Linonis, PA) 2240. (MacKenzie, CA)

AUSTRIA—Radio Austria Int'l, **9870** at 0127 with multi-lingual ID, Blue Danube. (Moser, PA) 0128 with ID in EE, FF, GG and into SS. (Newbury, NE) Radio Africa Int'l, **17895** via Austria at 1527 to 1600 close, with FF ID at 1530, FF mix of pop, rap, and hi-life. Frequent IDs but overwhelmed by VOA sign on at 1558. (D'Angelo, PA) AWR Relay, **17820** monitored at 2245 with interview. Some QRM from Radio Japan. (MacKenzie, CA)

BANGLADESH—Bangladesh Betar, **9550** at 1858 closing with addresses, schedule, and ID. Also heard on **7185//9550** at 1751. (Burrow, WA)

BELGIUM—Radio Vlaanderen Int'l, **11985** at 0359 with IS, multilingual Ids, and sign on. (Moser, PA) (*via Bonaire—gld*)

Abbreviations Used In This Month's Column

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

BENIN—ORTB, **5025** (Paraku) at 2143 with highlife vocals and FF talks. (D'Angelo, PA) **7210** at 2240 in FF with talk and African pops. Off with NA at 2301. Also heard at 0456 sign on. (Alexander, PA) 0525 in local language and local music. (Montgomery, PA)

BOLIVIA—Radio Mosoj Chaski, (pres) **3310** at 0939 with ranchero music, man and woman annors joking around in Quechua language. (Montgomery, PA) La Cruz del Sur, **4876.7** at 2311 with music and fast-talking man annor. ID at 2316. (Montgomery, PA)

BOTSWANA—Radio Botswana, **4820** at 0250 with barnyard IS to choral anthem at 2259, opening ID at 0301 and anmts in Setswana, music and talk. Also heard at 2139 to 2200 close. (D'Angelo, PA) 0255 with IS and ID. (Paradis, ME) 0336 with top 40 and country songs. (Wood, TN) **7255** at 0301 after VOA signs off. Botswana IS audible under VOA from 0248. (Montgomery, PA) 0404 with news. (Moser, PA) VOA relay, **9885** at 0300. (Jeffery, NY) 0320. (Linonis, PA) 13710 at 2202. (Newbury, NE) **17895** at 1910. (Brossell, WI)

BRAZIL—Radio Congohas, **4775**, 2255 with pops and romantic songs in EE and PP with IDs interspersed. Nice ID and frequency anmt during sign off routine at 0000. Closed with a prayer. (D'Angelo, PA) 2342 with lots of EE music from U.S. (Montgomery, PA) Radio Clube do Para, **4885** at 0320 in PP with ballads. (Linonis, PA) Radio Nacional Macapa, **4915** at 0320 with man/woman talks. Barely audible. (Jeffery, NY) Radio Difusora Taubate, **4925** in PP at 2251. Nice music. Canned ID at 2258 with frequencies mentioned. (Montgomery, PA) Radio Guarani, **6050** at 2236 with PP talks, ID, time checks, ad string, sports update, more ads, and time checks. Time pips at 2300 over continued talking. (D'Angelo, PA) Radio Nacional, **11780**, 2322 with news correspondents. (Newbury, NE) 0425 with talk and interview in PP. (Brossell, WI) 0745 with music. (Barton, AZ)

BULGARIA—Radio Bulgaria, **7400** heard at 0055 with local choirs; in Bulgarian by 0100. (MacKenzie, CA) **7599** at 2250 with DX program. (Newbury, NE) **9400** at 0240—government helps you in family planning and health. (Moser, IL) 0301 with IS, news, weather, ID. (Burrow, WA)

BURKINA FASO—Radio Burkina, **5030** at 2200 in FF with man taking music requests via phone calls. (Paradis, ME) 2210 with FF talks, vocals. (D'Angelo, PA) 0633 in FF with commercials and mix of Western and local music. (Miller, WA)

CAMBODIA—National Voice of Cambodia (tentative) **11940.4v** at 1226 with exotic vocals and instrumentals in unid. Language. Not even sure if this one is active. (D'Angelo, PA)

CANADA—RCI, **9755** at 0203 with news. (Newbury, NE) CFRX, **6070** at 0545 with local CFRB ID. (Becker, WA) CFVP, **6030** at 0652 relaying local CKMX. (Dybka, TN) CBC Northern Quebec Service, **9625** at 0405 with ID, "Northern Lights." (Burrow, WA)

CANARY ISLANDS—Full Gospel Las Palmas Church, **6715 USB** monitored at 2253 with sermon in Korean, hymns. Off in RTTY QRM around 2359. (D'Angelo, PA)

CHILE—Voz Cristiana, **15375** in SS with religious pops at 0137. (Newbury, NE) 0700. (Barton, AZ)

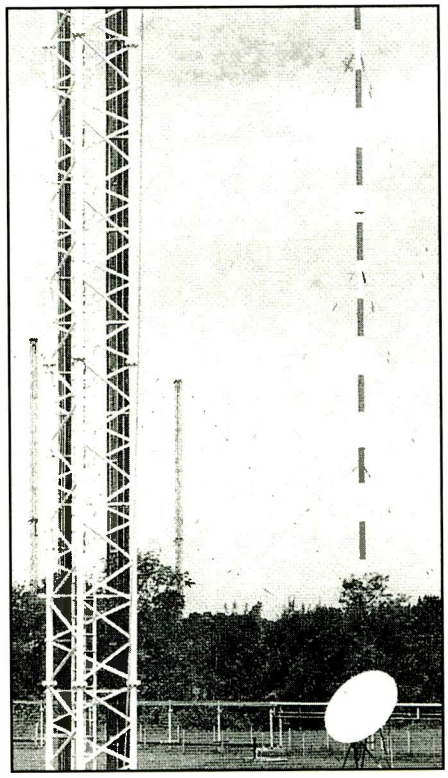
CHINA—China Radio Int'l, **5145** at 1110 in CC. (Montgomery, PA) **7190** in JJ to Japan at 1213. (Becker, WA) **9580** in CC via Cuba at 0240. (Northrup, MO) **9690** via Spain at 0304. (Moser, PA) 0320. (Burrow, WA) 11900 at 1330. (Brossell, WI) **11980** at 1254 ending "Life in China." (Newbury, NE) **13650** at 2330 and **13680** at 2327. (Jeffery, NY) Nei Menggu PBS, 0957 with long talks in Mandarin, presumed ID at top of the hour. (Montgomery, PA) China National Radio, **5880** in CC at 1214. (Becker, WA) Xizang (Tibet) Peoples Broadcasting Station, **6110//7385//9490** at 1624 in EE. Asian music, mentions of Tibet. Changes from EE to unid at 1650. (Burrow, WA) 7385 under WRMI at 0137 with female anncr, music. Very weak but **//5240** almost inaudible. (Montgomery, PA) Xingjiang PBS, **7310** in CC at 0120. Noisy frequency. (MacKenzie, CA) CPBS **9830** in CC at 1239. (Dybka, TN) Music jammer, **11900** at 2020 to past 2055. Also **13800** at 2320, **//11995**. (MacKenzie, CA)

COLOMBIA—Ecos del Atrato, presumed, **5019.6** at 0456 with music and man in SS. Possible sign off anmts and gone without an anthem. (D'Angelo, PA) La Voz del Guaviere, **6035** at 0952 with LA vocals, t/c at 0958, canned ID accompanied by group vocal, ad string, another ID and t/c, more ads, news in SS. Good until Radio Marti sign on at 1000. (D'Angelo, PA)

CONGO (DEM REP.)—RTV Congolaise, **9610** in FF at 0713 with news, promos. (Newbury, NE) Radio Okapi, (presumed) **11690**, 0155 very weak, with African music. (Montgomery, PA) Presumed this at 0203 with non-stop African vocals. (D'Angelo, PA)

CROATIA—Voice of Croatia, **9925** at 0402 in EE with multi-lingual ID and schedule. (Burrow, WA)

CUBA—Radio Havana Cuba, **6000** in SS at 1135. (Northrup, MO) 6000**//9820** with news comment at 0109. (Moser, PA) 9820 at 0109. (Newbury, NE)



These towers belong to Bayerischer Rundfunk in Munich (Ismaning), Germany on 6085. (Thanks R. D'Angelo)

CYPRUS—BBC relay, **11845** sign on at 0159. (Dybka, TN) **15575** at 1315. (Newbury, NE) **21660** at 1400 with soccer. (Paradis, ME)

CZECH REPUBLIC—Radio Prague Int'l, **6200//7345** with letters program at 0107. (Moser, PA) 9435 at 0357 with schedule, ID, IS, news. (Burrow, WA)

DOMINICAN REPUBLIC—Radio Pueblo, **5009.8** at 0140 with LA music, IDs and off abruptly at 0150. (Alexander, PA) Radio Barahona, **4830** at 1132 with SS male anncr, ID, canned ID by woman at 1136 and into music program. (Montgomery, PA) Radio Cristal Int'l, **5009.8** at 1030 with sign on, anmts, ID in SS at 1030 and into music. (Montgomery, PA) Radio Cima Cien, **4960** at 0105 with man/woman, salsa, promos, IDs. (Newbury, NE) 0321 with music, SS man anncr. (Jeffery, NY)

ECUADOR—Radio Oriental, presumed, **4782** in SS at 0220 with music and woman anncr. Barely audible. (Jeffery, NY) Radio El Buen Pastor, **4815** at 1026 with man anncr in SS with ID at 1023 and 1025. Lots of music and jingles. Very lively program. (Montgomery, PA) La Voz del Napo, **3279.6** at 1041 with music, man anncr in SS, ID at 1044 and 1049. (Montgomery, PA) Radio Federacion, **4960** at 1045 with rustic vocals, local language, and SS pops. Off abruptly at 1058. (Alexander, PA) Radio Centro, **3289.9** at 1015 with SS talks, ads, IDs, promos. Weak but in the clear—no sign of Guyana. (Alexander, PA) HCJB, **9745** at 0105 with ham radio show. (MacKenzie, CA) 0213. (Newbury, NE) 0244 with religious talk. (Moser, PA) **15115** with "Precepts" at 1300. (Paradis, ME)

EGYPT—Radio Cairo, **9475** with Mideast music at 0218, (Moser, PA) 0220 with history feature. Poor modulation. (Moser, IL) 0320 with program notes, anthem and off at 0326. (Burrow, WA) **9900** at 2300 with news. (Paradis, ME) 0011 in EE with Egyptian pops in AA. (Newbury, NE) **17675** in AA at 1340. (Brossell, WI)

ENGLAND—BBC, **6110//6130** in SS at 1055 with news, into IS. **15190** on books at 1355 (Northrup, MO) **12105** via Vladivostok at 1205. (Moser, PA).

FINLAND—YLE/Radio Finland, **17660** in Finnish at 1345. (Brossell, WI) **15400** at 1318 in Finnish. (Newbury, NE)

FRANCE—Radio France Int'l, **5915** in FF at 0320. (Quinby/Linonis, PA) **15605** to Africa at 1600. (Paradis, ME) **17620** at 1443. (Newbury, NE) **21645** with ID at 2125. (Barton, AZ)

GABON—Africa No. One, **9580** at 0517 with news in FF. (Newbury, NE)

GEORGIA—Abkhazia Radio, presumed, **9489.8** heard at 1337 with local vocals. (Strawman, IA)

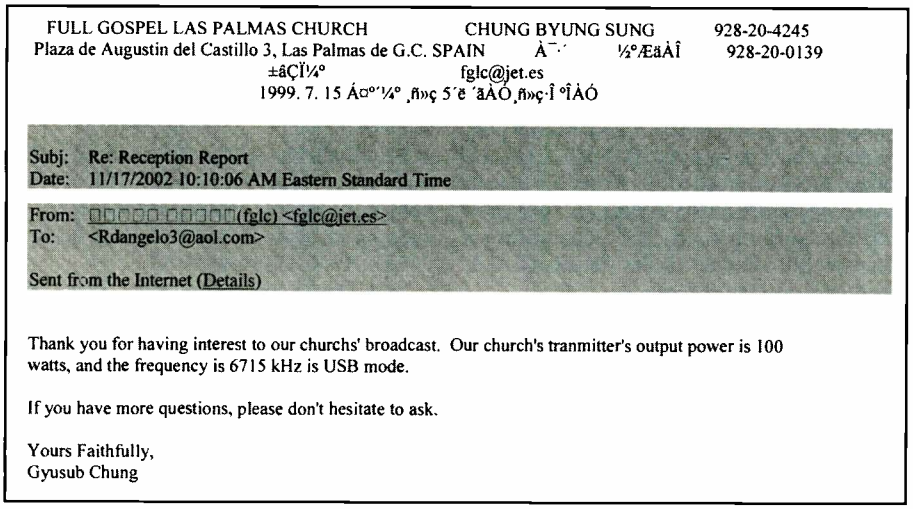
GERMANY—Deutsche Welle, **5910** in GG at 1150. **13780** in GG at 1335. (Northrup, MO) **6020** at 0340. (Moser, IL) **6040** via Canada at 0130. **9640** via Portugal at 0124 (Moser, PA) **6100** in GG at 0209. Also **7130** in GG at 0156 with mention of the CIA. (Newbury, NE) 0130 in GG. (MacKenzie, CA). **9735** in GG at 0900. (Barton, AZ) Trans World Radio via Germany, **6045** at 0757 with preaching. (Dybka, TN) The Overcomer Ministry, **13810** at 1330. (Northrup, MO) Radio Africa Int'l, **11690** at 0750 with woman in FF, vocals, frequent mentions of Democratic Republic of the Congo had me thinking this was Okapi but several Radio Africa IDs were heard at 0756 including address in New York. Carrier cut at 0800. (D'Angelo, PA) **11735** at 1740 with EE ID during music program, talks about various ethnic and religious groups in Nigeria. Off at 1758. (Montgomery, PA) Deutschland Radio, **6005** at 0748 with GG ID by woman at 0800, various types of music. (Montgomery, PA)

GHANA—Ghana Broadcasting Corp., **4915** at 2040 with tribal vocals and man anncr. (D'Angelo, PA)

GREECE—Voice of Greece, **9420** at 0635 in Greek to Western Europe. (Becker, PA) VOA relay, **11760** at 2209. (Newbury, NE)

GUAM—AFN, **5765 USB** with news at 1214. (Becker, WA) 1347. (Newbury, NE) KTWR—**12130** in CC to Southeast Asia heard at 1245. (Barton, AZ) 1338 with Bible verses in CC, then in EE. (Brossell, WI)

GUATEMALA—Radio K'ekchi, **4845** at 2350 with music. Under Mauritania. (Newbury NE) 0245 with religious and light instrumental music. Off at 0312 after long national anthem. (Alexander, PA) 1146 with screechy female vocals, ID by woman at 1201.



FULL GOSPEL LAS PALMAS CHURCH CHUNG BYUNG SUNG 928-20-4245
Plaza de Augustin del Castillo 3, Las Palmas de G.C. SPAIN À¯·· ½°ÆäÀÎ 928-20-0139
±âÇÏ¼° fglc@jet.es
1999. 7. 15 Á¤°¼° ¸ñ»ç 5´ë ´ÀÓ¸ñ»ç·Î °ÎÀÓ

Subj: Re: Reception Report
Date: 11/17/2002 10:10:06 AM Eastern Standard Time

From: □□□□□ □□□□□(fglc) <fglc@jet.es>
To: <Rdangelo3@aol.com>

Sent from the Internet (Details)

Thank you for having interest to our churchs' broadcast. Our church's tranmitter's output power is 100 watts, and the frequency is 6715 kHz is USB mode.

If you have more questions, please don't hesitate to ask.

Yours Faithfully,
Gyusub Chung

The Full Gospel Las Palmas Church sent this QSL to D'Angelo for his reception of their 6715 USB Korean language broadcast.

(Montgomery, PA) Radio Coatan, **4780** at 1032 with anthem, SS anmts, Ids, and into SS religious programming. (Alexander, PA) 1120 with ID, music, talks. (Montgomery, PA) Radio Verdad, **4052.5** at 0330 in SS with woman annor, ID at 0400. (Wood, TN) 0444 with choir and ID, TC in SS, more religious vocals, another ID, choral anthem, and off at 0505. (D'Angelo, PA)

GUINEA—RTV Guineenne, **7125** at 0614 in FF with African music. (Newbury, NE) 2240 with African folk music, FF/vernacular talk, off with anthem at 0000. (Alexander, PA)

HAWAII—KWHR, **17510** with news at 0001. (Jeffery, NY) AFN, **10320 USB** heard at 0532 with historical feature. (Newbury, NE)

HONDURAS—La Voz Evangelica, **4820** heard at 1340 with preaching in SS. (Newbury, NE) Radio Litoral, **4830.1** heard at 0432 wandering down here from usual 4832. Non-stop religious vocals until SS ID at 0451. Off at 0502. (D'Angelo, PA) **4832** at 0335 with continuous religious vocals, SS anmts, canned IDs. Off at 0459. (Alexander, PA) HRMI—Radio Misiones Int'l, **5010** in SS at 1112. (Jeffery, NY)

INDIA—All India Radio, **4800**, Hyderabad at 0040 with Hindi vocals to talk in Hindi at 0100. (D'Angelo, PA) **4840**, Mumbai, at 0132 with woman in Hindi and Hindi vocals. (D'Angelo, PA) 0137 with apparent news in Hindi. (Montgomery, PA) **11620** with sitar music at 0140. (Barton, AZ) Here and parallel **11585** in presumed Hindi at 0245. (Brossell, WI) **13605** in EE at 2305, //**11620**. (MacKenzie, CA) 0017, //11620. (Newbury, NE)

INDONESIA—Voice of Indonesia, **9525** in JJ at 1150. (Northrup, MO) **11785v** at 2000 from FF into EE with ID, frequencies, program preview, news. (Burrow, WA) 2004 with news. (Newbury, NE) 2005 with news. (Strawman, IA) RRI, Makassar, **4753.3** at 2135 with man and woman talking in II, Song of the Coconut Islands at 2159 and Jakarta news. (D'Angelo, PA) (*Don't try this at home dear readers—gld*) 1009 with local music. (Montgomery, PA)

IRAN—VOIRI, **9515** in SS at 0230. Off at 0245. (Quinby/Linonis, PA) **9580** in EE at 0030. (Newbury, NE) Here at 0044. Also at 0219 in SS. (Moser, PA) **11695** at 1930 with anthem, ID, schedule, and into Koran. (Burrow, WA) **11950** at 1330 sign on, into Koran. (Brossell, WI) **11970** and **9610** at 0116 with EE interview. (Dybka, TN)

IRELAND—RTE, **6155** via England at 0132. (Moser, PA) 0146 with commercials, note about driving with care in the fog. (Newbury, NE)

ISRAEL—Kol Israel, **6280** at 2000 with EE news, weather, ID, sked, IS and off at 2025. Back in FF at 2030. (Alexander, PA) **7545** at 0045 in HH, //**11585**. (MacKenzie, CA) 0445 in HH. (Quinby, PA) **9435** at 0403 in EE to 0415 when into FF. (Dybka, TN) 2000 with news in EE. (Paradis, ME) **11585** with pops. (Brossell, WI) 1503 with talk show in HH. (Newbury, NE) 1628 in FF. (Burrow, WA) Galei Zahal, **6971** in HH at 0305. Back on listed **6973** at 0305. (Montgomery, PA) 6973 at 0307 in HH with standards. (Wood, TN)

ITALY—RAI Int'l, **9675//11800** with music at 0034. (Moser, PA) **9745** with EE ID, news at 1935. (Burrow, WA) 11800 at 0300. (Brossell, WI) 1455. (Barton, AZ) 0102. (Newbury, NE)

JAPAN—Radio Japan, **5960** via Canada in JJ at 0300. (Quinby, PA) **6120** via Canada at 1150. (Northrup, MO) **6145** via Canada at 0032. (Moser, PA) **7200** at 1425. (Barton, AZ) **9505//11970//15355** at 1705 with news, frequencies, ID, more news. (Burrow, WA) **9530** via French Guiana at 0914. **11880** via Sri Lanka at 0111. Also **17835** with sports scores. (Newbury, NE) **11665** in JJ at 2232, //**11895** (Fr. Guiana), **11910** and **17825**. (MacKenzie, CA) **11885** at 2100 with "Asian Top News." (Paradis, ME) **11915** in Italian to Europe at 0535. (Becker, WA) **17180** in Malay heard at 2248. (MacKenzie, CA)

JORDAN—Radio Jordan, **11690** at 1601 with news. Relay of 96.3 FM. (Burrow, WA) 1604 with Top 40. (Newbury, NE)

KUWAIT—Radio Kuwait, **11675** in AA at 0250. (Brossell, WI) **11990** heard at 1800 with commentary. (Paradis, ME) 1803. (Newbury, NE) 1814 with Islamic history. (Burrow, WA) **15495** in AA to North Africa at 0615 and **15505** to Western Russia at 0415, 0615, and 0720. (Becker, WA) **17895** at 1420. (Barton, AZ)

LIBYA—Radio Jamahiriya, **15435** in AA at 1350. (Brossell, WI) 2230 with IS, ID, and into AA. (Linonis, PA) Voice of Africa EE insert at 1733 to 1739 when back to AA. (Burrow, WA) **21640** in AA at 1514. (*Via France—gld*)

LIBERIA—ELWA, **4760** at 2146 with EE sermon, ID, address at 2200, and orchestral national anthem. (D'Angelo, PA) 0620 with the daily reading. (Newbury, NE)

LITHUANIA—Radio Vilnius, **9875** in Lithuanian at 2300. IS, ID, and into EE at 2330. (Paradis, ME) 2330 with IS, ID, program notes, news. (Burrow, WA) 2332 with news. (Newbury, NE)

MALAYSIA—Radio Malaysia, **7295** at 1619 with pop, IDs for Radio Four, and Midnight Madness. (Burrow, WA)

MALI—RTV Malienne, **7284.4** with woman in FF at 0846, music at 0850. (Montgomery, PA)

MAURITANIA—Radio Mauritanie, **4845** in AA at 0322. (Jeffery, NY) 0410 with man in long AA talk. (D'Angelo, PA) 0654 with Koran. (Newbury, NE) 0750. (Dybka, TN)

MEXICO—Radio Educacion, **6185** with Mexican folk music at 0150. (Newbury, NE). 0407. (Becker, WA) Radio Mil, **6010** at 0736 with SS and romantic vocals. (D'Angelo, PA)

MOLDOVA—Voice of Russia relay, **7180** at 0320. (Brossell, WI)

MOROCCO—VOA relay, **11655** with sports updates, news, ID, and off at 2230. (MacKenzie, CA) **15240** at 1614. (Newbury, NE) 1800 with "Africa World Tonight." (Paradis, ME)

MYANMAR—Radio Myanmar, **4725** at 1318. Seemed //5040 which was mixing with an SS station. (Strawman, IA) **5040.6** presumed, 1147 with SEA vocals and talks to flute at 1200, man with apparent ID and woman with news. (D'Angelo, PA)

NETHERLANDS—Radio Nether-lands, **9895//13700** at 1936 with report on an academic congress. **11655** at 1937. (Moser, PA) 0632 in DD. (Newbury, NE) 11655 via Madagascar in DD at 1639. (Newbury, NE) **17570** via Russia in unid. language at 0007. (Jeffery, NY)

NETHERLANDS ANTILLES—Radio Netherlands via Bonaire, 6165 with news at 0025. (Newbury, NE) **6165//9845** at 0031 on music censorship. (Moser, PA) 9845 at 2330 with "Newsline." (Paradis, ME)

NEW ZEALAND—Radio New Zealand Int'l, **15340** heard at 9530 in EE and possibly Maori with music and native songs. (Linonis, PA) **17675** with 50s pops at 0117. (Newbury, NE) 0244 with "In Touch" program. (Jeffery,

NY) 0406 with weather, news report. (Burrow, WA)

NIGERIA—Radio Nigeria, Kaduna, **4770** at 2135 to 2300 close. Koran, vernacular talk, pops. Also 0431 sign on with drum IS, choral anthem, EE prayer, vernacular talk, EE religious talk, pops, and news. (Alexander, PA) 0508 man with news items, ID at 0519. (Montgomery, PA) Voice of Nigeria, **7255** at 0455. In on possible anthem, ID, schedule, and program notes. (Burrow, WA) 0500 with woman and program notes. (Newbury, NE) 0544 with talk on AIDS. (Montgomery, PA) **15120** at 1858 sign on with EE anmts, local agriculture, news at 2000. Off at 2300 with ID, address, and NA. //weak 7255. Also at 0454 sign on with anthem, EE anmts, program notes, EE news. 7255 much better (Alexander, PA) 1915 with business and magazine programs. (Paradis, ME)

NORTH KOREA—Voice of Korea, **7580** to Japan at 1236. (Becker, WA) **9335** with political talk at 1347. (Newbury, NE) **9975** in EE at 1655 sign off. (Burrow, WA)

NORTHERN MARIANAS—KFBS, Saipan, **11550** in CC monitored at 1350. (Newbury, NE)

NORWAY—Domestic service, **7470** at 0408 in NN. (Brossell, WI) **15705** in NN at 1802. (Newbury, NE)

OMAN—Radio Sultanate of Oman, **13640** in AA at 1312. (Newbury, NE) **15355** with "Ethics of Islam" program at 0325, news at 0330. (Burrow, WA)

PAKISTAN—Radio Pakistan, **11570** at 1455 with Urdu talks, Pakistani music, ID, and news at 1500. (D'Angelo, PA) 1557 with IS, ID, and news at 1600. (Burrow, WA) **15070** at 1442 with local flutes, woman annor. (Strawman, IA)

PALU—KHBN, **9965** at 1447 with man in CC. (Newbury, NE)

PAPUA NEW GUINEA—Radio Morobe, **3220** at 1005 in EE and Pidgin talks and music. (Montgomery, PA) Radio Manus, **3315** at 0947 in Pidgin with local music. (Montgomery, PA) Radio Enga, **2410** at 0953 with presumed ID. (Montgomery, PA) NBC, **9675** with island music, rooster crow, at 0747. EE and Pidgin. (Newbury, NE)

PERU—(Note: Since Peruvian station formats are mostly very similar—SS talks, Andean music, local commercials, and notices, etc.—we're going to limit details to any items specific to a particular station in order to save space) Radio Virgen del Carmen, **4886** at 0233. (Jeffery, NY) Radio San Antonio, **4939.7** at 1026. (D'Angelo, PA) Radio San Francisco Solano, **4750** at 1050, ID at 1053. (D'Angelo, PA) Radio Andina, **4995.6** at 0935. (Newbury, NE) Radio Huanta 2000, **4746.8** at 1006 with long talk. (D'Angelo, PA) 1017 having apparently just signed on. (Montgomery, PA) Radio Cora, **4914v** at 1030 with ID and lots more as broadcast continued. (Montgomery, PA; Barton, AZ) Radio Tacna, **9504.8** at 1018 with morning music program, canned ads. (D'Angelo, PA) 1023 with tentative ID. (Montgomery, PA) Radio Imperio, **4389v** at 1002 with SS church service, ID at 1016. (D'Angelo, PA) 1012 with seeming religious broadcast. (Montgomery, PA) Radio Union, **6114.9** with vocal, ID, remote reports. (D'Angelo, PA) La Voz de la Selva, **4824.4** at 1030 but very weak, interesting dance music, some U.S. stuff, several IDs. (Montgomery, PA) Radiodifusora Comercial/Radio La Voz del Vecino, **6324.3**, presumed, at 1105. (Alexander, PA)

PHILIPPINES—Radio Veritas Asia, **11820** at 2312 in Indonesian. Possible news at 2315. **//9505**. (Montgomery, PA) Radio Pilipinas, **15120//15270** at 0310 with news, music, agricultural and economic news. (Burrow, WA) **15190** at 1903 with radio play, EE ID and off at 1929. (D'Angelo, PA) VOA relay, **9890** at 2255. **17735** at 2252. (MacKenzie, CA) (Newbury, NE) **11805** in Special EE at 2330. (Paradis, ME) **11895** at 1330 in unid. Asian language. (Brossell, WI) **17765** at 0040 in unid. Language. **17820** at 2320 and 0050. (Jeffery, NY)

PORTUGAL—RDP Int'l, **11655** with PP comedy show at 0250. (Brossell, WI0

PUERTO RICO—AFN, **6458 USB** with live sports at 2230. (Paradis, ME) 0220 with features and promos. (Newbury, NE)

ROMANIA—Radio Romania Int'l, **11830** at 0400 with IS ID and talk. (Burrow, WA) **11940** at 0211 with news. **//15180**. (Newbury, NE) **17720** at 1344 in PP. (Brossell, WI)

RUSSIA—Radio Tatarstan, Samara, **15105** in presumed Tatar. (Becker, WA) Voice of Russia, **6235** at 2100 sign on to 2158 close. EE news, comments, jazz program. **//7300**, **7340**, 5950. (Alexander, PA) **7180** at 0218 and **9765** at 0211. (Moser, PA) **7390** in SS at 0105. **//7125**, **7180**, **7440**, **9965**. (MacKenzie, CA) **11750** at 0353. (Moser, IL) **15445** from Vladivostok to WCNA at 0504. (Becker, WA) Radio Rossi, **17600** with call-in program in RR at 1340. (Brossell, WI) Radio Magadan, **5940** carrying Rossi service in RR at 1210. (Becker, WA) **9530** in RR at 0525. (Newbury, NE)

RWANDA—Radio Rwanda on **6055** heard at 2057. Audible after Slovakia signs off. Poor, with tribal vocals until sign off anmts. Off at 2101. (D'Angelo, PA) Deutsche Welle relay, **7195** in unid. African dialect at 0322. Same format at 1910 on **17860**. (Brossell, WI) **9870** at 0249. (Moser, PA) **17860** in GG at 2107. (Newbury, NE)

SAO TOME—VOA relay, **6080** at 0509 with news items. (Newbury, NE)

SAUDI ARABIA—BSKSA, **15315** at 1619 in AA. (Newbury, NE) **17745** with Koran recitations at 1333. (Brossell, WI)

SEYCHELLES—FEBA, **11600** at 1554 with sermon, anmts, frequency "What a Friend" IS and off. (Newbury, NE) BBC relay, **21470** heard at 1700. (Paradis, ME)

SINGAPORE—Radio Singapore, **6000** in CC at 1231. **6150** to Indonesia at 1229 with stock report. Also **7170** to Indonesia at 1228 and **7235** at 1225. (Becker, WA) Mediacorp Radio, **6150** at 1520 in EE with pops, promos, entertainment guide, ID. (Burrow, WA) BBC relay, **9740** at 1307 with Mideast news. (Dybka, TN) **15360** at 0000 with news items. (Newbury, NE)

SLOVAKIA—Radio Slovakia Int'l, **5930** with letters program at 0115. (Moser, PA) **9440** at 0120 with music, cultural news, ID, address, IS, and IDs to 0130. Also heard on **7345** at 1930. (Burrow, WA)

SOUTH AFRICA—Channel Africa, **9525** at 0245 with talk about football. (Quinby/Linonis, PA) 1620 with feature, sports, ID, language change at 1630. (Burrow, WA) **11710** at 0504 with report on drought in parts of Africa. (Newbury, NE) **17870** at 1725 with soccer scores, news, views, and reviews. Into FF at 1730. (Montgomery, PA) Radio Sondergrense, **3320**, 2210 with pops. (D'Angelo, PA) 2310 with radio drama. (Wood, TN) (*Presume in Afrikaans—gld*) BBC relay, **3255** past 0314 with news. (Montgomery, PA) 0343 with letters program. (D'Angelo, PA) **11765** with African news at 0420. (Brossell, WI) Adventist World Radio, **17695** in FF at 2016. (Jeffery, NY)

SOUTH KOREA—Radio Korea Int'l, **5975//9515//9870** in EE at 1652 with Korean travelogue, ID, and off at 1657. (Burrow, WA) **9560** via Canada at 0220. (Moser, PA) **9650** via Canada at 1155 with KK language lesson. (Northrup, MO)

SPAIN—REE, **6055** at 0014 with South American news. (Newbury, NE) 0033 with news of Dominican Republic, radio club program. (Moser, PA) 0500 in SS to WCNA. (Becker, WA) **9690** at 2255 in EE; into SS at 2300. (MacKenzie, CA) **11880** in SS at 0345. (Burrow, WA)

SRI LANKA—SLBC, **9770** heard at 0032 with news, old hits hosted by woman. Ruined by Deutsche Welle sign on at 0100 on **9765**. (D'Angelo, PA) VOA relay, **11965** monitored at 2358 with sign on in RR. //15600 (via Vladivostok), **11695** (Petropavlovsk) **9690** (Sri Lanka) **7285** not heard due to ham QRM. (MacKenzie, CA)

SWEDEN—Radio Sweden, **9495** at 0235 with Scandinavian news. (Moser, IL) 0335 with weather for Iceland, Norway, Finland, Greenland. (Brossell, WI) **18960** heard at 1325 in Swedish, IS, ID, and into EE at 1330. (Newbury, NE) 1327 ending Swedish, into EE. (Moser, PA) 1430 with "60 Degrees North." (Paradis, ME)

SWAZILAND—Trans World Radio, **7225** at 0300 with IS, EE ID, and into unid. Language. (Montgomery, PA) **7240** at 0300 with religious programs in presumed RR. (Linonis, PA)

SWITZERLAND—Swiss Radio Int'l, **9885** with "News Net" at 2330. (Paradis, ME; Newbury, NE) **17660** via French Guiana in AA monitored at 1903. (Brossell, WI)

SYRIA—Radio Damascus, **12085// 13610** with schedule, program notes, ID, news at 2116. (Burrow, WA)

TAIWAN—WYFR relay, **15060** in unid. language with talks by man/woman. (Jeffery,

Hot log, cold place. A recent QSL from LRA36 (15476) in Argentina's Antarctic territory. (Thanks Rich D'Angelo)

NY) **15160** CBS, **11645** in CC with ID, ads and talk at 1315. (Brossell, WI) Radio Taipei Int'l, **6050** at 0300 with news program hosted by "Doris." (Young, IL) **7520** via Florida at 0157 with CC music. (Moser, PA) **9680** via Florida at 0315 with "Let's Learn Chinese." (Quinby/Linonis, PA) **11550** in EE at 1702 with anthem, schedule, news. (Burrow, WA) Radio Australia via Taiwan, **15110** at 0119. Off at 0029. (Jeffery, NY)

THAILAND—Radio Thailand, **15460** at 0323 with news, ID, chimes at 0330 and into Thai. Also **9535** at 1906. (Burrow, WA) VOA relay, **11785** at 1315. (Brossell, WI) BBC relay, **17615** at 0002. (Newbury, NE)

TUNISIA—RTV Tunisienne, **7190//7275** with Mideast music, AA talks at 0615. Abrupt close at 0659. (Barton, AZ) **12005** in AA at 0305. (Brossell, WI) **17735** in AA with phone calls at 1625. (Newbury, NE)

TURKEY—Voice of Turkey, **6020** at 0400 with news about Iraq. (Moser, PA) **7300** at 0330 in TT. Also 17815 in EE at 1350. (Brossell, WI) 7300 at 0158 in TT. (Newbury, NE) 0125 in TT. (MacKenzie, CA) 0330 in TT (Quinby, PA) **9460** at 0501 with Call to Prayers. (Becker, WA) **9525** at 2130 with news and press review. (Paradis, ME) **9890** at 1956 with possible news. (Burrow, WA) **17860** at 1400. (Barton, AZ)

UNITED ARAB EMIRATES—UAE Radio, Dubai, **12005** in AA. News by woman at 0401. (Dybka, TN) **13675** at 1603 with series on Saladin, roller rink organ music to 1630, ID and Dubai weather. Into AA at 1634. (Burrow, WA) 0237 in AA. (Newbury, NE)

UNITED STATES—AFN, Key West, **12689 USB** with pops heard at 0535. (Newbury, NE)

UGANDA—Radio Uganda, **4976** at 2034 with music program in unid. Language, ID, and sign off anmts, orchestral national anthem. (D'Angelo, PA) 2053 with man annor in FF. Off at 2100. (Montgomery, PA) 0300 sign on with local drums, anthem, EE anmts, and local religious music. Off at 0304 and back at 0313. (Alexander, PA)

UKRAINE—Radio Ukraine Int'l, **9810** at 0100 in EE to NA with DX program, mailbag, local news, off. (Alexander, PA)

UZBEKISTAN—Radio Tashkent, **9715** at 1330 with news and comment. (Paradis, ME) 1442 with ethnic choral music. (Newbury, NE) **11905** at 2130 with IS, music, talk, ID and possible news. (Burrow, WA)

VANUATU—Radio Vanuatu, **4960** with island music at 0607. (Becker, WA) **7260** at 0800 in EE with Polynesian music, clear ID at 0800. (Linonis, PA)

VATICAN—Vatican Radio, presumed, **6205** via Russia in CC at 2238. (Montgomery, PA) **7305** at 0258. (Moser, PA) **11625** monitored at 0502. **//15570**. (Newbury, NE)

VENEZUELA—Radio Tachira, **4830** in SS at 0313 and again at 1101. (Jeffery, NY) 0114. (Newbury, NE) Radio Amazonas, **4939.7** at 0912 with SS annor, lively LA music. Low modulation. (Montgomery, PA)

VIETNAM—Voice of Vietnam, **7115// 9730** at 1601 with Vietnam news, comments, ID 1609. (Burrow, WA) **6175** via Canada at 0108. (MacKenzie, CA) 0450. (Becker, WA)

YEMEN—Republic of Yemen Radio, **9779.6** at 1758 with IS, anthem ID, schedule, and news at 1800. (Burrow, WA)

YUGOSLAVIA—Radio Yugoslavia, **6100** at 2100 with news, local features (Paradis, ME) **7130** with news at 0202. (Moser, PA)

ZAMBIA—ZBC, **6265** at 0245 with fish eagle IS, EE ID, into Swahili. (Linonis, PA)

ZANZIBAR—RadioTanzania-Zanzibar, **11734.1** at 2025 with local vocals, man in Swahili. (D'Angelo, PA)

And it's "game over" for this month. A mighty roar of thanks to the following who did the good thing this time:

Pete Becker, Clarkson, WA; Jill Dybka, Kingston Springs, TN; Joe Wood, Gray, TN; Howard Moser, Lincolnshire, IL; James Young, Glenview, IL; William Moser, PA; Brian Alexander, Mechanicsburg, PA; Ray Paradis, Pittsfield, ME; Mark Northrup, Gladstone, MO; Robert Brossell, Pewaukee, WI; Rick Barton, Phoenix, AZ; Richard D'Angelo, Wyomissing, PA; Robert Montgomery, Levittown, PA (most of Rich and Bob's logs from a DXpedition at Pennsylvania's French Creek State Park) Mike Miller, Issaquah, WA; Bruce Burrow, Snoqualmie, WA; Ed Newbury, Kimball, NE; Stewart MacKenzie, Huntington Beach, CA; Dave Jeffery, Niagara Falls, NY; Jerry Strawman, Des Moines, IA; Jack Linonis, Hermitage, PA and Samuel Quinby, West Middlesex, PA. ■

the propagation corner

by Tomas Hood, NW7US
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up-to-the-minute forecasts helping you get the most from the radio spectrum

It's Auroral Season!

As we move into spring in the northern hemisphere we experience great DX openings from all around the world on HF. This is because the sun is mostly overhead over the equator, creating equal day and night periods in both hemispheres.

The vernal equinox on March 21, 2003, marks the day when the hours of daylight and darkness are about equal around the world. This creates an ionosphere of similar characteristics throughout more of the world than is possible during other times, when it is summer in one hemisphere and winter in the other and there are extreme differences in the ionosphere.

The Northern Lights is a spectacular sight.

This equalization of the ionospheric which takes place during the equinoctial periods (autumn and spring) is responsible for optimum DX conditions and starts late in February and lasts through late April. The improvement in propagation is most noticeable on long circuits between the northern and southern hemispheres. During this season conditions are also optimal for long-path as well as short-path openings and during gray line twilight periods associated with sunrise and sunset.

Spring is also the season of aurora. Geomagnetic storms that ignite auroras occur more often during the months around the equinoxes during early autumn and spring. This seasonal effect has been observed for more than 100 years. Scientists are still puzzled about all of the reasons, but they have a wealth of research from which they've developed models to help understand the phenomena.

What Is The Aurora?

Aurora is a direct result of solar plasma interacting with gasses in the upper atmosphere. It is common to see aurora during active to severe geomagnetic storms. Geomagnetic storms develop when strong gusts of solar wind or coronal mass ejections (CMEs) hit the earth's magnetosphere in just the right way.

The magnetosphere is filled with electrons and protons that are normally trapped by lines of magnetic force that prevent them from escaping to space or descending to the planet below. The impact of a CME breaks loose some of those trapped particles, causing them to rain down on the atmosphere. Gasses in the atmosphere start to glow under the impact of these particles. Different gasses give out various colors. Think of a neon sign and how the plasma inside the glass tube, when excited, glows with a bright color.

These precipitating particles mostly follow the magnetic field lines that run from earth's magnetic poles and are concentrated in circular regions around the magnetic poles called "auroral ovals." These bands expand away from the poles during magnetic storms. The stronger the storm, the greater these ovals will expand. Sometimes they grow so large that people at middle latitudes, like California, can see these "Northern Lights."

In the early 1970s scientists recognized a connection between the component of the interplanetary magnetic field (IMF) that lies along earth's magnetic axis (known as "B sub z (B_z)") and earth's changing seasons: the average size of B_z is greatest each year in early spring and autumn. So why do these storms increase in strength and number during spring and autumn?

As the sun rotates (one full rotation occurs about every 27 days), the plasma spewing out from it forms into a spiral shape known as the "Parker Spiral" (named after the scientist who first described it). This solar wind carries with it an interplanetary magnetic field, which expands away from the sun in this spiral. Think of one of those rotating lawn sprinklers with jets of water shooting away from the center—you can see a bending or curving of the water lines. As the earth moves around the sun, these spiraling solar winds sweep into the earth's magnetosphere. How the magnetic field lines in the solar wind interact with the magnetic field lines of the magnetosphere is the key to geomagnetic storms and aurora.

At the magnetopause, the part of our planet's magnetosphere that fends off the solar wind, earth's magnetic field points north. If the IMF tilts south (i.e., B_z becomes large and negative) it can partially cancel earth's magnetic field at the point of contact. This causes the two magnetic fields (earth's and the IMF) to link (think of how two magnets link with one magnet's south pole connecting with the other's north pole), creating a magnetic field line from earth directly into the solar wind. A south-

pointing B_z opens a window through which plasma from the solar wind and CME can reach earth's inner magnetosphere, bombarding the gasses of the upper atmosphere.

Earth's magnetic dipole axis is most closely aligned with the Parker Spiral in April and October. As a result, southward (and northward) excursions of B_z are greatest then. This is why aurora is most likely and strongest during the equinoctial months. When we are in the peak of a solar cycle, and in the year or so after a peak, solar activity is very high. The amount of solar wind and plasma is large at this point in the cycle, causing very dramatic and spectacular auroral light shows. Look for aurora-mode propagation when the Kp rises above 4, and look for visual aurora after dark when the Kp rises above 5. The higher the Kp, the more likely you may see the visual lights.

But you don't have to see them to hear their influence on propagation. Listen for stations from over the poles that sound raspy or fluttery. Look for VHF DX. Sometimes it will enhance a path at certain frequencies; other times it will degrade the signals. Sometimes signals will fade quickly, then come back with great strength. The reason for this is that the radio signal is being refracted off the more highly ionized areas that are lit up. These ionized areas ebb and flow, so the ability to refract changes, sometimes quickly. I've observed the effect of aurora and associated geomagnetic storminess even on lower HF frequencies.

I have a wealth of links at <http://prop.hfradio.org/> that provide up-to-the-minute aurora information and data. One of the most useful resources is <http://aurora.n1bug.net/>, the "Aurora Sentry."

Current Solar Cycle 23 Progress

Cycle 23 is showing a slow but steady decline. The Royal Observatory of Belgium reports a monthly mean sunspot number of 82 for December 2002, down 13 points from the 95 reported for November 2002. The low for the month was 25 on December 30, and the high was 140 on December 17. This results in a smoothed sunspot number of 106 centered on June 2002, just slightly down from the 109 of May 2002. A smoothed sunspot level of 66 is expected for March 2003, plus or minus 14 points.

During December there was a corresponding decrease in the 10.7-cm solar flux level. Canada's Dominion Radio Astrophysical Observatory at Penticton, British Columbia, reports a 10.7-cm observed monthly mean solar flux of 158 for December, down from November's 168. The 12-month smoothed 10.7-cm flux centered on June 2002 is 183, down from May's reading of 188. A smoothed 10.7-cm solar flux of about 118 is predicted for March 2003, plus or minus about 20 points.

The observed monthly mean planetary A Index (Ap) for December 2002 is 13, considerably quieter than the previous two months. The 12-month smoothed Ap index centered on June 2002 is 13.5, remaining about the same as May.

HF Propagation

April is a hot month for DX. The seasonal change plays out on HF with activity moving up from 41 meters and down from 11 meters. Propagation on the higher HF frequencies (19 through 11 meters)

Optimum Working Frequencies (MHz) - For April 2003 - Flux = 112, SSN = 61 - Created by NW7US

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
TO/FROM US WEST COAST																								
CARIBBEAN	25	25	24	23	21	19	17	16	15	14	13	12	12	15	18	20	21	23	24	24	25	25	25	25
NORTHERN SOUTH AMERICA	32	32	31	28	26	24	22	20	19	18	17	16	15	17	21	24	26	27	29	30	31	31	32	32
CENTRAL SOUTH AMERICA	32	29	27	24	22	21	19	18	17	16	16	17	16	19	24	27	29	31	32	33	33	34	33	33
SOUTHERN SOUTH AMERICA	30	27	24	22	21	19	18	17	16	16	15	14	16	16	20	23	26	28	30	31	33	33	34	32
WESTERN EUROPE	16	14	11	10	14	16	12	11	11	10	12	16	18	19	20	21	22	21	21	21	20	20	19	18
EASTERN EUROPE	10	10	10	10	14	16	17	15	11	10	14	16	18	19	19	20	20	20	19	18	17	15	11	11
EASTERN NORTH AMERICA	28	28	26	25	22	20	19	17	16	15	14	14	15	20	23	25	27	28	28	29	29	29	29	29
CENTRAL NORTH AMERICA	16	16	15	14	13	12	11	10	9	9	8	8	7	9	12	13	14	15	15	16	16	16	16	16
WESTERN NORTH AMERICA	9	8	8	8	7	7	6	6	5	5	4	4	4	4	5	6	7	8	8	8	8	9	9	9
SOUTHERN NORTH AMERICA	27	26	25	24	23	21	19	18	16	15	14	13	13	13	17	20	22	23	25	25	26	27	27	27
NORTHERN AFRICA	15	14	13	12	12	11	12	11	11	10	10	16	18	20	21	21	22	23	23	22	21	20	18	16
CENTRAL AFRICA	18	17	16	15	14	15	12	11	11	10	11	16	18	20	21	21	22	22	23	23	23	23	21	20
SOUTH AFRICA	20	19	18	17	16	15	16	15	14	14	13	13	19	22	24	26	27	27	28	28	28	26	24	22
MIDDLE EAST	12	12	11	12	16	18	16	13	11	10	14	16	18	19	20	21	21	21	20	19	16	15	14	13
JAPAN	23	23	23	23	22	21	20	18	14	13	12	12	11	11	10	13	12	11	11	15	18	20	21	22
CENTRAL ASIA	23	23	23	22	22	21	20	18	14	13	12	12	11	11	10	16	18	17	16	15	14	15	19	22
INDIA	18	19	19	19	19	18	18	17	15	12	10	14	14	11	10	10	10	9	9	12	15	16	17	18
THAILAND	19	22	23	22	21	21	19	18	14	12	12	11	11	10	14	17	19	19	18	16	15	14	14	16
AUSTRALIA	30	32	33	34	34	33	31	29	26	24	22	20	19	18	17	16	18	17	16	15	17	22	26	28
CHINA	22	22	22	22	21	20	19	18	15	12	11	11	10	10	15	14	13	12	11	11	11	16	19	20
SOUTH PACIFIC	34	35	35	34	34	32	30	27	24	22	20	19	18	17	16	15	15	14	15	23	28	31	32	34
TO/FROM US MIDWEST																								
CARIBBEAN	29	28	27	25	23	21	19	18	17	16	15	14	15	19	21	23	25	26	27	28	28	29	29	29
NORTHERN SOUTH AMERICA	29	29	28	26	23	21	20	18	17	16	15	14	14	18	20	22	24	25	27	28	28	29	29	29
CENTRAL SOUTH AMERICA	32	29	26	24	22	21	19	18	17	16	15	16	18	22	25	27	29	31	32	33	33	33	33	33
SOUTHERN SOUTH AMERICA	30	27	24	22	21	19	18	17	16	16	15	15	16	19	22	25	27	29	31	32	33	33	34	32
WESTERN EUROPE	15	11	11	10	10	12	11	11	10	10	15	18	20	21	22	22	22	22	22	21	21	20	19	17
EASTERN EUROPE	11	10	10	10	12	12	11	11	10	10	16	18	19	21	21	21	21	21	20	20	19	17	16	12
EASTERN NORTH AMERICA	20	20	19	17	16	15	13	12	12	11	10	10	13	15	17	18	19	20	21	21	21	21	21	21
CENTRAL NORTH AMERICA	9	9	9	8	8	7	6	6	5	5	5	4	5	6	7	8	9	9	9	10	10	10	10	10
WESTERN NORTH AMERICA	16	16	15	15	14	12	11	10	10	9	8	8	8	9	12	13	14	15	16	16	16	16	16	16
SOUTHERN NORTH AMERICA	19	18	18	17	16	14	13	12	11	10	10	9	9	11	13	15	16	17	17	18	18	19	19	19
NORTHERN AFRICA	19	18	17	15	14	13	12	12	11	11	14	18	20	21	22	23	23	24	24	24	24	23	23	21
CENTRAL AFRICA	19	17	16	15	14	13	12	12	11	11	14	18	20	21	22	23	23	24	24	24	24	23	22	20
SOUTH AFRICA	20	19	18	17	16	15	16	19	18	17	16	19	24	27	29	31	33	34	33	31	28	26	24	22
MIDDLE EAST	13	12	12	11	13	12	12	11	11	10	16	18	20	21	22	22	23	22	21	20	18	16	15	14
JAPAN	23	23	22	21	20	18	15	13	12	12	11	11	10	14	13	12	12	11	11	15	18	20	21	22
CENTRAL ASIA	23	22	22	21	20	18	15	13	12	11	11	10	11	17	19	20	18	17	16	15	14	15	19	22
INDIA	13	15	16	17	17	16	11	11	10	10	14	17	18	17	17	16	15	12	10	10	10	10	9	9
THAILAND	19	21	21	20	19	18	15	12	11	11	10	10	16	18	20	21	21	19	18	17	16	15	14	16
AUSTRALIA	31	33	34	33	32	30	28	25	23	21	20	19	17	17	18	19	18	17	16	15	18	23	27	29
CHINA	21	22	21	20	19	18	15	12	11	11	10	10	16	17	14	13	12	12	11	11	10	16	19	20
SOUTH PACIFIC	34	34	34	33	32	30	27	25	22	20	19	18	17	16	15	15	14	14	18	25	29	31	33	34
TO/FROM US EAST COAST																								
CARIBBEAN	23	22	21	19	18	16	15	14	13	12	11	11	14	16	18	19	20	21	22	22	23	23	23	23
NORTHERN SOUTH AMERICA	26	26	24	22	20	18	17	16	15	14	13	13	14	17	19	21	22	23	24	25	26	26	26	26
CENTRAL SOUTH AMERICA	31	28	26	23	22	20	19	18	17	16	15	17	21	23	26	27	29	30	31	32	33	33	33	32
SOUTHERN SOUTH AMERICA	30	26	24	22	21	19	18	17	16	15	15	14	19	22	24	27	28	30	31	32	32	33	33	32
WESTERN EUROPE	13	12	11	11	10	10	11	11	10	13	17	18	20	21	22	22	22	22	21	21	20	19	18	16
EASTERN EUROPE	14	11	10	12	13	12	11	11	10	14	18	20	21	21	21	21	21	21	21	20	19	19	18	16
EASTERN NORTH AMERICA	10	9	9	8	7	7	6	6	5	5	5	5	7	8	8	9	9	10	10	10	10	10	10	10
CENTRAL NORTH AMERICA	21	21	20	18	17	15	14	13	12	11	11	10	14	16	18	19	20	21	22	22	22	22	22	22
WESTERN NORTH AMERICA	29	28	27	25	23	21	19	18	16	15	14	14	15	20	23	25	27	28	29	29	30	30	30	29
SOUTHERN NORTH AMERICA	23	22	22	20	18	17	16	14	13	12	12	11	12	15	17	19	20	21	22	23	23	23	23	23
NORTHERN AFRICA	20	19	17	16	15	14	14	15	14	15	20	23	25	26	28	29	29	29	29	29	28	26	24	22
CENTRAL AFRICA	19	18	16	15	15	14	16	15	14	15	19	23	25	26	28	29	29	29	29	28	27	25	23	21
SOUTH AFRICA	20	19	18	17	16	15	15	18	17	16	17	22	25	27	29	31	32	33	33	31	28	26	23	22
MIDDLE EAST	17	16	15	14	14	13	12	11	11	14	17	20	21	22	23	24	24	24	24	24	24	22	20	18
JAPAN	22	21	20	18	15	14	13	12	11	11	10	15	15	14	13	12	12	11	11	15	18	20	21	22
CENTRAL ASIA	22	21	19	17	14	13	12	11	11	10	13	17	19	21	22	20	18	17	16	15	14	14	18	22
INDIA	10	10	9	9	13	12	11	11	10	13	17	19	20	20	20	19	19	18	18	17	15	12	11	10
THAILAND	18	20	18	15	13	12	11	11	10	11	17	19	20	21	22	23	22	20	18	17	16	15	14	14
AUSTRALIA	32	33	33	32	29	27	24	22	21	19	18	17	16	20	20	18	17	16	16	15	19	24	28	30
CHINA	21	20	19	16	13	12	12	11	11	10	15	18	20	19	16	13	12	12	11	11	10	15	18	20
SOUTH PACIFIC	34	34	33	32	29	26	24	21	19	18	17	16	16	15	15	14	14	14	22	27	30	32	33	34

begins to suffer late in April and into the summer months due to lower MUFs (Maximum Usable Frequencies) in the Northern Hemisphere. MUFs peak very late in the day during summer. Summertime MUFs are lower due to solar heating which cause the ionosphere to expand. An expanded ionosphere produces lower ion density, which results in lower MUFs. Short-path propagation between countries in the northern hemisphere will drop out entirely. Higher frequency propagation peaks in the fall. April and May are fall months in the southern hemisphere making long-path DX possible. Short-path propagation from South America, the South Pacific, and other areas south of the equator will be strong and reliable when open. However, these do not happen every day on the higher frequencies.

From April to June, excellent propagation occurs on both daytime and nighttime paths. The strongest propagation occurs on paths that span areas of both day and night, following the MUF. During April, peaking in May and still in June, 16 meters may offer 24-hour DX to all parts of the world, with both short- and long-path openings occurring, sometimes at the same time! If you hear a lot of echo on a signal, you might be beamed in the wrong direction. Try the opposite azimuth. Thirty-one through 19 meters are more stable as nighttime bands, with propagation following gray line and nighttime paths.

Low-band propagation is still hot on 41 meters, with Europe in the evening and Asia in the mornings. Occasional DX openings will occur on 90 and 75 meters around sunrise.

On VHF, many different types of propagation modes can appear once or twice during this month. Combination propagation modes may be possible on VHF this month, making for some exciting openings. Aurora is highly likely, as is an increase in Trans-equatorial (TE) propagation. On days of high solar flux, there might be F_2-mode VHF openings. Sporadic-*E* will become more common as we move into late spring and summer. There are times when sporadic-*E*, TE, and F_2-layer propagation modes will link, providing strong DX openings on VHF between North America and New Zealand, Australia, or other areas.

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) means 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>.

Keep Sending Your E-mails And Letters

I appreciate all of the e-mails you're sending. The questions are great. If you haven't already, please e-mail me or write a letter. I would like to hear from you. If you wish to check out the latest conditions, as well as the educational resources about propagation that I have put together for you, browse <http://prop.hfradio.org/>. If you own a WAP device, browse with your wireless to <http://wap.hfradio.org/>. You may also subscribe to my Propagation eAlerts (free of charge), by going to <http://prop.hfradio.org/ealert/> and filling out the online form.

Until next month, 73 and good DX!■

utility radio review

by Joe Cooper <ur-review@provcomm.net>

news, information, and events in the utility radio service between 30 kHz and 30 MHz

Monitoring North Korean Utility Comms, An Historic Storm, And More

As the headlines have been telling us, one of the new developments on the international scene has been the increase in aggression on the part of the dictatorial regime in North Korea. In last month's *Pop'Comm* there was an excellent article on monitoring both South and North Korea by Gary Dexter that inspired UTE monitor Ben Mesander to write a report for us on how to monitor North Korean UTE stations. This report, which we bring to you this month, should prove to be especially important if talks break down regarding North Korea's resumption of its nuclear power program.

British contributor David Hopcroft has sent more information on the great storm of the North Sea in 1953, as told to him by radio operator by John Handford. John's radio watch was in the middle of that storm, as we found out in last month's column. This month's tale is about the day after the storm and the impact it had on the lives of everyone touched by it. He had originally left it out because it did not have enough "radio" material in it, but on second reading realized that it spoke volumes about the reality of the working life of many utility radiomen (see "A Radio Watch To Remember...").

Reader's Letters

This month I have two letters that I want to share with you. One is a request and the other an observation. First the request:

Dear Joe:

I monitor maritime traffic between ships and others and shore. A couple of years ago I was able to find "Particulars of Ship Stations" on the net for free; erased it, I guess, and now I can't locate it. Any idea how I might find it on the net?

Dave Fagan

Does anyone have any information on this? If so please contact me using the column's e-mail address or via mail me at the address given at the end.

The following letter refers back to the column that I did on monitoring after 9/11.

Dear Joe:

An observation for you: I have to say that I agree with you on the Gentlemen's Agreement of monitoring. I can recall plenty of times I've heard police and fire departments give out telephone numbers (i.e., "Officer Jones, will you call Captain Smith right now at 555-0199) over the air. These numbers can be anywhere—cell phones, the senior officer's desk, or even telephones at the scene of a crime (sometimes payphones).

While it's certainly possible to send this information via pager or terminal in their patrol cars, sometimes the fastest way to get the information is to just give it out over the air. It leaves a great amount of room for anyone to simply pick up the phone and dial the number, thus preventing the legitimate, and perhaps urgent, call from going through.

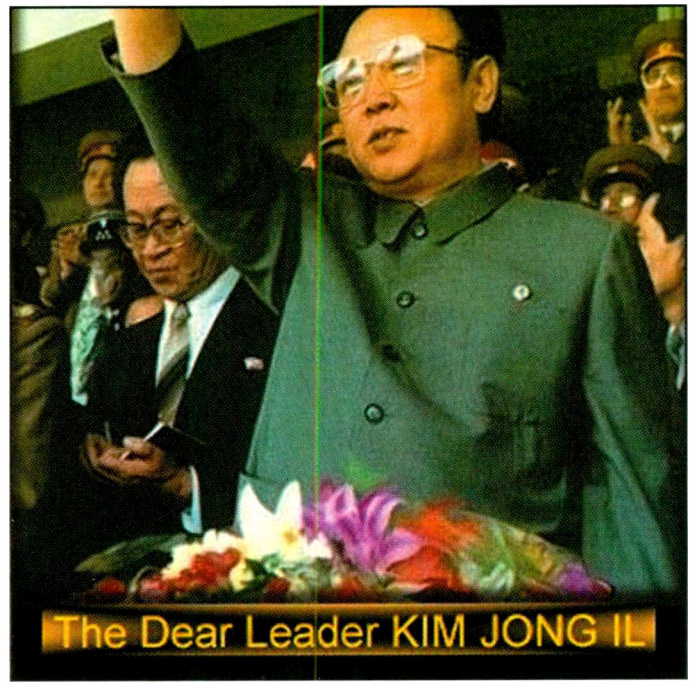
Adam Greenberg N3NKI
St. Louis, MO

Reader's Logs

Most people seem to have recovered from the New Year's celebrations and the logs are coming in at a good pace. Still lots of room for more, so please keep them coming. Remember that all frequencies are in kiloHertz and times are Universal (Z). Please remember to include the time that you heard the station in your log reports whenever possible.

0000: STATION, Anytown, USA, summary of traffic heard in MODE at 0000 Z (Z), personal comments here. (JC)
318: UNID, UNID CW offline encrypt with accentuated ltrs MS 2239Z. (DW)
490: E, CORSEN SITOR/B//100/E/170 WX fcst in FF. Nav wngs. MM 1640Z. (DW)
2182: CG, Radio ST. JOHNS establishing contact with OCEAN FOXTROT to QSY to 2118/2514 split operation. (DS2)
2210: USB w/Marine Information Bulletin for waters of Conn & Mass as well as Wright whale warnings for Cape Cod Bay. (RP3)
2514: CG, Radio ST. JOHNS working OCEAN FOXTROT with information about rendezvous with another vessel in regards to SAR. This was ST. JOHNS transmit freq. ST. JOHNS was rx'ing on 2118. (DS2)
2899: SHANWICK, Radio working aircraft w/ position rpts and SELCAL tests. (DS2)
3016: SANTA MARIA Radio w/ SELCAL and voice to UNID/unreadable aircraft. (DS2)
3016: VY weak SELCAL and voice transmissions around 0430Z. (DS2)
3322: UNID, RUSSIAN MIL CW Time sequence ev min starting +53 secs running thru +07 secs "=990149??0????? [28 wpm]. First "?" on the minute. "01"=date "49" min past hr. Hvy QRM. (DW)
3336.2: l, CISN ST PETERSBURG CW 3336.16. Single letter [L] HF beacon MI 2316Z. (DW)
3413: SHANNONSPAULDING Radio (?) w/ VOLMET aviation WX rpts. (DS2)
3485: Gander Radio with weather information in USB at 2330Z. (CG)
4015: MARS net with chit-chat, heavy QRM from a RTTY station. LSB from 0208-0218Z. (CG)
4028: UNID YL/SS with 5-figure groups. AM from 0201-0207Z. (CG)
4241: 4XZ, Haifa, Israel with beacon in CW at 0159Z. (CG)
4241: 4XZ, IN HAIFA CW Marker "vvv de 4XZ ==" MI 1928Z. (DW)
4555: FDG, FAF BORDEAUX RTTY// 50/N/400 Marker "Test de FDG voyez le brick figs ry's" MI 1931Z. (DW)
4610: GYA, RN NORTHWOOD FAX// 120/ 576/N/800 Heavy m/path MF 1918Z. (DW)
4616: BMF, TAIPEI MET FAX//120/ 576/N/ 800 Sfc analysis. Blurred. MF 2134Z. (DW)
4777: IMB, ROME MET FAX//120/ 576/N/ 800 End of chart 1703Z. Dual charlets but readability poor due m/path MF 1646. (DW)
4777.5: IMB, ROME MET FAX//120/ 576/N/800 Blurred, upper air chart for Europe MF 1921Z. (DW)
5159: 4XZ, Haifa, Israel with beacon in CW at 2152Z. (CG)
5159: 4XZ, IN HAIFA CW Marker "vvv de 4XZ==" MI 1749Z. (DW)
5275: UNID, O/M (French-Canadian): 2215 USB w/O/M (French-Canadian) in chat about a list that was for Customs. Chat also about trucks. Possible long-haul trucking/freight company. (RP3)
5434: UNID, "Backwards Music" station. USB at 2315Z. (CG)
5547: UNID, AIRCRAFT ICAO 51275320 HFDL// Logon resume to Shannon AE 2143Z. (DW)

5550: New York (MAWAR CAR-A) 0022Z USB w/Air Transat 775 in position report. (RP3)
5690: CG 1714 (C-130) in p/p via CAMSLANT to CGAS Sacramento to inform them of refueling plans 0053. (MC)
5696: CAMSPAC, Pt. Reyes working CG Rescue 1704 w/ flt ops and pos. rpt. 1704 RTB at 0700 local. Rqsted 1704 to QSY 8983 for rdo chk. (DS2)
5696: CAMSPAC, also working CG 1714. (DS2)
5696: CAMSLANT, Chesapeake asking CG 6032 to QSY to 8980 for pp Clearwater Air. (DS2)
5696: CG Rescue 1705 w/ CAMSPAC at ~1445Z to 1530Z position reports and rdo chk. Also QSY to 3211 for rdo chk but I didn't copy. Returned to 5696 as primary and 3211 as secondary. (DS2)
5696: CG 1706 coordinating w/ CG 1708 about on scene arrival, ETA, altitude, UHF freq. (DS2)
5696: CAMSLANT diverting CG 2118 (Hu-25) to an EPIRB search in the Gulf of Mexico at 0014. (MC)
5696: CAMSLANT wkg 18C (HH-60J #6018) with 4 POB departing Y1 enroute G5 on anti-drug mission at 0141. (MC)
5696: CAMSLANT, 2041Z USB w/CG 40C (HH-60J CGAS Clearwater—not heard) establishing radio guard. CG 40C will contact Panther (DEA, Nassau Bahamas). (RP3)
5696: CAMSLANT, 2259Z USB w/CG 40C and CG 1503 (HC-130H CGAS Elizabeth City) in radio checks. CG 1503 informs CAMSLANT they are bound for Mata (??), Ecuador. (RP3)
5696/8983: CAMSLANT Chesapeake 1459Z USB in radio checks & pos repts w/CG Rescue 1708 (HC-130H7 CGAS Clearwater); CG 1711 (HC-130H7 CGAS Clearwater); CG 1502 (HC-130H CGAS Elizabeth City); CG 2117 (HU-25A CGAS Miami) & CG 6031 (HH-60J CGAS Elizabeth City). (RP3)
5702: Architect (RAF Flight Watch Center): 0302Z USB w/volmet. (RP3)
5720: 03, ARINC REYKJAVICK HFDL// SPDUs. 2127Z Log-on cfm to acrft ICAO 17070141 AE 2120. (DW)
6340.5: NMF, USCG BOSTON FAX// 120/576/N/800 Sat pix for N/Atlantic MF 2154Z. (DW)
6577: New York (MWARA CAR-A) 0024Z USB w/Air France 461 in position report. (RP3)
6586: New York (MWARA CAR-B) 0023Z USB w/Lufthansa 463 in position report. (RP3)
6712: 03, ARINC REYKJAVICK HFDL// SPDUs AE 2145Z. (DW)
6840: UNID YL/EE with letters. No grouping was apparent. USB from 0133-0148Z. (CG)
6913: MARS net, net control station AAT4XS. Net consisted of a discussion of the priorities of emergency traffic. Had heavy QRM from the carrier of an AM number station on 6912. LSB from 0104-0121Z. (CG)
7396.9: HSW64, BANGKOK MET FAX//120/576/N/800 Textual fcst, weak, blurred in noise floor. 2324Z sfc analysis, vague outlines in noise. MF 2306Z. (DW)
7433.4: HLL, SEOUL MET FAX//120/ 576/N/720 Wave/wind fcst chart. MF 0838Z. (DW)
7505.2: FDG,FAF BORDEAUX RTTY// 50/R/850 Marker under QRM. "Test de FDG voyez le brick figs ry's MI 1822Z. (DW)
7569.9: UNID, TASHKENT MET FAX// 90/576/N/800 Small chartlet. Printing indistinct MF 1900Z. (DW)
7584.9: FDI8, FAF NICE CW Marker "vvv de FDI8 ar" MI 2034Z. (DW)
7601.9: FDI8, FAF NICE RTTY//50/ R/850 Marker "Test de FDI8 voyez le brick figs ry's" MI 2035Z. (DW)
7646: DDH7, HAMBURG MET RTTY// 50/N/450 Met tfc. Poor copy MR 2038Z. (DW)
7657: CG Rescue 1708 w/ PANTHER 400 ref SAR. Sent on scene WX to D7 ops and query of what other assets available. (DS2)
7657: CG Rescue 603 w/ PANTHER 400 arriving on scene for SAR w/ CG Rescue 1708. (DS2)
7668: 8by, FRENCH INTEL PARIS CW Marker "vvv 8BY 706/063/015" NG 2040Z. (DW)
7716.7: UNID, EGYPTIAN EMB ROME SITOR/A//100/E/170 irs mode then tfc in AA(ATU80) for two msgs then reverting to irs. 2145Z. (DW)



There are not many pictures available of North Korea. This is not surprising given the poor state of its economy and the secretive nature of its government. However, they do like to publish pictures of their "Dear Leader," Kim Jong IL. This picture comes from the official North Korean government website.

7790: Mexican Federal Police (Mexican Highway Patrol) with various check ins and traffic information. Lots of interesting traffic monitored on this frequency. They also use 7.790 LSB All in Spanish 2255 Z. (HV)
7880: DDK3, HAMBURG MET FAX// 120/576/N/800 Sfc chart. Grainy, m/path. 2204Z. (DW)
8040: 4XZ, IN Haifa 1715 CW ID Marker. (RH2)
8103: 4XZ, Haifa, Israel with beacon in CW at 2158Z. (CG)
8103: 4XZ, IN HAIFA CW Tfc in offline encrypt. Marker "vvv de 4XZ ==" 2043Z. (DW)
8303: LOR, AN Puerto Belgrano 0500 RTTY 75/170 RY/ID/SG. (RH2)
8418: IAR, ROME RADIO CW Chan free marker "IAR" 2130Z. (DW)
8419: VIP, GW NODE PERTH CW Chan free marker "VIP." Wkng ship in Globedata. 2129Z. (DW)
8419.5: PPR, RIOD DE JANEIRO RADIO CW Chan free marker "PPR" 2132Z. (DW)
8454: UIW, KALININGRAD RADIO 3SC//50/R/170 Nav wngs (NAWIP/ NAWAREA I) in 3sc 1620Z. (DW)
8461: UNID, CIS Navrad 1712 36-50 50/315. (RH2)
8478: FUF, FF Ft de France 0505 RTTY 75/850 RY/ID. (RH2)
8490: UNID, UNID: 0509 RTTY 75/150 Crypto? Strong sigs! (RH2)
8503.9: NMG, USCG NEW ORLEANS FAX//120/576/N/800 High wind/wave wng chart. 0740Z. (DW)
8677.1: CBV, VALPARAISO PLAYA ANCHA FAX//120/576/N/800 Sfc prog. 2300Z sat pix 2312Z. (DW)
8764: NMN, Portsmouth VA with synthesized voice with weather information. Heavy QRM from another weather station with same voice. Other station cut off suddenly, leading me to believe it was transmitting out of sequence. USB from 2250Z. (CG)
8788: UNID parties in p/p via WLO, Mobile, Alabama. After completion of the p/p, WLO operator came on and discussed the charges for the call with one of the parties. USB at 2240Z. (CG)
8971: Blue Star (TSCC, NAS Roosevelt Roads): 1258 USB w/probable P-3C (callsign 04) in clear and ANDVT checks. (RP3)
8971: Blue Star, 1358Z USB w/Branch 99 (probable P-3C) requesting status of the Alligator (Link-11). Branch 99 reported that Alligator was

down. (RP3)
8971: Blue Star, 1545Z USB w/Branch 99 in radio checks. (RP3)
8971: Blue Star, 2014Z USB w/Branch 99 inquiring as to the nature of his emergency and asking for his position and ETA. Branch 99 passes position and ETA in encoded format. Blue Star also asks about the identity of a Pick 21. This exchange was preceded by an ANDVT exchange. (RP3)
8971: Blue Star (TSCC, NAS Roosevelt Roads) 1525Z USB w/Unidentified aircraft. Also Goldfish 711 (P-3C) calling Fiddle (TSCC, NAS Jacksonville) w/no response. (RP3)
8975: O/M (EE): 1625Z USB w/O/M (EE). Both males w/heavy Southern accents in chat about maritime subjects. Probably fishermen in Gulf of Mexico. (RP3)
8980: Clearwater Air, working CG 6032 via pp CAMSLANT Chesapeake. 6032 to shift guard to St. Petersburg Group for new tasking. Also to contact Clearwater Air on VHF 21A or UHF when in range. (DS2)
8980: ATLANTIC AREA, working CG Rescue 1500 via pp CAMSLANT Chesapeake. 1500 rpting they tracked ELT to AF Radar site and did not do VS search in area ELT originally hrd. Also 1500 hving trbl w their EPIRB as it keeps activating and that maint. will have to repair. (DS2)
8980: CG 1708 p/p via CAMSLANT to District 7 Miami Ops discussing search they are conducting at 1928. (MC)
8983: CAMSPAC, Pt. Reyes w/ rdo chk to CG Rescue 1704 and CG 1714. Rqsts to QSY to 11202 for rdo chk. (DS2)
8983: CG Rescue, 1500 rqsting CAMSLANT Chesapeake to notify ATLANTIC AREA that the 1500 EPIRB activated again. (DS2)
8983: CAMSPAC Pt. Reyes calling CG Rescue 1705 several times at ~1345Z with no joy. (DS2)
8983: CG Rescue 1705, enroute to Kawajelin, calling CAMSPAC several times at ~1400Z with no joy. Both 1705 and CAMSPAC calling each other but neither could cpy other. Both F/R here. Then they tried 11202 but returned to 8983. COMSTA Kodiak also trying to call CG 1705. Propagation was very bad although I cpy'd all 3 stations. Kodiak could hear 1705 transmit and 1705 could hear CAMSPAC so there was a lot of relaying to get position report. ETA to Kawajelin 2100Z. (DS2)
8983: CG Rescue 1708 w/ CAMSLANT Chesapeake. flt ops and asking what freq they needed to use for SAR in Bahamas. Told to use 7657. (DS2)
8983: CAMSLANT diverting 38C (HH-60J #6038) to search for 3 Haitian vessels at 2148.
8983: CAMSLANT, Chesapeake: 1751 USB in radio check w/CG 1790 (HC-130H7 CGAS Sacramento). (RP3)
8983: CAMSLANT, 2000Z USB w/CG 2129 (HU-25C CGAS Miami) in position report (3021N/7952W); w/CG 2121 (HU-25A ATC Mobile) in position report (2913N/8622W); and w/CG 1711 (HC-130H7 CGAS Clearwater) who reports on final approach to homeplate & securing radio guard. (RP3)
8992: McClellan with 22-character EAM in USB at 0113Z. (CG)
8992: VENUS 70 conducting radio chk with Lajes HF-GCS at 2159. (MC)
8992: REACH 031Y (self-id as KC-135R) p/p via Andrews HF-GCS to Moron CP at 2312. Earlier gave PIREP posit over the Mid-Atlantic. (MC)
8997: O/M (Caribbean EE) 2244Z USB w/O/M (Caribbean EE) discussing upcoming travel plans from Miami FL. Mentions being 4-5 miles off the coast, near the Everglades. Appears to be commercial/pleasure boating net. (RP3)
9164.9: HLL, SEOUL MET FAX// 120/576/ N/720 Wave/wind fcst charts 0832Z. (DW)
9251: UNID YL./EE with British accent with 5-figure groups, each given twice. USB at 2130Z. (CG)
10242: Service Center, 2345Z USB w/Unidentified station (not heard) trying instruct him on how to use comms equipment. Unidentified station is apparently using the wrong key and is unintelligible to Service Center. (RP3)
10493: WGY 912 FEMA Mount Weather taking checkins from various stations during National Emergency Coord Net Exercise. (MC)
10555.3: VMW: Wiluna Met 1505 fax 120/576 WX chart- feint lines. (RH2)

Monitoring And Understanding North Korean Utility Stations

By Ben Mesander <bam@dimensional.com>

In addition to the North and South Korean broadcast stations described in the February 2003 issue of *Popular Communications*, there are several interesting North Korean utility stations that can be monitored in North America. We'll look at two.

KCNA, The Korean Central News Agency

This is the North Korean news agency. KCNA does RTTY broadcasts over HF that may be received in the morning in North America. There is a 1230 UTC broadcast on 11476 kHz in RTTY 50/250. If you don't have a RTTY decoder, or (like me) you don't like getting up that early, you can get most of the same news content from the KCNA website at <http://www.kcna.co.jp/>.

There have also been loggings in the past of press photos being sent on this frequency in HF FAX modes, but I have never monitored such a transmission myself. I know that KCNA also uses frequencies other than 11476 kHz, but I don't know what they are. I would be interested in hearing from anyone who monitors these broadcasts.

When reading North Korean press articles, you will see references to the DPRK, which is an abbreviation for the official name of North Korea, the Democratic People's Republic of Korea. The capital city is Pyongyang, and you will see this in the bylines of the articles.

North Korea also uses a unique calendar system, called "Juche," which you will see mentioned in many articles. In the Juche dating system, years are numbered from the birth of the founder of North Korea, Kim Il Sung. Year "Juche 92" corresponds to our year 2003. Juche is also the name of a political philosophy originally expounded by Kim Il Sung, that of "self reliance," or basically isolationism and avoidance of dependencies on the outside world.

North Korean Embassy Station

Another North Korean HF station I've come across appears to be an embassy. The embassy sends messages in RTTY, CW, and USB voice (in Korean, of course). I do not have an exact schedule for this station. I have occasionally caught it sending RTTY 50/1000 on 10776 kHz, 10878 kHz, 10888 kHz, and 10907 kHz between 0200 and 0400. They also send CW and USB voice on or near these frequencies (and possibly others in the 10000- to 11000-kHz range). I have also heard CW from this station on or near 6868 kHz and 8277 kHz. Since the schedule is unknown and/or erratic, some persistence will be required.

After the RTTY transmissions there are often CW transmissions. The CW consists of 5fg's which match up with 5fg's in the preceding RTTY broadcast. I believe they are doing error correction. Occasionally one also hears USB voice in Korean.

The content of the messages leads one to believe that this traffic is from the embassy in Havana. The messages consist of a mixture of a non-standard Romanized Korean and 5fg's. Havana (QABANA) and Columbia (GGOLLOMBIQA) have both appeared in messages. Some transmissions are stronger at my QTH than others, so it may be that more than one embassy is being monitored. I think it's the wrong time of day for the messages to be transmitted to North Korea, so I suspect this is a relay station of some kind, sending messages, like the following, from Havana to other embassies in the region.

GGOLOMBIQA
((GIMZENGQILMUNHOASSEINTE))
QUIQUENZANG HOSSEI LUPISEU DIQASUEU
GEULANADOSSEU
8 $) ZUCHEI91(2002)NYEN 9QUEL 3QIL. QABANA. -0-

Additional clues that this is a North Korean message are the use of the "Juche" dating system. ZUCHEI91(2002) denotes Juche 91, which is our year 2002. QUEL denotes month and QIL denotes the day of the month, so 9QUEL 3QUIL means September 3.

One of the messages was briefly examined by someone who knows Korean. This person said that it was from the director of the Kim Jong Il Culture Center in Columbia, who was sending a message on the occasion of the 54th anniversary of the founding of the DPRK and praising Kim Jong Il, the current leader of North Korea, and Kim Il Sung. The sender was planning on going to Pyongyang to meet Kim Jong Il himself and was leaving Havana on September 3.

The 5fg's have a group count added to each block of 100 numbers in the right margin. There are 10 groups per line, and a blank line every five lines, as shown in the following example:

49183 27155 52888 45810 63868 41540 12906 45966 24374 79719

37425 57090 92430 59968 55148 27409 92784 72468 66471 84117
8969; 12271
80495 76017 32974 18057 36099 86403 32022 99453
07815 71380 49989 01940
63330 02230 22134 58662 59804 65148
49764 08005 00324 77124 19090 72569
57873 94635 22946 29064

06455 11164 88014 15467 83803 03857 38890 36248
80750 73153
12729 99471 67430 86635 24161 17850 31795 60996 26341 09395

48411 05689 43989 50974 13031 85394 41424 84735 40244 04273
36435 59856
58815 33765 73806 72873 94798 40258 84726 80027
04608 92403 68580 39713
37054 33041 20310 12323 19201 82465 100

The headers of each message sent include a sender or recipient ID and a serial number. In the case of numeric messages, a group count is also added. Numeric messages also omit the sender/recipient ID if they are for or from the same sender or recipient as the previous message. The last header column of text messages contains a word (significance unknown). Some examples are as follows:

Text message header:

ZM79 0311 BODOGEN

Sender or Recipient: ZM79, message number 0311, mystery word BODOGEN
Numeric message header:

MF29/65 700
221

Sender or Recipient: MF29/65, message number 700, group count 221

701 31

Sender or Recipient: MF29/65 (implied), message number 701, group count 31

Message numbers are kept on a per-sender or recipient basis and increase by one for each message. The same numbering is used on multiple nights.

North Korea also has CW "numbers stations." While I have not copied any of these stations myself, a good write-up by the Asian Broadcasting Institute can be found at <http://www.246.ne.jp/~abi/ransu/ransu-e3.htm>.

Other Internet resources that may be useful include the following:

<http://www.korea-np.co.jp/pk/>
<http://news.bbc.co.uk/2/hi/world/asia-pacific/country_profiles/1131421.stm>
<http://www.cia.gov/cia/publications/factbook/geos/kn.html>
<http://www.korea-dpr.com/>

11030: VMC, BOM CHARLEVILLE FAX// 120/576/N/800 Sea/swell prog 0804Z. (DW)
11086.5: GYA: RN Northwood 1820 fax 120/576 Atlantic WX chart. (RH2)
11086.5: GYA: RN Northwood 1830 fax 120/576 Nice clean chart! (RH2)
11090: KVM70: Honolulu Met 1836 fax 120/576 Satpix. (RH2)
11175: RAIDER 35 calling Mainsail with "a request," no joy. Tried again later. USB at 0141 and 0154Z. (CG)
11175: Offutt with 28-character EAM in USB at 2142Z. (CG)
11175: Navy RG 280 calling MAINSAIL with no joy. Called Offutt Radio 2 minutes later, no response. USB at 0128Z. (CG)
11175: REACH 6021 calling MAINSAIL with no joy, at same time an EAM was being transmitted. USB at 0135Z. (CG)
11175: Offutt with 2 different 28-character EAMs. Echoed immediately and simultaneously by 2 UNID stations. USB at 0140Z. (CG)
11175: Thule HF-GCS echoing an Offutt SKYKING EAM at 2306. (MC)
11175: REACH 527Y wkg Ascension HF-GCS for p/p at 2151. (MC)
11175: REACH 558T (self-id as C-17) p/p via Andrews HF-GCS to Andrews CP heard at 2301. Report inbound w/27 PAX and 5 vehicles. (MC)
11175: RAGTIME wkg Andrews HF-GCS for p/p at 2219. Report they are in GOALPOST.
11202: CAMSPAC Pt. Reyes w/ rdo chk to CG Rescue 1704 and CG 1714. (DS2)
11232: CANFORCE 2802 wkg TRENTON MILITARY at 0012 for status report and WX request for Ottawa. (MC)
11232: Trenton Military 2239Z USB w/Canforce 3519 in pp w/Trenton Wing Ops for latest runway conditions. Base Ops reveals that Ascot 4665 (id as RAF C-130) is due shortly into Trenton. (RP3)
11300: UNID, MKA 914: 2230Z USB w/Tripoli and Khartoum (AFI-3) in position report. DWA 711 w/Tripoli in position report. (RP3)
11315: UNID, AIRCRADFT FLIGHT CO0485 HFDL//Posn 40.17N 74.28W 2156Z. (DW)
11315: UNID, AIRCRAFT FLIGHT CO0020 HFDL//Posn 40.37N 74.13.W 2158Z. (DW)
11315: UNID, AIRCRAFT FLIGHT CO0881HFDL// Link test to Riverhead. N67134. ACARS SA Media Advisory 2154Z. (DW)
11315: UNID, AIRCRAFT FLIGHT CO1500 HFDL// Posn 37.03N 78.08W 2154Z. (DW)
11315: UNID, AIRCRAFT FLIGHT CO1952HFDL// Posn 38.28N 75.27W 2158Z. (DW)
11315: UNID, AIRCRAFT FLIGHT TZ0717 HFDL// Posn 37.51N 86.05W 2157Z. (DW)
11315: 04, ARINC RIVERHEAD HFDL// SPDUs. Logon cfm to ICAO 52161115. Uplink demand mode to VP-BAY. (DW)
11360: UNID, UNID, O/M (Chinese): 2155 USB w/O/m (Hindi). (RP3)
11365: UNID, UNID, O/M (Hindi): 2153 USB w/O/M (Hindi). (RP3)
11418.2: FJY5: DTRE Crozet I. 0515 Arq-E3 200/400 Betas—strong sigs! (RH2)
11430: O/M (Arabic): m 2350Z USB w/O/M (Arabic). (RP3)
11475: RBT, ALGERIAN EMB RABAT MIL.STD 188-141A ALE on USB. Responding to Algiers/MAE 1458Z. (DW)
11475: MAE, MFA ALGIERS MIL.STD 188-141A ALE on USB. Clng Rabat/ RBT at 1458Z. (DW)
12489: UAGD M/V Tarpan 1030 ARQ tfc to Vladivostok. (ML)
12505: UFIL TH Kapitan Afanas'ev (ex c/s UBHF) 0842 ARQ UFIL log on & svc msg to Vladivostok. (ML)
12567: UCBK TH Ivan Zhdanov heard at 2310 ARQ w/PAQE seq selcal & msg to Khabarovsk. (ML)
12666.5: FUG, FN LA REGINE RTTY// 150/N/850 Marker "de FUG figs ry's sg's" 0755Z. (DW)
12669.5: LOR: AN Puerto Belgrano 0524 RTTY 75/170 5LG. (RH2)
12691: RFVIE: FN Le Port 1542 RTTY 75/850 RY/ID/SG. (RH2)
12808.5: VTG7: IN Mumbai 1640 CW Marine WX. (RH2)
12808.5: VTG7: IN Mumbai 1536 CW WX info. (RH2)
12856.7: 6WW: FN Dakar 1824 RTTY 75/850 RY/ID Marker. (RH2)

12932: UNID: SS Navrad 1655 RTTY 100/850 Online crypto—v strong sigs! In Arabian Sea? Chasing SCUDS? (RH2)
12935: HLG Seoul R 0800 CW tfc list for, mostly, KOR flagged vessels. (ML)
12969: XSV Tianjin R 1000 CW w/HR TFC LIST NIL QRU QRZ? then to DE XSV UP 443 EE mkr. (ML)
13200: Andrews with 28-character EAM in USB at 1950Z. (CG)
13210: UNID, O/M (Italian): 2252Z USB w/O/M (Italian). (ML)
13215: 160013, USAF C-5 86-0013 MIL. STD 188-141A ale on USB. Sounding 1429Z. (DW)
13215: PLA, USAF LAJES MIL.STD 188-141A ALE on USB. Sounding 1041. (DW)
13215: INR, USAF ROOSEVELT ROADS MIL.STD 188-141A ALE on USB. Sounding 1034Z. (DW)
13339: Aero México flight 02 working Mexico Radio (LDOC). Requesting WX for J.F.K. and Atlanta in SS. at 2246UTC. (HV)
13339: Aero México flight 496 wrk Mexico Radio (LDOC). Req WX for Mexicali. Mentioned fuel on board and position as 56 nautical miles off Tijuana. Also mentioned that departure was late because of a minor problem at security gate. Aircraft had very strong signal. All in SS at 23:30Z. (HV)
13339: Aero México flight 114 working Mexico Radio (LDOC). Mentioned departure Mazatlan and requested WX for San Jose, California at 2340 Z. (HV)
13356: Y/L (EE): 1634Z USB w/Air Jamaica 040 in chat concerning upcoming flight crews & crew changes. (RP3)
13356: Y/L (EE): 1635Z USB w/5-figure number groups. (RP3)
13430: VTK Indian Nvy Tuticorin 0930 CW w/VVV VTK 3/4/5/6/7 mkr to 4FG msg. (ML)
13510: CFH, CF HALIFAX FAX//120/576/N/800 End of chart, noisy 1240Z. (DW)
13510: CFH, CF HALIFAX RTTY//75/N/800 Reverts to RTTY bdcast. Met tfc, poor copy, TAFs 1245Z. (DW)
13569.9: HLL, KMA SEOUL FAX//120/576/N/700 Sfc analysis. Grainy pix in noise floor. Slight drum speed fluctuation at start. 1040Z. (DW)
13569.9: HLL, SEOUL MET FAX//120/576/N/720 Wave/wind fcst chart at 0823Z. (DW)
13850: PAR, ROCHWELL-COLLINS PARIS MIL.STD 188-141A ALE on USB. Sounding. Also at 1347 1302Z. (DW)
13900: DG, MOROCCAN MOI ?LOC MIL.STD 188-141A ALE on LSB. Sounding. Also at 1321 1251Z. (DW)
13907: Service Center: 2243Z USB in encrypted speech. In clear Service Center tells Unidentified station that they were Mickey Mouse when in encrypted mode. Then back into encrypted speech. (RP3)
13920.2: VCM9: Charleville Met 1450 fax 120/576 Navwarnings. (RH2)
13927: HAWK 63 wkg USAF MARS with morale p/p to Texas at 2044. (MC)
14467.3: DDH8, HAMBURG MET RTTY//50/N/450 SYNOPS then return to marker 1156Z. (DW)

A Radio Watch To Remember: The Great Winter Storm Of 195 Part II—The Day After

By John Handford
(As told to John Hopcroft, last radio manager of GKZ)

During the actual flooding of the radio station little could be observed of outside happenings. The fleeting full moon gave us pictures outside. The station grounds had given completely way to the sea, and the sea wall presented a Niagara of infinite length, with spectacular spray rising to compete with the aerial masts (100 feet).

Our retreat from the icy waters that had invaded the building resolved us, for convenience, to the narrow confines of the rest room dining table. Here we made tea, kept warm by the gas burners, and discussed the situation. (The gas supply never failed!) The act of making the tea was a force of order, and drinking it makes for orderly thinking, so we decided to refill the pot. However, we were thwarted as the pot fell into the floodwaters.

From our table we discussed, watched, and waited, using the brickwork by the side of the gas cooker as our tide gauge. Cliff and Jack left the station in the darkness but I decided to wait for morning light and low tide. Waiting, I assured myself, was the wisest policy. Furthermore, I felt certain the flood damage must be limited.

When I ventured out I saw for the first time the enormity of the disaster and felt alarmed. A young RAF recruit told me that the military had ordered the evacuation of the area. I was half-afraid to ask him how Sutton had fared. "It's had it," he said, and further told me several houses had been washed away and many people had drowned. I am not able to describe my tempest of emotions at hearing such news. I wanted to get home to my wife and kids, to see the house still standing, and I wanted to shake off the unreality of it all. Above all, I must get home.

The freezing water brought me from desperation to reasoning. The promenade along the sea-wall did not appear a reasonable avenue of escape. Although the sea had subsided, the concrete looked like so much sugar icing on a roughly handled cake. Railway lines, I argued, are usually flat and since the Mablethorpe-Sutton line ran near my house, I decided to walk along it.

Reaching the line was comparatively easy. My feet were beginning to get used to the water; I was becoming indifferent to wet trousers. The line itself just cleared the water and I walked along the sleepers.

This, I thought was going to be easy, but it turned out to be anything but. In the first instance, sleepers are not at a suitable distance for good walking, and they were slippery and covered with debris. At least the trains did not run on Sundays.

After a few hundred yards the lines disappeared under the water. I did my best to guess the sleeper positions by the occasional glimmer of the rail shoes, but my luck did not hold out long. My feet slipped between the sleepers and into large holes left by the washed out ballast. It was not long before I had fallen down a sufficient number of times to make myself thoroughly wet.

There were several dead chickens floating at one point, and a horse up to his knees in water looked thoroughly wretched. The solitary houses near the track had white faces at their upper windows, but I myself could give no hope or comfort. The track was about a mile and a half in length but it seemed very much more. At the point where I intended leaving it and joining the road, I came upon a large army lorry and scrambled up on the tailboard. This was the first evacuation lorry, and so I asked if my own family had gone already, but was told no and to go and get them out and bring them to the lorry.

Getting to the house was in itself difficult. There was a large drainage ditch in front with a narrow crossing bridge with no handrails. A direct approach would have been foolish, if not suicidal, and so I had to make my way a long way around to the back, clinging onto the garden fences

14481.7: RFFJ, FF DAKAR ARQ/E3//48/E/400 8rc. Tfc in FF, very slow transfer to start. Cct [TJF]. Tfc in offline encrypt and in FF 1203Z. (DW)
14585.7: UNID, FF NDJAMENA ? ARQ/E3//200/E/400 8rc. Betas, poor sync. 1514Z. (DW)
14670: CHU, TS OTTAWA USB Time sigs, announcements and data bursts. 1214Z. (DW)
14927.6: UNID, FF PARIS ? ARQ/E3//192/E/400 8rc. Betas. No app tfc heard thru 1700Z. (DW)
14982: RBV76: Tashkent Met 1520 fax 60/576 Clear characters! (RH2)
15016: SIGINELLA reading EAM. Also simulcast on 8992 and 13200. (DS2)
15025: Smasher (USOUTHAF Flight Monitoring Facility, NAS Key West): 1337 USB w/Evergreen 352 (AMC contract aircraft) w/departure message. (RP3)
15031: SENTRY 31 (E-3 AWACS) p/p via TRENTON MILITARY to Tinker AFB at 2019. Initial contact on 11232. (MC)
16246.7: UNID: MFA Cairo 1559 ARQ In IRS mode ending II II II KY. (RH2)
16801.5: UGBJ TR Baevo 2334 ARQ tfc to Petropavlovsk-Kamchatskiy, QSX was 17045. (ML)
16811.5: A9M: Hamala R 1600 ARQ CW Marker. (RH2)
16820: IAR: Rome R 1557 ARQ CW Marker. (RH2)
16830.5: SVO, Olympia R 1546 ARQ Msgs in Greek & EE. (RH2)
16975.7: PWZ33, BN Rio 0500 RTTY 75/850 Ships movements in EE. (RH2)
17130: HLW, Seoul Radio, South Korea with beacon in CW at 0049Z. (CG)
17147: URL, Sevastopol R 1525 CW ID Marker. (RH2)
17175.2: UFL Vladivostok R 0800 FEC tx freqs, exchange rates & blind tfc. (ML)

for support. The water was two to three feet deep in the house and it was heartbreaking to see our relatively new furniture floating around in disorder.

My wife and children were upstairs, and the relief of seeing them again can hardly be described. I carried my five-year-old out to the rescue lorry and returned to fetch the five-week-old baby. This was a trickier business, as I certainly could not afford to lose my footing. My wife struggled back with a pile of baby clothes in a suitcase, but in the difficult path to the lorry it became mostly submerged and everything became wet.

I saw them onto the lorry and away to safety, and I went with others to the railway station platforms which were high and dry, helping out wherever I could. We were all mostly cheerful, though wet. The station porter had made a fire, but we didn't get to see much of it. From the other platform an old man was walking across the lines. He astonished us by his immaculate appearance and entire absence of wetness. His shoes shone like patent leather, and he appeared completely masterful of the situation. He called across for someone to carry his wife (who looked very ill) and then he himself was carried while someone else carried his walking stick! Some of the people brought in were old and some very ill.

At last the rescue lorry returned and everyone got in with myself and two other work mates, Eric and Ken, clinging to the after end. We went through the desolate village and out towards the safety of dry land, some three miles away.

We had not gone far when the driver ran off the road. (Note: This coastal strip is fairly flat and the roads all have large drainage ditches on either side of them. With everything under water, it was difficult to see which was road and which was not.) By some sort of miracle, a telegraph pole jammed between the tailboard and the lorry body and stopped it from falling into the ditch, though it did trap my hand against a stanchion. But I got away with grazed and sore fingers. We were worried that if the lorry moved the pole would give way, so we yelled to the driver to hold it but he began to back up so we jumped off. The pole broke but somehow there was enough of it left to hold the lorry resting at a dangerous angle. There seemed little we could do to help, so we set off walking.

At the fish pound, the fresh water fish were floating dead among refuse and straw. We kept in a bunch—about six of us—doing our best to keep to the centre of the road. My colleague, Ken, who had been in the water since about 5 p.m. the previous evening, was beginning to lose interest in life and said he couldn't go on. We kidded ourselves and him that dry land was not far ahead and managed to keep going. Another of the group who had been in bed with flu was also finding it hard going.

At last we reached dry land. A soldier had made some soup. It looked very good. He gave us a Billycan and a spoon each. I noticed that none of us seemed able to hold his spoon steady.

Nevertheless, we were still cheerful and, for the most part, joking. We got on a bus and set out for the nearby town of Alford. The driver was new to the district and we soon found ourselves heading back into the flood zone. We soon got him back on the right road!

At Alford we were given dry clothes and set off to search for our families. It was bitterly cold and it took us until well after dark before we found them, and then it was only by chance. The wife of a local telephone operator had taken in my wife and children. They were very generous and warm-hearted towards us and we were unable to thank them enough.

On reflection, the whole experience seems worse afterwards than it did at the time. Perhaps our imaginations deal with us far worse than the actual circumstance. It is remarkable that one should survive a whole war in the Merchant Navy only to be sunk in a Coast Station!

17405: UBL Khabarovsk R 0934 FEC exchange rates & tfc list. (ML)
18040: BDF, SHANGHAI MET FAX// 120/576/N/800 Sea areas forecast chart 0812Z. (DW)
18040: VTK Indian Nvy Tuticorin 0900 CW w/VVV VTK 3/4/5/6/7 mkr to 4FG msg. (ML)
18183.4: UNID: Ambalg Tripoli 1550 Coq8 26.67 Msg\FF to MAE & "toutes ambassades en Afrique", & New York and Washington. (RH2)
18300: OLZ88, MFA PRAGUE MIL.STD 188-141A ALE on USB. Clng OLZ70 0910Z. (DW)
18321: RFTJ, FF Dakar 0625 Arq-E3 192/400 CdeV on TJD cid. (RH2)
18529.4: UNID, ALGERIAN EMB BAGHDAD COQ/8//13.3/I/- Tfc in FF 1127Z. (DW)
18560: BMF, TAIPEI MET FAX//120/576/N/800 WX fcst in Chinese 0900Z. (DW)
18571.6: CXA: UN Navrad? 1830 FEC 5LG plus lots of "int qrk & int qru & int qrv" & some French words (bjr ami bjr ami a vous). This frequency and callsign not listed in latest Klingenfuss. Heard several days and throughout day so guess it's a new freq with startup tests. (RH2)
18667.7: UNID, MFA CAIRO SITOR/ A// 100/E/170 End of tfc in offline encrypt. Occ short opchats in AA (ATU80) heard thru 1000Z. (DW)
19450: VTK Indian Nvy Tuticorin 1145 CW w/VVV VTK 3/4/5/6/7 mkr to 4FG msg. (ML)
19698: GU (?) UNID 1842 ARQ Marker - unlisted Kling 2003Z. (RH2)
20277: FAPSI 1050 RTTY 100/500 5LGs on link 00098 prev copied at 75 bd this freq. (ML)
20602: AMM, UK MIL/DIPLO AMMAN MIL.STD 188-141A ALE on USB. Sounding. 1044Z. (DW)
20602: ANK, UK MIL/DIPLO ANKARA MIL.STD 188-141A ALE on USB. Sounding 1103Z. (DW)
20602: KUW, UK MIL/DIPLO KUWAIT MIL.STD 188-141A ALE on USB. Sounding 1051 Z. (DW)
20631: 440190, USAF KC10 MIL.STD 188-141A ALE on USB. Sounding. Monitored at 1122Z and 1250Z. (DW)
20631: DYL, USAF (?) MIL.STD 188-141A ALE on USB. Sounding 1257Z. (DW)
20716.7: UNID, FF PARIS ? ARQ/E3// 192/E/400 8rc. Variable sync. Betas 0953Z. (DW)
20890: CS1, US CUSTOMS ?LOC MIL.STD 188-141A ALE on USB. Sounding 1224Z. (DW)
20890: R25, US CUSTOMS ?LOC MIL.STD 188-141A ALE on USB. Sounding at 1227Z. (DW)
20890: UNID, UNID, 2050 USB Encrypted voice. (RP3)
20917.5: S00, MFA STOCKHOLM MIL. STD 188-141A ALE on USB. Clng S72/Kinshasa 1435Z. (DW)
20942: S00, MFA STOCKHOLM MIL.STD 188-141A ALE on USB. Clng S97/Abidjan [AMD]N D 1409Z. (DW)
20976.7: Pakistani Emb Dhaka BGD 0955 ARQ local nx to Islamabad, cct DAI. (ML)
20995: KAH, SLOVAKIAN EMB CAIRO MIL.STD 188-141A ALE on USB. Sounding. Also 1328Z 1229Z. (DW)
22311: UHFD TSM Kolomenskoe 0640 ARQ part msg to Kaliningrad, 53785 UHFD log on. (ML)
22537: FUF, FN FORT DE FRANCE RTTY//75/N/850 Marker "FAA de FUF rg's sg's figs ry's sg's" 1413Z. (DW)
22847.5: CPK, GW NODE SANTA CRUZ CW Chan free marker "CPK" and working ships in Globedata 1035Z. (DW)
23150: WPC, SEAWAVE MIDDLETON CW Chan free marker with CW ID "WPC" every three mins thru 1623Z—no tfc. 1538Z. (DW)

This month's contributors were:
Chris Grey (CG); Day Watson (DW); Dwight Simpson (DS2); Mark Cleary (MC); Murray Lehman (ML); Ron Perron (RP3); Robert Hall (RH); and Hector Vazquez (HV).

Thanks again to each of you for your contributions. Those of you who have not contributed yet, or those who got out of the habit of sending them in, remember that new logs are always welcome.

Coming Next Month

The revamp continues, so it's still going to be a while before I can start posting a solid schedule again. As I've outlined, my plan is to get as many of you involved in this revamp as possible. I have a few new people already lined up. Don't forget that you can write to me at "Utility Radio Review," PMB 121, 1623 Military Rd. Niagara Falls NY 14304-1745. ■

computer-assisted radio monitoring

by Joe Cooper <joe@provcomm.net>

Taking The Mystery Out Of Computer-Assisted Radio: What Are YOUR Experiences?

Last month I began to sum up the series of columns I've undertaken for the past year. If you have been following this series from the beginning, you now have more than a basic understanding of how the microcomputer can be a very powerful tool to help you get the most out of your monitoring radio. By now you also know my basic philosophy on the current stage of the interfacing of microcomputers and radios: I believe it to be the foundation of a modern computer-assisted monitoring station. The hardware components are a properly operating and configured serial port and sound card. The software components are Digital Signal Processing (DSP), Computer Assisted Tuning (CAT), and Frequency Database Management (FDM).

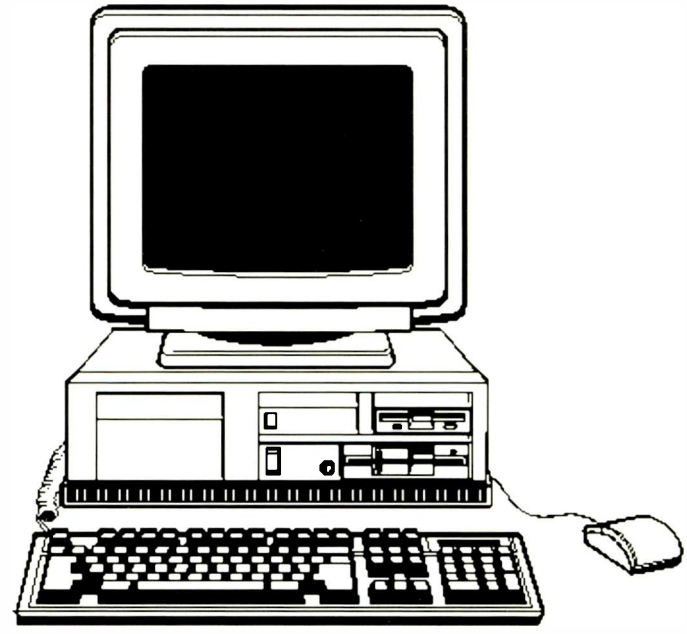
I've shown you how each part of these hardware and software components works, both individually and together. The point now is to make them work together to serve your particular radio monitoring requirements.

We've looked at the different types of radio monitoring that can take place when you are tuning a particular range of frequencies. Obviously someone who is monitoring radio services in the very low (VLF) frequencies is going to have very different needs from someone who is listening up in the VHF/UHF range. We are truly in a new "golden age" of radio monitoring thanks to all the microcomputer technology and software out there. However, how many people are really getting the most use out of it?

I really get the sense from the e-mails and letters that I have received over the past year that many people have far more potential in their current radio monitoring setups than they realize. The problem is that they have simply had the radio running in the most basic mode and are afraid to go past that point. Or worse, many other people are passing over the opportunity to get involved with computer-assisted radio monitoring because they consider it too complicated or too expensive. The point here is that after having spent a year looking at this subject in detail I don't believe for a minute that it is either!

Wanted: Volunteers

Originally, this month I was going to tell you how to set up a monitoring station for a particular radio service or range of frequencies. It is important to lay down a good foundation about the subject of computer-assisted radio monitoring as there is still not a great deal of good information for the beginner or intermediate hobbyist. However, I decided that what really needed to be done was to let different people tell there *own* stories on how they have set up their radio monitoring stations. So I need some volunteers. I'd like to move away from the one-way direction of communication that, out of necessity, this column has so far taken.



What I need from you is *your* story on how you set up and operate your computer-assisted radio monitoring station. Rather than have me continue to tell you *how* to do things, I'd like to know how other people have *achieved success*...or failure! There is nothing wrong with someone sharing a cautionary tale or two.

What did you do right and what did you do wrong? Share some pictures and schematics with us so that we can learn from your experiences. That's the whole point of this magazine. *Popular Communications* is a reader-based magazine. Your input is needed now!

Please volunteer stories, pictures, advice, letters, e-mails, whatever, that tell your stories. I particularly wish to hear from Mac users and I would like to dedicate at least one two-part column in the upcoming year to look at that topic.

I still intend to be contributing here as well. I've got a whole column on controlling radios remotely over a local area network or the Internet. I will also cover how to send the audio from a remote radio over those two types of networks and you will find that it is shockingly simple.

What Is Needed?

So just to review then, what I need specifically are people who will be able to share their experiences setting up and running a computer-assisted radio monitoring station that does any of the following:

Very Low and Low Frequencies

There are a number of different services on the frequencies from the beginning of the radio spectrum at around 10 kHz up to the beginning of the standard Broadcast Band at 535 kHz. The two biggest single problems with this range of frequencies are noise (both natural and man made) and the inefficiency of the antennas used. How do those of you who listen regularly in this range deal with those kinds of problems? Likewise, do any of you monitor special modes of transmission, such as government, commercial, and military digital? How do your techniques differ from those used in the HF and VHF/UHF ranges? Are there other resources I have not mentioned in this column that we should know about?

Broadcast Band

Noise is still a big issue for monitoring distant stations and even not-so-distant BCB stations. You've had a chance to see the BCB station I introduced back at the beginning of this series. Did any of you manage to build it? (I know some of you tried because I got a number of e-mails asking for advice). Are there other ways to set up a BCB monitoring station that I have not covered? What services, such as databases, have you found on the Internet that can help you? What kind of DSP software do you use? Are there other types of software that we should know about?

Shortwave Broadcasters

This is one area that has had lots of support from the radio monitoring hardware and software manufacturers, so many of you out there certainly have lots of important information to share. What software do you use to control your radio? Are there any techniques you use to optimize your ability to capture a rare station? I'm sure that just this one topic can keep us going for a long time. What about the Mac users out there? How difficult has it been to run a compatible radio with that kind of set up? How about Mac software? Again, I'll put together a two-part column if you can provide the necessary information.

Utility Radio

Utility radio monitors have some of the toughest targets to listen to. While many high-powered stations are to be found in this service, many more are running from 5 to 100 watts and often do so under less than ideal conditions. Many of these services are unscheduled, so you have to be at the right place at the right time, and that often involves scanning multiple banks of frequencies. So how do you do it? What software is popular for CAT compatible radios? Do you run banks of radios? Can this be done using off-the-shelf software? There are many interesting topics to be found when monitoring this particular group of services, so let's hear from you.

VHF/UHF Scanning

Once you get into this range of frequencies you are talking about either scanners or "DC-to-daylight" radios. Noise is no longer a big factor, but you certainly need to be able to scan a *lot* of RF spectrum. So what are the issues here? What is the popular CAT software for scanners and how well does it perform with different makes and models? Are there accessories we should know about that make the task of monitoring these frequencies easier?

Next Month

Next month will be up to you! From here on in I want this to be *your* column, a place to share your experiences. I've given you the basic agenda for the remainder of the year, now it's up to you to make it happen.

Contact me with ideas, comments, and suggestions. The e-mail address is <joe@provcomm.net>, and my mailing address is "Computer-Assisted Radio Monitoring," C/O Joe Cooper, PMB 121, 1623 Military Rd., Niagara Falls, NY 14304-1745. Don't forget that I cannot answer general questions about computers, software, or operating systems, but I will do my best on any questions about the content of the columns or computer-assisted radio in general.

Thanks again and I hope that the information provided here will help you get more out of your computer and monitoring radio than you ever thought possible.

Tuning In *(from page 4)*

"carrier," who gave us—sit down for this news, please—a whopping *10* free units for "my inconvenience." I took the 10 units and contacted the FCC, filing a written complaint, certainly one of thousands.

You know what burns my fat? I used the tools at my disposal to make the call, yet despite the billions of dollars raked in by the cell industry on gizmos and calling plans and colored face plates, they still can't get it right! Let's look at the facts. It shouldn't matter what kind of phone I'm using or what service plan I have or don't have. It shouldn't matter where I am or whether I'm on the New York Thruway or a boat on the Mohawk River. Not today. Not in the 21st Century! Thirty years ago when folks only dreamed of having phones like we have today it *might* be understandable, but even then I could have stopped and used a rotary-dial phone from a cabin to call the cops; just dial "O" and you were in touch. How's *that* for high-tech? Nothing fancy, no bells and whistles or fancy ringing modes—just good old-fashioned common sense and some wires.

The friendly bureaucrats at the Cellular Telecommunications Industry Associa-tion have a dandy website extolling the virtues of cellular, of course. Their own statistics (as of June 2002) say there are 15 million Americans using analog cell phones and another 120 million with digital ones. They report, "...analog cellular...the predominant system in use today." It doesn't take a rocket scientist to figure that at any one moment hundreds or thousands of those 15 *million* folks could be trying to reach a 911 operator for assistance. The Commission recognizes the problem. Uh huh. These are the same folks who couldn't *recognize* Sasquatch if he were sitting on the hood of the Chairman's SUV in broad daylight. Don't worry, the FCC is on it. They've implemented Rules, Public Notices, and E911 Requirements in sufficient quantity to make the average bureaucrat smile with delight, but something is wrong...very wrong.

I don't believe it's entirely the FCC's fault for not getting the Industry on the stick, it's a whole *lot* of wrongs from the ground up. Years ago the almighty Cellular Industry should have worked out the bugs in the system and explained them clearly to the public. At the onset, the Commission should have required all cell phones sold in the U.S. to have a red 911 emergency button. They clearly did not.

Can you hear me now? ■

washington beat

Capitol Hill and FCC actions affecting communications

by Laura Quarantiello <lauraq@cts.com>

Coast Guard Comm Upgrade

General Dynamics Decision Systems has been awarded a contract to upgrade the U.S. Coast Guard's National Distress & Response System. The $611 million contract, called "Rescue 21," will modernize ground-based installations at 270 Coast Guard facilities and over 300 radio towers, as well as provide new communications equipment on 657 Coast Guard vessels.

Secretary of Transportation Norman Y. Mineta said Rescue 21 is the maritime equivalent of a 911 system. It will reduce response time by enhancing VHF-FM coverage, add position locating, increase the number of voice channels allowing for multiple operations, protect sensitive voice communications, and allow asset tracking and digital voice recording with immediate enhanced playback.

The system will be initially launched in Atlantic City, New Jersey, and the eastern shore of Maryland in 2003, followed by the St. Petersburg, Florida, area and Mobile, Alabama. Seattle and Port Angeles, Washington, are scheduled to follow, with the balance of the United States operational by September 30, 2006.

CC&R Bill Introduced

A new congressional bill may be the answer to Amateur Radio woes concerning CC&R's (private deed covenants, conditions and restrictions) which have long dogged ham radio operators. The bill, sponsored by Rep. Steve Israel (D-NY), Rep. Mike Ross, WD5DVR (D-AR), and Rep. Greg Walden, WB7OCE (R-OR) and rapidly gaining co-sponsors, is called the Amateur Radio Emergency Communications Consistency Act (HR 4720). It would require private organizations like homeowners' associations to reasonably accommodate Amateur Radio antennas consistent with the PRB-1 limited federal preemption. As it stands, PRB-1 only applies to states and municipalities. HR 4720 has been referred to the House Telecommunications and Internet Subcommittee.

3G Spectrum Allocated

The FCC has allocated 90 MHz of spectrum to 3G (third generation) advanced wireless services. Two frequency bands were tapped for the new allocation: 1710 to 1755 MHz and 2110 to 2155 MHz. Both bands were released by the Department of Defense last summer and are expected to be auctioned by mid-2004.

Despite the hype over 3G and the continuing spectrum grabbing for the new technology, other countries who have already allocated spectrum to 3G services have found the high tech to be less than successful in action. FCC Commissioner Michael Copps recommended that the FCC examine Europe's experience deploying advanced wireless services, saying "3G has been less than a success in Europe. What role did government allocations and service rules play? What other factors were at work? We need to know. Those who don't study history are condemned to repeat it."

Jumpstart Broadband Act

A new bill proposes to set loose a chunk of radio spectrum for use by wireless products. The Jumpstart Broadband Act, proposed by Sen. Barbara Boxer (D-CA) and Sen. George Allen (R-VA), though considered to be a long-shot at actually passing, asks for a minimum of 225 MHz of unlicensed spectrum below 6 GHz to be freed up within 180 days of passage. Staffers say the final version of the bill will target the 5-GHz band, a segment of spectrum which is in sync with allocations in Europe but is currently used by the U.S. Department of Defense. Some say allowing wireless devices to use this band could interference with military communications. No word from DoD or the wireless industry on their stands for or against the bill

New Tech For Emergency Workers

The Center for Emergency Response Technology, Instruction and Policy (CERTIP) at Georgia Tech University is developing advanced, cost-effective tools for fire, police, medical, and other first responders to crises. The work includes using digital wireless technology to set up on-scene networks that can be used by responders from different agencies, whose older, analog radios may not communicate with each other.

CERTIP is also developing ways to equip personal digital assistants to send data related to the size and scope of a chemical, biological, or radiological event to experts across the country or the world. Data could be sent on the condition of each patient affected, and advice could be received from experts away from the scene. Georgia Tech hopes to become a part of the network of labs to be created by the U.S. Department of Homeland Security.

McCain In, Wheeler Out

Sen. John McCain (R-AZ) has succeeded Sen. Ernest Hollings (D-SC) as chairman of the Senate Commerce Committee. Reports say that McCain is a proponent of telecommunications deregulation and a strong supporter of FCC Chairman Michael Powell, as well as a vocal critic of the cable industry. Meanwhile, Thomas Wheeler, president of the Cellular Telecommunications & Internet Association (CTIA), has stated that he does not intend to renew his contract, which expires at the end of 2003. "I will have been here 11 and one-half years. It has been an incredible experience, the highlight of my career." ■

readers' market

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loose connection

radio communications humor

by Bill Price, N3AVY <chrodoc@earthlink.net>

Fond Farewells

Hello again, loyal readers. It's good to be back in the office after a short hiatus, and I've promised everyone I won't be away from the water cooler and snack table for a while.

As I write, Norm is packing his K-car for a trip south, which will include a stop here at the famous Price Manse in Cowfield County, Virginia. Sadly, he won't be bringing Chump with him anymore—Chump has left for greener pastures and is now a "silent paw." I will miss him every bit as much as Norm will.

Meanwhile, friend Steve Bradley has gone searching the private sector for a *genuine* H.P.J.I.E.* instead of the one he pursued alongside me for the past nine years. Luckily for me, he is NOT a silent paw, because if we're letting secrets out of the bag today, Steve is responsible for so many of the topics I write about each month. I've told him to take the H.P.W.M.O.C.** so that he, too, could share in the wealth, fame, and fortune, but he's always been content to provide me with fodder and remain offstage.

"...he's ingrained in me the standard electronic diagnosis (check the plug, check the fuses, check the breakers) and field repair (turn it off, count to 10, turn it back on), as well as the standard shop-repair method (pack it up and send it to the manufacturer with a note indicating where the smoke was seen).

It will be difficult to look to my right and not see Steve standing there, warning me not to put my finger into that live circuit, or advising me against getting my beard too close to that muffin-fan, but I'll adjust, I'm sure. By now, he's ingrained in me the standard electronic diagnosis (check the plug, check the fuses, check the breakers) and field repair (turn it off, count to 10, turn it back on), as well as the standard shop-repair method (pack it up and send it to the manufacturer with a note indicating where the smoke was seen).

When we were in danger of being found out—when the "higher-ups" were getting close to catching on to our repair methods, Steve was the one who coined the phrase "re-initialize." "Yes sir, we re-initialized the microwave transmitter and it's working fine now. Thank you, sir." It sounds so much more professional than "Yeah, we pulled the plug and counted to 10." It's all in how a person describes what he does.

"...Steve was the one who coined the phrase 're-initialize'.... we pulled the plug and counted to 10."

And Steve graciously passed up many opportunities to abuse me. He never once made fun of my pet rats, and, while others commented openly about the condition of my car, he merely snickered ever so gently as I'd open the passenger door and he'd watch soda cans and fast-food bags slide out as if Fibber McGee's Closet had gone mobile. He patiently helped me put fresh duct-tape around the edges of the sunroof before all the major storms last year, never once suggesting that I consider having the thing *fixed*.

When I bought my climbing support-harness ("one size fits all") he never once made the tiniest snicker. Even when I put the thing on and gave it a little too much of a tug for the first time and yelled for him to loosen the leg strap, there wasn't even a hint of a smile on his face. Come to think of it, he had his face turned away from me that time. Oh well, he still helped me get it loose.

Steve was always kind in the way he'd ask, "Didn't you want to turn there?" knowing full well that it would have sounded like nagging if he'd reminded me of a turn *before* we got to it. Instead of making fun of me after watching me try to drill through 14-inch plate steel with the drill set in "reverse," he'd merely reach over while I was cooling the bit and flip the switch into the "forward" position and smile.

He was taller and I was, well, girthier. Neither of us could be Stan Laurel; we were both Oliver Hardy instead. We no more looked like each other than Martin and Lewis, but everyone thought we were brothers. From the first day I joined him at work, people called us by each other's name. We just began to answer to it; it was easier.

I hope I've absorbed enough knowledge and skill from old Steve (he is a month or two older than I am) because I'll have this H.P.J.I.E all to myself for a few months now, till they *try* to replace him. The new and improved Steve can be fat or thin, tall or short, male or female, but I doubt that he/she/it will ever have the wit and sense of humor that Steve Bradley takes with him as he leaves.

Good bye, Chump. Best of luck, Steve. I'm really gonna miss those guys.

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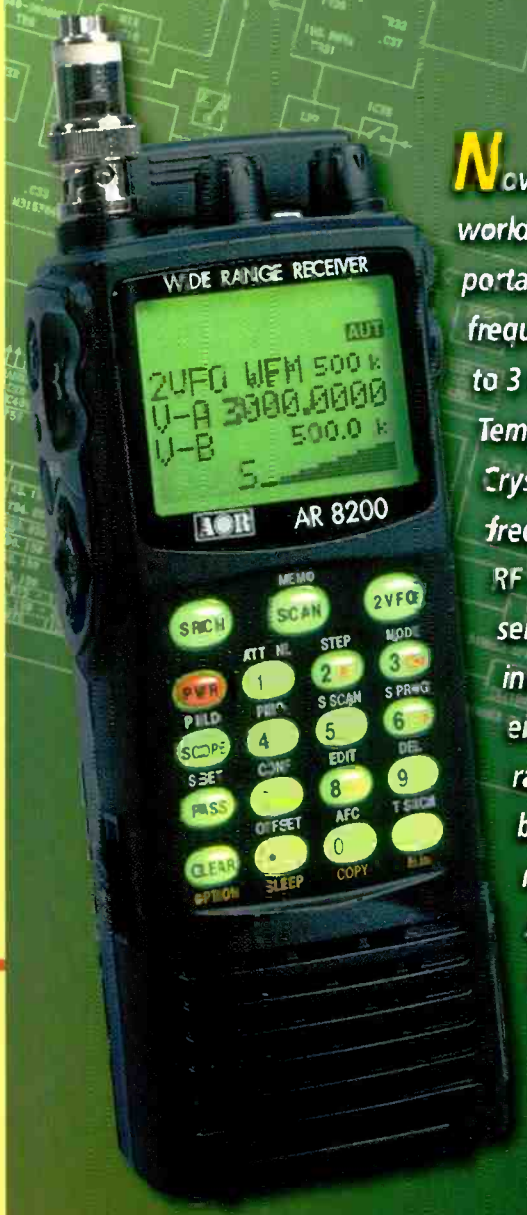

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