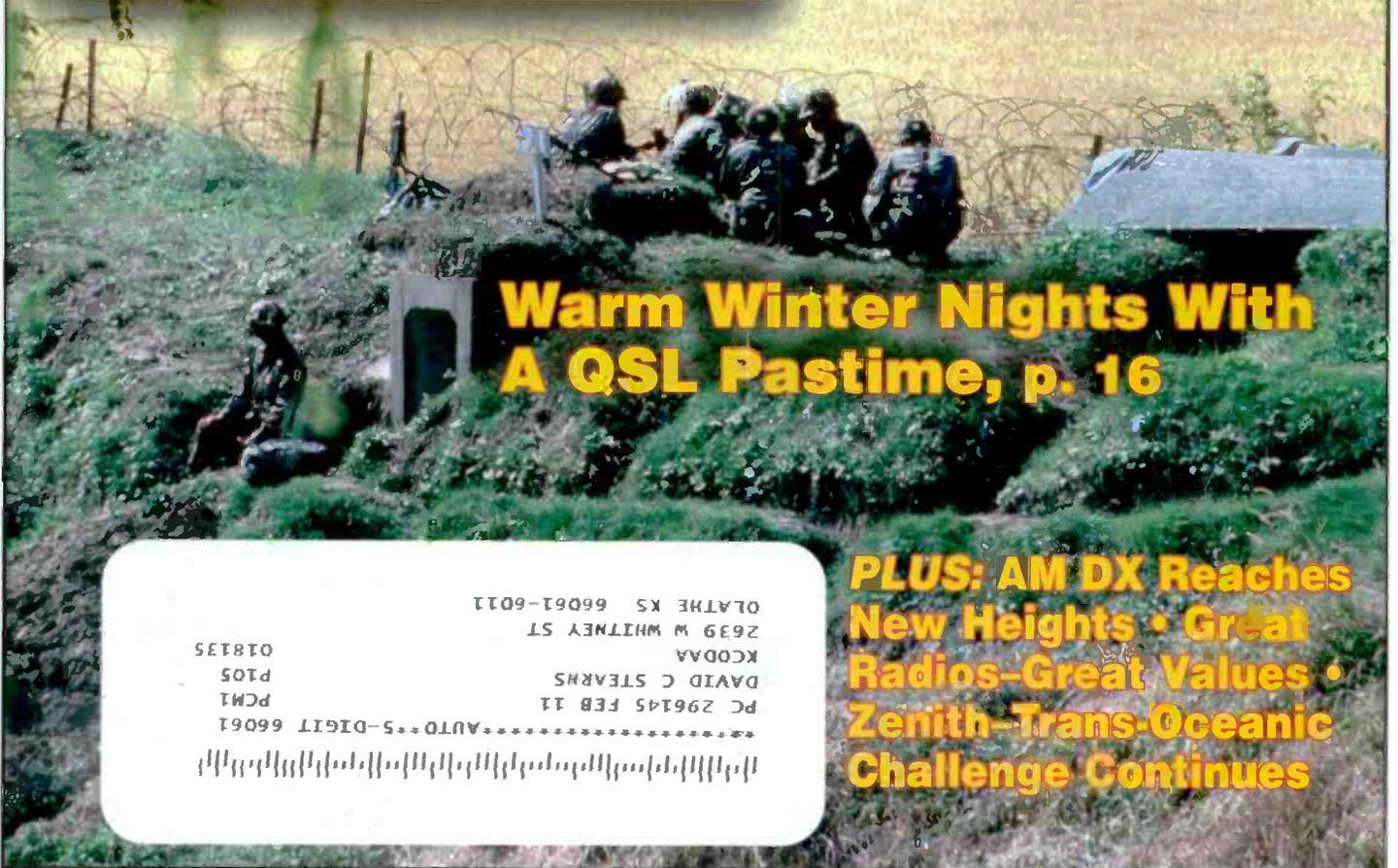
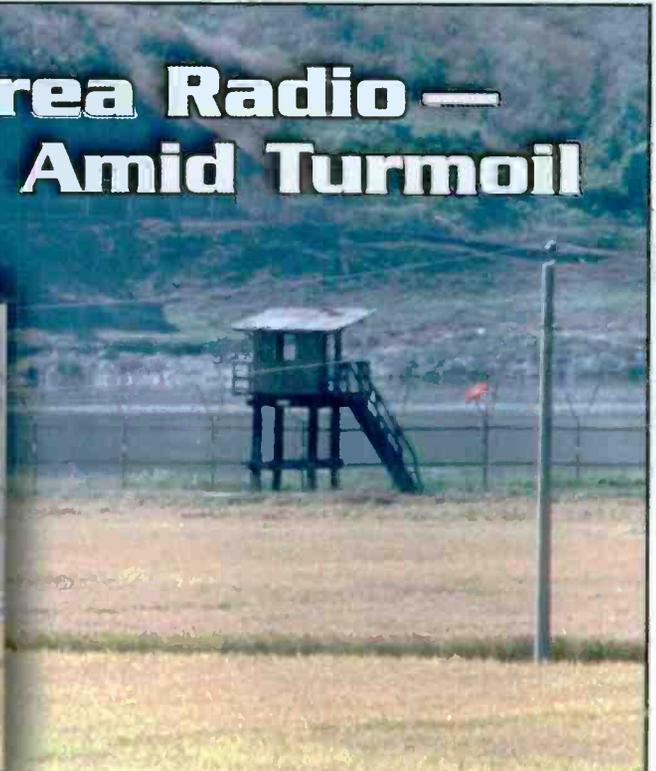


POPULAR COMMUNICATIONS

FEBRUARY 2011

Shortwave Listening • Scanning • AM & FM • Radio History

Free North Korea Radio — A Voice Of Hope Amid Turmoil



Warm Winter Nights With A QSL Pastime, p. 16

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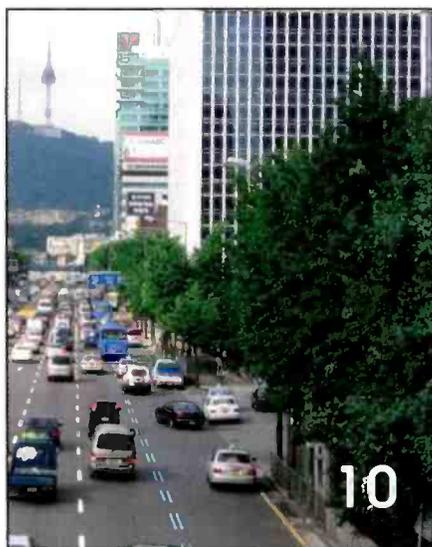
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ON THE COVER

Decades of strife have plagued the Korean Peninsula, which teetered on a knife edge at press time. Its future also uncertain, Free North Korea Radio, staffed by defectors from North Korea, broadcasts its message of democracy from Seoul to its repressed neighbor. See "DX Target: Free North Korea Radio" starting on page 10. (Cover image: USAF airmen at defensive position across from a North Korean watchtower on the DMZ circa 1995, from *Airman Magazine*, by MSGT Rose Reynolds, via Wikimedia Commons; Inset: Kim Seong Min, founder of Free North Korea Radio, in the studio).

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MFJ-1024
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EDITORIAL

Tuning In

Reasons To Be Cheerful

by Edith Lennon, N2ZRW

editor@popular-communications.com

Gray winter days got you down? Wish you'd sprung for the higher horsepower snow blower, at least the higher-rated receiver? Well, cheer up: plenty of things are on the upswing. Yes, I'm irritatingly optimistic, but whether Punxsutawney Phil tucks tail and runs or stands firm against the February chill, spring *is* just around the corner (if we could only be so certain about sunspots!).

But we don't have to wait for rodents, or spring, or sunspots to revel in bits of good news—they're popping up like early crocuses. So here's a little cheering bouquet for you. We'll start with the future: radio and the young.

While it has had a huge impact on what we listen to and how we do it—revolutionary when it comes to our youth—the Internet has not killed the radio star. True, the results of a recent survey of the media and technology habits of young Americans (ages 12 to 24) confirmed a lot of what we pretty much knew instinctively, or by having to coexist with teenagers: there has been a massive migration from terrestrial broadcasting (ew, still not used to that term) to the Internet. But the results of the survey, conducted by Edison Research and compiled in a report titled "The American Youth Study 2010," also show some green shoots in the radio landscape. For instance, 51 percent of respondents said that radio remains "the leading source for learning about new music." In a finding I found surprising, radio also continues to beat social media as "the main source for concert information." A third of the group said that "putting an FM tuner on their cell phones would lead to more listening" (that one goes out to our friends at NAB). The most heartening item from this survey, though, was that compared to one conducted in 2000, young people are actually listening to terrestrial radio *more* than they were back then. The most endearing item was that 64 percent agreed with the statement, "You would be very disappointed if the AM/FM radio stations you listen to no longer exist-

ed"—so young to be so sentimental! (And, by the way, the Internet will never kill the radio star: It will just provide more outlets for it to shine its light.)

Though chilly, I'm cheered by other positive developments in our hobby. It's good to know that the Local Community Radio Act, which permits the FCC to license hundreds more LPFMs, made it through the House of Representatives. At this writing it was being held up in the Senate, but I'm hopeful it will pass before the lame duck Congress waddles off. It's also exciting to think of how the monitoring hobby might take off among the masses thanks to great new scanners manufacturers recently rolled out for the consumer market. And, despite the incessant predictions of the uninformed, the number of licensed amateurs is rising. Who cares about some Pennsylvanian rodent, it might as well be spring.

Staff Changes: So Long N2IQO, Welcome K7JA

While the vast majority of our readers haven't a clue who he is, our advertisers—and all of us at *Pop'Comm*—certainly do, and I have to take a moment to say, "thank you" and "see you again... *RIGHT?!?*" to Arnold Sposato, N2IQO, *Pop'Comm's* advertising manager since January 2002 and sister publication CQ's prior to that. Arnie is retiring to a life of leisure, so my melancholy is tempered by bitter jealousy. That and my excitement about his successor, Chip Margelli, K7JA. His name should be familiar to our readers as a terrific contributing author, and to the hams among you also as a committed, energetic, and practically omnipresent (this guy seems to go everywhere!) force in the hobby. I'd still be a bit melancholy, but Chip says he'll still write for us.

So radio has a future, Arnie will be fishing, Chip will be typing, sunspots will be returning, and crocuses will be sprouting. That's good enough for me.

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The Weirder Side Of Wireless

by Staff

Refreshing—Transmits Great, Too

Next time you see a fountain of water, grab your radio and see if you can pick up a signal—that fountain might just be an antenna. According to the website wired.co.uk, SPAWAR System Center Pacific has found a way to turn seawater into a liquid antenna for the US Navy. By projecting a jet of water through a probe SPAWAR can create "...a powerful, high frequency broadcast tower for ships, emergency situations and easy transportation." The seawater antenna uses the magnetic induction properties of salt to make ordinary ocean water transmit and receive radio signals. By varying the height of the water column, reception of UHF, VHF and HF broadcasts are possible. And by setting up multiple jets of water, at different heights, it's possible to broadcast on different bands simultaneously. The Navy, of course, has an endless supply of seawater, but by adding salt to a local water source the liquid antenna could also be used on land. Downside: soon we'll *never* be out of cell range of the boss' phone calls.

To Catch A Thief, Press 1

File this story under best use of cell phone technology. Maryland couple Kari and Derek Fisher came home to find they had been burglarized. The thief made off a pair of digital cameras, a video camera, a satellite radio, and their cell phone, as reported in the *Washington Post*. After informing police, the Fishers called their cell carrier, Sprint Nextel, and asked if the company could trace the location of the missing phone. The Sprint rep told them about the Sprint Family Locator service, launched in 2006 ostensibly to help parents keep tabs on their kids whereabouts, and which relies on GPS technology embedded in the phone. The Fishers signed up for a free 15-day trial. The Family Locator placed the stolen phone inside an apartment building, where police found it, plus a host of other stolen property. Ironically, though, because the Fishers did not immediately cancel their phone service, Sprint said the Fishers granted permission for the thief use their phone as much as he wanted, to the tune of 1,000 or so calls and an additional \$35 worth of charges. Sprint agreed to waive these charges

when contacted by the press, so at least the Fishers weren't robbed twice.

Is TV Torture?

It can be if you're forced to watch the same thing day after day, according to James Poulin, an inmate at the Brevard County Jail in Orlando, Florida. Poulin claims he is being "tortured by the lack of quality TV" and "the repetition of the same movies over and over again," as reported by Central Florida News 13. Poulin is asking a federal judge to allow the jail to connect a digital converter so inmates can watch over-the-air programming on the jailhouse TV. "It's rather like Chinese water torture," Poulin said of the movies. "I hear those [movies] through my brain all night long. I can hear them. I can close my eyes, but I'm still gonna hear these movies, over and over and over." Poulin went on to say that inmates have a right to access the media even in jail. Now it's up to a judge to decide. Poulin was arrested in 2007 for vehicular DUI manslaughter. He might have a point if the daily movie shown is *Crash*.

Eyes In The Back of Your Head

No one is sneaking up on Wafaa Bilal, an assistant art professor at New York University's Tisch School of the Arts, because he'll constantly be recording what's going on behind him, according to a piece in *TechNewsWorld*. Bilal has had a camera surgically attached to the back of his head that will capture digital images at one-minute intervals, which will be transmitted by cell phone to the Mathaf Arab Museum of Modern Art in Qatar. To attach it, three titanium plates were implanted under the skin on Bilal's head. Posts on the plates stick through the skin for attaching a 1 x 2-inch 10-megapixel digital camera. The images are transmitted via a cell phone carried by Bilal—why not embedded in his ear?—and will be displayed in real time in the museum as an exhibit dubbed, "The Third I," which has been described as a type of *sousveillance* (translation: the recording of an activity from the perspective of a participant). To make sure the "sous" part stays in "sousveillance," NYU has asked him to cover the camera with a lens cap while he's on university property, in order to protect the privacy of staff and students. He has agreed to do so.

News, Trends, And Short Takes

B10 HFCC Data Files Now Available For Download

by D. Prabakaran

The public version of the operational schedules of HFCC members for the winter period B10 (as of November 2, 2010) is now available for download from the HFCC website www.hfcc.org/data/index.phtml.

RNW Dutch To North America Frequency Change

RNW has changed the frequency of its Dutch broadcast via Bonaire to North America at 0059–0127 UTC from 6190 to 6195 kHz. The change was made because of co-channel interference on 6190 from International Radio Serbia, which reactivated the frequency after a long absence.

New BBC/DW DRM Channel For South Asia

BBC World Service and Deutsche Welle (DW) have launched a new Digital Radio Mondiale (DRM) digital radio channel for South Asia. The channel will carry a four-hour daily broadcast that includes international programs in English and Hindi from BBC World Service and Deutsche Welle. It will also offer the advantages of DRM digital radio, including near-FM quality audio, text messages, Journaline and an Electronic Programme Guide (EPG). The joint initiative was launched using two transmitters in the region and will cover much of South Asia, including the majority of the Indian sub-continent and possibly as far as Pakistan, Bangladesh, Nepal, and other neighboring countries. The transmission is broadcast from 1400–1800 UTC. Listeners will find the program stream on 13590 and 5845 kHz (SW) and additionally on 1548 kHz (MW) between 1700–1800 UTC.

(Source: DRM Consortium)

Slovak Radio/Government Sign Agreement On 2011 Financing

The public Slovak Radio (SRo) and the Ministry of Culture have signed an annual annex to the contract with the state. The annex specifies financing for year 2011 of 4 million euros. Of the funds received, 2.2 million euros will be spent on programs produced in the public interest, 800,000 euros on specific investment projects, and 1 million euros on foreign broadcasting of Radio Slovakia International (RSI). The state will co-finance 9,511 educational, religious, documentary

and other programs. The funds will also be used to finance foreign broadcasting in six languages distributed through satellite and the Internet, provided by Radio Slovakia International.

(Source: SITA website)

First DRM+ Trial In The Asia-Pacific Region

The DRM Consortium has announced a DRM+ trial and workshop in Sri Lanka. The Consortium has joined forces with the Telecommunications Regulatory Commission of Sri Lanka (TRC), the Sri Lankan Broadcasting Corporation (SLBC), Germany's international broadcaster, Deutsche Welle and the Asian-Pacific Broadcasting Union (ABU) to run a trial of DRM+ and showcase its benefits. SLBC has offered the DRM Consortium its full support and the use of one of its low power stations in Colombo for the duration of the trial.

(Source: DRM Consortium)

Radio Australia To Use Kranji Relay

Radio Australia has been granted access and use of the Kranji shortwave relay station by Singapore's Media Development Authority (MDA). Two transmissions per day are being relaying to Burma and China:

Burmese: 0100–0130 UTC on 11780 kHz 340 degrees 250 kW

English: 1100–1300 UTC on 6140 kHz 13 degrees 250 kW

Radio Free Sarawak Goes On The Air

Radio Free Sarawak, aimed as an alternative voice for Sarawakians, inhabitants of the island of Borneo, Malaysia, has gone on the air. In an email to *Free Malaysia Today*, the Bruno Manser Foundation said that the new alternative radio station will have two daily broadcasts on shortwave, presumably in Iban and Bahasa Malaysia. It is an open secret that the media in Sarawak are strictly controlled by the state government under Chief Minister Abdul Taib Mahmud and logging companies who own and control all major media outlets in the state. The transmission details of Radio Free Sarawak are as follows:

1st transmission: 0630–0730 local time (2230–2330 UTC) on 7590 kHz

2nd transmission: 1800–1900 local time (1000–1100 UTC) on 15680 kHz

(Source: www.freemalaysiatoday.com)

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, K16SN **Text Messages, Video, Photos On Horizon For Calling 9-1-1?**

A "Next Generation 9-1-1" plan that would allow people to send mobile text messages, video, and photographs to 9-1-1 emergency call centers has been proposed by Federal Communications Commission Chairman Julius Genachowski, according to an on-line report by Sara Yin in *PC Magazine*. The need for consideration of accepting SMS-based pleas for help follows a snapshot of 9-1-1 activity that revealed "70 percent of calls... are made through a mobile phone, and 72 percent of Americans" send text messages," Yin wrote.

"The Virginia Tech campus shootings in 2007 are a tragic, real-life reminder of the technological limitations that 9-1-1 is now saddled with," Genachowski said in a speech at the Arlington (Virginia) County Emergency Center. "Some students and witnesses tried to text 9-1-1 during that emergency and, as we know, those messages never went through and were never received by local 9-1-1 dispatchers."

"Modernizing the hotline would allow Americans to text for help in situations when a call might jeopardize their safety," the FCC said in a statement. "Furthermore, accepting mobile videos and photos could provide first responders with on-the-ground information to assess a situation in real time."

"Many 9-1-1 call centers don't even have broadband, and some are in communities where broadband isn't even available," Genachowski said. "That is unacceptable." An FCC-led "Next-Generation 9-1-1" proceeding, to gauge the public's opinion," was planned by the Commission in late 2010, Yin reported.

FCC Eyes Repackaging, Channel Sharing In Broadcast Spectrum

The FCC readied a rule-making session in late November 2010 addressing preliminary steps to free up broadcast spectrum by repackaging and channel sharing, according to published reports.

A story from the *MediaPost* Internet site said, "the rules stop short of actually proposing a comprehensive repacking scheme, whereby the FCC would squeeze out as much as 36 MHz out of the broadcast band by shifting channel assignments and trimming power and coverage of stations. However, the proceeding looks for ways of improving the much-maligned VHF band (chs. 2-13) for broadcasting, suggesting that the FCC intends to drive more stations there. UHF channels, chs. 14 to 51, are generally considered better for broadcasting and broadband," the story said.

Specifically, the Commission's rulemaking "will explore VHF indoor antenna performance standards and seek suggestions for reducing noise in the VHF band," *MediaPost* said. "The FCC expects to recover the most broadcast spectrum by encouraging channel sharing, in which stations would voluntarily double up—or even triple up—on a single 6 MHz TV channel."

FCC Report: Broadcast Stations Total 30,785

As of September 30, 2010, broadcast licensees under FCC jurisdiction totaled 30,785, according to a report from the Commission. The statistics were based on data covering stations classified as Commercial, Educational, Class A, Translators and Boosters, and Low-Power across the AM and FM broadcast, VHF and UHF spectrum, as follows:

AM Stations, 4,784; FM Commercial, 6,512; FM Educational: 3,251; Total: 14,547.

UHF Commercial TV, 1,022; VHF Commercial TV, 370; UHF Educational TV, 284; VHF Educational TV, 107; Total: 1,783.

Class A UHF Stations, 443; Class A VHF Stations, 82; Total: 525.

FM Translators and Boosters, 6,161; UHF Translators, 3,049; VHF Translators, 1,469; Total: 10,679.

UHF Low-Power TV, 1,860; VHF Low-Power TV, 527; Total: 2,387.

Low Power FM, 864.

FCC Seeks Donations For Technology Experience Center

The Office of Managing Director of the FCC is accepting donations of "technical communications devices designed for personal or business use" from vendors for the new FCC Technology Experience Center (FCC TEC), "an on-site technology lab that will provide FCC employees and invited guests hands-on experience with the latest communications devices and solutions," a report on RadioMagOnline.com said.

"Today's world of technology is always changing, and we are establishing the Technology Experience Center to allow FCC employees to keep pace with this change," FCC managing director Steven VanRoekel said. "The goal of FCC TEC is to promote better employee understanding of the current state of technology in the industries in which the Commission oversees."

"Donation to the center is strictly voluntary and is not contingent on and does not imply any expected benefit to the donor," the FCC said.

The Next Generation Of Hobbyists

by Rob de Santos
commhorizons@gmail.com
Twitter: @shuttleman58

“...if you were to build a Wi-Fi-enabled coffee maker to alert you when the coffee is low, would that make you a communications hobbyist?”

If you've followed hobbies like shortwave listening or amateur radio for any length of time, you're probably aware of the concerns surrounding the “aging” of the hobby. Certainly, if you attend ham-fests or get-togethers, such as the annual Winter SWL Fest in Pennsylvania, you'll come away convinced that the communications hobby is rapidly becoming the domain of a very “senior” crowd. Perhaps, however, we are missing something.

No, I don't mean that there are “ghost” attendees at these events. But it might be that the newer hobbyists simply are spending their time elsewhere, or are listening in ways we aren't considering. FCC statistics suggest that the number of licensed hams has been slowly growing. By most indications, despite the solar cycle and the economy, sales in the ham and shortwave business have continued to be robust enough—at least sufficient to keep plenty of companies in the business. Listening to commercial radio, either via RF or the Internet, is stable to growing according to the industry trade reports.

So where are these hams, SWLs, radio fans, and scanner hobbyists?

Maybe we aren't looking for them in the right places. By this, I mean the hobby is changing and listeners might be in places we've not traditionally expected them. By its nature, radio listening can be a very solitary hobby. The younger generation communicates with each other via social media, texting, and similar methods, and attending a local meeting of a radio club might not be high on its list. New hams might get licensed for very different reasons than did earlier generations. For example, there are increasing numbers of hams among diverse groups, such as truck drivers and government employees. If the motivation for involvement in the hobby is different, and they are communicating with their peers in different ways, then we may not recognize that they are there.

At no time in history has more communication between humans been taking place. We are “more connected” than ever before. We have more ways to exchange information with others. It's only logical that we also have a historical high in fans of “communication.” So those fans must be in “new” places, not the old ones. This leads to another logical conclusion that what's wrong is our traditional definition of what constitutes a communications hobbyist. By “wrong” I don't mean that we made

an error in the original definition, but that we need to adjust it to reflect the new reality.

In the past, almost every definition of a radio hobbyist centered on someone using something directly related to the electromagnetic transmission and reception devices developed by Tesla, Marconi, Fessenden, De Forest, and others—things that most of us would recognize as a “radio.” Yet, in the modern wireless world, we're surrounded by devices that are radios, but which the average person doesn't think of as a radio and which hobbyists don't include in their definition of radios for hobby usage.

Our society is rife with mobile phones, chips embedded in credit cards, Bluetooth earpieces, Wi-Fi-enabled computers, Internet radios, and many more such devices. Each one of these is a radio receiver or transmitter by any technical definition. So, if you were to build a Wi-Fi-enabled coffee maker to alert you when the coffee is low, would that make you a communications hobbyist? (See the mbed.org project and next month's column on the Internet of Things.) If you use Bluetooth and FM to transmit your stereo to every room in the house by assembling the necessary technology, does that make you a communications aficionado?

I realize more than a few of you are probably saying “it doesn't have a knob, so it's not a radio” or “it doesn't take any technical knowledge of radio to do that.” Perhaps that's true, but it doesn't take much knowledge of heterodyne circuits and tube technology to use a modern 2-meter handheld, either. The hobby is changing and the communications world has changed and continues to change. It may well be that we've been guilty of looking inward too much in our view of where the communications hobby is going. As with so many others with passionate interests, we're certainly guilty of only seeing the future in terms of the past.

I won't pretend to tell you what the hot topics in the hobby will be 10 or 20 years from now. I'll bet, though, that things will be different from what we expected. Those active in the hobby might well include a few names we recognize doing things we expect, but it will also include many things that aren't considered part of the hobby today.

How do you think the hobby is changing? Should we change our definition of a hobbyist? Share your views with me using the hobby means at your disposal. I look forward to hearing from you.

DX Target: Free North Korea Radio

A Voice Calls For Freedom In A Troubled Region Once Called "The Land Of The Morning Calm"

by Richard A. D'Angelo

Free North Korea Radio broadcasts from Seoul, capital of South Korea. (Courtesy Johannes Barre, via Wikimedia Commons)

Free North Korea Radio (FNKR) is a shortwave radio station in Seoul run by North Korean defectors. Their goal is to bring about the downfall of the North Korean regime—not through violence, but by teaching North Koreans what democracy means.

But the station, which was set up in 2004 by defector Kim Seong-Min, is now under pressure to close down. Some South Korean groups claim the radio station is provoking war because it is upsetting the regime in Pyongyang and claim it violates an agreement by both sides to not broadcast propaganda.

History And Geopolitics Of The Korean Peninsula

The geographic area of East Asia that we know as Korea gave rise to a civilization, a former unified state, and two sovereign nations that now share the Korean Peninsula: North Korea and South Korea. The Korean Peninsula borders China to the north and west, Russia to the northeast, with Mongolia situated farther to the northwest, and Japan to the east, separated by the Korea Strait and the Sea of Japan.

Richard A. D'Angelo is the Executive Director of the North American Shortwave Association (NASWA) and a member of its Executive Council. He currently edits the club's "Listener's Notebook" column.



An independent Korean state or collection of states has existed almost continuously for several millennia. Between its initial unification in the 7th Century— from three predecessor Korean states— until the 20th Century, Korea was a single independent country. In 1905, following the Russo-Japanese War, Korea became a protectorate of imperial Japan, and in 1910 was annexed as a colony. Korea regained its independence following Japan's surrender in 1945. After World War II, a Republic of Korea (ROK) was set up in the southern half of the Korean Peninsula, while a Communist-style government was installed in the north, the Democratic People's Republic of Korea (DPRK).

“Kim is the only North Korean on staff at the radio station who uses his real name; the others use pseudonyms to protect their families who are still living in the North.”

During the Korean War (1950–53), United States troops and United Nations forces fought alongside soldiers from the ROK to defend South Korea from DPRK attacks supported by China and the Soviet Union. An armistice was signed in 1953, splitting the peninsula along a demilitarized zone at about the 38th parallel. Thereafter, South Korea achieved rapid economic growth with per capita income rising to roughly 14 times the level of North Korea. South Korea today is a fully functioning modern democracy. In June 2000, a historic first North-South summit took place between the South's President

Kim Dae-jung and the North's leader Kim Jong Il. In October 2007, a second North-South summit took place between the South's President Roh Moo-hyun and the North Korean leader.

Since the 1960s, South Korea has achieved an incredible record of growth and integration into the high-tech modern world economy. Four decades ago, GDP per capita was comparable with levels in the poorer countries of Africa and Asia. In 2004, South Korea joined the trillion-dollar club of world economies. In 2008, its GDP per capita was roughly the same as that of the



Paranoid and irrational, “Dear Leader” Kim Jong Il (inset) heads a repressive and secretive regime from capital Pyongyang. (Courtesy Myouzke, via Wikimedia Commons)

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Kim Seong-Min, founder of Free North Korea Radio, broadcasting from Seoul.



Czech Republic and New Zealand. This success was achieved by a system of close government/business ties, including directed credit, import restrictions, sponsorship of specific industries, and a strong labor effort.

North Korea, one of the world's most centrally directed and least open economies, faces chronic economic problems. Industrial capital stock is nearly beyond repair as a result of years of underinvestment and shortages of spare parts. Large-scale military spending draws off resources needed for investment and civilian consumption. Industrial and power output has declined in parallel from pre-1990 levels. Severe flooding in the summer of 2007 aggravated chronic food shortages caused by on-going systemic problems, including a lack of arable land, collective farming practices, and persistent shortages of tractors and fuel.

Large-scale international food aid deliveries have allowed the people of North Korea to escape widespread starvation since famine threatened in 1995, but the population continues to suffer from prolonged malnutrition and poor living conditions. By December 2005, the government had terminated most international humanitarian assistance operations in North Korea and restricted the activities of the remaining international and non-governmental aid organizations, such as the World Food Program. External food aid now comes



Above and top right, unidentified announcers at the station.

primarily from China and South Korea in the form of grants and long-term loans. In May 2008, the United States agreed to give 500,000 metric tons of food to North Korea via the World Food Program and U.S. nongovernmental organizations. During the October 2007 summit, South Korea also agreed to help develop some of North Korea's infrastructure, natural resources, and light industry, but inter-Korean economic cooperation slowed in 2008 as Pyongyang restricted tourism and manufacturing joint ventures in the North, and food aid from South Korea was suspended. Firm political control remains the Communist government's overriding concern, which will likely inhibit the loosening of economic regulations.

In March 2010, a North Korean submarine's torpedo sank a South Korean

navy ship, resulting in the deaths of 46 sailors, although the government in Pyongyang denied involvement. Tensions escalated further in late November 2010 after North Korea conducted an artillery attack against the South Korean island of Yeonpyeong, killing four people. The U.S. and South Korea conducted joint naval exercises in response, which drew a warning from North Korea that the maneuvers could lead to "all-out war" at any time. At press time, the situation remained precarious.

The Station

FNKR is a non-profit organization founded and run by North Korean defectors. Its mission is to disseminate the ideas of freedom and democracy within North Korea, where the people have

been deprived of basic human rights, and to raise awareness of the North Korean human rights situation within South Korea and the international community.

FNKR started Internet broadcasting toward North Korea in December 2003, and it has now expanded its activity to short-wave radio, broadcasting for five hours per day.

FNK Network consists of FNKR, which delivers democracy and the latest news from the world; NK Information Center, which provides North Korea-related confidential information; NK Defectors Rescue Center, which is committed to rescuing North Korean defectors from repatriation to North Korea; and Voice of Freedom Radio, which delivers the Gospel to the North Korean people.

Based in Seoul, South Korea, FNKR broadcasts news of the outside world across the border. Since it is illegal for North Koreans to listen to anything other than state-run radio, and all legal radios are fixed so they can play only channels approved by the government, the station believes that many North Koreans are secretly tuning in. FNKR's on-air reporters and the station's operators don't know for sure whether their target audience is listening.

The founder of FNKR, Kim Seong-Min, also a defector, was a former propagandist for the North Korean army and says he collected an illegal radio on one of his patrols. He was curious, so he tuned in to a South Korean broadcast. The program centered on the leader of North Korea, Kim Jong Il, and sought to dispel the myths surrounding the leader, including the story of his birth. North Koreans are taught to believe that Kim Jong Il was born on Mount Paekdu, considered sacred in Korean history. But the radio program Kim heard that day said Jong Il was born in the Soviet Union. Kim started to doubt everything he was taught to believe, and the more he listened, the more he was convinced he had to leave the country.

After defecting, Kim decided to beam shortwave broadcasts into the North. "We want to contribute to the downfall of the North Korean regime," Kim says. "Not in a forceful, violent way, but by teaching North Koreans what democracy means, so they will initiate change themselves."

The radio program was initially only three hours a day, but Kim was able to expand it to five hours daily, broadcasting during the evenings and late at night, when most North Koreans are able to tune in. Running a radio station is expensive and FNKR relies on donations from South Korean citizens as well as an annual grant indirectly from Washington, through the National Endowment for Democracy. Though funding is sometimes a struggle, they believe that the broadcast is vital to North Korea because the South Korean government stopped its own radio broadcasts into the country under the "Sunshine Policy" instituted by former President Kim Dae-jung in 1988.

There's no way to definitively determine how many North Koreans are actually listening to FNKR, but research by a Christian organization in North Korea found 17 percent of those surveyed had listened to the station. And Kim says he receives letters and phone calls almost daily from defectors who say they were able to hear his program through radios bought on the black market.

Kim believes the North Koreans try to jam their radio signal into North Korea and says the North Koreans have called him a traitor. If he were ever to return to his homeland, Kim says, he would receive "the highest punishment" for his work. But he and the other staffers at FNKR all believe that it is worth the risk.



Kim Seong-Min.

FNKR staff member Min Jae Oh says that FNKR will continue to encourage the North Korean people to establish for themselves a democratic, sovereign, and liberal government. In order to achieve this historic goal, FNK Network will strive to broadcast more influential, relevant, and practical programs, and to provide North Korea's hidden truth as well.

Just eight people work for FNKR. Six are North Korean defectors who've made the long and dangerous trek to freedom in South Korea. Kim is the only North Korean on staff at the radio station who uses his real name; the others use pseudonyms to protect their families who are still living in the North.

The current schedule for transmissions of FNKR to North Korea is 1100–1200 UTC on 12155 kHz from Dushanbe-Yangiyul, Tajikistan with 100 kW on a 070-degree azimuth; 1300–1500 UTC on 15645 kHz from Dushanbe-Yangiyul, Tajikistan with 100 kW on a 070-degree azimuth; and 1900–2100 UTC on 7530 kHz from Gavar, Armenia, with 300 kW on a 065-degree azimuth. Watch for changes in broadcast times and frequencies for FNKR in Gerry Dexter's "Global Information Guide" column.

All programs are in the Korean language, but the station readily responds to English language reception reports that are sent to it electronically. Although I sent my report to the station at Mini6915@hanmail.net, the reply came from Min Jae Oh at njoh6701@naver.com. Alternatively, you can try reaching the station via postal mail:

Free North Korea Radio
Yang Cheon P. O. Box 92
Mok-dong
Yangcheon-gu
Seoul 158-600
South Korea

As always, remember to send in the FNKR logs and QSL illustrations to editor Gerry Dexter for the "Global Information Guide." Good luck with this DX target.

Warm Your Winter Nights With QSL Reminiscing

If Asked To Choose Your Favorite Station Verifications, Could You...?

by Edward J. Insinger, WDX2RVO

II How's this for a radio challenge? If you had to choose only 10 verifications in your collection, based on those that hold the greatest significance and fondest memories, which ones would you select? Not an easy choice by any means, regardless of the size of your QSL collection. If you do set yourself to the task, however, I think you'll find it extremely enlightening, as I did. And now is the perfect time to spend over those cherished items, sorting, reminiscing, and even choosing your favorites.

Winter's long evenings, cold weather, and snowy conditions have all but the hardest of us nestled into the warmth of our homes. Plus, with the Holiday Season now behind us, we hobbyists have additional time to roam the bands during this peak listening season. But even in the peak DX season, there are times when propagation conditions don't allow for favorable reception. When that happens, don't be dismayed—take advantage of it: turn off the receiver and instead focus your attention on those prized QSLs that have become such an integral part of our hobby.

It's a great chance to peruse your QSL collection, reviewing older cards and letters from your earliest days in the hobby, while logging in those new additions that now grace your collection. You may even

Edward J. Insinger has been a shortwave enthusiast since 1968. He continues to roam the bands, seeking out new DX catches and stations—and verifications—from the far corners of the Earth.



My first QSL card, from Radio Nederland, featured Eddie Startz, the host of the Happy Station and spreader of "Peace, Cheer and Joy."

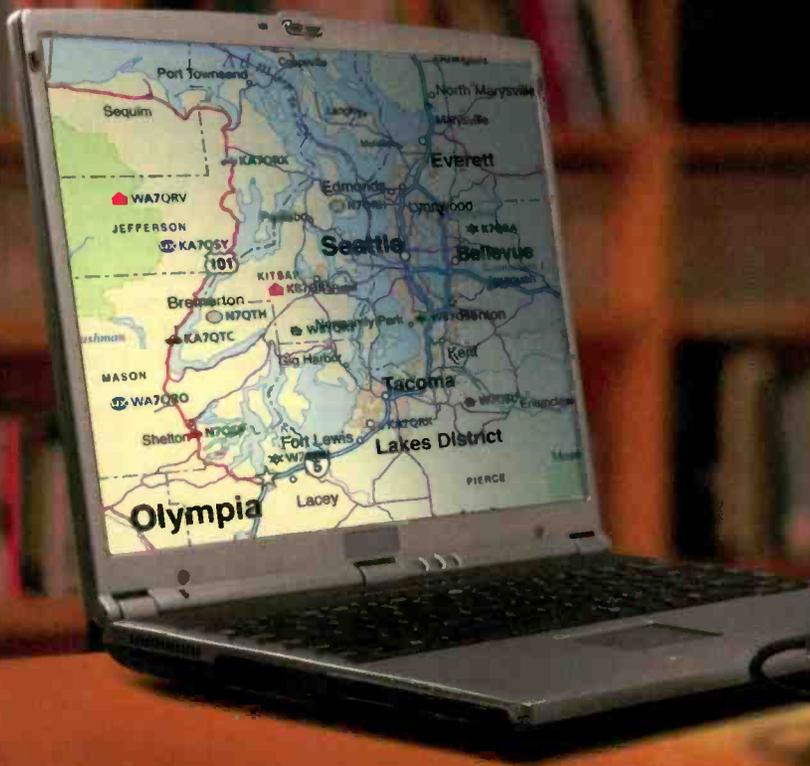
find that it helps you refocus on what's most important to you in your hobby.

An Exercise In Priorities

"So you want me to choose just 10 verifications? Is this an episode of *Survivor*? How on earth am I supposed to eliminate so many others?" I hear you ask with a chuckle. True, for those of us who value our collections it poses quite a dilemma. However, it's also a chance to place the hobby in perspective as you review your "veries," recalling shortwave stations

logged and confirmed, each card or letter with its own unique story to tell about the programs heard, where you were, what receiver you were listening to (see sidebar). It a great way to help you relive and better understand your own radio journey.

So fix yourself the warm beverage of your choice and give it a shot (I mean the activity, not the beverage!). As you review your collection, you'll enjoy the memories it brings back as you reminisce over QSL cards and letters you haven't seen in a long time or rediscover some



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“If you had to choose only 10 verifications in your collection...which ones would you select?”

that were forgotten over the years. (Veteran DXers who have been around the bands many times over will certainly be able to relate to this!)

My Top-10

Coming up with my own Top 10 took a lot of careful thought. I'd like to share those with you now, along with my reasons for choosing them and just a few of the many memories and other associations they still bring back for me.

QSL Number 1: First QSL Received

Radio Nederland, Hilversum, Holland. It was November 1968 when I received this, my very first QSL card. Getting it was an important benchmark for me in this newfound hobby. In addition, the QSL commemorated the 40th Anniversary of the Happy Station, providing a biography of its host, Eddie Startz. His unique story as a radio personality began in 1928, when he was appointed announcer and commentator at the experimental Phillips Station PCJ. This station began its journey of carrying “Peace, Cheer and Joy” over Radio Nederland transmitters. This friendly and upbeat ambassador gained a huge audience of shortwave listeners. He began referring to them as “WLHF,” the call letters translating to World’s Largest Happy Family. My reception report yielded verification in record time to this very day: I received it five days after mailing!

QSL Number 2: First Reception Report

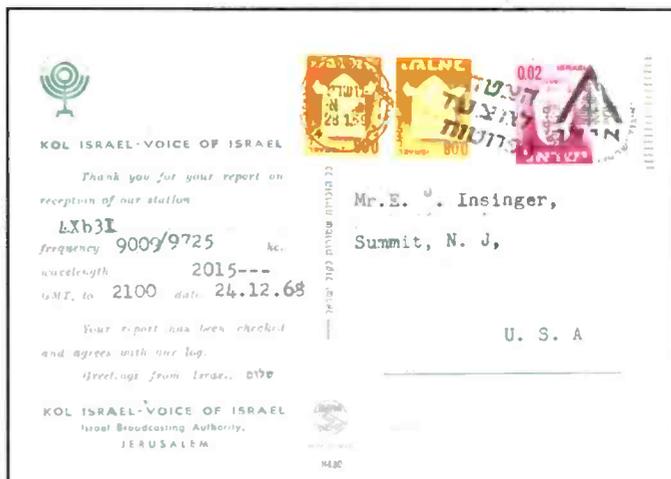
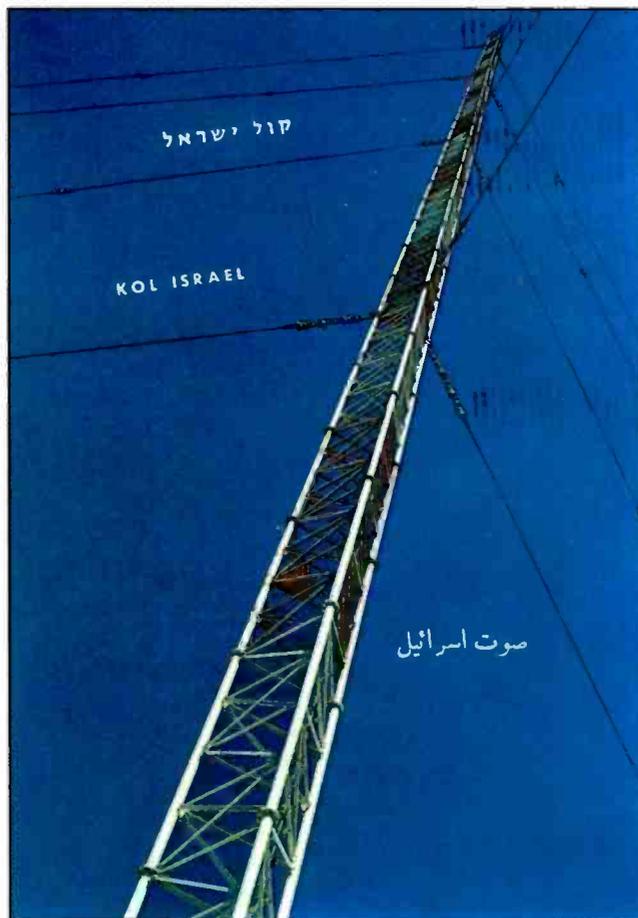
HCJB, Quito, Ecuador. In September of 1968, my first QSL request was sent to the Voice of the Andes for a Sunday morning broadcast. I had been fascinated by the fact that HCJB was nestled high in the Andes Mountains of South America, and I was delighted when a mere two months after my request a QSL card was received. This was the beginning of a long friendship that developed with the station, which sent me many reception reports over the years that comprise my extensive HCJB QSL collection. Interestingly, one such QSL came with a three-page letter answering my question about the steps that must take place from receipt of my reception report at the station through the issuing of a QSL card. It made for fascinating reading and provided this novice with insight into the entire process.

QSL Number 3: First DX Catch

Windward Islands Broadcasting Service, Grenada, West Indies. Everyone recalls their very early days in the hobby and one of my favorite memories goes back to 1968. I had been scanning the bands as a shortwave listener after building my first radio, a Heathkit GR-64 AM/SW receiver with a four-vacuum tube circuit. Shortly thereafter, having installed an outdoor aerial, I logged Radio Grenada. This became such a special achievement for me because this receiver was very basic in design and yet I was able to snag this tiny station of 5000 watts. Once my QSL card of verification came, I was even more pleased at my accomplishment: this broadcast was beamed toward the British West Indies! I've since concluded that this was my very first “true DX catch” on shortwave.

QSL Number 4: A Very Special Broadcast

Kol Israel, Israel Broadcasting Authority, Jerusalem. Logging a station from the Holy Land was a special treat for me and I had the pleasure of hearing Kol Israel many times. Fortunately for many hobbyists the station was easy to hear thanks to its powerful transmitters and the use of frequencies that were interference-free. However, the real enjoyment occurred on December 24th, when Kol Israel carried the Midnight Mass from Bethlehem live on shortwave. Listening from my Summit, New Jersey, location to the birthplace of



My QSL verifying reception of Kol Israel's December 24th Midnight Mass transmission from Bethlehem.

Christianity on Christmas Eve at the stroke of midnight—all via live radio—was an experience I will never forget.

QSL Number 5: Enchanting Island Music

ORTF-Radio Tahiti, Papeete, Tahiti, South Pacific. My Radio Tahiti QSL stands out as a reminder of the most enchanting and exotic music I have ever heard on shortwave. I truly was carried away from my listening post in New Jersey to the South Pacific and felt I was on a remote white sandy beach or a tropical cruise. And to make the listening “trés romantique,” as the Polynesians would say, the entire broadcast was in French, so my high school study of the language came into play as I composed my reception report. I was rewarded for my efforts with beautiful Tahitian stamps and an equally beautiful mermaid QSL card that is a reminder of the broadcast and music that captured my heart and imagination.

QSL Number 6: Amidst the Tide of War

Radio Liberation, South Vietnam. On September 29, 1972, as the Vietnam War was winding down, I picked up a broadcast from Radio Liberation in French. There is some uncertainty as to where the transmitter for Radio Liberation was located; however, I received a QSL letter for my reception report (also in French) that listed the location as “Sud Vietnam,” handwritten on the envelope flap and typed on the top of the verification letter. Placed in a broader perspective, this shortwave logging was

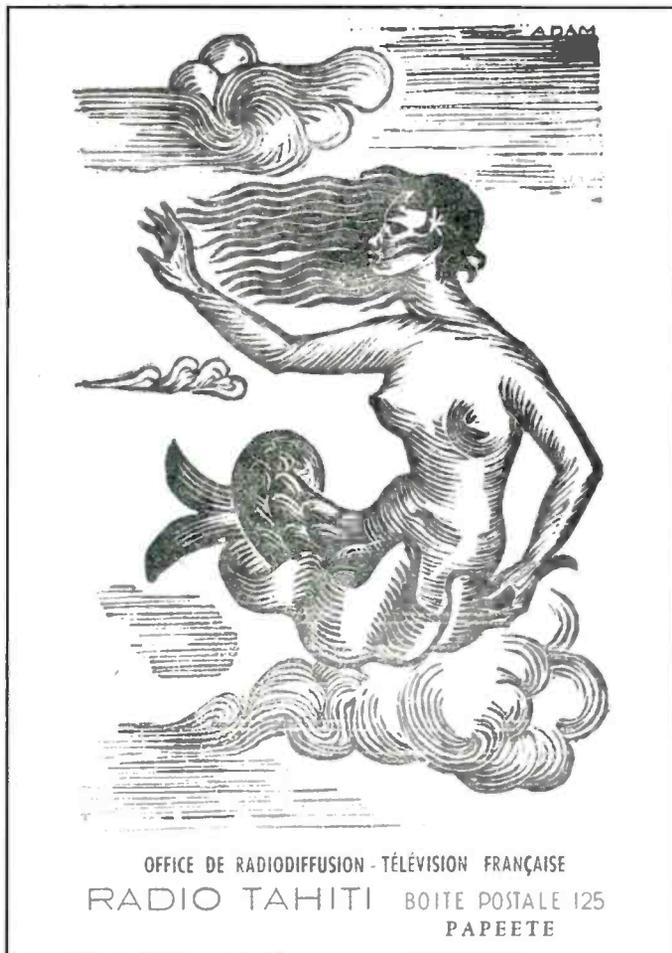
of great significance to me. After the war ended, there was no longer a geographic division between North and South Vietnam, so I had logged and verified a country that no longer existed. If indeed Radio Liberation did broadcast from South Vietnam, I possessed a QSL verification from another time and another place in history, changed by the tide of war.

QSL Number 7: From the Island of Sicily

RAI—Radio Roma Domestic Service from Caltanissetta, Sicily. RAI used to broadcast a program called “Roma O.C.” every evening on 6060 kHz, which was audible here in North America. On this frequency, it was also possible to hear a broadcast from RAI’s transmitter site in Caltanissetta, Sicily. The entire program was broadcast in Italian, but I was able to understand enough to send a reception report. I requested that they kindly include the transmitter site on the QSL card. This was an opportunity to log a new country as well, since the NASWA Country List recognized Sicily as geographically separate from Italy. No man is an island, but this beautiful strip of land surrounded by the waters of the Mediterranean was a great DX catch for shortwave hobbyists. The forthcoming QSL listed the transmitter site as Caltanissetta, and I take great pleasure reminiscing over it with my wife, who was born in Sicily.

QSL Number 8: The Birth of a Country

Radio Bangladesh, a new voice on shortwave. In December



Nous avons le plaisir de confirmer votre rapport d'écoute du 1 JUIL. 73e 03 H 40 heures G.M.T. à 03 H 58

Nous émettons tous les jours de la semaine de 15.170 KHz

16 h00 à 19 h00 G.M.T.
 20 h45 à 23 h30 G.M.T.
 3 h00 à 7 h00 G.M.T.

et le dimanche de 19 h00 à 23 h30 et de 3 h00 à 7 h00 G.M.T. sur les longueurs d'ondes ou fréquences suivantes :

Gamme	Fréquences	Long. d'onde	Puissance
OM	740 KHz	405 m 40	20 KW
OC	3.223 KHz	93 m 09	4 KW
OC	6.135 KHz	48 m 90	4 KW
OC	11.825 KHz	25 m 37	20 KW
OC	15.170 KHz	19 m 78	20 KW

PAR AVION

U. S. A.

STREET, N.J. 07901

MR. EDWARD J. INSINGER

Papeete 71

POLYNESIE FRANCAISE POSTES

71

POLYNESIE FRANCAISE POSTES

Radio Tahiti verified, with this enchanting mermaid, my catch of its equally enchanting music. The QSL was also adorned with lovely Tahitian stamps.

1971, the former East Pakistan gained its liberation from West Pakistan and became the independent nation of Bangladesh. In a letter dated 21 April, 1972, Mr. M. Muhaddes of the newly formed Government of the People's Republic of Bangladesh wrote: "It has been heartwarming for us to know that you listen to our programmes." A QSL card was received afterward for reception of Radio Bangladesh on 5 April to 8 April 1972. Since Bangladesh as a country was still in its infancy, the QSL contained postage stamps from Pakistan. This was one of those rare opportunities as a hobbyist to be a part of the birth of a new nation via shortwave radio.

QSL Number 9: *Clandestine Logging*

Radio Euzkadi, the Voice of the Basque Underground. Operating on an out-of-band frequency of 13250 kHz, Radio Euzkadi was audible in North America. A reception report sent to its Paris office yielded a prized QSL for me. The transmitter regularly suffered from jamming of its signal, and what really personalized this QSL was the typewritten note on the reverse side, in response to my reception report noting the presence of "intentional interference." It really made this clandestine station's QSL card all the more special.

QSL Number 10: *A Valuable Reception Report*

Radio Vaticana, Vatican City State. In a letter dated 15 March 1969, Chief Engineer Michele Lemme wrote to thank me for my reception report of Radio Vaticana on 6145 kHz to North America, saying:

Due to your precious information about 6145 kHz, we will switch

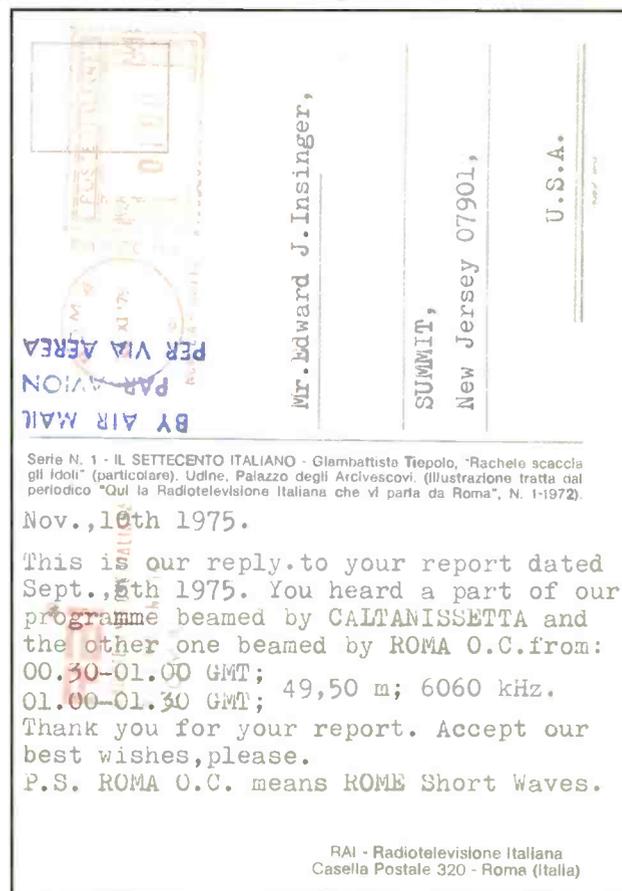
A Wonderful Side Road Off Memory Lane

While hard at work choosing my own Top 10 list and enjoying the many memories doing so brought back, I found myself reminiscing fondly about some of my favorite equipment, too—the radios I was using when just starting out in the hobby. I especially loved the gear from the days when tube receivers were in vogue and power supplies were either separately encased on their own chassis or fit into the massive and large cabinets. Though they took up a great deal of space and weighed a ton, these units were anchored against a hefty chassis and were well ventilated. Such was my Hammarlund (Super Pro) SP-400-X Receiver.

This ruggedly built receiver from 1946 became a most welcomed addition to my radio shack, offering general coverage of all shortwave bands, excellent selectivity, several bandwidths, and powerful, rich audio. Beyond these useful features, I soon came to appreciate the fact that the power supply cranked out radiant heat that warmed the corner of my listening post, just like one of those electric space heaters. If you looked inside the exposed top of the power supply, you could also see the large vacuum tubes glowing orange through their glass enclosures.

This was also true of my Hallicrafters SX-100 Mark II, though to a much lesser degree. The perforated steel-hinged cover allowed a good amount of heat to radiate upward from the right side of the receiver, where the power transformer and vacuum tubes reside. It, too, was a welcome source of heat as I touched the cover on a cold winter's evening.

What radios do you have warm memories of?



I caught RAI's signal via its transmitter in Caltanissetta, Sicily, and received this beautiful QSL for my reception report.

RADIO EUZKADI EUZKADI IRRATIA

Date: 13-aout 2012 19h

20.30 GMT 23 m. 13.250 KHz.
 21.30 GMT 80 K W 19 m. 15.000 KHz.
 22.30 GMT ... m. ... KHz.

"La Voix de la Resistance Basque"
 "The Voice of the Basque Underground"

Basques were a free nation throughout history. Franco's uprising in 1936, assisted by Hitler and Mussolini, crushed the Basques depriving them of their ancient freedom. Now under Spanish rule, without elementary human rights, Basques fight under cover to restore democracy to their land.

Les Basques: un peuple uni par l'histoire, par sa langue et par sa volonté de vivre en liberté. Le but de notre lutte est une Euzkadi libre dans une Europe unie en délivrant le peuple basque de la tyrannie.

— Votre rapport d'écoute est d'accord avec notre programme.
 Nous vous remercions vivement.

— Your listening report agrees with our programming schedule.
 We feel much obliged for your appreciable help.

PAR AVION 1.40

Mr. Edward J. Insinger
 Summit, N.J. 07901
 U.S.A.

Radio Euzkadi
 R. P. 59
 Poste Centrale
 75 - PARIS (16)
 France

Thank you very much for your report. We are happy to know that even, with the "jamming" we still have listeners!

Radio Euzkadi, the Voice of the Basque Underground, sent this QSL via France. Note the reference to "jamming" on the back of the card.

this channel in the 19 meter band, starting from next March 18... We thank you once again for your valuable collaboration.

As of March 18, Radio Vaticana switched to a higher frequency, abandoning 6145 kHz. Knowing that my reception report played a part in this change was one of those very special occurrences in the hobby. My continuing reception reports were indeed appreciated. In 1983, I received a parchment from Mr. Lemme, in acknowledgment of my efforts as an Official Technical Monitor.

What's In Your Top 10?

Trying to choose your own favorite 10 verifications out of your collection can be a daunting—perhaps nearly impossible task—but I guarantee it will also be a very enjoyable one. As you review your prized verifications, wonderful recollections will resurface about the programs heard, the radios listened to, and many other special moments in the hobby.

Perhaps asking you to choose 10 is too difficult, though. After all, what about that QSL folder from Radio Greenland? Or the verification letter from St. Denis, Reunion Island? That recent prize QSL from Radio St. Helena? Maybe it's best to just pour another cup of hot chocolate and expand that list to 20. I'm sure you've got memories to spare.

The Committee To Preserve Radio Verifications

Veteran DXers and QSL card collectors may already be aware of a terrific organization known as the Committee to Preserve Radio Verifications (CPRV), which is associated with the Library of American Broadcasting at the University of Maryland (see pl703.pairlitesite.com).

For those of you who aren't familiar with it, the Committee was established in 1986 in order to collect, archive, and preserve QSL cards and letters donated from inactive listeners and their families. In its effort to preserve radio verifications, the Committee promotes awareness of a central repository where inactive listeners, families of deceased hobbyists, or anyone else who chooses to can send QSL collections to protect them against loss or destruction.

To ensure that these prized possessions live on, the Committee will send hobbyists special stickers that can be affixed to QSL albums. These stickers express a message that the hobbyists would like their collections to be donated to the Committee once they are no longer able to enjoy them. The names of all members on the Committee are listed on the website given above, along with their contact information. You can also get more information by sending a business-size self-addressed stamped envelope (SASE) to John Herkimer, Registered Collections Coordinator, Committee to Preserve Radio Verifications, P.O. Box 54, Caledonia, NY 14423.

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AR2300 "Black Box" Professional Grade Communications Receiver

First in a new generation of software-controlled black box receivers, the AR2300 covers 40kHz to 3.15 GHz* and monitors up to 3 channels simultaneously. Remote control functions. Internal SD audio recorder allows for unattended long term monitoring. Spectrum recording with optional AR-IQ software can be used for laboratory signal analysis. Using FFT, the unit scans large frequency segments quickly and accurately. Optional IP control port.

AR5001D Professional Grade Wide Coverage Communications Receiver

With amazing performance in terms of accuracy, sensitivity and speed, the AR5001D features ultra-wide frequency coverage from 40kHz to 3.15GHz* in 1 Hz steps with 1ppm accuracy and no interruptions. Large easy-to-read digital spectrum display and popular analog signal meter. The AR5001D makes it easy to monitor up to 3 channels simultaneously. Can also be controlled through a PC running Windows XP or higher. Great as a mobile or desktop receiver.



AR-Alpha with I/Q Control Software

Welcome to a new class of professional monitoring receivers. The AR-Alpha can perform unattended datalogging for extended periods and covers 10kHz to 3.3GHz* continuous, with no interruptions. It boasts a 6-inch color TFT monitor that displays spectrum bandwidth, a switchable time-lapse "waterfall" display or live video in NTSC or PAL. Five VFOs, 2000 alphanumeric memories that can be computer programmed as 40 banks of 50 channels, 40 search banks, a "select memory" bank of 100 frequencies and a priority channel. Also includes APCO-25 digital capability and can record up to 52 minutes of audio.

AR-One Communications Receiver

Enjoy total command of frequencies, modes and tuning steps with this versatile performer that allows you to control up to 99 units with a single PC. Covers 10 kHz to 3.3 GHz and delivers excellent sensitivity, ultra-stable reference frequency oscillator, high intercept, adjustable BFO and multi-IF signal output (10.7 MHz or 455kHz) plus 1000 memory channels and 10 VFOs.



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AR8200 Mark III World Class Portable Receiver

With 1,000 alphanumeric memories and a TCXO that delivers solid frequency stability and performance not found in most desktop units, the AR8200 Mark III covers 500 kHz to 3GHz* and can be used with optional internal slot cards that expand its capabilities. It features true carrier reinsertion in USB and LSB modes and includes a 3kHz SSB filter. The data port can be used for computer control, memory configuration and transfer, cloning or tape recording output. A special government version, AR8200Mark III IR, features user-selectable infra-red illumination of the display and operating keys.

AR8600 Mark II Wide-Range Desktop Receiver

With an optional P25 (APCO25) decoder module, improved front end and receive audio response, display illumination control, ultra-stable TCXO and up to four optional cards that can enhance certain functions, the AR8600Mark II covers 100kHz to 3GHz* with 1000 alphanumeric memories and free downloadable control software. Receives WFM, NFM, Super-narrow FM, Wide and Narrow AM, USB, LSB and CW.



AR-STV Handheld Video Receiver

See who is watching you on wireless video surveillance cameras. The AR-STV handheld receiver detects hidden NTSC or PAL analog video signals in real time. A valuable addition to any security operation, the AR-STV features a large 2.5 inch color LCD display and a USB connector that makes it easy to download stored images into a computer. With optional 4GB SD memory card, up to nearly 2000 images can be stored for later analysis.



SR2000A Spectrum Display Monitor

Ultra sensitive, incredibly fast, yet easy to use, the SR2000A lets you SEE received signals in FULL color. Using the power of FFT, it covers 25 MHz to 3GHz* and features a color monitor that displays spectrum bandwidth, a switchable time-lapse "waterfall" display or live video in NTSC or PAL. High quality internal speaker delivers crisp, clean audio signals. Scans 10 MHz in as little as 0.2 seconds. Instantly detects, captures and displays transmitted signals. PC control through RS232C serial port or USB interface. With 12 VDC input, it's perfect for base, mobile or field use.



Whatever the monitoring need, AOR products deliver exceptional performance for use by federal, state and local law enforcement agencies, the military, emergency managers, diplomatic service, news-gathering operations, and home monitoring enthusiasts.

Scanning South Florida—Part II

by Ken Reiss
radioken@earthlink.net

“This month we continue, moving up the coast a bit to Broward and Palm Beach Counties.”

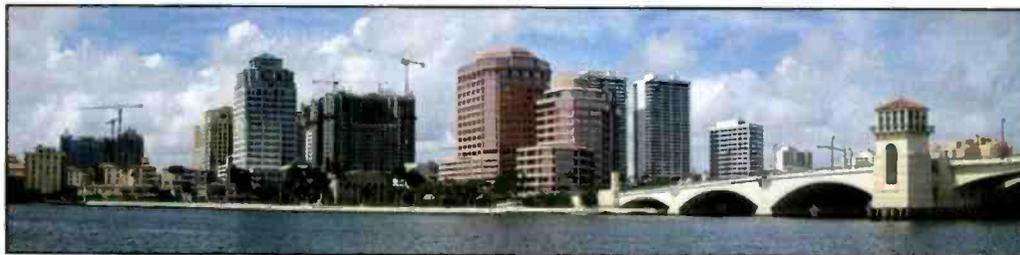
With snowbirds, college kids, and families all seeking warmer climes, the Sunshine State is in our scanning spotlight. Last month we began our look at South Florida with the Miami Dade area. This month we continue, moving up the coast a bit to Broward and Palm Beach Counties. There’s a lot to listen to in these popular tourist destinations, so grab your scanner and load in some frequencies. Don’t forget to look back at December 2009 for more great information on the State of Florida as well.

While there’s so much activity on those frequencies that we could probably continue this series for quite a while, just working up and down the Florida Coast, next month we’ll move on to another area, so check back with us for more interesting scanning destinations.

Again, we’ve got a lot of ground to cover, so let’s dive right in. Until next time. Good Listening!



The uniform patch of the Broward County Sheriff's Office. (Courtesy conner395 at flickr.com)



West Palm Beach skyline. (Courtesy Andyxox, via Wikimedia Commons)



Broward County Sheriff's Department patrol car. (Courtesy Christopher Ziemnowicz, via Wikimedia Commons)



Interior of a Broward sheriff's unit. (Courtesy Christopher Ziemnowicz, via Wikimedia Commons)

Scanning Broward And Palm Beach Counties

The main system in Broward County is a Motorola Type II with both analog and APCO 25 digital traffic.

Site	Name	Freqs							
1	Primary	855.2375	856.4875	856.7375	857.3625	857.4875	857.7375	857.9875	858.3625
		858.4875	858.7375	858.9875	859.3625	859.4375	859.4875	859.7125	859.7375
		859.9875	860.23750c	860.48750c	860.73750c	860.98750c	866.1875	866.6875	867.0375
		867.7125	868.0625	868.1875	868.7625				
2	Deerfield Bch	856.76250a	857.76250c	858.76250c					
3	Hollywood	866.08750c	866.3375	866.5875	866.7125	866.8375	867.0875	867.3375	868.2125
		868.71250c							
4	Ft Lauderdale	866.2125	866.2375	866.26250c	866.41250c	866.6625	866.91250c	867.1875	867.2125
		867.2625	867.6125	867.6375	867.8375	867.86250c	867.8875	868.0375	868.0875
		868.2875	868.3125	868.3375	868.5375	868.5625	868.5875	868.7875	868.8125
		868.8375	868.9125						
5	Plantation	858.2625	859.26250c	860.26250c	860.76250c				

Broward County Firecom Talkgroups

DEC	Description
592	12A Tac
8208	North Dispatch - Port Everglades (Station 6), Airport (Station 10), Lauderdale By The Sea (Station 12), Lighthouse Point (Statio
8240	Central Dispatch
8272	South Dispatch - Davie (Stations 38,65,68,91,104), Hallandale Beach (Stations 7,60,90), Southwest Ranches (Station 82), BSOFR Co
8304	Brwd Svp
8336	Brwd HQ
8368	North Echo car-to-car
8400	Central Echo car-to-car
8432	South Echo car-to-car
8464	Delta common car-to-car
8496	Tactical Alpha
8528	Tactical Bravo
8560	Tactical Charlie
8592	Special
8624	Tactical Juliet
8656	Chiefs
8688	Admin
9072	HS Mgmt
9136	Support
9168	City Spv
9200	West Echo car-to-car
9232	West Dispatch - Lauderdale (Stations 30,57,73,110), Tamarac (Stations 15,41,78), Oakland Park (Stations 9,20,87),North Lauderdale
9264	M Aid 2
9296	Areawide Echo car-to-car
9328	6F Disp
9360	9A Tac
9392	9B Tac
9424	9C Tac
9456	9D Tac
9488	9E CC
9520	9F Disp
9552	9G Tac
9584	9H Tac
9616	9I Tac
9648	9J Tac
9680	9K Tac
9712	9L Tac
9744	9M Tac
9776	9N Tac
9808	9O Tac

Broward County Medcom Talkgroups

DEC	Description
8720	Medical coordination
8752	Medcom 1 hospital patch
8784	Medcom 2 hospita patch
8816	Medcom 3 hospital patch
8848	Medcom 4 hospital patch
8880	Medcom 5 hospital patch
8912	Medcom 6 hospital patch
8944	Medcom 7 hospital patch
8976	Medcom 8 hospital patch
9008	Medcom 9 hospital patch
9040	Medcom 10 calling/channel assignment

Broward County Sheriff Talkgroups

DEC	Description
4112	BSO
4144	Dania (District 2), Port Everglades (District 14), Airport
4176	Weston (District 8), Southwest Ranches (District 9), Cooper City (District 16)
4208	Pembroke Park, W Park, & South (District 1), Hallandale Beach (District 28)
4240	Davie (District 21)
4272	CDC Dispatch
4304	Central UnInc (District 5), Lauderdale
4336	Detention 1
4368	Oakland Park (District 12), Lauderdale Lakes
4400	Tamarac (District 7), North Lauderdale (District 15), Parkland (District 17)
4432	Deerfield Beach (District 10), Lauderdale-by-the-Sea (District 13), Sea Ranch Lakes (District 13), Lighthouse Point
4464	Miramar (District 23)
4496	TechSupt
4528	Narc N
4560	I.A.
4592	Car-to-Car
4624	Car-to-Car
4656	Omega G PD
4688	Community Services/School Resource Officers
4720	Car-Car
4752	FLL Airport Detail - Tactical
4784	Charlie Central (District 5), Oakland Park (District 12) Tactical
4816	TTY D
4848	MIU
4880	Civil Division
4912	Tactical
4944	Narcs South

20624	Emergency Operations Center	52944	Announcement
20816	Building Dept Code Compliance	52976	Dispatch East
20848	Building Dept Construction Services - A	53008	Wide Area (Sites 1 and 2)
20912	Building & Zoning Department common	53040	Special Event 2
20944	Building Dept Construction Services - B	53072	Log On
21008	Lifeguards-B	53104	Detectives
21040	Rangers	53136	Street Crimes
21136	Parking and Fleet Services - A	53168	Tactical 1
21168	Parking and Fleet Services - B	53200	Tactical 2
21264	Surveyors	53232	Detectives Tactical
21296	Surveyors	53264	Information/Teletype
21328	Surveyors	53296	Dispatch West
21360	Surveyors		
21392	Surveyors		
21520	Public Services		
21552	Public Services		
21584	Bulk Trash		
21968	Utilities		
22000	Utilities		
22032	Environmental Engineering		
22064	Mechanics- B		
22096	Utilities		
22128	Utilities - Small Leaks Crews		
22160	Facilities Maintenance		
22192	Utilities		
22224	Public Services		
22256	Public Services		
22448	Parks and Recreation - Maintenance		
22512	Parks and Recreation - Park Rangers		
22544	Parks and Recreation - Snyder Park		
22768	Parks and Recreation - Events		
22800	Marine Facilities		
25840	Building Dept Community Inspections		
28688	Fort Lauderdale Global		
Hallandale Talkgroups			
DEC	Description		
6544	Hallandale Common		
6576	Hallandale Public Works 1		
6608	Hallandale Public Works 2		
6640	Hallandale Public Works 3		
Hollywood Fire/EMS Talkgroups			
DEC	Description		
53520	Announcement		
53552	Administration		
53584	Administration		
53616	Building		
53648	Beach Safety - Main (Lifeguards)		
53680	Seminole		
53712	EMS		
53744	North Dispatch (Hollywood)		
53776	South Dispatch (Dania)		
53808	Inspectors/SWAT		
53840	Logistics		
53872	Beach Safety - Tactical 1		
54128	Tactical 1 - North		
54160	Tactical 1 - South		
54192	Tactical 2 - North		
54224	Tactical 2 - South		
54256	Tactical 3 - North		
54288	Tactical 3 - South		
54320	Training		
Hollywood Police Talkgroups			
DEC	Description		
52816	Vice/Intelligence/Narcotics		
52848	Vice/Intelligence/Narcotics Tactical		
52944	Announcement		
52976	Dispatch East		
53008	Wide Area (Sites 1 and 2)		
53040	Special Event 2		
53072	Log On		
53104	Detectives		
53136	Street Crimes		
53168	Tactical 1		
53200	Tactical 2		
53232	Detectives Tactical		
53264	Information/Teletype		
53296	Dispatch West		
Hollywood Services Talkgroups			
DEC	Description		
37968	Announcement		
38000	All Services		
38032	ALT 1		
38096	Ch. 4 Code Enforcement		
38128	CADM		
38160	FMNT		
38192	Parking Enforcement		
38224	Public Works 1		
38256	Public Works 2 (Solid Waste)		
38288	Parks and Recreation		
38320	Utilities 1 (Water Department)		
38352	Utilities 2		
38384	Utilities 3 (Water Department)		
38416	Utilities 4		
38448	Public Works 3		
38544	All Services to Police		
Miramar Talkgroups			
DEC	Description		
6352			
Miramar Fire/Rescue Talkgroups			
DEC	Description		
26704	Fire Main		
26736	TAC 1		
26768	TAC 2		
26800	TAC 3		
26832	TAC 4		
26864	TAC 5		
26896	TAC 6		
26928	TAC 7		
26960	TAC 8		
26992	TAC 9		
27024	Operations		
27056	Administration		
27088	Training		
27120	EMS		
27152	Fire-Life-Safety		
North Lauderdale Talkgroups			
DEC	Description		
6480			
Oakland Park City Services Talkgroups			
DEC	Description		
23632	Water Dept Customer Service		
23664	Municipal Services		
23696	Sanitation		
23728	Parks & Recreation		

Boca Raton Talkgroups

DEC	Description
5840	Police Dispatch 1
5872	Police 2
5904	Police Car-to-Car 3
5936	Police Operations
5968	Police Operations
6000	Police Operations
6032	Police Car to Car
6064	Police Training
6192	Fire/Rescue with Florida Atlantic University (BRFR-FAU1)
6224	Parking Lot Ops
6256	Florida Atlantic University Police
6288	Police Training
6480	Boca Fire Main
6512	Boca Fire Tac 2
6544	Boca Fire Tac 3
6576	Fire/Rescue 16 Special Operations
6608	Fire/Rescue 6 Life Safety 1
6640	Fire/Rescue 7 Life Safety 2
6672	Fire/Rescue 8 Life Safety 3
6704	Fire/Rescue 4 Administration 1
6736	Fire/Rescue 5 Administration 2
6768	Fire/Rescue 9 Logistics 1
6800	Fire/Rescue 10 Logistics 2
6832	Fire/Rescue 11 Training 1
6864	Fire/Rescue 12 Training 2
6928	Fire/Rescue 15 CERT
6960	Fire/Rescue 14 Airport Tower Patch
7536	PD Surveillance
35792	MEDCOM Med Control 2
35824	MEDCOM MED 6
35856	MEDCOM MED 7
35888	MEDCOM MED 8
35920	MEDCOM MED 9
35952	MEDCOM MED 10
36112	Encodes to Bethesda Medical Center
36144	Encodes to Delray Medical Center
36176	Encodes to Boca Raton Community Hospital
36208	Encodes to West Boca Medical Center
55376	Water Department
55504	Recreation Services - Lifeguards (Fire Dispatch Patch, Fire/Rescue Ch. 13)
55536	Recreation Services
55568	Recreation Services - Irrigation
55600	Utility Services Main
55632	Utility Services Talk 2
55664	Utility Services Talk 3
55760	Streets
55824	Engineering
55856	Streets 2
55952	Lifeguards
55984	Animal Control
56016	Signals
56048	Fleet Maintenance

Boynton Beach Talkgroups

DEC	Description
4144	South Hub Interop
7120	Police Dispatch
7152	Police Teletype
7184	Police Car-to-Car
7408	Police - Traffic Units
7760	Fire Dispatch
7792	Fire Tactical 2
7824	Fire Tactical 3
7856	Fire Operations

7888	Fire Operations
8016	Fire Operations
52000	Boynton Beach ALL 2
56784	Parks
56816	Recreation 1
56912	Senior Center/Transportation
57072	Recreation 2
57136	Recreation 3
57168	Boynton Beach ALL 1
57200	Boynton Beach ALL 2
57296	Facility Management
57328	Lifeguards
57392	Code Enforcement

Delray Beach Talkgroups

DEC	Description
3216	Police Dispatch
3248	Police Information
3280	Police Operations
3312	Police Operations
3344	Police Tac-5
3376	Police Tac-6
3408	Police Tac 7
3536	PD OPS Surveillance
3600	Citizen Patrol
3632	PD/FD Common
3760	Fire Dispatch
3792	Fire Tac-2
3824	Fire Tac-3
3888	C.E.R.T.
3920	Fire 6A - Administration
3984	Fire Training
29520	Police-Fire Common 1
29552	Police-Fire Common 2
29584	Police-Fire Common 3
29616	Police-Fire Common 4
57488	Code Enforcement
57520	Local Gov
57552	Lifeguards
57712	MDT
57776	Police-Fire-Local Government 1
57808	Police-Fire-Local Government 2

Greenacres City Talkgroups

DEC	Description
52592	Police Dispatch
52624	Police Tac/Info

Highland Beach Talkgroups

DEC	Description
60176	Police 1
60208	Police 2

Juno Beach Talkgroups

DEC	Description
42832	Reserved
42864	Reserved
42896	Reserved
42928	Reserved
42960	Reserved

Lake Park Talkgroups

DEC	Description
44080	Services 1
44144	Services 2

Lake Worth Talkgroups

Police services provided by PBSO District 14. Dispatch on 10a. Car-to-Car on 10b.

Lantana Talkgroups

DEC Description
 54000 Police Dispatch
 54032 Police Channel (South Palm Beach)

North Palm Beach Talkgroups

DEC Description
 44656 Police - Dispatch
 44688 Police - 2

Ocean Ridge Talkgroups

DEC Description
 60240 Police Dispatch

Palm Beach Shores Talkgroups

DEC Description
 48240 Police
 48272 Police
 48304 Police

Port of Palm Beach Talkgroups

DEC Description
 42064 Security

Riviera Beach Talkgroups

DEC Description
 48336 Police Dispatch
 48368 Police Car-to-Car
 48400 Police Information
 48432 Police Detectives
 48464 Police COP
 48496 Police Code Enforcement
 48528 Police Administration
 48560 Police Special Event
 48720 Rivieria Common

Palm Beach County Fire/Rescue Talkgroups

DEC Description
 34192 Fire/Rescue Main (Station Alerting for all stations, including all cities served (Lake Worth, North Palm Beach, West Palm Beach
 34224 TAC 2A (Communications stations Tequesta 85, 14, 15, 16, 17, 18, 19, 61, 62, 63, 64, 65, 67, 68, 72, 73, 74)[North & West]
 34256 TAC 3A (Communications stations 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 33, 34, 36,39,91,92,93, 94, 95)[Central, Lake Wo
 34288 TAC 4A (Communications stations 32, 35, 37, 38, 41, 42, 43, 44, 45, 46, 47,48, 51, 52, 53, 54, 55, 56, 57, 58)[South]
 34320 TAC 5A (Communications stations 1, 2, 3, 4, 5, 6,7,8,86,87,88, and 89)
 34352 Tactical 6A (Tactical Fireground)[All departments/ assigned in order as needed]
 34384 Tactical 7A (Tactical Fireground)[All departments/ assigned in order as needed]
 34416 Tactical 8A (Tactical Fireground)[All departments/ assigned in order as needed]
 34448 Tactical 9A (Tactical Fireground)[All departments/ assigned in order as needed]



Town of South Palm Beach fire engine. (Courtesy Christopher Ziemnowicz, via Wikimedia Commons)

34480 Tactical 10A (Tactical Fireground)[All departments/ assigned in order as needed]
 34512 Tactical 11A (Tactical Fireground)[All departments/ assigned in order as needed]
 34544 Tactical 12A (Ambulance Communications)
 34608 Tactical 2B
 34640 Tactical 3B
 34672 Tactical 4B
 34704 Tactical 5B
 34736 Tactical 6B
 34768 Tactical 7B
 34800 Tactical 8B
 34832 Tactical 9B
 34864 Tactical 10B
 34896 Tactical 11B
 34928 Tactical 12B
 34960 Tactical 13B
 34992 Administration
 35024 Volunteers
 35056 TAC 13A (Communications station 81)
 35088 Investigations
 35120 Training and Safety
 35152 Supply/Warehouse
 35184 Radio Shop
 35216 Fleet Management
 35248 Fire SP1
 35280 Fire SP2
 35312 Fire SP3
 35344 Fire SP4
 35376 Fire SP5
 35408 Fire SP6
 35440 Fire SP7
 35472 Fire SP8
 35504 HazMat
 35568 Command 2C
 38384 Medcom Medical Control 1 (Ambulance Alerting)
 38416 Medcom Medical Control 2
 38448 Medic SP3
 38480 Medic SP4
 38512 Medic SP5
 38544 Medic SP6

- 38576 Medic SP7
- 38608 Medic SP8
- 38640 Jupiter Hospital ER
- 38672 Palm Beach Gardens Medical Center ER
- 38704 St. Mary's Hospital ER
- 38736 St. Mary's Hospital Pediatric ER
- 38768 Columbia Medical Center ER
- 38800 Riviera Beach Veterans Affairs Hospital
- 38832 Good Samaritan Hospital ER
- 38864 Lakeside Medical Center ER
- 38896 Palms West Hospital ER
- 38928 Palms West Ped ER
- 38960 Wellington Regional Hospital ER
- 38992 JFK Hospital ER
- 39024 Bethesda Memorial Hospital ER
- 39056 Delray Community Hospital ER
- 39088 Boca Raton Community Hospital ER
- 39120 West Boca Hospital ER

Palm Beach County Lifeguards Talkgroups

- | DEC | Description |
|-------|---|
| 40080 | Lifeguards - North |
| 40112 | Lifeguards - South |
| 58064 | SHUB Lifeguards (Boca Raton, Delray Beach, Boynton Beach) |

Palm Beach County Sheriff Talkgroups

- | DEC | Description |
|-------|---|
| 1872 | SRT 1 |
| 1904 | SRT 2 |
| 1936 | OCB 1 |
| 1968 | OCB 2 |
| 2000 | OCB 3 |
| 2032 | Tactical 1 |
| 2064 | Tactical 2 |
| 2096 | Tactical 3 |
| 5424 | State Attorney's Office |
| 26192 | NORTH Car-to-Car |
| 26224 | FUTURE |
| 26256 | CENTRAL Car-to-Car |
| 26288 | FUTURE |
| 26320 | SOUTH Car-to-Car |
| 26352 | District 9B (Royal Palm) Car-to-Car |
| 26384 | SOUTH (District 7) Car-to-Car |
| 26416 | WEST Car-to-Car |
| 26448 | PBIA AIRPORT Car-to-Car |
| 26480 | Eagle Academy - car to car |
| 26512 | District 14 (Lake Worth) Car-to-Car |
| 26672 | Dynamic Regroup Channel |
| 26704 | Dist. 2 (Mangonia Park), Dist. 3 (Unincorporated North), Dist. 10 (Lake Park), Dist. 15 (Loxahatchee/Acreage) |
| 26736 | NORTH |
| 26768 | Dist. 1 (Unincorporated Central), Dist. 8 (Wellington) |
| 26800 | CENTRAL |
| 26832 | Dist. 4 (West Delray), Dist. 6 (West Boynton) |
| 26864 | Dist. 9 (Royal Palm Beach) |
| 26896 | Dist. 7 (West Boca Raton) |
| 26928 | Dist. 5 (Unincorporated West), Dist. 11 (South Bay), Dist. |
| | 12 (Pahokee), Dist 13 (Belle Glade) |
| 26960 | Palm Beach International Airport |
| 26992 | Eagle Academy |
| 27024 | Dist. 14 (Lake Worth) |
| 27088 | SP EVENTS |
| 27120 | SP EVENTS |
| 27152 | SPEVENTS |
| 27184 | SP EVENTS |
| 27216 | INQ 1 |



Palm Beach County Sheriff cars lined up and waiting for the next shift. (Courtesy of nivium via flickr)

- | | |
|-------|-------------------------------|
| 27248 | Supervisors |
| 27280 | Command 1 |
| 27312 | Command 2 |
| 27376 | INQ 2 |
| 27408 | All County Dispatch 1 |
| 27440 | All County Dispatch 2 |
| 27536 | DETECTIVE |
| 27568 | DETECTIVE |
| 27600 | WARRANTS |
| 27632 | Emergency Field Force 1 |
| 27664 | Emergency Field Force 2 |
| 27696 | Support Services 1 |
| 27728 | Support Services 2 |
| 27760 | RADIO SHOP |
| 27792 | VEH MAINT |
| 27824 | Communications Center Channel |
| 27920 | TRAINING |
| 27952 | TRAINING |
| 28048 | PBSO Parks Patrol |
| 28080 | AIRPORT |
| 28112 | CODE ENF |
| 28144 | SCHOOL BOARD |
| 28176 | HEALTH DIST |
| 28336 | SECURITY |
| 28368 | ANNEX |
| 28784 | STATE ATTY |
| 62768 | School Police |

Palm Beach County Public Works Talkgroups

- | DEC | Description |
|-------|---|
| 4816 | County Radio Shop |
| 39856 | COMM DIV COM 1 Service Facilities |
| 39888 | COMM DIV COM 2 Special Events |
| 39920 | COMM DIV COM 3 Disaster |
| 40208 | Environment 1 |
| 40240 | Environment 2 |
| 40336 | Traffic Engineering |
| 40368 | Traffic Operations |
| 40432 | Facilities Management - Administration |
| 40460 | Facilities Management - Government Center Complex |
| 40464 | Facilities Management - Operations |
| 40496 | Facilities Management - Main Dispatch |
| 40528 | Facilities Management - Security / Parking |

Pop'Comm February 2011 Reader Survey Questions

This month we'd like to ask a little more about how (or if) DXing fits into your hobby. Please use the Reader Survey Card and circle all appropriate numbers. We'll pick one respondent at random for a free one-year subscription, or extension, to *Pop'Comm*, so don't forget your address. Thanks for participating.

How important is radio DXing to you?

- Very important, it's what I live for. 1
- Moderately important, propagation permitting 2
- It's cool when it happens 3
- I'm not involved in that aspect 4
- What's DXing? 5

What type of DXing do you engage in?

- Shortwave 6
- Longwave 7
- AM 8
- FM 9
- VHF/UHF 10
- Ham Bands 11
- Scanner Frequencies 12
- Other 13

I use specialized equipment for the purpose

- Yes 14
- No 15
- Not Yet! 16

August Survey Winner

We're out of room for August highlights, but the winner of the free sub or extension for answering that survey is **James Damron** of Charleston, West Virginia. Congratulations, James!

Listening is only half the fun...

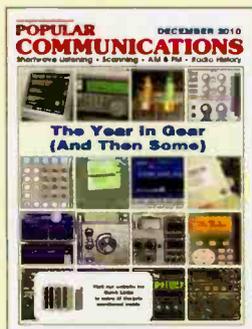
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- 40976 Road and Bridge Department
- 41008 Road & Bridge Future
- 41552 Water Utilities

Palm Beach County Parks & Recreation Talkgroups

- | DEC | Description |
|-------|-------------------------------------|
| 41040 | Administration |
| 41072 | Park Maintenance |
| 41104 | Park Rangers (monitored by Sheriff) |
| 41136 | Support |

Palm Beach County Services Talkgroups

- | DEC | Description |
|-------|-------------------------|
| 39984 | EOC Operations |
| 40016 | EOC Tactical |
| 40048 | Animal Care and Control |
| 42128 | County Libraries |

Palm Beach International Airport Talkgroups

- | DEC | Description |
|-------|----------------------|
| 39632 | Administration |
| 39664 | Operations |
| 39696 | Terminal Maintenance |
| 39728 | Grounds Maintenance |
| 39792 | Future |

Palm Trans Buses Talkgroups

- | DEC | Description |
|-------|------------------|
| 41296 | Main Dispatch |
| 41328 | Special Events 1 |
| 41360 | Special Events 2 |
| 41392 | Supervisor |
| 41424 | Maintenance |
| 41456 | Future Use |

Frequency Of The Month

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

Our frequency this month is **118.750**. Check it out and see what you hear, or don't. Let me know and we'll enter your name into the monthly drawing. Send your entries, as well as suggestions and questions, to radioken@earthlink.net or via more traditional methods to Ken Reiss, 9051 Watson Rd. #309, St. Louis, MO 63126. Please note frequency of the month entries with the frequency on the envelope or subject line for correct routing. And don't forget that address!

The most recent winner of our drawing is **Lou Borkowski, K2EAI**, of **S. Tonawanda, New York**. Congratulations, Lou!

A Brazilian On An Old Spot, Transmitters In Transition, And—As Always—Hundreds Of Reader Logs

by Gerry L. Dexter
gdex@wi.rr.com

“The Federal Radio Corporation of Nigeria (FRCN) has increased its activity. That’s the good news.”

From south of the border (WAY south of the border) comes the news that one of the oldest still-active Brazilian shortwave stations, Radio Inconfidencia in Belo Horizonte (Minas Gerais state), some 300 miles north of Rio de Janeiro, reactivated one of its old spots (15190) sometime last October. Radio Inconfidencia continues to use 6010, where it is frequently noted despite competition from several other stations.

The Federal Radio Corporation of Nigeria (FRCN) has increased its activity. That’s the good news. The not-so-good news is its choice of frequency: 7275. That’s already in use by RT Tunisienne, which is widely heard in North America from 0400 and later. The Voice of Nigeria on 7255 is well heard around 0500 and (in the fall to spring seasons) during the late afternoon. VON is also regularly heard on 15120 with its “international service” during our afternoons.

The Sri Lanka Broadcasting Corporation is believed to have employed at least one new 100-kW transmitter for its 0100–0330 English service broadcast, which is sometimes heard in North

America. SLBC has also initiated a new service for India in Hindi, which seems active from 1530–1630 on 11905 and would appear to be at least as “hearable” as the 0100 segment on 19 meters. Another SLBC broadcast is being heard by some monitors in the 1200 hour on 7190.

HCJB’s technical engineering center in Indiana is busy reconditioning two 100-kW transmitters for use at HCJB-Australia’s Kununurra site. They were originally used at Pifo until taken out of service to make way for Quito’s enlarged airport. The refurbished units will double Kununurra’s available wattage.

TWR is also in the process of doing an upgrade. It’s trying to raise money to install and activate two reconditioned 250-kW transmitters at its Guam site. The station had hoped to begin work by last November and to have the facility ready and operating in about a year. Everything rests on how quickly it can raise the necessary funds.

Reader Logs

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between the items, list each logging according to its home country, and include your last name and state abbreviation after each. Also needed are spare QSLs or good copies you don’t need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And how about sending a photo of you at your listening post? It’s your turn to grace these pages!

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

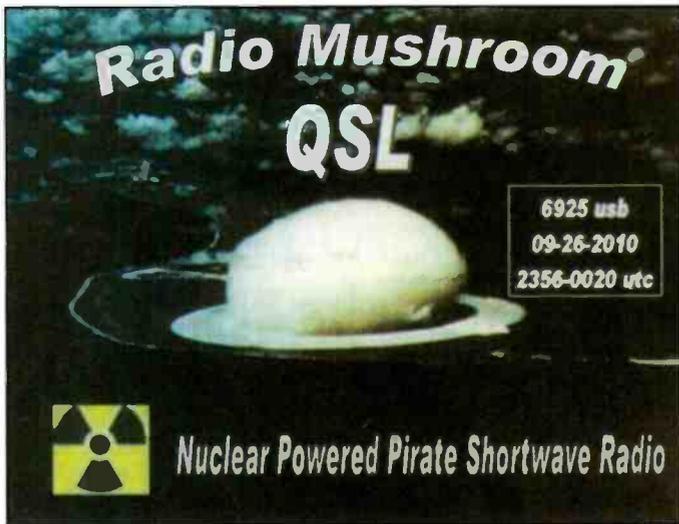
ALASKA—KNLS, 7355 at 1206 with *Health and Medicine* feature. (Sellers, BC) 1250, with a religious instrumental. (Strawman, IA)

ALGERIA—Radio Algerienne, 5865 via Issoudun in AA with the Koran at 0425. Also, 7295 at 0536.

Help Wanted—Become A “GIG” Reporter (And Maybe Win A Prize!)

We believe the “Global Information Guide” offers more logs than any other monthly SW publication (**530* shortwave broadcast station logs were processed this month!**). Why not join the fun and add your name to the list of “GIG” reporters? Not only will you be supporting the hobby, but doing so will also put you in the running to win a prize (see prize announcement box). It’s easy: just send your logs to “Global Information Guide,” 213 Forest St., Lake Geneva, WI 53147. Or you can email them to gdex@wi.rr.com. Please note that attachment files do not always go through. See the column text for formatting tips, and please check over your submissions before sending them in, making sure you’ve included frequency and UTC time (that information kinda helps!).

**Not all logs get used. There are usually a few which are obviously inaccurate, unclear, or lack a time or frequency. Also discounted are unidentified, duplicate items (same broadcaster, same frequency, same site), and questionable logs.*



Here's a QSL from "nuclear-powered" pirate Radio Mushroom, received by Rich D'Angelo.



The newly reenergized Radio Verdad, Chiquimula, Guatemala, verified D'Angelo's reception. Verdad is now back on its original frequency of 4025.

(Parker, PA) 7295, via Issoudun, with Koran recitations at 0443. (Brossell, WI)

ANGOLA—Radio Nacional Angola, Mulenvos, 4950 at 0254 with music, time pips on the hour, W with ID, M with news in PP. (D'Angelo, PA) 0320 with big band swing and W vocal. (Parker, PA) 0344, in PP with Afro-pop. (Wood, TN) 0418, with PP news or actualities. (Taylor, WI)

ANGUILLA—University Network, 6090 at 0005 with a Melissa Scott sermon. (MacKenzie, CA)

ANTARCTICA—LRA36/Radio Nacional Arcangel, 15476 with vocals popping up through the noise floor for a few seconds at 1243 and again at 1302. (Strawman, IA)

ARGENTINA—Radio Nacional/RAE, 11710 at 0200 with multiple IDs and opening of EE segment, tangos, and W anc. (D'Angelo, PA)

ASCENSION IS.—BBC South Atlantic Relay, 7255 at 0333 with news for West Africa. (Taylor, WI) 0513. (Parker, PA) 12095 with news on Serbia-Croatia at 1551. (Yohnicki, ON) 17795 with world news at 1701. (Coady, ON)

AUSTRALIA—Radio Australia, 7240-Shepparton with headlines at 1402 over ham QRM. Also 11875 via Palau on the Commonwealth Games at 2225. (Ronda, OK) 6020-Brandon in Tok Pisin with island music, TC, and ID at 1100. (Coady, ON) 1055 in Tok Pisin over reggae-like number. (Barton, AZ) 9580-Shepparton at 1722 on technology. 15515-Shepparton at 0352. 15560-Shepparton at 2317 and 17795-



Pirate KBOX (aka Radio Paranoia) verified D'Angelo's report on 6925.

Shepparton at 2322. (MacKenzie, CA) 9965 via Palau at 1237. (Strawman, IA) 11660-Brandon with sports commentary at 2118. (Taylor, WI) 11945-Shepparton on alcohol abuse at 1207. (Brossell, WI)

ABC Northern Territories Service: VL8A-Alice Springs, 2310 with news at 1300. (Barton, AZ; Ronda, OK) VL8K-Katherine, 2485 at 1226 with a weak vocal. (Strawman, IA) 5025-Katherine, weak at 0725 under Rebelde mentioning something about draught. (Maxant, WV)

HCJB Australia, 11750-Kunururra, with preaching at 0915 and 15400 at 1210 discussing the Trinity. (Maxant, WV)

AUSTRIA—Radio Austria Intl, 6155-Moosbrunn with news in GG at 0500 (Padazopoulos, Greece)

BAHRAIN—Radio Bahrain, 9745 (t) at 0006-0052 fade out with ME vocals and M anmt. Poor with some fading and eventually lost in noise. (D'Angelo, PA) (p) at 0035-0135 using reduced carrier USB with ME vocals. (Alexander, PA)

BELARUS—Beloruskaje Radyjpo 1, Hrodna, 6030 at 0318 with M/W in Belarussian with news features, seemingly mixing with a Brazilian station. W began hosting a music pgm at 0404. (D'Angelo, PA)

BOLIVIA—Radio Santa Ana, Santa Ana del Yacuma, 4451 weak in SS at 2330. (Wilkner, FL)

Radio Eco, Reyes, 4410 with music and M in SS heard at 2333. (Wilkner, FL)

Radio San Miguel, Riberalta, 4700, strong in SS heard at 0940. (Wilkner, FL)

Radio Lipez, Uyuni, 4796 in SS at 2330. (Wilkner, FL)

BONAIRE—Radio Nederland Relay, 6165 at 0305 with bluesy EE pops and M in SS. (Wood, TN) 0022 in SS, 9865 in DD at 0515 and 17605 in DD at 2319. (MacKenzie, CA)

BOTSWANA—VOA Relay, Mopeng Hill, 4930 with talk at 0345. (Yohnicki, ON) 0437 and 9855 at 0300 with African news. (Parker, PA) 15580 at 1940 with *Encounter* discussion on al Qaeda. (Coady, ON)

Brazil—(All in PP—gld) Radio Alvorada, Londrina, 4865 with songs and talks at 1020. (Brossell, WI)

Radio Difusora Acreana, Rio Branco, 4885 at 0302 with ID, jingle and lots of studio chatter. (Ronda, OK)

Radio Clube do Para, Belem, 4885 at 0445 with M/W talk and ads. (Parker, PA)

Radio Difusora, Macapa, 4915 at 0150 with slow ballads, M anc. Much stronger later in the evening. (Parker, PA)

Radio Capixaba, Vitoria, 3935 at 0331 with impassioned talk by M. (Parker, PA)

Radio Brazil Central, Goiania, 4985 at 0325 with long talk by W. (Parker, PA) 11815 with a W and 2-M in conversation at 2324. (Ronda, OK)

Radio Cultura do Para, Belem, 5045 at 0240 with a mix of Brazilian ballads and Brazil pops with M/W host, ads and promos. (Coady, ON) 0440 with M host and LA music. (Wood, TN)

Radio Voz Missionaria. Florinapolis, 5940 at 0405 with Christian music, religious talk. Stronger on //9665, threshold on 11750. (Alexander, PA) 9665 at 0444 with preacher and religious songs. (Ronda, OK)

Radio Itatiaia, Belo Horizonte, 5970 at 2343 with talks and vocals. Blasted away by RHC at 2358. (D'Angelo, PA)

Radio Senado, Brasilia, 5990 at *0851 with talk, instls, local pop ballads, ID and anmts at 0901. (Alexander, PA)

Radio Nacional Amazonia, Brasilia, 6185 with talks and songs monitored at 0152. (Ronda, OK) 11780 with presumed news at 1200. (Brossell, WI) 2354 with vocal group, 2-M with comments. (MacKenzie, CA)

Radio Capital, Rio, 6070 (t) at 2220 carrying Super Radio Deus e Amor pgms with PP preacher. (Alexander, PA)

Super Radio Deus e Amor, Curitiba, 9587 at 2335 with religious talk, anmt and promos. (Alexander, PA) 11765 at 0114 with preach-

ing, ID at 0130 and more preaching. (D'Angelo, PA) 0507. (Brossell WI)

Radio Bandeirantes, Sao Paulo, 9645 at 0027 with two M commentators presumably covering a soccer game. (Parker, PA) 0144 with extended comments and a few ads. (Strawman, IA)

Radio Inconfidencia, Belo Horizonte, 15190 with local music, IDs and talk at 2200. (Alexander, PA)

BULGARIA—Radio Bulgaria, 9700 at 0218 on their economy. (Brossell, WI)

CANADA—Radio Canada Intl, 6100 at 0006, 9515 in FF at 1716 and 15455 in SS at 2350. (MacKenzie, CA)

CFRX, Toronto, 6070 at 0722 with ads, then back to *The Phil Hendrie Show*. (Sellers, BC) 1240 with "Newstalk 1010" ID and into sports. (Fraser, ME)

CKZN, St. John's (Newfoundland), 6160 at 0915 on oil production. (Maxant, WV) 1256 with local ads and pops. (Strawman, IA)

CHU, Ottawa, 7850 with time signals at 1250. (Maxant, WV)

CHAD—Radio Nationale Tchadienne, 6165 noted at *0448 sign on with balafon IS, anthem and FF talk. Also with a variety of Afro-pops to 2259 sign off. (Anderson, PA)

CHILE—CVC Intl, 17680 at 1739 with Christian pops. (Yohnicki, ON)

CHINA—China Radio Intl, 7265 at 2005 with CC/Esperanto lesson, //9470//9570//9675 at 0110; 13610 at 1230, 17855 at 0530, 7295 at 2030, 7335 in SS at 2100. Also, 17505 at 0625, 17680 in SS at 0620. (Padazopoulos, Greece) 6190 via Canada at 0550, 9695 at 1740, 11620 in VV at 2340, 11790 at 2312, 11975 via Mali in CC at 0015 and 17770 in RR at 0316. (MacKenzie, CA) 9515 via Albania in AA at 0530 and 9815-Kashi in CC at 0232. (Parker, PA) 9595-Kashi at 0057. CC and SS IDs at 0100. (Strawman, IA) 9675-Shijiazhuang in RR at 1342. (Taylor, WI) 9710-Kashi in SS at 0211 and 11650-Urumqi at 0120 in Mandarin. (Ronda, OK) 11610-Xi'an at 1000. (Barton, AZ) 11600-Boaji in VV at 1150, 11620-Xi'an in JJ at 1155 and 11690-Xi'an at 1235. (Brossell, WI) 13740 via Cuba at 1420. (Fraser, ME) 15220 in (p) CC at 1435. (Yohnicki, ON) 17650-Kashi in CC at 1210. (Bryant, KY)

CPBS/China National Radio: CPBS, 6125-Shijiazhuang in CC at 1140 and 11835-Xi'an in CC at 1204. (Brossell, WI) 11610 in CC at 2337 with many parallels. Also, 11690 in CC at 0409. (MacKenzie, CA) China National Radio, Network One, 6175-Beijing in Mandarin at 1157, 11630 in Mandarin at 2122. (Taylor, WI) CNR-2, 6090-Ge'eremu in Mandarin at 1214 and CNR-6, 6165-Beijing in Mandarin at 1203. (Taylor, WI) Xinjiang PBS, Urumqi, 7310 in Mandarin at 0008.

PBS Xizang, 7240-Lhasa (Tibet)(p) at *0000 with anthem, talk in Mandarin. Poor, but readable with minimal ham QRM, but soon faded. (Ronda, OK) Voice of the Strait, Fuzhou, 6115 with a children's chorus at 1228, //7280. (Ronda, OK) 7280 in (l) Amoy at 1211 and 7280 in (l) Mandarin heard at 1136. (Taylor, WI)

Firedrake Jammer, 11500 at 1150, assumed against Radio Free Asia. (Brossell, WI) 13800 with a tremendous signal at 1000. (Barton, AZ)

COLOMBIA—Marfil Estereo, Puerto Lleras, 5910 at 0320 with long SS sermon, f/by LA vocals. (D'Angelo, PA) 0429 in SS with highlife and EZL. (Parker, PA) 0510 in SS. (Wood, TN)

La Voz de tu Concencia, 6010 at 0420 with SS talk and local selections, short EE anmt at 0426 and ID as "The Voice of Your Concience." (Alexander, PA)

CROATIA—Croatian Radio/Voice of Croatia, 3985-Deanovic with *Croatia Today* at 0202. //7375. (Coady, ON) 7375 via Wertachtal in Croatian at 0128. (Ronda, OK)

CUBA—Radio Havana Cuba, 5970 in SS at 0028, 6110 in SS at 0013, 11690 in SS at 0415, 12020 in SS at 0405, 13670 in SS at 0348, and 17705 in PP at 2334. (MacKenzie, CA) 6000 in EE at 0220. (Padazopoulos, Greece) 12130 at 2315 with Cuban jazz. (Barton, AZ) 15360 in SS at 1430, //15120 and 15380. (Yohnicki, ON)

CZECH REPUBLIC—Radio Prague, 7345-Litomysl at 0100 with EE news and features. (Coady, ON) 0136 with street organ music. (Ronda, OK) 9445 at 0330 with news. (Yohnicki, ON)

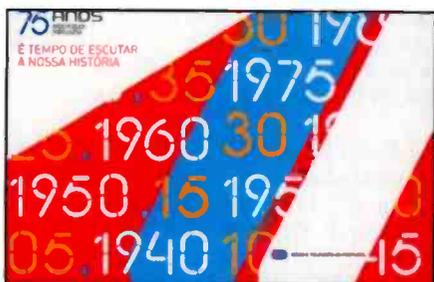
DJIBOUTI—Radio Djibouti, 4780 at *0300 with NA, opening anmts in AA and local tribal music. Koran at 0302, f/by AA talk. (Alexander, PA)

DOMINICAN REPUBLIC—Radio Amanecer, Santo Domingo, 6025 noted with SS talk and Christian music at 0055 and 1025. (Alexander, PA)

ECUADOR—Radio Quito, Quito, 4919 heard at 0150 with M/W in SS, Andean music. (Coady, ON) 0230 with *musica de los Andes* and M with IDs. (Paszkiwicz, WI) 0325 with lively Latin vocals hosted by M, numerous IDs as "Radio Quito, la Voz de la Capital." (D'Angelo, PA) (*Reactivated, but probably not for long.*—gld)

HCJB, 11920 in PP at 0010. (MacKenzie, CA) (*11920 is believed to be via Santiago.*—gld)

ENGLAND—BBC, 5875 in (l) Pashto at 0132, 5935 in EE at 0140, 9410 at 0500. And 6195 at 0453, 11810 at 2030 and 17830 at 1305. (Padazopoulos, Greece) 6155 South Africa Relay at 0404 and 7310 South Africa



Portugal's RDP International used this card to help celebrate its 75th year. (Thanks David Weronka, North Carolina)



Hmong World Christian Radio sent this card to Peter Ng, Malaysia.

In Times Past...

Here's your blast from the past for this month...

Lesotho—Radio Lesotho, 4800 at 0403, Lancers Gap, on April 30, 1971. (Dexter, WI)

at 0413. (Ronda, OK) 6155 South Africa at 0325. Also 11820 Cyprus Relay in AA at 1710. (Strawman, IA) 7325 in AA at 0530. (MacKenzie, CA) 7390 South Africa at 0423. (Yohnicki, ON) 9410-Rampisham at 0448 and 9895 Cyprus Relay in Dari at 0235. (Parker, PA) 11860 via French Guiana at 1225. (Brossell, WI)

EGYPT—Radio Cairo. 9305 in AA at 0000 strong, but with bad audio quality. (Parker, PA) 1845 in AA. (Brossell, WI)

EQUATORIAL GUINEA—Radio Africa, Bata, 15190 with a sermon at 1923. (Brossell, WI)

ETHIOPIA—Radio Fana, 7210 at *0257 sign on with IS, vernacular talk. HOA music. Covered by BBC at 0300, //6110 very weak under Cuba. (Alexander, PA)

Radio Oromiya. 6030 at *0321 with xylophone IS, W in (p) Oromo with ID, anmts, fanfare, M anc and HOA vocals, then news at 0400. (Alexander, PA)

FRANCE—Radio France Intl, 7220 in FF at 0448. (Parker, PA) 11705 at 1910 with talks and songs in FF. (Brossell, WI) 15300 in EE at 1608. (Yohnicki, ON) 17620, //17850 in FF monitored at 1213. (Bryant, KY)

GERMANY—Deutsche Welle, 5915 via Rampisham in GG at 0325. 7240 Rwanda Relay in EE at 0453, 9465 Rwanda in GG at 0528, 9480 Rwanda in GG at 0516 and 11800 via Woolferton in FF at 1743 and 11885 in RR at 1854. (Brossell, WI) 6075 in GG at 0454 and 9825 in EE at 0507. (Padazopoulos, Greece) 9550 Sri Lanka Relay in Mandarin at 2330. (Taylor, WI) 9735 Portugal Relay at 2130 with *Pulse* pgm, 11865 Rwanda at 2130 with *Hits in Germany*. Also 15410 via Rampisham at 1645. (Coady, ON) 9865 via Singapore in CC at 2310 and 15640 Rwanda at 2120 on world financial problems, 17820 via Cypress Creek in GG heard at 2312. (MacKenzie, CA)

Deutschlandfunk, Berlin, 6190 at 0043 with continuous classical music until blasted by Radio Nederland sign on at 0058. (D'Angelo, PA)

GREECE—Voice of Greece. 7475-Avdis in GG at 0113 and 9420 at 2123. (Ronda, OK) 7475 in Greek at 0446. (Brossell, WI) 7475//9420 at 0119. (Padazopoulos, Greece) 9420 in Greek at 0505. (Parker, PA)

GUAM—Adventist World Radio/ KSDA, 9560 in FF at 1300, just after Radio Australia closes there. (Barton, AZ) 11825 in CC at 1202. (Brossell, WI)

GUATEMALA—Radio Verdad, Chiquimula. 4055 in SS at 0100 open with hymns, SS talk, M preaching, (Taylor, WI) 0225 with a wide variety of selections, several repeated. Needed to use USB mode. (Ronda, OK) 0535 with religious music. NA at 0603. (Alexander, PA) 1145. (Wilkner, FL)

GUINEA—Familia FM, Conakry, 4900 with M in FF at 2330. (Wilkner, FL) 2335 in FF with pops, ballads and Afropops. (Alexander, PA) 2350 to 0001* with highlife. W in FF. (D'Angelo, PA)

GUYANA—Voice of Guyana, 3290 with 80s pop at 0235. (Wilkner, FL) 0727 with promos for several BBC pgms and BBC news at 0730. (Sellers, BC)

HONDURAS—Radio Luz y Vida, San Luis, 3250 at 0235 in SS with W preaching. (Wood, TN) 1000 in SS. (Wilkner, FL)

INDIA—All India Radio. 4920-Chennai heard at 0036 with M and news in Hindi and Hindi vocals. Poor and beginning to fade. Also 5010-Thiruvananthapuram at 0050 with Hindi vocals and a discussion pgm in Hindi. (D'Angelo, PA) 7210-Kolkata at 0341 with Hindi vocals. BBC was off from 0330. Also 11715-Delhi at 0129 with IS, ID by M and into Nepali and 11985-Delhi at 0023 with M in Tamil. (Ronda, OK) 7340-Mumbai at 1253 in (I) Sindhi. Also, 15050 Delhi at 1259 with "Song of India" IS, into (p) Hindi. (Strawman, IA) 9425 at 2136 in EE and Hindi. (Taylor, WI) 9445 at 2130. (Maxant, WV) 9870-Bangaluru with their Vividh Bharati service in Hindi at 0250. (Parker, PA)

INDONESIA—Radio Republik Indonesia, 3325-Palangkaraya (Kalimantan), with just a threshold signal at 1222. (Strawman, IA)

Voice of Indonesia. 9525v at *0959 sign on in (I) KK with an EE ID at 1000 and EE news at 1005. (Alexander, PA) 1118 in CC. (D'Angelo, PA) 1341 with EE pgm. (Ronda, OK)

IRAN—Islamic Republic of Iran Broadcasting, 7425-Kalamabad at 0226 ending EE segment and off at 0228. (Ronda, OK) 15085 in

SN BERNARDINO CA 92518-2017
DEPARTMENT OF DEFENSE
NMC DET AFFRS-DMC
23755 Z St, Bldg. 2730
Riverside CA 92518-2017
US DEC 30 09 PM 2
OFFICIAL BUSINESS
Dear Richard D'Angelo
This confirms your reception of the American Forces
Radio and Television Service Short-wave signal.
Original Station AFN Diego Garcia
Frequency 4319 kHz
Date 4 Dec 2009
Time 2200-2300 UTC
We thank you for your interest and confirmation of our
signal's quality.
Sincerely,
C. C. [Signature]
Richard D'Angelo
22116 Burkley Drive
Wyomissing, PA
19610

Not a fancy card, but a rather rare catch—the AFN outlet at Diego Garcia in the British Indian Ocean Territory is seldom heard on 4319 USB. (Thanks Rich D'Angelo)

GG at 1818. (Wilkner, FL) 1827 with brief piano and FF ID at 1830. (Brossell, WI) 15150 in AA at 1221. (Bryant, KY) 1432 with Koran. (Yohnicki, ON) 15320 in SS at 0530. (Padazopoulos, Greece)

ISRAEL—Galei Zahal. 6973 in HH heard at 0125 with rock, two M talking. (Parker, PA)

JAPAN—NHK World Radio Japan, 5975 via Rampisham in EE at 0506. (Parker, PA) 7295, via Madagascar in Swahili at 0322. (Ronda, OK) 9695 at 1158 opening in EE. 11740 in (I) Tibetan at 1145 and 11870 via France at 0509. (Brossell, WI) 9790 in EE at 1215. (Sellers, BC) 9835 at 1850 and 9840 with *Focus* pgm at 1015. (Barton, AZ) 9835 in JJ at 1748. //11945, 15325 in JJ at 0340 and 17810 in II at 2320. (MacKenzie, CA)

KUWAIT—Radio Kuwait, 15540 heard at 1934 on oyster fishing there. (Brossell, WI)

LIBYA—Radio Jamahiriya/Voice of Africa, 17725-Sabrata in EE at 1417, //21695. (Fraser, ME) 21695 at 1435 with ID, talk on their constitution, pgm on the people of Africa. (D'Angelo, PA) 1513 with EE news on the African Union. (Alexander, PA)

MADAGASCAR—Radio Madagasikara, 5010 at *0212 sign on with local music, Malagasy talk, IS and choral NA and local guitar. (Alexander, PA) 0233 with odd rap selections, some with EE lyrics, mixed in with local fare, talk in (p) Malagasy. ID at 0300. (D'Angelo, PA)

This Month's Prizewinner

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

This month's prizewinner is **Jim Ronda, Tulsa, Oklahoma**, who, about now, is probably thumbing through a 2011 edition of the *World Radio TV Handbook* looking for new targets. This year's edition, as you'd expect, is another jam-packed package of essential info for the SWL, DXer—even the "pros" rely on the *WRTH*! Get your copy from your favorite hobby radio supplier, on-line source or "real-life" bookstore.



KUSA, a patriotic pirate of past days, replied to Rich D'Angelo with this card.

MAURITANIA—Radio Mauritanie, Nouakchott, 4845 at 2238 with M talk in AA. (Ronda, OK)

MEXICO—Radio Mil. Mexico City, 6010 with SS vocals monitored at 0810. (Maxant, WV)

Radio Educacion. Mexico City, 6185 with SS vocals at 0815. (Maxant, WV)

MOLDOVA/PRIDNESTROVIE—Radio PMR, 6240 heard at 0000 with ID and news. (Coady, ON) 0130 with ticking clock, opening ID anmts and EE news by M. Into GG segment heard at 0145. (D'Angelo, PA)

MOROCCO—RTV Marocaine, 15345 in AA heard at 1931. (Brossell, WI)

NETHERLANDS—Radio Nederland, 5965 with news in DD at 0500, //6015 and 6125. (Padazopoulos, Greece) 6140 in DD at 0018. (MacKenzie, CA) (*What sites?—gld*) 7360 via Philippines in DD heard at 1115. (Brossell, WI) 11610 via Madagascar with *Earthbeat* at 2010. (Fraser, ME) 15535 via Wertachtal at 1940 with *Earthbeat*. (Coady, ON)

NEW ZEALAND—Radio New Zealand Intl, 7455 at 1205, 11725 at 0502 and 13730 at 0405. (Maxant, WV) 9655 at 1130 with news, *Tradewinds* pgm. (Coady, ON) 1231 with a news magazine pgm. (Sellers, BC) 11725 with news at 0500. (Brossell, WI) 13730 at 0350 with news at 0400. (MacKenzie, CA)

NIGERIA—Radio Nigeria, Abuja, 7350 from *0545 with test tone, tribal music, NA and "National Pledge" at 0548, religious music and EE news at 0600. (Alexander, PA)

NORTH KOREA—Voice of Korea, 7200 at 1210 with patriotic chorals. Also 11710 with impassioned commentary at 1706. (Strawman, IA) 9325-Kujang in KK at 1231. (Ronda, OK) 11710 with patriotic vocals and talks on Korea. (Coady, ON)

Korean Central Broadcasting Station, 4450 in KK at 1238. (Strawman, IA) 9335 in

KK at 1703. (MacKenzie, CA) 11710 in KK at 1206. (Brossell, WI)

NORTHERN MARIANAS—Far East Broadcasting/KFBS, 11580-Saipan in CC at 1203. (Brossell, WI)

OPPOSITION—Radio Okapi (to Congo), 11690 via Meyerton monitored at 0443-0459* with vernacular talk, ID, jingles, some Afropops. (Alexander, PA) 0443-0458 in FF with several jingles, talk segments, IDs, lively vocals. (D'Angelo, PA)

Radio Bilal (to Ethiopia), 15350 via Samara, 1800-1815 plus with sign on, opening ID and anmts, local talk, possibly Koran, Amharic talk, ME type music. (Alexander, PA) 1803 with M interview in (p) Amharic, brief HOA vocals. Off at 1829. (D'Angelo, PA)

Radio Republica (to Cuba), 5954 via Costa Rica monitored at 0315-0354* with SS talk, SS talk, local music. Jammed. (Alexander, PA)

Radio Y'Abadanga (to Uganda), 11500 in AA monitored at 1715. (Brossell, WI) 15410 via France in Swahili at 1724-1730*. Saturdays only. (Alexander, PA)

Radio Payem e-Doost (to Iran), 7460 at 0303 in (l) Farsi. W with talk mixed with music bits. (D'Angelo, PA)

Nippon no Kaze (to North Korea), 9950 via Taiwan at 1311 with W in KK and short music breaks. (Ronda, OK)

Korean National Democratic Front (to South Korea), 3480 at 1130 with ping-pong KK commentary. (Barton, AZ) 3480 in KK at 1117. (Taylor, WI)

Voice of the People, (to North Korea), 3912 in KK at 1030. (Barton, AZ)

Radio Nacional de la RASD (to Morocco), 6927 at 0020-0033* with SS talk, local music and off with NA. (Alexander, PA) 2251-0020 with time pips heard at 2300, ID and AA news. Then seemingly into SS at 2354. (D'Angelo, PA)

Baati Rewmi Radio (to Gambia), 15225 at *1815-1830* sign on with local Afropops, opening EE anmts as "the Voice of Our Nation." All in EE with talk on the role of nations in nation building. Saturdays only. (Alexander, PA)

Radio Voice of the People (to Zimbabwe), 9875 via Madagascar at 0410 with discussion features and short music segments, several IDs and postal address in local language. (D'Angelo, PA) 0418 with interviews and music. (Yohnicki, ON) 0429 with interview on Zimbabwe. Shona and Ndebele are the listed languages. (Ronda, OK)

PAKISTAN—Radio Pakistan, 15490-Islamabad, monitored at 0130 but poor with long talk in (l) Urdu, Koran at 0147 and return to the same talk. This was an exceptionally good evening on 19m. (Ronda, OK)

PAPUA NEW GUINEA—Radio East New Britain (New Britain Is.) 3385-Rabaul, at 1112 with long talk in Tok Pisin. (Taylor, WI) 1148 with traces of talk and into music. (Ronda, OK) 1215 with peppy island music, man in Tok Pisin, more music then sudden close. (Barton, AZ)

PERU—Ondas del Huallaga, Huanuco,

3330 with M and traditional rustic music at 0945. (Wilkner, FL)

Radio Vision, Chiclayo, 4790 monitored at 0945 with religious programming. (Wilkner, FL)

Radio Madre de Dios, Puerto Maldonado, 4950 poor with presumed sign on at 1030. (Wilkner, FL)

Radio Libertad, Junin, 5040 at 1055 with Cuban interference. (Wilkner, FL)

Ondas del Suroriente, Quallabamba, 5120.5 at 1030 with UTEQRM. (Wilkner, FL)

Radio Bolivar, Ciudad Bolivar, 5460 at 0030-0040 in SS. (Wilkner, FL)

Radio Vitoria, Lima, 6020 at 0746 in SS with numerous IDs, music background and time checks. Emotional preacher in a (p) Indian dialect. (Sellers, BC)

Radio Tawantinsuyo, Cusco, 6174 at 1050 weak in SS. (Wilkner, FL)

PHILIPPINES—Far East Broadcasting, 7485 via Tashkent with religious songs in Hindi. Off at 0100, per sked. (Ronda, OK) 0052-0102 in Hindi. (Parker, PA) 9400-Iba at 1329 with IS loop, ID and into Mandarin. 9430-Bocau, seemingly in parallel, was much stronger. (Ronda, OK)

PIRATES—The Crystal Ship, 5385.4 heard at 0112 sign on with IS and "Yo Ho Ho" song; pgm of mostly pop things. (Zeller, OH) 0125 with ID and '70s stuff. tcsshort-wave@gmail.com. (Hassig, IL) 0229 with oldies and mentions of "glorious AM" and "100 watts." (D'Angelo, PA)

Captain Morgan, 6924 at 0106 with blues, ballad rock. (Hassig, IL) 0111 mostly highly irritating dance club techno with horribly overdriven "rice box" audio. (Parker, PA) 0159-0209* when closed with ID. (D'Angelo, PA)

Barnyard Radio, 6925u at 0224 with particularly abrasive music. (Parker, PA) 0254 with M ancr, several IDs and various rock things. (D'Angelo, PA)

WEAK Radio, 6925u at 0239, 0316 and 2308 with rock, parody ads, frequent IDs. Also 6930u at 0254 with rock, periodic IDs, various selections. (D'Angelo, PA) 6940u at 0109 with '70s soft rock. (Hassig, IL) 0338 with '70s-'80s pops. (Parker, PA) 2300 with a couple hours of pop. (Gay, KY)

Radio Ronin Shortwave, 6925u at 0057-0100* with vocal prior to closedown with ID, email. (D'Angelo, PA) 0155 with '70s-'80s things. (Hassig, IL)

Outhouse Radio, 6925u with techno rock at 2006. (Gay, KY)

KIPM, 6925 heard at 0150 with what appeared to be new stories and selections. Gave a long email address which was not copied. (Hassig, IL)

WKND, 6924.4 at 2255 with hosts "Rick O'Shay" and "Radio Animal" rambling on various topics, parody ads and generic pop things. (Hassig, IL)

Radio Mushroom, 6925u at 0005 with ID, email, rock and mentioning they were being powered by "pure nuclear energy." (D'Angelo, PA)



Transmitter control panels at WEWN, Birmingham. (Thanks Charles Maxant, West Virginia)

Longrange Radio, 6925u (t) heard at 0315 with spacey jazz music and whispered ID. (Hassig, IL)

WLDJ, 6924.9 at 2340 with "The Last DJ" testing and taking requests but not getting any. Played various numbers. No address info heard. (Hassig, IL)

The Crooked Man, 6925u at 0030-0101* with multiple IDs "The Crooked Man is calling," short talk segments and Beatles selections. (D'Angelo, PA)

WXMN, 6924.9u at 2131 announcing as "89.5. Monticello Community Radio," then jazz music and talk about a West Virginia town. Gave the Belfast address. (Gay, KY)

Northwoods Radio, 6935u at 0210-0248* with IDs, gmail address. Long closedown routine with man and numerous UTC time checks. Said he would return the next day at 1200 or 1300. (D'Angelo, PA)

Radio Gaga, 6925u with rock oldies at 2339. (Gay, KY)

Radio Paisano, 6925 at 0115 with Italian-style music. Italian-themed story of Goldilocks. (Hassig, IL)

Atlantic Radio (Euro), (t) 6959.9 at 0110 with threshold pops, but too weak for any details. This has been reported by others. (Alexander, PA)

POLAND—Polish Radio, 11675 via Austria at 1200 with *News from Poland*. (Coady, ON) 1230 on Polish-German trade. (Maxant, WV) 1243 with pops and interviews. (Fraser, ME) 1234 with news of the European Union. Also heard on 15155 via Germany in RR at 1934. (Brossell, WI) 11980 via England at 1237 with listener letters. (Sellers, BC)

PORTUGAL—RDP Intl, 7240 at *0458 in PP with talks. (Parker, PA)

ROMANIA—Radio Romania Intl, 5945-Tiganesti in RR at 0435 and 9450-Tiganesti in FF at 0512. (Parker, PA) 6140 and 7350 at 0445 in Romanian. Also 9655 with commentary in SS at 0530. (Padazopulos, Greece) 7335 at 0300 with *Radio Newsreel* and 9520 in SS at 0214. (Brossell, WI) 11715 at 1748-1759* with *DX Mailbag* pgm, ID, closedown anmt for Western Europe. (D'Angelo, PA) 7355-Galbeni at 0132 and 7385-Tiganesti in FF at 0125. (Parker, PA)

RUSSIA—Voice of Russia, 5920 with SS commentary at 2025, 7270 in RR at 0120, 9535 in SS at 0114, 9620 at 0505, 12040 at 1705. (Padazopulos, Greece) 7440 via Moldova at 0216, //9665. Also 12040-Moscow with headlines at 1819. (Brossell, WI) 9735 via French Guiana at 0425 and 15425-Petropavlovsk at 0334. (MacKenzie, CA) 12040-Moscow at 1945. (Fraser, ME) 12065-Chita at 1302. (Strawman, IA) 1238 in VV. (Bryant, KY)

Radio Rossii, 7320-Magadan in RR at 0508. (Ronda, OK)

Ulan-Ude Radio, 6195 with time pips at 1200, talk in RR and mention of "Rossii." (Brossell, WI)

SAO TOME—VOA Relay, Pinheira, 4960 with an editorial at 0425. (Parker, PA) 6080 at 0314. (Ronda, OK) 12015 with a sports report at 1836. (Brossell, WI)

SAUDI ARABIA—Broadcasting Service of the Kingdom, 9555 with ME music at 2245. (Barton, AZ) 11820 with Koran at 1845. (Brossell, WI) 15380 in AA at 1610. (Yohnicki, ON)

SERBIA—International Radio of Serbia, 9675 at *0028-0058* with IS, W opening EE pgm, news and *Press Review*. (D'Angelo, PA)

SEYCHELLES—BBC Indian Ocean Relay, 6005 at 0250 ending EE at 0259 and switching to Ascension Island. Also 9610 at 0309 in Swahili. (Ronda, OK)

SINGAPORE—BBC Far East Relay, 15285 with a sports roundup at 1045. (Barton, AZ)

SPAIN—Radio Exterior de Espana, 6055 with SS commentary at 0453, 7275 with SS interview at 1730 and 21610 with SS commentary at 1030. (Padazopulos, Greece) 9630 Costa Rica Relay in SS at 0432 and 9665 in SS at 1725. (MacKenzie, CA) 12015 in FF at 1920. (Brossell, WI)

SOLOMON ISLANDS—SIBC, 5020 with usual sign off routine including a devotional, W with ID anmts and anthem at 1202. (Sellers, BC)

SOUTH AFRICA—Channel Africa, 3345 at poor level at 0407 and 6135 at 0317 with a mix of news and commentary during their morning program. (Ronda, OK) 0330 interviewing school children. (Maxant, WV) 0347 with news reports. (Yohnicki, ON)

Radio Sondergrense, 3320 at 0157 with local ballad, M in Afrikaans and oldies pop. (Coady, ON)

SUDAN—Sudan Radio TV, 7200 at

0218-0431 with Koran, AA talk, chirping bird, local music. Fair, after Iran closed at 0328. (Alexander, PA)

Miraya FM, 9740 via IRRS/Slovakia at 0400 with AA, EE news at 0403-0412 and a mix of AA/EE from 0413. (Alexander, PA)

SURINAME—Radio Apimé, 4990 in Dutch with pops at 0415. (Parker, PA)

SWAZILAND—TWR, 4775 at 0349 with preaching in (I) Lowe. Into the GG pgm at 0400. (D'Angelo, PA) 0409 in GG. (Taylor, WI) 0433 in GG. (Brossell, WI) 0356 in Lowe. Carrier off abruptly at 0359, then back with GG at 0401. Also 9500 at 0520 with M/W discussing scripture. (Parker, PA)

SWEDEN—(Since Sweden has ceased shortwave, we are ceasing Sweden!—gld)

TAIWAN—Radio Taiwan Intl, 3985 (via England—gld) in SS at 2030, 13840 at 1610 (Padazopulos, Greece) 11665 in VV at 2346, 15465 in CC at 2348. (MacKenzie, CA) 11710 in CC at 1155. (Brossell, WI)

TAJIKISTAN—Tajik Radio, Yangiyul, 4765 in Tajik with songs at 2345. (Padazopulos, Greece)

THAILAND—Radio Thailand, 9575 in Thai at 1311, EE ID at 1315 and opening in Mandarin. (Taylor, WI) 15275 at 0000 with crash start, but immediately off, then back in EE. (Strawman, IA) *0000-0029* in EE service, news headlines and national news with alternating M/W. (D'Angelo, PA)

TUNISIA—RT Tunisienne, 7275 in AA at 0407. (Yohnicki, ON) 0445. (MacKenzie, CA)

0523 in AA. (Wood, TN) 0525. (Parker, PA) 9725 in AA at 0451. (Brossell, WI)

TURKEY—Voice of Turkey, 9830 at 2230 with *The Letterbox Program*. (Coady, ON) 11835 in GG at 1810 and 11980 in TT at 0510. (Brossell, WI) 15450 on climate change at 1235. (Fraser, ME)

UGANDA—UBC Radio, 4976 at 0329 with M/W ancrs in vernacular. (Parker, PA)

UKRAINE—Radio Ukraine Intl, 7440-Lvov at 0118 with talk in UU. (Ronda, OK) 11620 at 0915 on entering the EU. (Maxant, WV)

UNITED STATES—Voice of America, 7575 Thailand Relay at 1246, 9780 Sri Lanka Relay at 0113 and 15170 Thailand in Mandarin at 0106. (Strawman, IA) 9780 Sri Lanka at 0110 and 9815 via Nauen at 2051 in FF with EE news drop-ins. Closed at 2059. (D'Angelo, PA) 11535 Deewa Service via Sri Lanka Relay in Pashto at 0107 and 11805 Philippine Relay in II at 2328. (Ronda, OK) 11825 Philippines, //11785 Thailand in CC at 1201. (Brossell, WI) 1825 Philippines in CC at 1248. (Bryant, KY) 12080 at 0500. (Padazopulos, Greece) 12080 discussing Somalia at 0415. (Maxant, WV)

Radio Free Asia, 7470 via Mongolia in Tibetan at 1248 and 11795 Northern Marianas in Mandarin at 1708. (Strawman, IA) 9445 Northern Marianas (t) in Mandarin at 2157. (Taylor, WI) 9355 Northern Marianas in CC at 1710, 15585 Tinian (NM) in CC at 2340 and 21690 Saipan (NM) in CC at 0308.

(MacKenzie, CA) 9885 via Wertachtal in Tibetan at 0143. (Ronda, OK) 0324. (Parker, PA) 11590 Kuwait Relay in (I) Tibetan heard at 1235. (Brossell, WI) 13830 via Dushanbe in Tibetan at 1228. (Bryant, KY)

RFE/RL-Radio Liberty, 7435 in RR at 0446. (Padazopoulos, Greece) 17730 Sri Lanka in Kyrgyz at 1218. (Bryant, KY)

Radio Free Afghanistan, 17685 Sri Lanka in Dari at 1200. (Bryant, KY)

Radio Farda, 5860, 5885 and 7295 in Farsi at 0120; 13680 at 0303, 13860 in Farsi at 1303 and 17845 at 1045. (Padazopoulos, Greece) 9805 via Lampertheim in Farsi at 0257 and 11520 Sri Lanka in Farsi at 1723-1729*. (Parker, PA)

AFN/AFRTS, 5446.5u with ABC news at 0920. (Maxant, WV)

WWCR, Tennessee, 3255 testing at 0300 and requesting reports to 3255@wwcr.com. (D'Angelo, Parker, PA)

World Harvest Radio, 7555-Cypress Creek at 0533. (MacKenzie, CA)

Trans World Radio, 6105 via Germany with *Rendezvous* pgm at 0715 and 9800-Fontbonne (France) with preaching at 0720. (Maxant, WV) 7215 via South Africa in (I) Oromo at 0335, off at 0345. (Ronda, OK)

Adventist World Radio, 6155 via Austria at 0430 sign on with "This is Adventist World Radio—The Voice of Hope" and into FF. (Brossell, WI) 9845 via Wertachtal at *0400 with multi-lingual IDs and going into AA. (D'Angelo, PA) 12010 via Germany with ID at 0830 and into AA-like language. (Sellers, BC)

KVOH, California, 17775 in SS at 1601. (Yohnicki, ON)

Family Radio/WYFR, 7730 in GG at 0530 and 17725 in SS at 2330. (MacKenzie, CA) 11690 via Irkutsk in VV at 1245. (Bryant, KY) 11895 via Irkutsk in FF at 1206. (Brossell, WI)

WEWN, Alabama, 11520 at 1220 and 11620 at 0930. (Maxant, WV)

VATICAN—Vatican Radio, 7250 at 0506. (Parker, PA) 0520. (Padazopoulos, Greece) 9660 at 0505. (Maxant, WV) 9830 via Canada, just at their 1213 closing. (Sellers, BC) 12020 at 1230. (Strawman, IA) 15570 in FF at 1718. (MacKenzie, CA) 15595 with Catholic news at 1617. (Coady, ON)

VIETNAM—Voice of Vietnam, 9840 in JJ at 1122; into EE heard at 1130. (Ronda, OK) 1242 with talks about Vietnam, VV music. (Sellers, BC)

ZAMBIA—CVC One Africa, 4965 at 0230 with EZL music, M with accented talk. (Coady, ON) 0424 with hymns. (Brossell, WI) 0420 with M in vernacular, also 5925 with inspirational pops at 0445 and 4930 with W and rap things. (Parker, PA) 0540 with music and African news. (Waterbury, AZ) 9540 at 2142 with what can best be described as gospel hip-hop. (Ronda, OK) 15590 heard at 1557 with W and hip-hop. (Yohnicki, ON)

ZIMBABWE—Voice of Zimbabwe, 4828 with only an open carrier at 0350. (Parker, PA)

And, once again, order is restored! Except to extend thanks and high fives to this month's group of stalwart contributors. Here's to Harold Sellers, Vernon, BC; Fotios Padazopoulos, Zaharo, Greece; Stewart MacKenzie, Huntington Beach, CA; Sheryl Paszkiewicz, Manitowoc, WI; Charles Maxant, Hinton, WV; Jerry Strawman, Des Moines, IA; Brian Alexander, Mechanicsburg, PA; Mark Coady, Peterborough, ON; Rich D'Angelo, Wyomissing, PA; Jim Ronda, Tulsa, OK; Rick Barton, Phoenix, AZ;

Joe Wood, Greenback, TN; Robert Wilkner, Pompano Beach, FL; Mark Taylor, Madison, WI; William Hassig, Mt. Prospect, IL; Richard Parker, Pennsburg, PA; Robert Brossell, Pewaukee, WI; Gardnier Waterbury, Peoria, AZ; George Zeller, Cleveland, OH; Mike Bryant, Louisville, KY; Chris Gay, Lexington, KY; Robert Fraser, Belfast, ME; and Michael Yohnicki, London, ON. Thanks to each of you—and keep 'em coming!

Until next month, good listening!

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BROADCASTING

World Band Tuning Tips

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

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

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

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0000	11975	China Radio International, via Mali	CC	0300	7210	Radio Fana, Ethiopia	Amharic
0000	5970	Radio Havana Cuba	SS	0300	5954	Radio Republica, via Costa Rica	SS
0000	6165	Radio Nederland, via Bonaire	SS	0300	5010	Radio Madagasikara, Madagascar	Malagasy
0000	9645	Radio Bandeirantes, Brazil	PP	0300	15325	Radio Japan	JJ
0000	6090	Caribbean Beacon, Anguilla		0300	7215	Trans World Radio, via South Africa	Oromo
0000	6240	Radio PMR, Moldova/Pridnestrovie		0300	4976	UBC Radio, Uganda	
0000	15275	Radio Thailand		0300	13680	Radio Farda, USA	Farsi
0000	9790	Radio Prague, Czech Republic		0300	7200	SRTC, Sudan	AA
0000	6020	China Radio International, via Canada		0300	15425	Voice of Russia	
0000	6135	Radio Santa Cruz, Bolivia	SS	0300	6080	Voice of America, Sao Tome Relay	
0030	9675	International Radio of Serbia		0300	9965	Voice of Russia, via Armenia	SS
0100	7435	Radio Prague, Czech Republic		0300	11590	Radio Cairo, Egypt	AA
0100	7375	Croatian Radio, via Germany	Croatian	0330	6030	Radio Oromiya, Ethiopia	Oromo
0100	11780	Radio Nacional Amazonia, Brazil	PP	0330	6135	Channel Africa, South Africa	
0100	6973	Galei Zahal, Israel	HH	0400	6010	La Voz de su Concencia, Colombia	SS
0100	7475	Voice of Greece	Greek	0400	5940	Voz Missionaria, Brazil	PP
0100	7440	Radio Ukraine International	UU	0400	4885	Radio Clube do Para, Brazil	PP
0100	9780	Voice of America, Sri Lanka Relay		0400	5045	Radio Cultura do Para, Brazil	PP
0100	7270	Voice of Russia	RR	0400	5865	Radio Algerienne, Algeria	AA
0100	7355	Radio Romaina International		0400	4950	Radio Nacional, Angola	PP
0100	4975	Radio del Pacifico, Peru	SS	0400	7240	Deutsche Welle, Germany via Rwanda	
0200	3250	Radio Luz y Vida, Honduras	SS	0400	7220	Radio France International	FF
0200	3985	Voice of Croatia		0400	6075	Deutsch Welle, Germany	GG
0200	6000	Radio Havana Cuba		0400	7310	BBC, South Africa Relay	
0200	9700	Radio Bulgaria		0400	6155	BBC, South Africa Relay	Swahili
0200	4915	Radio Difusora Macapa, Brazil	PP	0400	4790	Radio Vision, Peru	SS
0200	11710	Radio Argentina al Exterior		0400	9875	Voice of the People, via Madagascar	
0200	7245	Islamic Republic of Iran Broadcasting		0400	13720	Radio New Zealand	
0200	4919	Radio Quito, Ecuador	SS; irregular	0400	12080	Voice of America	
0200	9885	Radio Free Asia, USA, via Germany	Tibetan	0400	4828	Voice of Zimbabwe	
0200	9805	Radio Farda, USA, via Germany	Farsi	0400	9725	RT Tunisienne, Tunisia	AA
0200	3320	Radio Sondergrense, South Africa	Afrikaans	0400	4965	CVC, Zambia	vernacular
0200	6005	BBC, Seychelles Relay		0400	4990	Radio Apinte, Suriname	DD
0200	7440	Voice of Russia, via Moldova		0400	4775	Trans World Radio, Swaziland	GG
0200	5025	Radio Rebelde, Cuba	SS	0400	3345	Channel Africa, South Africa	
0200	11915	Radio Gaucha, Brazil	PP	0400	4960	Voice of America, Relay, Sao Tome	
0200	3310	Radio Mosoj Chaski, Bolivia	SS	0400	9735	Voice of Russia, via French Guiana	SS
0200	9895	BBC, Cyprus Relay	Dari	0400	11960	Radio Jordan	AA
0300	4780	Radio Djibouti	AA	0430	6165	Radio National, Chad	FF
0300	13760	Radio Havana Cuba	SS	0430	6155	Adventist World Radio, via Austria	FF
0300	9855	Voice of America, Botswana Relay		0500	5910	Marfil Estereo, Colombia	SS
0300	4985	Radio Brazil Central	PP	0500	9515	China Radio International, via Albania	AA

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0500	9430	Christian Voice, via Australia		1400	9560	Adventist World Radio, Guam	
0500	7925	Radio Algerienne, Algeria	AA	1400	15150	Islamic Republic of Iran Broadcasting	AA
0500	6155	Radio Austria International	GG	1400	17725	Radio Jamahiriya, Libya	
0500	4025	Radio Verdad, Guatemala	SS	1400	15150	Sound of Hope, Taiwan	CC
0500	7240	RDP International, Portugal	PP	1500	11710	Voice of Korea, North Korea	
0500	11725	Radio New Zealand		1500	11680	Radio Nacional, Venezuela, via Cuba	SS
0500	11970	Radio Japan, via France		1500	21655	RDP International, Portugal	PP
0500	7730	Family Radio	GG	1530	11905	SLBC/Radio Ceylon, Sri Lanka	
0500	7250	Vatican Radio		1600	12095	BBC Relay, Ascension Island	
0500	9660	Vatican Radio		1600	15410	Deutsche Welle, via England	
0500	9430	CVC, Zambia		1600	15300	Radio France International	FF
0500	7275	RT Tunisienne, Tunisia	AA	1600	15595	Vatican Radio	
0500	9500	Trans World Radio, Swaziland		1600	17775	KVOH, California	SS
0500	7320	Radio Rossii, Russia	RR	1600	15380	Bc. Svc of the Kingdom, Saudi Arabia	AA
0500	9450	Radio Romaina International		1600	17700	So. Sudan Interact. R., via Ascension	AA
0600	7350	Radio Nigeria		1700	9515	Radio Canada International	FF
0600	6185	Radio Educacion, Mexico	SS	1700	17680	Christian Voice, Chile	SS
0600	3960	Star Radio, Liberia		1700	9665	Radio Exterior de Espana, Spain	SS
0700	7125	Radio Guinea	FF	1700	11510	Radio Dabanga, Netherlands	AA
0800	6020	Radio Victoria, Peru	SS	1700	15140	Radio Sultanate of Oman	AA
0800	6010	Radio Mil, Mexico	SS	1799	9335	Korean Central Broadcasting, N. Korea	KK
0800	3925	Radio Nikkei, Japan	JJ	1800	15085	Islamic Republic of Iran Broadcasting	GG
0900	5990	Radio Senado, Brazil	PP	1800	9305	Radio Cairo	AA
0900	3290	Voice of Guyana		1800	11835	Voice of Turkey	GG
0900	5446	AFN/AFRTS, Florida	usb	1800	12040	Voice of Russia	
0900	11620	Radio Ukraine International		1800	11820	Bc. Svc. of Kingdom, Saudi Arabia	AA
0900	6050	HCJB, Ecuador	Quechua	1900	15580	Voice of America, Botswana Relay	
1000	4865	Radio Alvorada, Brazil	PP	1900	11705	Radio France International	FF
1000	6020	Radio Australia	Pidgin	1900	15190	Radio Africa, Equatorial Guinea	
1000	6025	Radio Amanecer, Dominican Republic	SS	1900	15535	Radio Nederland, via Germany	
1000	9840	Radio Japan		1900	15345	RTV Marocaine, Morocco	AA
1000	4747	Radio Huanta 2000, Peru	SS	1900	15540	Radio Kuwait	
1100	7280	Voice of the Strait, China	CC	1900	12015	Radio Exterior de Espana, Spain	SS
1100	9526	Voice of Indonesia	various	2000	11610	Radio Nederland, via Madagascar	
1100	3385	Radio East New Britain, Papua NG	Pidgin	2030	9705	La Voix du Sahel, Niger	FF
1100	11740	Radio Japan, via Singapore	Tibetan	2100	7335	China Radio International	SS
1100	5010	SIBC, Solomon Islands		2100	15190	Radio Inconfidencia, Brazil	PP
1200	6165	CKZN, Canada		2100	9445	All India Radio	
1200	6070	CFRX, Canada		2100	9420	Voice of Greece	Greek
1200	15400	HCJB, Australia		2100	9540	CVC, Zambia	
1200	7355	KNLS, Alaska		2130	11865	Deutsche Welle, Germany, via Rwanda	
1200	2485	ABC Northern Territories, Australia		2200	11875	Radio Australia, via Palau	
1200	11825	Adventist World Radio, Guam	CC	2200	4845	Radio Mauritanie, Mauritania	AA
1200	17620	Radio France Intl, via French Guiana	FF	2200	9830	Voice of Turkey	
1200	11580	Far East Broadcasting/KFBS, Saipan	CC	2200	9550	Bc.. Svc. of the Kingdom, Saudi Arabia	AA
1200	11675	Polish Radio, via Austria		2200	6927	R. Nacional de la RASD, Algeria	SS/AA
1200	7455	Radio New Zealand		2300	11620	China Radio International	VV
1200	9695	Radio Japan		2300	4451	Radio Santa Ana, Bolivia	SS
1200	12020	Voice of Vietnam		2300	11815	Radio Brazil Central	PP
1200	7575	Voice of America, Thailand Relay		2300	5990	China Radio International, via Cuba	
1200	9830	Vatican Radio		2300	17605	Radio Nederland, Bonaire Relay	DD
1200	15450	Voice of Turkey		2300	9587	Super Radio Deus e Amor, Brazil	PP
1230	9650	KBS World Radio, South Korea		2300	15560	Radio Australia	
1300	9675	China Radio International	RR	2300	4900	Familia FM, Guinea	FF
1300	9580	Radio Australia		2300	17820	Deutsche Welle, Germany, via USA	GG
1300	9400	Far East Broadcasting, Philippines	Mandarin	2300	17725	Radio Taiwan international, via Florida	SS
1300	9575	Radio Thailand	EE/TT	2300	6055	Radio Exterior de Espana, Spain	FF
1400	13740	China Radio International, via Cuba					

Trivia And Toons

by R.B. Sturtevant, AD7IL

Q. You've mentioned before that during wartime governments often confiscated civilian amateurs' radio equipment. What did the government do with the ham gear during wartime?

A. Usually it was just locked up somewhere that the owners hoped wouldn't be on the bombers' maps. Equipment was usually returned to its owners after the war. For one ham in Jamaica, however, things took a different twist during World War II.

John Grinan, a native of Jamaica and a ham since 1916, had established the first amateur station in Jamaica in 1926. When ham radios were confiscated in September 1939, Grinan suggested that his equipment be adapted to mediumwave AM and used as a government station to give the British island colony news and government announcements. Scheduled broadcasts using Grinan's equipment began in November 1939. Initially there was only one hour-long broadcast per week. In time, however, ZQ1, as the station was known, increased its on-air time and widened its format. In May 1940, Grinan left Jamaica for the United States and donated his equipment to the government. The station remained on the air and in government hands until 1950 when it was sold and began commercial broadcasting.

Q. The Allies got a lot of intelligence from spies that the Nazis had sent to Britain but who were then turned by British Counterintelligence. Did this mean that gaining insight into German intentions after D-Day became more difficult since there were no more spies to turn?

A. Well, yes and no. After D-Day Germany wasn't as interested in what their spies in Britain

had to say. After all, the fighting was now on the continent. Ever optimistic, though, the Nazis were planning a big comeback, so they left "stay-behind" agents. These true believers in the Nazi cause went to radio Berlin with the latest news on the Allies activities.

Each of the stay-behind agents would send several test messages to Berlin before the Allies actually over ran their position, sometimes even before the German troops left the area. The Radio Security Service, which had been operating Direction Finding nets in Britain since 1939, was also active on the continent. They picked up these test messages going to Berlin and pinpointed the stay-behind spies. As soon as the Allies got into the newly liberated area, the RSS would lead Counterintelligence to the clandestine transmitter and the radio game would go on from there.

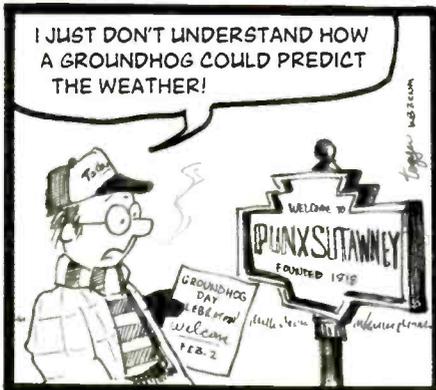
Q. I am under the impression that the general number of hams is on the decline. Is that true?

A. Far from it. Back in the 1950s there were about 100,000 licenses granted in the United States. In the 1960s there were about 200,000. Back then our friends in Great Britain had only about 9,400, and many of the world's nations (about half) had only about 25 hams in their countries. Only 16 nations had more than 1,000 licensed hams.

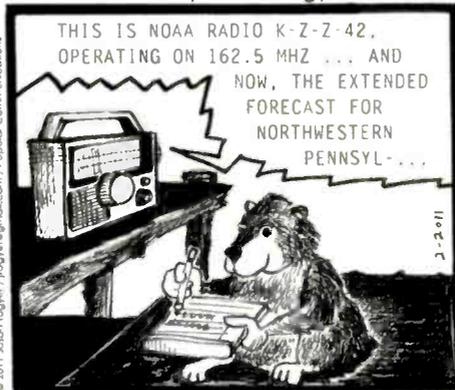
By the end of the 1970s, America had 375,000 licensees. In 2000 Americans on the air numbered 680,000, and at the end of 2010 the FCC listed 734,866 licensed amateurs in the U.S. We aren't first in the world anymore, though: Japan currently has about 1.3 million licensees, up from only 30 in 1925. So, I'm happy to say, your impression is mistaken.

What you may be observing is that the ratio between hams and non-hams is getting wider. There are fewer licenses per capita than there used to be because there are more Americans now than in the past. Assuming that the ratio is a constant over time (statistically speaking it should be), that means that there are a lot of potential hams out there who haven't been introduced to amateur radio and don't know what they're missing. When was the last time you invited someone into your shack for a radio evening? Maybe it's time.

SPURIOUS SIGNALS



By Jason Togyer KB3CNM



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The Ten-Tec Eagle HF DSP Transceiver

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Ten-Tec's Eagle measures 2.9 x 8.5 x 10.25 inches (HWD) and sells for \$1,995 with its built-in tuner or \$1,795 without the tuner; an optional 320NB noise blander adds \$43.

For more information about The Eagle or Ten-Tec, visit www.tentec.com or call 800-833-7373.

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face, consumers can also be greeted by their favorite photos. Its easy-to-use touch screen and Wi-Fi connectivity provide access to thousands of Internet radio stations around the world, and the built-in Wi-Fi connection lets you check weather, share online photos, and use popular Internet applications. Finally, you can display your digital photos saving favorites to the 128MB of internal memory.

The Altaz Internet Clock Radio/Digital Photo Frame retails for \$99.99 and is available on Amazon.com and through the ALTAZ online store at www.AltazUSA.com.



Altaz 3.5-inch Internet Clock Radio offers a cool visual element: a digital photo frame.

On The Web

Ham Square

If you're a radio amateur who owns an iPhone and is frequently on the go, you'll want to check out a new app from Mark Turner, G7LEU. Turner has developed an iPhone application called Ham Square that uses the iPhone's built-in GPS receiver to determine current location, then presents that location in decimal degrees and Maidenhead Locator to show the current "square." The app is free and available to iPhone users via the iTunes App Store. For more info, see www.kramstuff.com.

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At Transmitter Site, AM Broadcast DX Reaches New Heights

by Bruce A. Conti
contiba@gmail.com

Craig Healy, chief engineer for a number of radio stations in Rhode Island and Massachusetts, also has an interest in long-distance (DX) reception of broadcast stations. "Radio is interesting regardless whether you're on the transmit or receive side," said Healy.

Recently, while one of his stations, 550 AM WDDZ, was temporarily off the air, Healy had the opportunity to attempt reception of AM broadcast signals at its transmitter site in Cumberland, Rhode Island. In 40-plus years as an engineer, this was the first time he ever had access to what appeared to be really quiet DX-worthy facilities.

"In the past I have done this at other locations," Healy said. "I have had access to daytimers, but they were too close to other fulltime AM stations. When 1220 WRIB in Providence, Rhode Island, was a daytimer, I occasionally did this after sign-off. The antenna was very noisy." But the experiment wasn't a total loss. "I remember working someone in Czechoslovakia on 75 meters SSB with only 100 watts."

"I DXed off 1340 in New Bedford, Massachusetts, for a while," Healy told me. "It was noisy. This 550 site has very little noise. I was surprised."

Healy also described another successful experiment with an AM receiver antenna co-located on

"... fellow broadcast DXer Chris Black and I [joined chief engineer Craig Healy] for an evening of AM broadcast DXing to survey reception off the dormant WDDZ two-tower antenna array."

the 95.5 WBRU FM tower high atop the Sciences Library 15-story building at Brown University. "WBRU to Puerto Rico was great, following a salt water path up Narragansett Bay."

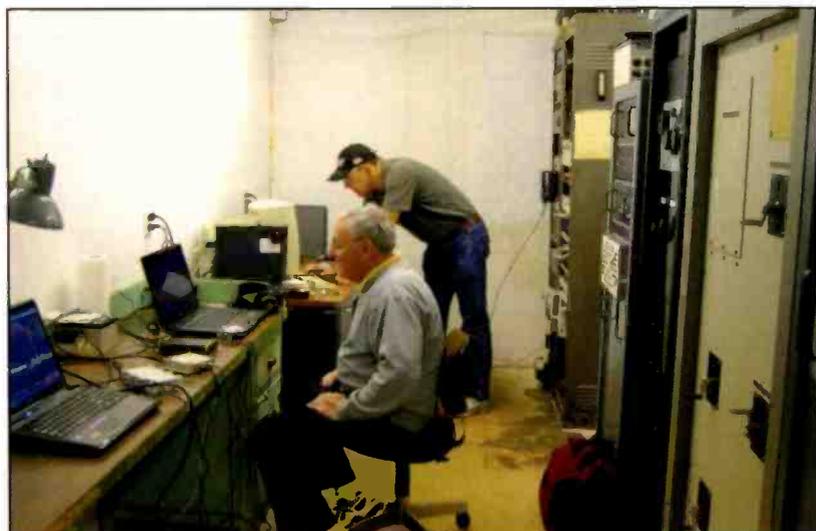
For this latest experiment, an RFSpace SDR-14 software-defined radio (SDR) receiver was connected to the WDDZ antennas while the station was off the air. In addition to DXing, from the radio station engineer's perspective, Healy was curious to learn more about sources of interference to WDDZ. The SDR-14 was tuned to 550 kHz with a streaming audio Internet link for 24/7 remote monitoring. WDEV Vermont, WGR Buffalo, WSVA Virginia, Radio Rebelde Cuba, Radio Nacional Colombia, and YVKE Venezuela were all heard on 550 at various times between sunset and sunrise.

That led Healy to wonder what might be found on other frequencies—and that, in turn, led fellow broadcast DXer Chris Black and I to join him for an evening of AM broadcast DXing to survey reception off the dormant WDDZ two-tower antenna array. It's nice to have a broadcast engineer who's also a DXer! Following is a brief run-down of what we used and what we heard.

Antenna Overload

Two 300-foot tall, one-sixth wavelength antennas located on the site are tuned for operation at 550 kHz and phased at night to produce a cardioid pattern aimed 168° southeast. The primary null on the backside of the cardioid is optimized at 40° off the horizon for short-skip protection of co-channel WDEV in Vermont.

As sunset approached, three SDR receivers were connected to the antenna array for this DXpeditionary experiment: an Microtelecom Perseus, an RFSpace SDR-14, and a WiNRADiO Excalibur, via an ICE active 4-way splitter. Upon initial hook-up to the big antennas, our receivers



Chris Black and Craig Healy with the WiNRADiO Excalibur, Microtelecom Perseus, and RFSpace SDR-14 in the WDDZ transmitter room.



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were overloaded with spurious signals throughout the entire AM band from former cross-town rival 630 WPRO. It took a couple of in-line -6 dB attenuators to eliminate the interference. WPRO harmonics still showed up at 470, 1260, and 1890 kHz. For some unknown reason, the site had a fix on WPRO, yet none of the other local radio stations were a problem.

The beam of the phased antennas definitely enhanced reception to the south. Radio Rebelde Cuba was logged on multiple frequencies including rare reception on 540 kHz. YVKE Venezuela dominated 550 kHz. Radio Progreso Cuba could be heard under WJR on 760 kHz. Radio 4VEH Haiti was an easy catch on 840 kHz. Sensitivity above 900 kHz was way down because the array was tuned for 550 kHz operation, which Healy said was to be expected. The directional pattern also seemed to deteriorate at higher frequencies, with strong signals from the north, such as 800 CJAD Montreal, very evident, yet Cuba could still be heard on 820, 861, 870, and 900 kHz. Later we switched to non-directional operation using just one of the two antennas, and most of the tropical signals disappeared. WGR Buffalo now dominated 550 kHz.

Ghosts Of AM Past

It seems that every AM broadcast facility has its collection of relics. Among the WDDZ museum pieces I admired during my visit is a Motorola C-QUAM AM stereo exciter. (AM stereo technology actually isn't very old, but it went into rapid decline by the late '90s as most AM stations switched from music to



The WDDZ two-tower array of 300-foot, one-sixth wavelength, 550-kHz antennas aimed southeast.

news/talk. Very few stations still broadcast in C-QUAM AM stereo today.) Two vintage RCA racks are still in use, where modulation, processing, and monitoring rack-mount equipment is secured. All the original tube transmitters are long gone though, replaced with solid-state digital-ready hardware, leaving only the larger footprints of the old equipment behind on the floor of the transmitter room. There was a time when live studios were located in the building, back in the '70s when WGNG ruled the airwaves broadcasting Top 40 music from the site, but now only echoes of the glory days of AM radio filled an empty room as we reminisced.

AM Present

The transmitter equipment in use at WDDZ is a mix of old and new. The primary and back-up transmitters are Nautel J1000 solid-state units. Although Nautel is based in Canada, these transmitters were built at its manufacturing subsidiary in Bangor, Maine. The primary transmitter is setup for hybrid analog/HD digital operation with a GPS synchronization unit to maintain frequency accuracy within hundredths of a hertz. A vintage-style Delta Electronics unit measures power and SWR. An Optimod model 9100B audio processor, Wizard AM digital modulation monitor, and HD digital modulation monitor keep the sound in check.



The station's Nautel J1000 transmitter outfitted with HD digital and GPS synchronization units.



Vintage-looking Delta Electronics power and SWR unit at WDDZ.

Auto-pilot software keeps the entire operation running smoothly, including the switch between 1-kW omnidirectional daytime operation and the 540-watt nighttime directional pattern which occurs with the loud clunk of relays being activated. Panels of large knobs and cranks are used to control reactance and resistance and look like something out of a classic black & white science fiction movie.

Broadcast Loggings

The Cuba connection and more select-ed logs from the WDDZ experiment fol-low. All times are UTC.

540 WFLF Pine Hills, Florida, heard at 0035 carrying Gators Radio Network sports.

540 WGOP Pocomoke City, Maryland, heard at 2150 oldies music, ID for 540 AM and 100.7 FM.

540 Radio Rebelde, Sancti Spiritus, Cuba, at 2307 heard under WFLF, parallel 550, 560, 600, etc.

549 Chaîne 1, Les Trembles, Algeria, at 2120 North African music, throwing a loud het against 550 kHz.

550 WGR Buffalo, New York, heard at 0100 with Buffalo Sabers Radio Network hockey. WGR Sportsradio 550 contest promo.

550 Radio Rebelde, Cuba, at 2336 on top with a romantic vocal parallel 540, 560, and 600 kHz.

550 YVKE Caracas, Venezuela, heard at 2358 promos with many Venezuela mentions, llanera background music, over Cuba.

555 ZIZ Basseterre, St. Kitts & Nevis, heard at 2140 loud and clear with soca music.

560 Radio Rebelde, Moa, Cuba, at 2303 heard Rebelde signature sounder and news.

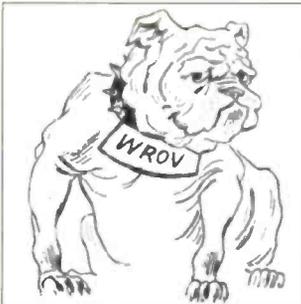
560 WFIL Philadelphia, Pennsylvania, heard at 0100 Focus on the Family promo, wfil.com ID.

This Month In Broadcast History

75 Years Ago (1936)—According to some this was when BBC television began broadcasting, although the more widely accepted official launch date wasn't until November. Regardless, by all accounts, the BBC was the world's first television network, signing on in 1936 using the Marconi-EMI system.

50 Years Ago (1961)—Netherlands-based pirate Radio Veronica on 1620 kHz, transmitting from international waters aboard the ship *Borkum Rif*, began carrying the English program of the Commercial Neutral Broadcasting Company, but it was short lived, cancelled a month later due to a lack of interest by Dutch listeners and a weak signal toward the UK. AM 1240 WROV Roanoke, Virginia, ran a 24-hour "Call to Aid" telethon to help the unemployed.

25 Years Ago (1986)—The FCC issued a pre-emption order that prevented local zoning ordi-nances from placing unreasonable restrictions on the use of television receive-only (TVRO) satellite dish installation. A clarification in the Telecommunications Act of 1996 assigned legal protection only for satellite dishes with a maximum diame-ter of 1 meter.



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Any day you don't learn something new is a wasted day!



Circa 1939 Faradon capacitor once used for phasing of a directional antenna array.



HD digital monitor and Optimod analog audio processor.

570 Radio Reloj, Santa Clara, Cuba, at 2238 syncopated clock heard under WMCA New York.

580 WKAQ San Juan, Puerto Rico, at 2347 news/talk in Spanish heard through co-channel WTAG Worcester, Massachusetts.

595 SNRT Oujda, Morocco, at 2215 this offset carrier noted alongside an unidentified transatlantic signal on 594 kHz.

600 Radio Rebelde, Arroyo Arenas, Cuba, heard at 0000 excellent, "Rebelde, la habana, la emisora de la revolucion," and sounder, over WICC.

610 Radio Rebelde, Bahía Honda, Cuba, at 2254 over WIP Philadelphia, an operatic vocal parallel 600 kHz.

640 Radio Progreso, Cuba. at 2340 barely readable in heavy interference from adjacent 630 WPRO Providence, Rhode Island.

650 Radio Rebelde, Media Luna/Santiago de Cuba, at 0005 clearly parallel 600 kHz, heard through 660 WFAN New York HD digital noise.

684 RNE1 Sevilla, Spain, at 2143 sports talk in Spanish on a good signal despite interference from adjacent 680 WRKO Boston.

690 WELD Fisher, West Virginia, at

2220 jingle and oldies music. WZAP Bristol, Virginia, also heard in there.

693 BBC5 United Kingdom, at 2108 a strengthening signal with news/talk in English.

710 Radio Rebelde, Cuba, at 0102 Spanish contemporary vocal parallel 600 and 670 kHz, under WOR New York.

750 Radio Progreso, Palmira/Trinidad, Cuba, heard at 2325 loud and clear, parallel 690 kHz.

760 Radio Progreso, Cuba, at 0015 heard under WJR Detroit.

770 Radio Rebelde, Las Mercedes, Cuba, at 0000 sounder and ID with organ background music parallel 600 kHz, well over WABC New York.

800 CKLW Windsor, Ontario, at 0100 Windsor Spitfire hockey, dominant on non-directional antenna. CJAD Montreal was dominant on the directional array.

820 Radio Reloj, Contra maestre, Cuba, at 0002 syncopated clock, minute marker, RR code ID, and news.

820 Radio Paradise, St. Kitts & Nevis, presumed fading in briefly with religious choral music.

840 CHMW Dobleveé, Santa Clara, Cuba, at 0100 Dobleveé ID with signature music, over WHAS Louisville.

840 4VEH Cap Haitien, Haiti, at 2320 first noted with talk in Caribbean-accented French, then at 2354 heard callsign ID and religious music.

861 Radio Reloj, Cuba, at 2330 on this offset frequency producing a loud het against 860 CJBC Toronto.

870 Radio Reloj, Sancti Spiritus, Cuba, at 2337 syncopated clock and news, over News/Talk 870 WHCU Ithaca, New York.

900 Radio Progreso, Cacocum, Cuba, at 2334 nostalgia parallel 690 kHz.

Healy maintains the AM-DX.com website (www.am-dx.com), dedicated to the distant AM station reception hobby, 150 to 1800 kHz, and featuring a database of over 3,300 directional antenna patterns. While on the Internet, be sure to connect with *Popular Communications* on Facebook or send an email to let us know what you're receiving.

Until next time, 73 and Good DX!



Retired Motorola C-QUAM AM stereo exciter.

Bombs Away From The Bayou State— Barksdale Air Force Base

by Mark Meece, N8ICW
ohioscan@gmail.com

The transition from spring to summer in 1979 saw the release of musician John Stewart's album "Bombs Away Dream Babies," his first commercial success as a solo act after spending many years with The Kingston Trio. You're probably asking yourself what this musical history lesson has to do with monitoring military communications. Well, just hang with me here while I explain my train of thought. I recently had some songs from that album running through my head when it gave me the inspiration for this issue's column. So, with a nod to Stewart for leading the way, follow me as we check out the home of the oldest bomb wing in the United States Air Force: Barksdale Air Force Base, Louisiana.

Cotton Fields Becomes Airfield

Barksdale is located on the eastern bank of the Red River in Bossier Parish near Bossier City, Louisiana. It's just across the river from Shreveport and about 18 miles east of the

"The B-52 from Minot was mistakenly loaded with six AGM-129 ACM cruise missiles fitted with W80-1 nuclear warheads, unbeknownst to the aircrew or the base personnel, creating a huge controversy."

Louisiana-Texas state line. Today it's home to the 8th Air Force and the 2nd Bomb Wing, the aforementioned oldest bomber unit in the United States Air Force. Its history goes back many decades.

Early development of the area that would one day become Barksdale began in February 1928 when several Shreveport community leaders came together and hired a local crop duster, an Army Air Corp Captain named Harold Ross Harris, to scout the area by air for a useable site for an airfield. As Harris flew just east of the city he spotted a large open cotton plantation and presented this as a good possibility to the selection committee. Shortly thereafter, the committee approved the site's selection, and made a trip to Washington D.C. to offer its proposal directly to the War Department. This was soon followed by a visit from a special Army board, which agreed that the area suited all the requirements for an Army Air Corp Base. On December 5, 1928, Shreveport was officially chosen as the site for the new airfield.

In 1931 construction on Barksdale Field began in earnest with the grading of 1,400 acres of cotton fields, work which required 150 men and 350 mules. The runways and hangars quickly took shape, and flying operations got underway on November 7, 1932.

On February 2, 1933, the base was named in honor of 2nd Lieutenant Eugene Hoy Barksdale, who died on August 11, 1926, while testing a Douglas O-2 observation aircraft over McCook Field near Dayton, Ohio. Lieutenant Barksdale is interred at Arlington National Cemetery. The



A B-52H of the 3rd Bomb Wing, Barksdale AFB, Louisiana.

name officially changed to Barksdale Air Force Base on February 13, 1948, with the founding of the United States Air Force as a separate service.

From Bombs To B-52s

Airships were still in use when Barksdale's airfield was first being built, back in the 1930s, so Hangars 1 and 2 were built to accommodate the large aircraft, although no airships were ever officially assigned to base.

The training of bomber crews started in the 1940s. Later in that decade, Barksdale became the home of the first USAF all-jet strategic reconnaissance/bomber aircraft, the RB-45 "Tornado" and the soon-to-follow B-47 Stratojet from Boeing. From 1945 to 1949 it was the headquarters of the Air Training Command.

As the Cold War heated up in the 1950s, Barksdale's importance grew, and it became a major Strategic Air Command (SAC) base and the headquarters of the 2nd Air Force. In 1958 Barksdale started receiving the first of its Boeing B-52 "Stratofortress" and Boeing KC-135 "Stratotankers," and it welcomed the assignment of the 2nd Bomb Wing, transferred from Hunter Field in Georgia. The 20th Bombardment Squadron and the 913th Air Refueling Squadron became the operational subordinate units at Barksdale. The 20th BS, which flew the B-52F, was reassigned in June 1965 to the 7th Bomb Wing at Carswell AFB, Texas. The 62nd Bomb Squadron replaced the 20th BS after being re-assigned from Eglin Air Force Base, Florida, flying the B-52G. In April 1968 the 596th Bomb Squadron joined the 62nd as a "flying G" unit at Barksdale.

It wasn't until the end of the Vietnam War, during the 1972-1973 period, that units from Barksdale saw action as they participated in the LINEBACKER I and LINEBACKER II raids. The first operational KC-10A "Extender" refueling aircraft arrived nearly a decade later, in November 1981, for Barksdale's 32nd Air Refueling Squadron. The 32nd ARS was reassigned to McGuire Air Force Base, New Jersey, on June 1, 1992. After its final flight in 1992, Barksdale's last KC-135 was placed in the Eighth Air Force Museum located on the base. Barksdale also took part in Operation JUST CAUSE in Panama in 1989 and Operation DESERT SHIELD and DESERT STORM during the first Gulf War in 1990 and 1991, respectively.

Barksdale has also served as a refueling and rest stop for the Space Shuttle and its 747 transport when flying back to Cape Canaveral from a west coast landing. It further served as a safe haven for President George W. Bush's return flight to the capital following the 9/11 attacks. More recently Barksdale has played a role in Operation ENDURING FREEDOM and the Global War on Terrorism.

Modern Day Barksdale

Today Barksdale is a part of the Air Combat Command (ACC) and remains the home of the Eighth Air Force Headquarters. It operates one runway (15/33) on 22,000 acres. See the

"Listening In" sidebar for a full listing of units and frequencies in use at Barksdale.

Bent Spear Incident

An incident took place on August 30, 2007, that involved a B-52 originating from Minot Air Force Base and terminating at Barksdale. It caused serious lasting repercussions through the United States Armed Forces. The B-52 from Minot was *mistakenly* loaded with six AGM-129 ACM cruise missiles fitted with W80-1 nuclear warheads, unbeknownst to the aircrew or the base personnel, creating a huge controversy. As described by Joby Warrick and Walter Pincus writing for the *Washington Post*:



The Space Shuttle *Discovery* makes a stop at Barksdale on its way back to Kennedy Space Center.



An A10 of the 917th Wing, Barksdale AFB.

That detail would escape notice for an astounding 36 hours, during which the missiles were flown across the country to a Louisiana air base that had no idea nuclear warheads were coming. It was the first known flight by a nuclear-armed bomber over U.S. airspace, without special high-level authorization, in nearly 40 years.

Then Secretary of Defense Robert Gates said at the time, "A substantial number of Air Force general officers and colonels have been identified as potentially subject to disciplinary measures, ranging from removal from command to letters of reprimand." He accepted the resignations of United States Air Force Secretary Michael Wynne and USAF Chief of Staff Michael Moseley. It became known as the "Bent Spear Incident," for a

military reporting term to identify and report a significant incident with a nuclear weapon, nuclear components, or nuclear-bearing vehicle.

If You Go

Lastly, Barksdale is home to the 8th Air Force Museum, which boasts an impressive static display of historic aircraft, including B-17, B-24, SR-71 Blackbird, F-111, and a Royal Air Force Avro Vulcan. It is open from 9:30 a.m. to 4 p.m. every day except Thanksgiving, Christmas, and New Years Day. For more information on the museum, see its website at <http://www.8afmuseum.com>.

Listening In

Barksdale Air Force Base

Active Units

2nd Bomb Wing [DOOM]

11th Bomb Squadron (Training) B-52H

20th Bomb Squadron B-52H

96th Bomb Squadron B-52H

917th Wing (AFRC)

93rd Bomb Squadron B-52H

47th Fighter Squadron (Training) A-10 [CAPS]

Callsigns

2nd Bomb Wing

11th BS TUFF

20th BS SCOUT, TURBO

96th BS DOOM, HAVOK, REX, ROGUE, SKULL

917th Wing

93rd BS SCALP, SHAM

47th FS CAPS, RUCKUS, SWINE

Aeronautical Operations

Barksdale Air Force Base (KBAD)

119.900 Shreveport Approach/Departure South

121.400 Barksdale Approach/Departure (0000-0600)

121.800 Barksdale Ground

123.750 Shreveport Approach/Departure North

128.250 Barksdale Tower

227.400 Metro

228.275 96th BS Air to Air

236.600 Barksdale Tower

250.250 96th BS Air to Air

275.800 Barksdale Ground

278.300 Barksdale Tower

307.025 ATIS

311.000 ACC Command Post Primary (RAYMOND 06)

321.000 ACC Command Post Secondary (RAYMOND 06)

335.550 Shreveport Approach/Departure South

360.725 Shreveport Approach/Departure North

372.200 Pilot to Dispatcher

372.900 Shreveport Approach/Departure

Barksdale Air Force currently operates an analog Motorola Smartnet UHF Trunked Radio System using digital voice, which requires a digital scanner in order to monitor.

SYSTEM: Barksdale Air Force Base

TYPE: Motorola Type II Smartnet

SYSID:

VOICE: Analog and APCO-25 Common Air Interface

Custom Frequency Table

BASE: 406.350

SPACING: 50.0 kHz

OFFSET: 380

Frequencies

406.35000	406.75000	407.15000
407.55000	407.95000	408.20000
408.75000	409.15000	409.55000
409.75000	409.95000c	410.20000

c- denotes the control channel

Talkgroups

80	MISSION OPERATIONS CENTER (MOC) MAIN
112	MOC Secondary
250	Line Chiefs
288	Munitions
368	Security
432	Fueling
496	Tower
1584	Aircraft Maintenance
1840	Aircraft Maintenance
1968	Aircraft Maintenance
2000	Aircraft Maintenance
2064	Aircraft Maintenance
2224	Aircraft Maintenance
2384	Aircraft Maintenance

The 2005 DoD Base Re-alignment and Closure list recommends that Eielson Air Force base, Alaska, be realigned, three A-10 aircraft from the 354th Fighter Wing will be sent to the 47th FS at Barksdale. The 47th will also be receiving six of the A-10s from 926th Fighter Wing's fleet based at Naval Air Station Joint Reserve Base New Orleans.



A B-2 and B-52 fly in formation over Shreveport, Louisiana, during the Defenders of Freedom Airshow 2010. (US Air Force photo by Staff Sgt Samuel Rogers)

While the base itself is closed to the public, each year there is an open house when non-DoD personnel are allowed. Annually, Barksdale hosts the Defenders of Liberty Airshow and Open House, which is usually scheduled around the end of April or beginning of May. Admission is free and so is parking. Everyone is subject to search, though it seems that cameras and scanners are allowed. Keep a watch on the event's website, at www.barksdaleafbairshow.com, for details.

Military Loggings

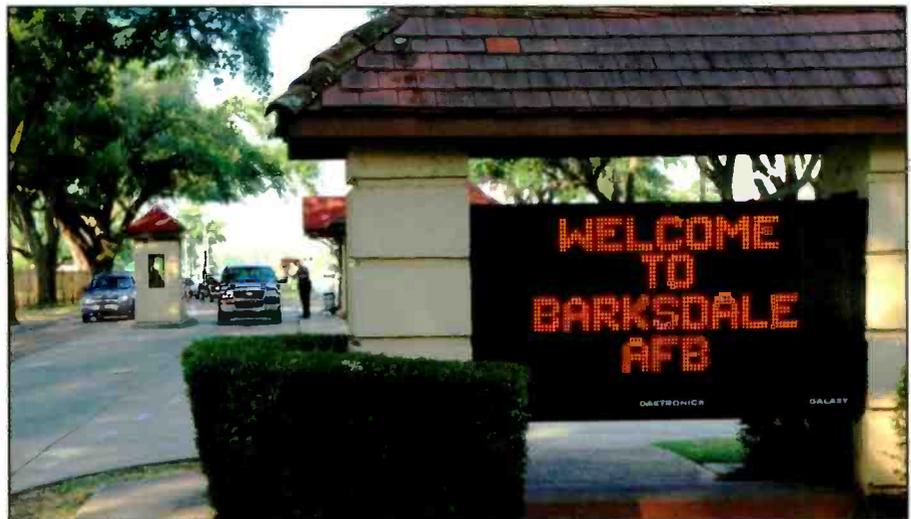
We love receiving reader input and loggings from all of our readers, whether it's on HF, VHF, or UHF. You can send your comments, questions, and logs to me at the email address listed in the column header. If you're sending logs, please try to follow the format you see here and we will include them in a future column.

Our regular contributor Doug Bell of Ontario, Canada, provides us with his HF military intercepts heard from his Sony ICF-2010 and ICOM R-75 using a 50-foot long wire.

5598: USB 0146Z REACH 879 (C-5B #85-0004/436th AW, Dover AFB, DE) wkg New York Radio with a confirmation of fl 310.

5616: USB 0015Z SAM 8095 (C-32A #98-0002/89th AW, 1st AS, Andrews AFB MD) wkg Gander Radio with a 040W position report. Flight instructed to contact Gander Center at 050W on 127.10.

0123Z REACH 411 (C-17A #01-0189/



Barksdale Air Force Base Shreveport Gate. (U.S. Air Force photo by Senior Airman Joanna M. Kresge)

437th AW, Charleston AFB, SC) wkg Gander Radio with a 040W position report with fl 320.

0125Z REACH 264 (KC-135R #57-1454/319th ARW, 905th ARS, Grand Forks AFB, ND) wkg Gander Radio with a position of 58N 050W with fl 340.

0125Z REACH 552 (KC-10A #86-0038/60th AMW, Travis AFB, CA) wkg Gander Radio with a GQBL SELCAL check.

0202Z REACH 524 (C-17A #03-3126/305th AMW, McGuire AFB, NJ) wkg Gander Radio with a 040W position report with fl 340.

0236Z REACH 467 (C-5B #87-0037/439th AW, 337th AS, Westover ARB, MA) wkg Gander Radio with a 030W position report with fl 330.

8864: USB 1037Z REACH 106 (C-17A #04-4129/305th AMW, McGuire AFB, NJ) wkg Gander radio with a 030W position report.

1056Z SPAR 31 (C-37A #01-0028/6th AMW, 310th AS, MacDill AFB, FL) wkg Gander Radio with a 040W position report and a FSBG SELCAL check.

1107Z VADER 24 (C-130H #92-3024/910th AW, 773rd AS, Youngstown-Warren Regional Airport, OH) wkg Gander Radio with a full 040W position report.

1131Z REACH 650 (C-5A #70-0467/164th AW, 155th AS, TN-ANG, Memphis IAP, TN) wkg Gander Radio with a 030W position report and a DRAJ SELCAL check.

1210Z REACH 353 (KC-135R #60-0353/92nd ARW, Fairchild AFB, WA) wkg



A B-52 refuels over Afghanistan. (U.S. Air Force photo by Master Sgt. Lance Cheung)

Gander Radio and receiving instructions to contact Gander Center on VHF.

1220Z REACH 535 (C-130H #92-0552/19th AG, 50th AS, Little Rock AFB, AR wkg Gander Radio and reporting fl 220.

1315Z REACH 107 (C-17A #05-5145/452nd AMW, March AFB, CA) wkg Gander Radio and reporting fl 340.

1320Z REACH 813 (C-5B #87-0041/439th AW, 337th AS, Westover AFB, MA) wkg Gander Radio with a 050W position report with fl 320. Flight performed a DQBP SELCAL check.

8918: USB 1410Z CARMEN 02 (C-130H #84-0213/166th AW, 142nd AS, DE-ANG, Newcastle County Airport, DE) wkg New York Radio with a confirmation of fl 210.

1455Z TEAL 76 (WC-130J/403rd WG, 53rd WRS, Keesler AFB, MS) wkg New York Radio and reporting operations are normal. [Flight on a Data Mission into EARL.]

1924Z NOAA 49 (Gulfstream G-IV #N49RF/National Oceanographic and Atmospheric Administration, MacDill AFB, FL) wkg New York Radio with a full position report in fl block 410-450. [Flight on a Research Mission into Hurricane EARL.]

2119Z NOAA 43 (WP-3D #N43RF/National Oceanographic and Atmospheric Administration, MacDill AFB, FL) wkg New York Radio with a full position report. [Flight on a Research Mission into EARL.]

2230Z NASA 817 (DC-8 #N817NA/Airborne Laboratory, NASA Dryden Flight Research Center, Palmdale, CA) wkg New York Radio with a full position report. [Flight on a Research Mission into Hurricane EARL.]

8992: USB 1810Z OMNI 05 (C-130H/USCG Law Enforcement Mission) wkg HF-GCS Station OFFUTT with a phone patch and flight data.

11175: USB 1418Z REACH 226 (C-130H #96-1006/133rd AW, 109th AS, MN-ANG, Minneapolis-St. Paul IAP, MN) wkg HF-GCS Station OFFUTT with a phone patch and weather passed for Minneapolis-St. Paul.

1512Z REACH 431 (C-17A #92-3291/97th AMW, 58th AS, Altus AFB, OK) wkg HF-GCS Station OFFUTT with an AR message passed.

1521Z REACH 2294 (C-17A #92-3294/62nd AW, McChord AFB, WA) wkg HF-GCS Station OFFUTT with a HF signal check.

1539Z TOPCAT 42 (RC-135V #64-14842/55th WG, 38th RS, Offutt AFB, NE) wkg HF-GCS Station ANDREWS with a phone patch and flight data passed.

1645Z JETBLUE 691 (A320/Boston> Las Americas, Santo Domingo) repeatedly calling "mainsail" on HF-GCS with no response. Calls were interrupted by an EAM from ANDREWS. [This "mainsail" made me think there was something wrong aboard this Airbus, but in a few minutes I monitored this same flight wkg New York Radio with a full standard voice position report.]

2036Z REACH 035 (C-17A #01-0188/437th AW, Charleston AFB, SC) wkg HF-GCS Station LAJES with a HF radio and signal check.

2059Z KING 74 (HC-130P #65-0974/10th RQW, 102nd RQS, NY-ANG, Gabreiski Airport, NY) wkg HF-GCS Station OFFUTT with flight data and ETA passed.

2108Z COBRA 70 (OC-135W #61-2670/55th WG, 45th RS, Offutt AFB, NE) wkg HF-GCS Station OFFUTT with a phone patch and weather passed for Elmendorf AFB, Alaska.

2145Z NAVY LL097 (P-3C/VP-30, NAS Jacksonville, FL) repeatedly calling "mainsail" with no response.

11232: USB 1545Z RESCUE 333 (C-130H #130333/8 WG, 436 SQN, CFB Trenton, Ontario) wkg TRENTON MILITARY with flight and SAR data passed.

1928Z RESCUE 305 (C-130E #130305/8 WG, 436 SQN CFB Trenton, Ontario) wkg TRENTON MILITARY with a phone patch and SAR data passed.

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Preparing For An Emergency

by Mitch Gill, NA7US,
NA7US@yahoo.com

We've been very lucky so far that there has not been another incident in this country as catastrophic as 9/11. Perhaps lucky is not the proper word to use, as attempts since then were thwarted by the remarkable work of people in our intelligence agencies as well as some quick action by private citizens. I chose that word, however, because as diligent as we are, the persistence of our enemies makes me feel less confident that an attack will never occur. In addition, our own government agrees that an attack is inevitable.

Air Traffic Monitoring

The authorities tell us that it's a matter of "not if, but when" for another attack. We need to keep that foremost in our mind as we continue to monitor appropriate frequencies. In my opinion right now, some of the more important frequencies to monitor at this time in our history are from 118 MHz to 135 MHz. These are the frequencies that all airports use to communicate with all commercial aircraft. And as security is ramped up, it has become even more important to monitor the frequencies. Terrorists have attempted to use aircraft to ship explosive mail or packages from overseas, and they continued to view aircraft as an ideal weapon or target.

Several frequencies are used, from the taxiway to several thousand feet in the air, but it's not that hard to find out the exact frequencies to listen to.

Use your scanner to lock in on the signals it hears, then listen for a while to determine what part of the flight is being tracked on that particular frequency. Is it the final approach frequency or another part of the flight? Record that information.

I have several airports within 100 miles of my workplace at Camp Murray and listen to them on my 2-meter radio that also monitors from 116 MHz to 152 MHz. I enjoy listening to the pilots as they takeoff and the tower tells them what frequency to go to. It took some time to figure out that 352 meant 135.200, but once I had that I was able to monitor an aircraft from takeoff until it was released to another air traffic controller in the next region."

Before Disaster Strikes

After a year's analysis of national readiness to deal with a second, escalated 9/11, a 13-member panel of experts found that DoD response plans are dated, federal-state command and control is "problematic," and no "civil-military common operating picture" exists. The chairman sounded the following alarm in his September 15, 2010, letter to the Defense Secretary and Congress, excerpted here:

It is with a profound sense of urgency that we deliver the report of the Advisory Panel on Department of Defense Capabilities for Support of Civil Authorities After Certain Incidents. This is a matter of critical



FEMA Urban Search and Rescue members search for residents in areas impacted by Hurricane Katrina. (Jocelyn Augustino/FEMA)

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Main Features:

- 406 Presets (FM 3 Pages: 27 Presets / LW 1 page: 9 Presets / MW 2 Pages: 18 Presets / SW 39 Pages: 351 Presets) + 1 Priority Preset
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national importance. All of us who have worked in the area of domestic disaster response know that there are factors that complicate effective response to major incidents... These factors will most certainly complicate a response to a major chemical, biological, radiological, nuclear, or high-yield explosive incident, but they must not stand in the way of essential and timely preparation. Such an incident will happen. It is only a matter of time. The stakes are too high to delay action... Notwithstanding the lower probability of the occurrence of such an incident compared with hurricanes, tornadoes, floods, wildland fires, and other natural disasters, the potential consequences demand that we quickly find those solutions.

(signed) Steve Abbot,
Chairman
Adm.(ret.)

Abbot was the first Deputy Director of the Office of Homeland Security. His last assignment before retirement from active duty with four-star rank was Deputy Commander-in-Chief of the U.S. European Command during the Kosovo conflict; before that Deputy Director of Operations for the Chairman of the Joint Chiefs of Staff. Reading his words, you can see how your ability to monitor the frequencies is not just for the safety of the masses, but for your own safety as well. If Abbotts' assessment is correct, we can expect that in the event of any disaster, local first responders could at some point be overwhelmed and the state and federal response slow (remember Katrina?). The government has a lot of work to do should disaster strike, and I cannot afford to risk my family's health or well being on relying on its assistance. Neither should you.

Being Prepared For Anything

What can you do? Prepare for the worst and hope for the best. And put together your essentials now.

Here's what I carry in my disaster preparedness backpack. Enough food and water to last for 72 hours. This includes:

- 4 liters (1 gallon) of water per person per day, for washing, drinking and cooking
- Non-perishable food
- Water purification tablets and filters
- Cooking supplies
- Plastic plates, plastic coffee cups, water cups

You also want to have the following:

- A first aid kit
- Fire starting tools (i.e. matches, flint etc.)
- Hand crank and or solar radio
- Radio monitor and extra batteries
- CB or ham radio with gel cell battery
- 15-watt solar cell to charge gel cell
- List of emergency frequencies to monitor (in the event the radios memory is lost)
- Toiletries
- A disaster plan
- Emergency information (I have information on building traps for fish and animals, pictures of edible mushrooms and plants, etc.)
- Fishing line and hooks
- Maps and travel information
- Standard camping equipment, including sanitation supplies
- Weather-appropriate clothing (poncho, headwear, gloves, etc.)
- Bedding items, such as sleeping bags & blankets
- Enough medicine to last an extended evacuation period
- Pet, child and elderly care needs
- Lighting (battery or crank operated flashlight, glow sticks)
- Cash and change, as electronic banking transactions may not be available during the initial period following an emergency or evacuation
- Fixed-blade, folding knife and small axe



Carolyn, WV7Q, and Adrien, N7BVL, monitor HF frequencies during an emergency response exercise at Fort Flagler in Washington State.

- Firearms for hunting and protection (this is a personal choice)
- A good compass

The items listed above should be kept in your vehicle. For home you also should consider storing some gasoline and buying a generator. I paid 250 dollars for a brand new one that is large enough to keep my refrigerator and freezer going as well a few lights and the TV should we get bored. Even a two-stroke generator can be useful to keep the refrigerator going or an HF radio. Remember that during an emergency there are no restrictions on any radio frequency. You use anything you can.

There are many survival kits that you can buy online from various sites, which are easily found with a short search. I personally prefer developing my own as I then know what I have and know how to use it. I have also purchased one for my wife to ensure that she has what she needs in the event we are separated.

If disaster does strike in your area—manmade or natural—you will feel confident to face it if you've prepared yourself and your family. No one can predict how bad or how long a disaster can affect you. Just prepare based on what you're comfortable with. Some people will prepare for the long term and some for the short term. I have chosen the long term based on three possible scenarios for my area. Below are the criteria I used for how much survival food I should store. They are based on my personal decisions on what is appropriate for my situation; you must make your own decision.

- Flooding – At least 3 days after the rain quits
- Fire – No more than three days
- Terrorist Attack – Unknown, depends on extent of damage
- Earthquake – At least three weeks, depending on amount of damage
- Financial collapse – Unknown

Based on the above I chose to buy a year supply of food for my wife and me. If an earthquake hits, I can feed a few more people should it develop into a long-term event and people run out of food. There is no way for me to judge what affect a financial collapse would have, I believe that it could be long term. And I have to make my choices based on what I believe.

I hope this gives you some idea of what you can do and what you should monitor. In addition to the aircraft frequencies, continue to monitor all the other ones we've discussed and those you've found to be useful in your area.

Be prepared—that's one decision you'll never regret.

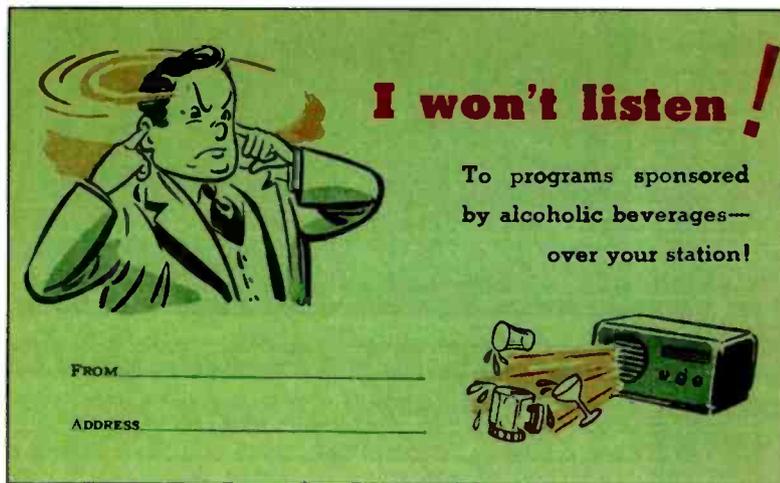
"RADIO STATION POSTCARDS, 4 Inches By 6"

by Shannon Huniwell
melodyfm@yahoo.com

Other than those few words of our title, all the little classified newspaper advertisement offered was a phone number and a price: \$5. That scant description, though, was more than sufficient motivation for me to make the call.

The young man who answered admitted not knowing anything about the ad except that it had been submitted by his aunt, who was being moved into a nursing home. He said she hated the idea of having to downsize and sell her estate, so only parted with stuff that her relatives would probably just chuck anyway.

When I stopped by the homestead that afternoon, the nephew led me to a linoleum-floored kitchen/dining room combo, piled high with sundry clutter and collectibles, including stacks of pie plates, old peanut butter jars filled with rubber bands, novelty Avon bottles, and little cat figurines. The guy complained of not being able to find anything, but he eventually hit pay dirt inside a shoebox labeled, "alcohol radio station protest." "Maybe they're in here," he mumbled.



Though not even the most imaginative proponents of today's emerging multi-program, digital audio broadcasting claims it can teleport solids and liquids, folks in the 1940s who'd be inclined to send this protest card seemed to have envisioned alcohol commercials as transmitting booze through the public airwaves. All that the disgruntled listener had to do was jot down the offending station's address on the stamp side and fill in his or her contact info on the "message" side. In some cases, the temperance group that sanctioned such boycotts would not only supply the cards but pay for the postage as well. It's not known if the mailings had any direct results other than to cause station officials to chuckle and show the cards to their colleagues.

"Essentially mesmerized by his unexpected visitor, the engineer thanked her profusely and tripped over his desk chair while reaching for a handful of publicity cards touting the new FM."

As he fumbled to uncover the treasure, I imagined a lifetime's carefully collated grouping of beautiful linen postcards featuring colorful depictions of AM or FM radio station buildings and their associated transmitter sites. Instead, I thumbed through at least a hundred pieces of bland card stock illustrated with a stuffy prude blocking his ears from a radio program apparently sponsored by some beer or wine company. All the cards were identical and told the recipient that the sender would not be listening to any broadcast associated with old John Barleycorn!

"Is your Auntie a teetotaler?" I asked, handing the box back to the fellow.

"Heck no," he answered, "She could drink any sailor under a table. Anyhow, I doubt she ever sent any of these cards. Probably picked 'em up somewhere to use as scrap paper. If you want the whole box for a buck you can have it."

Even with that huge reduction in the asking price, the cards held minimal appeal for me, but I figured one might someday get parlayed into a *Pop' Comm* column and that the remainder could be palmed off on my Dad as a gag birthday present. "Hope you don't mind dimes and nickels," I said, digging through the basement of my purse. The guy watched me count out a dollar, then tossed the coins into a nearby pie tin. "Bingo," he said when they'd all hit their mark.

Halfway out the door, I turned and said to him, "I know this sounds dumb, but I sure would be interested in finding out from your Auntie if these cards have a story."

"Give me a number or email or something," the nephew offered with very little enthusiasm, "and I'll see what I can do."

An Unexpected Contact

The column that was slated to run this month was partially written when I noticed the words "RADIO CARDS" in the subject line of an email

with an unfamiliar address. Its content made me put what I'd been composing on hold and go in a different direction. It read: Shannon,

Strangely enough, my Aunt knew a lot about those cards you bought. It's odd because she doesn't remember much these days. She said she got the cards from an elderly neighbor whose brother used to send dozens of them to radio stations every week. From the looks of it, he must have spent tons of money in postage.

Anyway, she said the story goes back in the late 1940s, when this man was asked to work late on an office project. His pregnant wife encouraged this because she knew her husband was on track for a big promotion. Turns out that she felt like she was going into labor, but had experienced a few previous false alarms. She didn't want to worry him for nothing, so decided to get the woman next door to drive her to the hospital. On the way, a guy who'd spent several hours at neighborhood bar ran a red light and plowed into their car. The drunk hardly sustained a scratch, but the women in the other car were killed.

As you can imagine, the young husband went to pieces. When he came out of it, he became fanatical and devoted much of his spare time to anti-drunk driving and anti-alcohol causes. Probably, whenever he heard a beer commercial, he fired-off one of those cards. Obviously, beer and wine ads never went away from the airwaves. So, barraging stations with the protest cards didn't do any good other than to make him feel he was somehow avenging his wife's death.

Hope that helps.

Oh, I've Seen These Kinds Of Things Somewhere...

I shared the email with my father after later gifting him with all but one card in the box. True to form, he had a tale about such protests. Dad recalls touring a local Long Island AM outlet when he was a Boy Scout involved in some community service broadcast. The DJ tasked with leading the tour made the scouts laugh when he showered a carton chock-full of "Stop advertising alcohol!" postcards onto the studio floor, and quipped, "I told one of the old coots who constantly send these my way that I'll be delighted to quit running alcohol ads on my show if she'd simply send me a donation so I could buy some beer."

Dad wasn't clear on whether the cards were green or had the exact same graphics as the ones I bought, though does believe



Somewhere in greater Portland, Oregon, this billboard caught the eye of a KXL official who had the scene turned into a postcard. In that miniature form, it could be sent to potential customers in an effort to get them to sample the beautiful or "better" music format offered on KXL-FM in stereo all day and night. The orchestra conductor theme signaled a selection of songs that were considered "high-brow classy" when compared to the teeny-bopper Top-40 hits transmitted on the city's higher rated AM outlets. Though the image is undated, I'd put it circa 1965-1966.

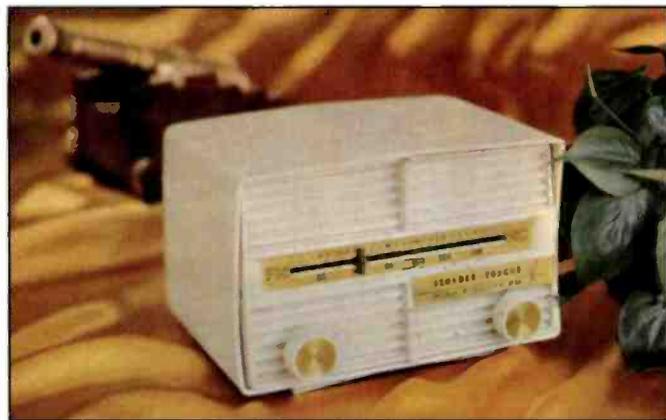
that they included a clip-art drawing and an ultimatum. Fresh in his memory, however, was another radio card-related story he heard from an engineer friend in Portland, Oregon. Actually, there wasn't much to the tale, other than that the motivation of the card sender was the polar opposite of the grieving husband's. In this case, the person mailing the cards sent them to random individuals and businesses, rather than directing them to broadcast stations.

Reportedly, a woman—described to my father by his engineer buddy as "a classy lady, a sultry movie star-type"—sweet-talked her way into the engineering office at KXL-AM/FM, and handed a new-in-the-box Blonder-Tongue FM table radio to my Dad's friend. She had heard that KXL-FM played "sophisticated music," and wondered if it wouldn't be too much trouble for him to properly tune the radio to KXL-FM's "channel" and make certain that the music sounded nice on her radio. This occurred around early fall 1965, not more than four or five months after the 68-kW (@ an antenna height of 920 feet above average terrain) beautiful music outlet debuted at 95.5 MHz in stereo.

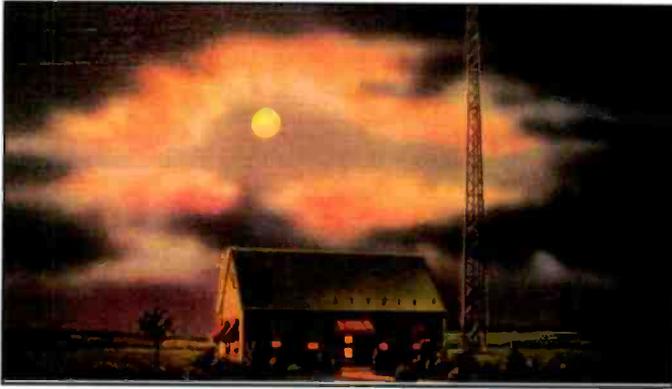
While the set the lovely lass presented to the technician was monophonic, its fidelity was sufficiently pleasing to her ears. She benevolently pledged her support in helping promote the facility and its velvety format. Essentially mesmerized by his unexpected visitor, the engineer thanked her profusely and tripped over his desk chair while reaching for a handful of publicity cards touting the new FM. "Send these to your friends," he gushed.

"Don't be surprised if you're the first to receive one," she smiled. And with that she was gone.

A decade later, as the fellow relayed details of the meeting to my father, who was visiting him in his office, he closed the



A fascinating New Jersey-based electronics company, the makers of this Blonder-Tongue FM radio are best known to many broadcasting history enthusiasts as manufacturers of UHF-TV converters. These were sold with the B-T marquee and private-branded by Radio Shack and Sears. During the company's genesis (in the early '50s), Ike Blonder and Ben Tongue developed a broadband VHF-TV booster that vastly improved reception on the period's television sets. Among the duo's other ventures were graphic equalizers (the best remembered was dubbed the Audio Baton), radios like the FM table model in my Dad's KXL engineer story, and ownership of a Spanish language UHF-TV station (Channel 47 Patterson, New Jersey) and another "U" (Channel 68 in nearby Newark) that beamed subscription television programming throughout the New York media market. Today, B-T is located in Old Bridge, New Jersey, and its products serve the cable TV industry.



Late night travelers on U.S. Highway 11, a few miles above Hagerstown, Maryland, might recognize this scene. Then again, it's unlikely that the WJMJ transmitter building really looked quite as inviting as this artist's rendition, which portrays such a welcoming illumination coming from every window. Notice how the light coming from the front door shines all down the entrance walkway, beckoning curious visitors. WJMJ debuted in 1932 with 250 watts on 1240 kc. The station has a long history of real community service and at one time had auxiliary studios in Martinsburg, West Virginia, and Waynesboro, Pennsylvania. Its present owner purchased the station in 1972 and recalls first hearing it as a kid in the late 1930s on a crystal radio.

story by giving Dad that card. "My radio and I thank your skillful hands and wonderfully warm hospitality," it read in an impressively feminine swirl. A postscript indicated she'd sent others word of his "beautiful sound." "Keep the card," the buddy told Dad. "I've had it here all these years. My wife would never believe me if I'd brought it home and tried to explain it was just a note of appreciation for tuning an FM radio dial!"

Pictures Of The AM Band After Dark

There must be other broadcast postcard collectors out there, other radio buffs who love studying images of how proudly even the most modest stations could be presented to anyone with a mailing address. Somehow I imagine my kindred spirits bending over their cherished keepsakes late at night, smiling over the memories they rekindle.

Coincidentally, perhaps, three of my favorite radio cards picture their subjects in a nighttime setting. Those who've gazed through a nearby radio tower at moving clouds backlit by a harvest moon have felt the eerie sensation that only a tall skeleton of steel accented by blinking red beacons can produce. To those of us who understand the unseen, far-reaching silent power of their standard broadcast radio waves beaming into the sky, AM transmitter towers in twilight are icons of communication, far more romantic than any wireless signal digitizing some laptop or cell phone. Perhaps that's why vintage postcards from WJMJ Hagerstown, Maryland; WSNJ Bridgeton, New Jersey; and WTJS from Jackson, Tennessee, show their facilities performing during what could well be the witching hour.

The beauty of these postcards tells our story this month far more eloquently than my words ever could, so I'll let them speak for themselves. I do, however, want to pay my respects, in a way, with my own theory behind *why* broadcasters saw fit to publish cards bearing the likeness of their.

The most classic of these scenes come down to us from the 1930s through the Truman-era and were printed on linen card

stock, which provided a rich canvas-like texture perfect for the artist's rendition of how the station might ideally appear. I believe that many were original watercolors influenced by a series of photographs snapped by the artist or someone else connected with the project. No doubt, station management consulted with the artist while the painting was in progress. Little touches that one party or another believed would add a Norman Rockwell-esque quality of "all is well in our corner of America thanks to our station" were probably at the forefront of little critiques. Afterward, buildings perhaps appeared a bit staterier, or maybe the grounds were better manicured, and towers may have been treated to fresher red and white with a few small brushstrokes, perhaps even redesigned.

One watercolor, which didn't make it to postcard stage, was commissioned by the owners of the former WZZZ-AM 1300 in Fulton, New York, and depicted the daytimer's 305-foot guyed stick as a noticeably shorter self-supporting antenna due to the artist's need to fit the top beacon into the work and the licensee's preference for broad-based, three-legged towers. The painting also features the call letters above the front door when, in fact, they were only posted on a wooden sign peeking from tall grass and cattails near the swampy entrance of the 1000-watt's long gravel driveway.

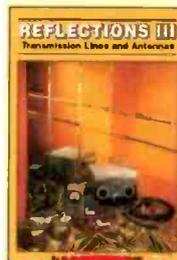
Any Truly Effective Radiated Promotional Power?

Besides their logical use of these cards as promotional mailings by station personnel to area businesses, local listeners, and an occasional DXer (arguably the most grateful recip-

REFLECTIONS III

by Walter Maxwell, W2DU

Here's a sampling of what you'll find inside this fully revised and updated third edition!



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ients), the lion's share of these 4 x 6-inch advertising ambassadors went to people who had scant connection to the pictured station's RF output.

It seems that stacks of them were distributed to hotels, motels, and tourist destinations in the broadcast property's coverage communities. The strong bond that most station officials typically maintained with their chamber of commerce is a plausible reason why radio station postcards often got funneled to tourism venues—establishments continuously flush with brochures, flyers, and cards suitable for imparting information to current visitors and hopefully drumming up new ones. Curiously then, not many of the station cards told readers where they could find the featured signal on the hotel's or car's radio dial. That meant that the postcard could only serve to portray the local station as a pretty face.

A good example of this limitation is a summer's day postcard portrayal (in a retouched/air brushed, so-called "natural color" image) of an Art Deco-style building, captioned "Radio Station WMAM, Marinette, Wis." The message side of the card highlighted Marinette, not the station. Not a word was devoted to WMAM's 570 kHz frequency or operating schedule. And I suspect neither sender nor receiver gave much thought to bolstering the (circa 1940) 250 watts day/100 watts night service for the station's audience. Written on the postcard in stately cursive is the following:

Ethel, We've been having marvelous weather this week! Walked along the Menominee River near the shore of beautiful Green Bay. The outboard motor Ernie brought with us conked out. He says he'll rent a boat again anyway so we can get out on the water for some relaxing sun and fun. I think he just wants me to row! Tell Hannah "hello" and we'll see you sometime next Sunday. Love to all, Evelyn.

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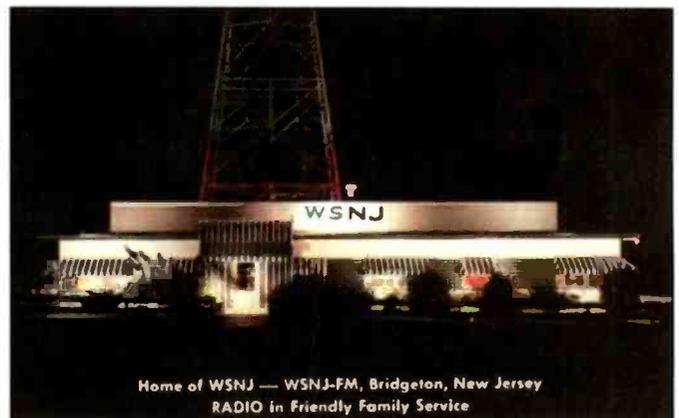
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If the writer had any thought of WMAM, it was as conspicuously absent as the station's tower missing from the card. No matter, as an avid collector, I'm still on the lookout for other 4 x 6 mementos like it, and anything else that provides a moment-in-time view of America's broadcast past.

And so ends another day of radio history in *Pop'Comm*...



Jackson, Tennessee's WTJS first hit the air in 1931 and has long operated on 1390 with 5-kW days and 1-kW at night. Check out the half-round ironwork ornamentation atop the remarkably well-lit broadcast building. It appears as if a party is going on inside. And get a load of that fancy fountain! During the 1920s and 30s, such spray in front of vintage transmitter sites usually had something to do with a circulating pump that cooled the RF generating tubes. In addition to the pond fountain, the WTJS grounds featured a meticulously manicured shrubbery and a small lake. After the transmitter site was relocated, the building fell into some disrepair, but has been acquired and revitalized by a Jackson-area civic organization, which uses the former radio locale as a meeting place for community service events.



Even when this 1960s photo was taken of 1000-watt day/250-watt night WSNJ (1240 kc) at Bridgeton, New Jersey, it was her more powerful (15.2-kW @486 feet above average terrain) FM side that was a friend to listeners in four states. The sisters shared a common theme of local radio (faithfully broadcasting everything from school lunch menus to a "swap-shop" free classified ads call-in show) until early 2004 when WSNJ-FM was sold to a savvy radio investment group that moved it into the Philadelphia market. Happily for fans of hometown radio, though, the AM was purchased by a local individual who strives to continue the station's enthusiastic, native Southern New Jersey provenance. That's a mighty impressive tower—and its red and white paint goes nicely with the striped green awnings!

Modern Radios: Increasing Value In A Tough Economy

by Kirk Kleinschmidt, NT0Z
kirk@cloudnet.com

WYou don't have to be out of a job to know that the economic power of the average ham—and the average citizen—is falling a bit short of the American Dream these days. The housing bubble is still burst. The economic recovery hinted at during the midterm elections is pretty much non-existent unless you're already wealthy. And chances are with money tight, Santa couldn't be as generous to us hobbyists as he would have liked this past Holiday Season.

Fortunately, though, the outlook ahead isn't as bleak as the winter. For hams the good news is that no matter how grim the rest of the statistics become, the fact remains that ham radio gear, transceivers in particular, have never been more powerful or more affordable. Sure, radio gear still costs money, but compared to the truly expensive equipment from decades past, every shopping day is Black Friday!

For once, inflation, technology, and the value of the dollar are working in our favor. Plus, modern gear has tremendous size and performance advantages. It's a real win-win scenario, as I dis-

“For once, inflation—a real bogeyman for politicians and economists—is a ham's best friend!”

covered while playing around in the recent November Sweepstakes contests (CW and SSB).

For these outings my trusty ICOM (www.icomamerica.com) IC-718 transceiver shared the spotlight with a FlexRadio (www.flex-radio.com) Flex-1500, a QRP software-defined radio (SDR). Both radios are entry level, each costing about \$650 new. The IC-718 is a versatile “do just about anything” HF transceiver that puts out 1 to 100 watts. It has all the standard features we've come to expect from every HF transceiver: dual VFOs, computer control, DSP, all modes, all bands, QSK CW, easy digi-mode operation, selectable IF filters, etc. The '718 is built like a tank, is very easy to use, and has been a completely trouble-free performer for the past five years.

Having used plenty of higher-end radios in the past, I occasionally found myself wanting a few big-bucks features every now and then, especially better dynamic range, adjustable AGC, and more filter options. But the only real complaints I have with the '718 are its AGC timing and its noise/RF gain performance below 10 MHz. These issues are quite annoying during crowded contest conditions, but aren't a big deal during casual operation.

Because I'd become used to the pros and cons of the little ICOM over the past several years, I was curious to see how the Flex-1500 would handle under the same band conditions. Comparatively, the Flex-1500, being an SDR that requires a computer running PowerSDR software to function at all, is a real paradigm shift that represents the probable future of radio technology.

The two rigs cost essentially the same, but there are vast differences in how they work and perform. I was shocked. And after 30-plus years as a ham that doesn't happen easily.



ICOM's entry-level IC-718 has been in the company's lineup for at least a decade—and for good reason. With a street price of about \$600, the '718 is the perfect “do everything” budget HF transceiver. It's very easy to use, versatile, built like a tank, and doesn't suffer from “nested menu hell” as do radios of many of its competitors.

So, in light of this month's topic—how radio performance is on the rise while costs are still slowly falling—I'm going to offer a few observations I made. I want to stress that this isn't a blow-by-blow review. I didn't make any performance measurements, and I didn't compare the rigs side by side, switching between the radios in real time, but I think you'll get the idea.

The SDR Difference

In a nutshell, SDRs have a conventional receiver front-end up through the first mixer. Instead of converting the incoming RF signal to an intermediate frequency, however, where it's filtered, detected, and amplified, etc., an SDR converts the RF immediately to the "baseband" (AF or RF), where it's digitized and processed by DSP. The functions that are traditionally handled by analog circuits and filters are completely handled in the digital domain.

As mentioned, a PC is required for all functions. That's not necessarily convenient, but it does provide for one of the most powerful SDR features: a band scope spectrum display that shows the strength and location of signals up and down the band (in addition to the signal that you're tuning).

This feature is so powerful that I can now hardly imagine being without it now! And I'm not the only op who feels that way after using a modern SDR. Being able to see a signal, click on it with the mouse, and have it perfectly tuned in is simply amazing.

I must confess that, at the start of the CW sweepstakes, after working a few stations, I wondered why participation seemed down. Several times in a row I "saw" a station calling CQ on the '1500's spectrum display, clicked on the signal and worked the other station. No muss, no fuss. The problem was that the whole process seemed almost too clean. The usual interfering signals and other artifacts of a crowded contest band, 40 meters in this case, were gone. I was actually worried that the venerable November Sweepstakes was suffering an unexpected decline in participation, despite excellent band conditions.

Then I noticed that I had selected a 100-Hz filter bandwidth! No wonder the bands seemed sanitized. I was listening to only a teeny slice of the available spectrum. When I switched to a bandwidth of 2.4 kHz (what I typically tune with on the '718), the band exploded with signals that all seemed to be stacked on top of one another. All was well with the Sweepstakes.

The smooth DSP filters on the Flex-1500, combined with "point-and-click" tuning made possible by the band scope display, had taken me to a new level of amazement. My '718 has a 250-Hz CW filter that works wonders compared to using the stock SSB filter on CW, but the filter is too tight to easily tune up and down the band during contest conditions. Plus, the SDR's noticeably better dynamic range, especially on close-spaced signals, made a huge difference. I easily copied and worked stations that I would have struggled or failed to work before. It was shocking, really.

Some Snags With The Bells And Whistles

Before you get the wrong idea, I had my share of challenges, too. Ergonomically and functionally, SDRs take some getting used to. My shack PC, for example, isn't well integrated into my station design (yet). This was a problem because the Flex-1500 doesn't have a front panel (or physical controls) of any kind. All inputs for tuning and tweaking, typically handled by knobs and buttons, are handled by PowerSDR and the PC mouse.



FlexRadio's entry-level QRP software-defined radio (SDR), the Flex-1500, offers tremendous performance (on HF+6) and a huge feature set for its \$650 price class, but because the '1500 requires a Windows PC running PowerSDR to operate, it's not suited for everyone. The Flex-1500 is tiny, even when compared to the IC-718, which is itself reasonably compact. From the looks of it, about six '1500s could fit in the space of one '718 (not including the required PC). The '1500 is so small, in fact, that it can become "the tail that wagged the dog" when all required cords and cables are connected to it!

The software, while quite functional, isn't going to win any beauty contests, so if you're an Apple/Steve Jobs fan used to graceful and elegant user interfaces, PowerSDR will seem sparse. As a "function before beauty" kind of guy I didn't have any trouble with that.

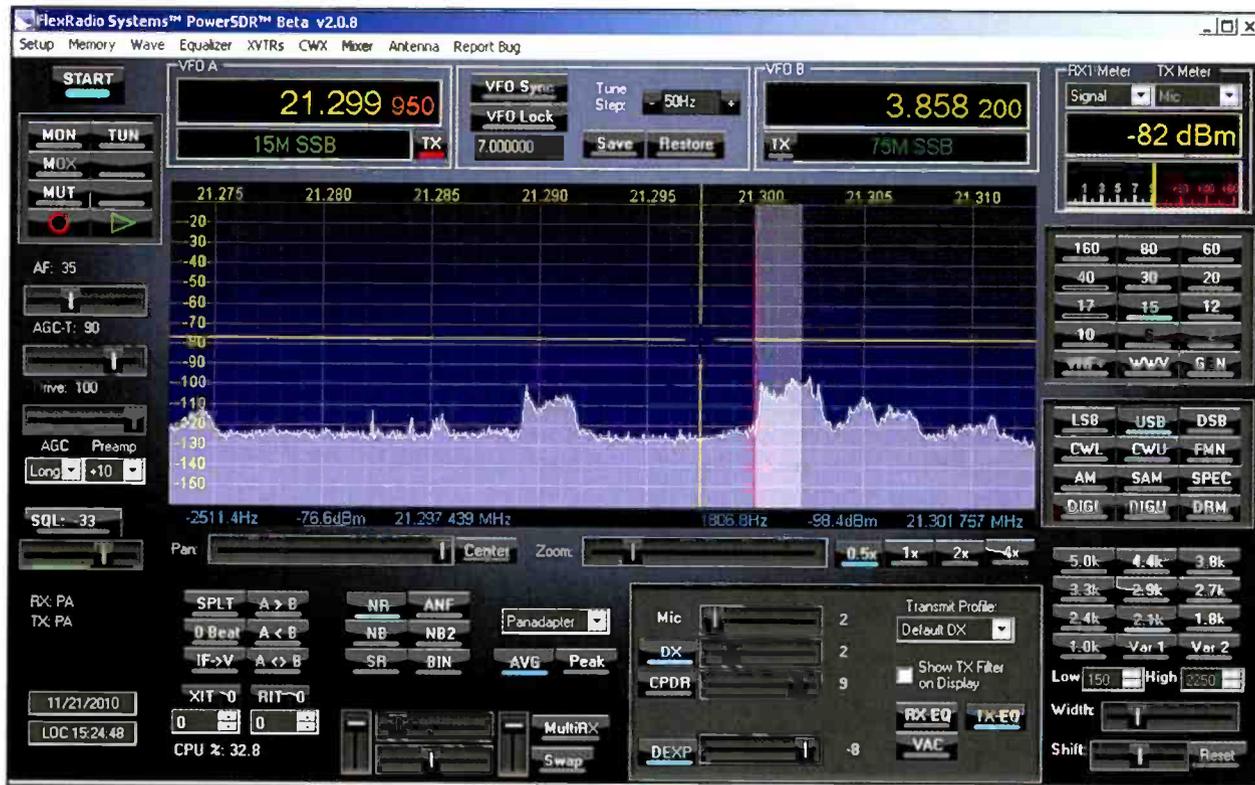
I did become more fluent with using PowerSDR after a few days of playing around, but I still must admit to *really missing* a typical radio interface. For the most part I want knobs and buttons instead of software sliders—but don't touch that spectrum display! That's not going anywhere!

At press time, FlexRadio was still tweaking the '1500's firmware and OS-specific hardware drivers and, because of that, the little radio has a few rough edges that will likely be smoothed out before too long. One consequence impacts your choice of PC operating systems. Presently, PowerSDR works only in Windows XP, Vista or Windows 7. As a longtime PC tech I was surprised to hear that the Flex-1500 works best with Windows 7, with XP coming in a distant second and Vista finishing flat on its face (the Vista part is no surprise!).

My shack PC runs XP, which gives PowerSDR and the '1500 a few problems with signal timing on the universal serial bus (USB), which is used to connect the '1500 to the PC. As a consequence I couldn't use the radio's built-in CW keyer or its QSK capabilities. As mentioned, FlexRadio is working on this issue, but for the Sweepstakes I had to use an external keyer (no biggie) and wire up an external PTT foot switch to toggle transmit and receive. That took me back a few decades.

Getting the radio (and PowerSDR) to work with computerized logging, rig-control, and digi-mode software also takes some doing and may require third-party apps such as Virtual Audio Cable (about \$30; see <http://software.muzychenko.net/eng/vac.htm>) and various virtual serial port managers to make everything work. Getting everything squared away can be difficult, and some ops who try SDRs (not just the Flex-1500) find the whole experience too frustrating.

I have three older LCD monitors connected to my shack PC. PowerSDR was on one, my contest logger was on the other,



Captured here as I was playing around in the November Sweepstakes are several SSB signals on the phone portion of 15 meters. The ability to see nearby signals and simply click on them with the mouse to tune them in is revolutionary. Thanks to an architecture shared by all SDRs, the little radio's close-in dynamic range and multiple ultra-sharp DSP IF filters provide performance that belies the radio's tiny size.

and a Web browser was on the third. Tuning the radio requires clicking on a displayed waveform on the band scope, and fine tuning that signal requires the use of the mouse's scroll wheel—very handy. In short order I was “click scrolling” with ease. But when I needed to point at something or enter data into the logging software, which was in its own display window, I had to click the mouse on the logging software (to give the logging app “focus”); this made fine tuning with the scroll wheel impossible (until I clicked on PowerSDR again, returning focus to that app). It's the little things that make you crazy!

There are ways around this issue, but none are terribly convenient. I could install a Griffin Powermate (www.griffin-technology.com), an external USB-connected multimedia control (“tuning knob”) and map it to the fine tuning function in PowerSDR. That way, no matter which app has the mouse focus, the USB tuning knob will always function. I've thought about building a complete front panel for the radio, with knobs and switches that are mapped to various functions in PowerSDR. I'm not sure whether the software is “open” enough license-wise for that to be permitted, but func-

tionally, at least, some other SDR software packages have that ability. That makes me think about the hybrid radios that already exist, such as the Elecraft K3, which is essentially an SDR with physical buttons and switches. What it's not is entry level! Darn!

There are many aspects of SDRs that I haven't addressed. Interestingly, many seem to come down to performance versus ergonomics. Without a doubt, SDR architecture has a lot to offer, especially in the area of ultimate RF performance. My first experience with it has me convinced of that. Ergonomically, though, I have yet to get used to it. The rough edges—again, of the Flex-1500 and of SDRs in general—will undoubtedly be worked out.

Tough Times Maybe, Great Value Definitely

So, getting back to the two entry-level radios on my bench: The IC-718 is versatile, reliable, and easy to use—and a completely known quantity; the Flex-1500 is an amazing—and amazingly affordable—path to the probable future of radio technology. Its ultimate RF performance outclasses the '718, its spectrum display is revolutionary, but it has hardware, soft-

ware, and ergonomic factors make it suitable for a smaller set of users.

Each radio, with an MSRP of about \$650, is an outstanding value, especially when you consider that back in the day a decent HF transceiver cost as much as a new car. A 1968 Camaro SS (worth a whole lot more today) cost a measly \$2,588. A 1966 Ford pickup was \$1,795. In 1968, a Collins 51S-1 ham/shortwave receiver cost more than \$2,000. Drake's R4, more affordable, still cost \$600, but it offered ham bands only. Even Swan's 350—the budget transceiver of its day—cost \$500.

Adjusted for inflation, a radio that cost \$500 in 1968 would cost more than \$3,000 today! That Collins 51S-1 would cost \$12,000—exactly the cost of a top-of-the-line transceiver today. And we haven't even considered features and performance...Going in reverse, a radio that costs \$650 today would cost about \$100 in “1968 bucks.” That's a real steal for a radio that does stuff that a 1968 radio couldn't even dream of.

For once, inflation—a real bogeyman for politicians and economists—is a ham's best friend! So don't despair: there's at least one thing in the economy that's moving in the right direction.

More Electronic Warfare Antennas

by Kent Britain, WA5VJB
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radio.com

It's a hostile world out there, as the news keeps reminding us, and the folks tasked with protecting us from it are constantly inventing and adapting new technologies for the purpose. One thing that means to readers of this column is that an awful lot of antennas have been developed for use military use. Let's continue with our look at some of them.

The cavity backed spiral antenna is a common electronic warfare antenna because of its extremely wide bandwidth. The lowest frequency is determined by the diameter of the antenna; the highest by how accurately you can form the spiral in the center. 1- to 40-GHz cavity backed spirals are commonly used. The spiral shown in **Photo A** is the nose antenna from the radar decoy we talked about in the last column. It works from 2 to 16 GHz, which was enough to cover all the bands the Navy was interested in for this particular application.

To prevent various resonances in the cavity, the cavity is usually filled with a radar absorber. In **Photo B** we see a couple of cavity backed spirals I built for my antenna range. Note that on one of the examples the spirals go clockwise, but by flipping the board over the spiral goes counter-clockwise on the other antenna. This gave me left hand and right hand circular polarization references.

These are not simple antennas to build. The impedance at the center of spiral is about 120

"This design was dubbed scimitar because the antenna looks much like a sword from an Arabian Nights tale."

ohms and is a balanced input. The coax connector is, of course, 50 ohms and unbalanced. Getting a 50- to 120-ohm Balun working over the entire 700–4000 MHz range of the antenna was fun, to put it mildly. For those with a background in antennas, I have a 5-inch long PCB Infinity Balun in there.

Spirals are not particularly efficient antennas, either, especially with the back side filled with an absorber. Gain is on the order of -6 to -8 dBi. But the circularity of their circular polarization is very good.

How They're Used

At first you might think that the extremely low gain of a cavity backed spiral would be a prob-



Photo A. Spiral antennas for a missile decoy.



Photo B. Spiral antennas for an antenna test range.

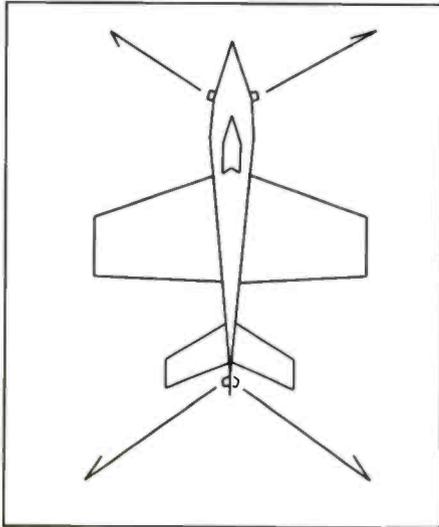


Figure 1. Array of spirals.

lem, but just think about how far away the radar detector in your car can pick up a .1-watt radar. Now, from how far away do you think you can pick up a 1,000,000-watt radar? So low gain is not a problem when listening for high-power military radars. The low antenna gain may even help protect the receiver from burn out.

The radar warning receiver (RWR) on many military aircraft is quite a bit different from a simple radar detector. Typically four antennas are placed around the airplane looking in four directions, as shown in **Figure 1**. On some planes the antennas are mounted on the nose and tail as in that Figure, or they might be on the ends of the rudders, or even the tips of the wings. But the

idea is to have the four antennas looking in four different directions.

The RWR can compare the strength of the signal in these four directions and figure out the direction of the radar. With some knowledge of the radar's power, an approximate distance can be determined. Now we have a direction and a distance. Throw in the frequency, pulse width, pulse rate, and you have a good idea of which radars out there. And if the signal suddenly stays on you and goes to a real high scan rate, then the radar is tracking you. This information goes on a screen in the cockpit with a display somewhat like the one in **Figure 2**. In this example, the S represents a long-range search radar; the W is a Weapons System, and the A's are two aircraft radars. All radars are shown relative to the position of the aircraft. The RWR gives the pilot or weapons officer a good situational awareness of the surrounding electronic threats.

Scimitar

This design was dubbed scimitar because the antenna looks much like a sword from an Arabian Nights tale. **Photo C** shows a scimitar ECM antenna on the belly of a B52 at the Imperial War Museum in Duxford, England. The antennas were very popular back in the 1960s and several found homes on Apollo command modules.

Scimitars are very broad-banded antennas. The lowest frequency is determined by the length of the outside curve;

the highest frequency by the length of the inside curve. They work very well on their harmonics.

Their wide bandwidth made scimitars very popular electronic counter measures antennas. Typically this antenna was used simply to jam enemy ground-aircraft communications. Soviet, and therefore Vietnamese, intercept pilots were virtually a servo in a radio-controlled airplane. A ground controller told them what heading to fly, what altitude to fly at, when to arm their weapons, and when to shoot. It certainly is not the western template for a fighter pilot.

But a ground-controlled pilot doesn't need very much training and follows the Soviet doctrine of a strict top/down command structure. Now jamming that radio link between the ground controller and the airplane can have some real benefits in terms of throwing the proverbial monkey wrench in the efficiency of interceptor pilots.

Photo D shows another version of a scimitar, this one a low-profile design that was developed for a business jet L-Band IFF transponder.

Upcoming Construction Project

I'm not quite finished with it yet, but **Photo E** shows a prototype antenna I'm working on for a possible future construction project. This scimitar has an excellent SWR from 400 MHz to over 1500 MHz and is usable to over 3000 MHz. The tricky part is the low imped-

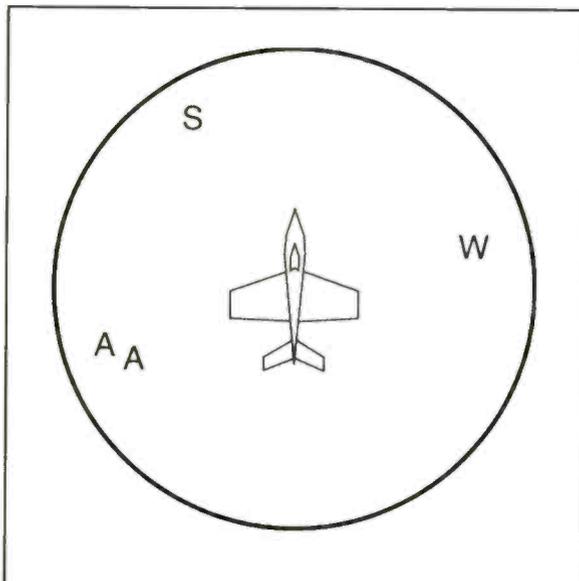


Figure 2. Cockpit display.



Photo C. Scimitar on a B52.

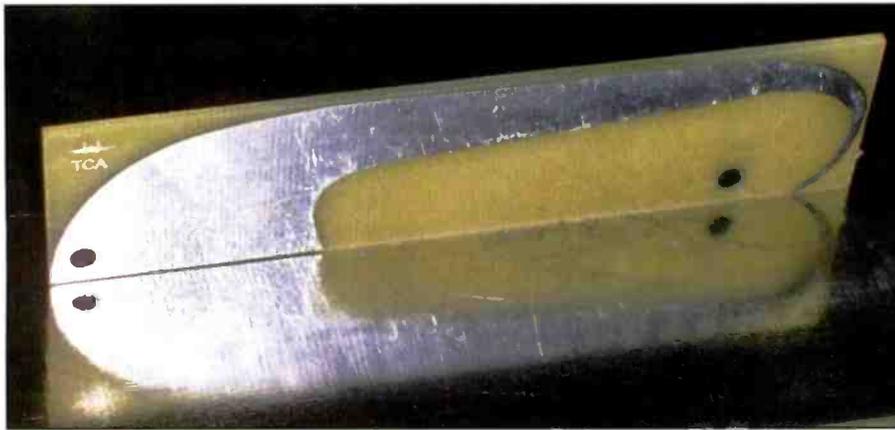


Photo D. Low-profile L-Band scimitar antenna.



Photo E. Homebrew scimitar antenna.

ance of a scimitar: this only has about 20 ohms impedance at the feed point, but I'm working on it.

Wanted: Your Input For Future Topics

I have a family of antennas and low-noise amplifiers that are suitable for amateur radio astronomy. If we have any members of the Society of Amateur Radio Astronomers out there, or any other

readers who are just interested in this area, please let me know and we can consider some for future projects.

We mentioned commercial aircraft IFF radar transponders this month. In Europe it's quite popular to use special scanners that monitor the IFF transponder signals between airports and aircraft. This gives the scanner enthusiast virtually an air traffic controller's view of aircraft traffic. Again, if there's interest among our readers on this, I can easily

make a construction project out of the 1020/1080 MHz receive antennas.

As always we welcome questions from you. Suggestions for column topics are always handy during times of writer's block. Snail mail can be sent to my attention care of *Popular Communications*, 25 Newbridge Rd., Hicksville, NY 11801; email can be sent to WA5VJB@cq-vhf.com. For additional antenna projects, see the reference section in www.wa5vjb.com.

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Understanding Propagation And Space Weather Terms

by Tomas Hood,
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If you tune one of the WWV, WWVB, or WWVH shortwave stations (they are found at 2.5, 5, 10, 15, and 20 MHz), you may hear hourly space weather and geophysical reports broadcast by the National Oceanic and Atmospheric Administration (NOAA). At 18 minutes past each hour, on WWV, you will hear a collection of terms and measurements that describe the various conditions and levels of solar activity and geophysical conditions. On WWVH, you will hear these geophysical alerts broadcast 45 minutes after the hour. You may also access these alerts on the Internet (www.sec.noaa.gov/ftpdir/latest/wwv.txt) or by telephone (303-497-3235). Of course, there are many pages on the Internet where this information may be found, including my website (<http://sunspotwatch.org/>). The radio messages are less than 45 seconds long and are updated every three hours (typically at 0000, 0300, 0600, 0900, 1200, 1500, 1800, and 2100 UTC). More frequent updates are made when necessary.

WWV radiates 10,000 watts on 5, 10, and 15 MHz; and 2,500 watts on 2.5 and 20 MHz. WWVH radiates 10,000 watts on 5, 10, and 15 MHz, and 5,000 watts on 2.5 MHz. Each frequency is broadcast from a separate transmitter. Although each frequency carries the same information, multiple frequencies are used because the quality of HF reception depends on many factors, such as location, time of year, time of day, the frequency being used, and atmospheric and ionospheric propagation conditions. The various frequencies make it likely that at least one frequency will be usable at all times.

The geophysical alerts provide information about the current conditions for long-distance HF radio communications. The alerts use a standardized format and terminology that requires some explanation, so before looking at sample messages, let's look at some of the terminology:

Solar flux is a measurement of the intensity of 10.7-cm (roughly 2800 MHz) solar radio emissions. At 2000 UTC, the Dominion Radio Astrophysical Observatory of the Canadian National Research Council located at Penticton, British Columbia, Canada, records the daily solar flux measurement. The solar flux index broadcast ranges from a theoretical minimum of about 50 to numbers larger than 300. During the early part of each 11-year sunspot cycle, the flux numbers are low, but they rise and fall as the cycle proceeds.

The numbers will remain high for extended periods around sunspot maximum.

The *K indices* are a measurement of the behavior of the magnetic field in and around the Earth. The K index uses a scale from 0 to 9 to measure the change in the horizontal component of the geomagnetic field. A new K index is determined every three hours based on magnetometers around the world. Usually, the reported K index is the *planetary K index* (K_p), which is an average of all the many K index readings from around the globe.

The *planetary A index* (A_p) is a daily value on a scale from 0 to 400 to express the range of disturbance of the geomagnetic field. It is obtained by converting and averaging the eight, three-hour K index values. An estimate of the A index is first announced at 2100 UTC, based on seven measurements and one estimated value. At 0000 UTC, the announced A index consists entirely of known measurements, and the word "estimated" is dropped from the announcement.

Space weather describes the conditions in space that affect Earth and its technological systems. Space weather is a consequence of the behavior of the sun, the nature of Earth's magnetic field and atmosphere, and our location in the solar system.

Space weather storms observed and expected are characterized using the *NOAA Space Weather Scales*. **Table 1** shows the levels of activity that are included in the announcements and the associated terminology. The descriptor used to identify observed or expected conditions is the maximum level reached or predicted. The NOAA Space Weather Scales are further described at the Space Environment Center's website www.sec.noaa.gov/NOAAscales.

Geomagnetic storm levels are determined by the estimated three-hourly planetary K-indices derived in real time from a network of Western Hemisphere ground-based magnetometers. These levels are shown in **Table 2**. When the K index reaches 6 and above, there is a very good chance that aurora conditions exist. When the K index reaches 5 or higher, you might wish to check aurora conditions at www.sec.noaa.gov/pmap/.

Solar radiation storm levels are determined by the proton flux measurements made by NOAA's primary Geostationary Operational Environmental Satellite (GOES). **Table 3** details these levels.

Radio blackout levels are determined by the x-

Table 1. NOAA Space Weather Scales

Geomagnetic Storms	Solar Radiation Storms	Radio Blackouts	Descriptor
G5	S5	R5	Extreme
G4	S4	R4	Severe
G3	S3	R3	Strong
G2	S2	R2	Moderate
G1	S1	R1	Minor

Table 2. Geomagnetic Storm Levels

Planetary K indices	Geomagnetic storm level
K = 5	G1
K = 6	G2
K = 7	G3
K = 8	G4
K = 9	G5

Table 3. Solar Radiation Storm Levels

Flux level of >10 MeV particles	Solar Radiation Storm level
10	S1
10 ²	S2
10 ³	S3
10 ⁴	S4
10 ⁵	S5

ray level measured by the primary GOES satellite. X-ray radiation ionizes the D region of the ionosphere, causing absorption of HF signals starting at the lower frequencies, and increasing up to higher HF frequencies with higher levels of radiation. X-ray levels and related flares are categorized using the letters B, C, M, and X, with X being the most intense. **Table 4** correlates X-ray levels and flux to radio blackout levels.

Every geophysical alert consists of three parts. The first part contains the solar-terrestrial indices for the day: specifically the solar flux, the A index, and the K index. Part two contains space weather storms observed during the previous 24 hours. This includes all observed geomagnetic storms, solar radiation storms (proton events) and radio blackouts (class M1 and greater flares). Finally, part three gives the space weather expected during the following 24 hours.

Following are a couple of sample geophysical alerts:

Solar-terrestrial indices for 08 February follow. Solar flux 89 and Mid-Latitude A-index 26. The Mid-latitude K-index at 1500 UTC on 08 February was 4. Space Weather for the past 24 hours has been moderate. Solar radiation storm(s) reaching the S4 level is in progress. Radio blackouts(s) reaching the R2 level occurred.

Solar-terrestrial indices for 08 February follow. Solar flux 109 and Mid-Latitude A-index 17. The Mid-latitude K-index at 1500 UTC on 08 February was 3. No Space Weather storms have been observed during the past 24 hours. Space Weather for the next 24 hours is expected to be severe. Solar radiation storms reaching the S4 level are expected to continue. Radio blackouts reaching the R2 level are expected.

To hear the current geophysical alert message, tune to one of the frequencies of WWV or WWVH at the times we have listed above.

HF Propagation

We are starting to approach the end of the winter season. The period of darkness is growing shorter, causing a rise of the average daily maximum usable frequency (MUF) on any given radio propagation path that traverses the ionosphere in the Northern Hemisphere.

Noise levels are still low so reliable DX is possible. The solar activity is just now high enough to provide mid-HF ionospheric propagation. General conditions are expected to be good to excellent for HF propagation throughout February.

This means that the highest shortwave frequencies are not going to offer much excitement. However, since we are still in the heart of the winter season, the noise level is very low on the HF bands, and at the same time, the average MUF is increasing as compared to the last few months. During the first three months of the year the Earth is at perigee with the sun. This causes long winter nights, which in turn allows the ions of lower lay-

ers to drift upward and add to the F₂ region. The F₂ region contains the maximum ion density (foF₂), which usually defines the MUF for DX paths.

Throughout these winter months, the foF₂ increases slowly, day by day, until it reaches the highest monthly average of the year sometime during this quarter. Even during the year of the solar minimum, when solar energy variation is small, an enhanced F₂ region can be expected to build up in the winter.

Geomagnetic storms during these months, however, may disrupt the mid-latitude ionosphere. As we approach the spring equinox, Earth's magnetic field is sufficiently perturbed by solar wind particles flowing into the auroral zone (between 50 and 70 degrees north geographic latitude) to cause the mid-latitude ionosphere to be depleted. This February, we are unlikely to see any significant solar storm, though we might see periods when a coronal hole could influence some storminess.

Below the auroral zone, during those periods where the solar wind is elevated, the ionosphere develops a trough that extends southward, especially on the dark side of the Earth (at night) for two or three days in a row. At the same time, near the equator, geomagnetic disturbances enhance ionization. This is the reason for the higher MUF and ionospheric tilts that give us transequatorial propagation (TE). TE is prevalent during the equinoctial months, and more so in the spring than in the autumn, and throughout the winter in general.

Nineteen meters through 15 meters will open shortly after sunrise, and will remain open until early to late evening. Morning and evening DX openings between some areas in the Northern Hemisphere on these bands are very short, because the band in question closes on one end of the path before it opens on the opposite end. Transequatorial propagation on these bands will be more likely toward sunset during days of high solar flux and a disturbed geomagnetic field (look for days with an A_p greater than 15, or a K_p greater than 3).

Paths on 31 through 22 meters remain in their seasonal peak much like in January, but with longer openings. Continue to look for great openings between North America and Europe in the morning and between North America and Asia during the late afternoon hours. Twenty-two meters will often be the best daytime DX band, with 31 and 25 running a close second.

Optimum Working Frequencies (MHz) - For February 2011 - Flux = 101, 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	21	19	16	13	12	11	11	11	10	10	10	10	10	9	16	19	21	22	23	24	24	24	23	23	
NORTHERN SOUTH AMERICA	30	28	25	18	17	16	15	15	14	14	13	13	13	13	18	25	27	29	30	31	32	32	32	31	
CENTRAL SOUTH AMERICA	29	27	23	17	16	15	15	14	14	13	13	13	13	21	26	27	29	30	30	31	31	31	31	31	
SOUTHERN SOUTH AMERICA	31	30	27	23	19	18	17	16	15	15	14	14	13	13	13	23	27	28	30	31	31	32	32	32	
WESTERN EUROPE	10	9	9	9	9	9	9	9	9	9	9	9	9	9	12	15	16	17	16	16	14	11	10	10	
EASTERN EUROPE	9	9	9	9	9	8	8	9	9	9	9	9	9	9	9	11	11	11	10	10	9	9	9	9	
EASTERN NORTH AMERICA	23	21	18	14	13	13	12	12	11	11	11	11	11	11	18	22	23	25	25	26	26	26	25	25	
CENTRAL NORTH AMERICA	13	13	12	9	8	7	7	7	6	6	6	6	6	6	6	10	12	13	14	14	14	14	14	14	
WESTERN NORTH AMERICA	7	7	7	6	4	4	3	3	3	3	3	3	3	3	4	6	6	7	7	7	8	8	8	7	
SOUTHERN NORTH AMERICA	23	21	19	15	13	12	11	11	11	10	10	10	10	10	18	21	22	23	24	24	24	24	24	24	
HAWAII	21	21	20	19	17	14	11	11	10	10	10	9	9	9	9	8	8	15	17	19	20	21	21	21	
NORTHERN AFRICA	10	10	9	9	9	9	9	9	9	9	9	9	9	9	13	16	17	18	19	17	12	11	11	10	
CENTRAL AFRICA	12	12	12	11	10	10	10	9	9	9	9	9	9	9	12	15	17	18	18	16	15	14	13	13	
SOUTH AFRICA	21	19	15	13	12	12	12	11	11	11	11	10	10	18	21	22	23	24	24	24	24	24	24	23	
MIDDLE EAST	9	9	9	9	9	10	10	9	9	9	9	9	9	9	9	14	16	16	12	11	10	10	10	9	
JAPAN	20	20	19	18	17	15	11	11	10	10	10	9	9	9	9	9	9	9	9	9	9	15	18	19	
CENTRAL ASIA	20	20	19	18	17	15	11	11	10	10	10	9	9	9	9	9	9	12	11	11	11	15	20	14	
INDIA	15	16	16	14	12	10	10	9	9	9	9	9	9	9	8	8	9	9	9	8	10	13	14	14	
THAILAND	19	19	19	18	16	14	11	10	10	10	9	9	9	9	9	9	9	12	13	12	12	12	11	11	
AUSTRALIA	26	27	29	29	26	22	17	16	15	15	14	14	13	13	13	13	13	17	16	15	16	19	22	24	
CHINA	17	19	18	17	16	14	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	15	
SOUTH PACIFIC	30	31	30	29	26	20	18	17	16	15	15	14	14	14	13	13	16	16	20	23	25	27	28	28	
TO/FROM US MIDWEST																									
CARIBBEAN	24	21	17	16	15	14	13	13	12	12	12	11	11	18	22	24	26	27	28	28	28	27	27	26	
NORTHERN SOUTH AMERICA	27	25	21	19	18	16	15	15	14	13	13	12	12	16	21	24	26	27	28	29	30	30	29	28	
CENTRAL SOUTH AMERICA	28	25	21	19	18	17	16	15	15	14	14	13	13	21	25	26	28	29	30	31	31	31	31	30	
SOUTHERN SOUTH AMERICA	30	28	25	22	20	19	18	17	16	15	15	14	14	15	23	25	27	29	30	31	31	32	32	32	
WESTERN EUROPE	10	9	9	9	9	9	9	9	9	9	9	9	9	15	17	18	18	18	18	17	15	13	10	10	
EASTERN EUROPE	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13	15	15	14	14	13	12	10	10	9	
EASTERN NORTH AMERICA	16	14	10	10	9	9	8	8	8	8	8	8	8	12	15	17	18	19	19	19	19	19	18	18	
CENTRAL NORTH AMERICA	8	7	6	4	4	4	4	4	4	3	3	3	3	3	6	7	8	8	9	9	9	9	9	8	
WESTERN NORTH AMERICA	14	13	12	9	8	7	7	7	7	6	6	6	6	6	11	12	13	14	14	15	15	15	14	14	
SOUTHERN NORTH AMERICA	16	14	12	9	8	8	8	8	7	7	7	7	7	12	14	16	17	17	17	17	17	17	17	17	
HAWAII	24	23	22	19	14	13	12	12	11	11	10	10	10	10	10	10	10	18	21	23	24	25	25	24	
NORTHERN AFRICA	12	11	11	10	10	10	9	9	9	9	9	9	11	16	18	19	20	20	21	21	18	14	13	13	
CENTRAL AFRICA	13	11	11	10	10	10	9	9	9	9	9	9	11	16	18	19	20	20	20	19	16	15	14	13	
SOUTH AFRICA	22	17	16	15	14	14	14	13	13	13	13	13	17	25	28	29	31	31	32	31	31	29	26	24	
MIDDLE EAST	9	9	9	9	9	9	9	9	9	9	9	9	9	15	17	18	19	17	14	11	11	10	10	10	
JAPAN	19	19	17	15	11	11	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	14	17	19	
CENTRAL ASIA	19	18	17	15	11	11	10	10	10	9	9	9	9	9	9	11	12	12	11	11	11	12	19	19	
INDIA	12	14	13	11	10	10	9	9	9	9	9	9	9	9	13	15	14	13	10	10	9	9	9	9	
THAILAND	18	17	16	14	11	10	10	10	9	9	9	9	9	9	13	14	13	13	12	12	12	11	11	11	
AUSTRALIA	26	28	28	25	18	16	16	15	14	14	14	13	13	13	13	15	18	17	16	15	17	20	22	25	
CHINA	16	17	16	13	11	10	10	10	9	9	9	9	9	9	10	10	9	9	9	9	9	9	9	13	
SOUTH PACIFIC	31	30	28	25	20	19	17	16	16	15	14	14	14	13	13	18	17	16	18	21	24	26	28	29	
TO/FROM US EAST COAST																									
CARIBBEAN	19	16	14	13	12	12	11	11	10	10	9	9	12	17	19	21	22	22	23	23	23	22	21	20	
NORTHERN SOUTH AMERICA	24	22	20	18	17	16	15	14	13	12	12	11	13	17	20	22	24	25	26	26	27	27	26	25	
CENTRAL SOUTH AMERICA	28	25	23	21	19	18	17	16	15	15	14	14	20	23	25	26	28	29	30	31	31	31	31	30	
SOUTHERN SOUTH AMERICA	30	27	25	23	21	19	18	17	16	15	15	14	17	22	24	26	28	29	30	31	31	32	32	32	
WESTERN EUROPE	9	9	9	9	9	8	8	8	8	8	8	13	16	17	18	19	19	18	18	17	16	13	10	10	
EASTERN EUROPE	9	9	9	9	9	9	9	9	9	9	9	11	16	17	17	17	16	16	14	12	10	10	9	9	
EASTERN NORTH AMERICA	7	5	5	4	4	4	4	4	4	4	4	3	5	7	8	9	9	9	9	9	9	9	9	8	
CENTRAL NORTH AMERICA	17	15	11	10	10	9	9	9	9	8	8	8	8	13	16	18	19	20	20	20	20	20	19	18	
WESTERN NORTH AMERICA	24	22	18	14	13	13	12	12	12	11	11	11	11	11	19	22	24	25	26	26	26	26	26	25	
SOUTHERN NORTH AMERICA	19	16	13	12	11	11	10	10	9	9	9	9	9	14	17	19	20	21	22	22	22	22	21	20	
HAWAII	24	22	19	14	13	13	12	12	12	11	11	11	11	11	12	11	11	20	23	25	27	27	26	26	
NORTHERN AFRICA	12	12	12	11	11	11	11	11	11	11	11	11	19	22	24	25	26	26	26	24	22	19	14	13	13
CENTRAL AFRICA	14	13	13	12	11	11	11	11	11	11	11	11	19	22	24	25	26	27	26	24	21	18	17	15	14
SOUTH AFRICA	21	19	18	17	16	15	15	14	14	13	13	20	26	29	30	31	31	32	32	31	31	29	26	24	
MIDDLE EAST	11	11	10	10	10	9	9	9	9	9	9	14	17	19	20	21	21	21	19	14	13	13	12	12	
JAPAN	17																								

Table 4. Radio Blackouts (caused by X-ray Flares)

Peak flare x-ray level	X-ray flux level	Radio blackout level
M1	10^{-5}	R1
M5	5×10^{-5}	R2
X1	10^{-4}	R3
X10	10^{-3}	R4
X20	2×10^{-3}	R5

Ninety through 41 meters will be useful almost 24 hours a day. Daytime conditions will resemble those of 25 meters, but skip and signal strength may decrease during midday on days with high solar flux values. Nighttime will be good except after days of very high MUF conditions. Generally, the usable distance is expected to be somewhat greater on the higher of these bands than on 90. DX activity tends to increase later in the evening toward midnight. Look for Africa and South Pacific (Australia, Papua New Guinea, and so on) on 90 through 60 meters throughout the night. On 41, 49, and 60 meters, long path DX is possible along the gray line.

The 120-meter band continues to remain stable, with very low noise levels. Throughout the winter season, high noise may occur during regional snowstorms. The band opens just before sunset and lasts until the sun comes up on the path of interest. Except for daytime short-skip signal strengths, high solar activity has little impact. Continue to look for Europe and Africa around sunset until the middle of the night, and then Asia, the Pacific, and the South Pacific as morning approaches.

Signals below 120 meters will remain strong and exciting, except during times of regional storms and high geomagnetic activity. Mediumwave DX is still quite hot throughout February.

VHF And Above

There are no major meteor showers during February that could provide any VHF meteor scatter propagation, but other modes may be possible. Check for 6-meter short-skip openings during the daylight hours. Some short-skip openings over distances of about 1,200 to 2,300 miles may occur. The best times for such openings are during the afternoon hours.

Auroral activity often occurs during periods of radio storminess on the HF bands. Look for days where the A_p index is climbing and when the K_p index reaches 4 or higher. These are the days on which

VHF auroral-type openings are most likely to occur.

Current Solar Cycle 24 Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for October 2010 is 23.5. The lowest daily sunspot value of zero (0) was recorded for October 6, 7, and 8. The highest daily sunspot count was 47 on October 25. The 12-month running smoothed sunspot number centered on April 2010 is 14.0. A smoothed sunspot count of 47, give or take about 9 points is expected for February 2011.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 81.6 for October 2010. The 12-month smoothed 10.7-cm flux centered on April 2010 is 78.3. The predicted

smoothed 10.7-cm solar flux for February 2011 is 101, give or take about 9 points.

The observed monthly mean planetary A_p index for October 2010 is 6, which is still very quiet. The 12-month smoothed A_p index centered on April 2010 is 5.5. Expect the overall geomagnetic activity to be varying greatly between quiet to active during most days in February. Refer to the Last Minute Forecast published in *CQ* magazine or on my website (<http://prop.hfradio.org>) for the outlook on what days that this might occur.

I'd Like To Hear From You

As always, I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may email me, write me a letter, or catch me on the HF Amateur bands. Please come and participate in my online propagation discussion forum at <http://hfradio.org/forums/>. If you are on Facebook, check out www.facebook.com/spacewx, www.facebook.com/NW7US. Speaking of Facebook, check out the *Popular Communications* magazine fan page at www.facebook.com/PopComm.

Until next month,
73 de NW7US. Tomas Hood

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Nifty Multimeters For Select Radios

by Gordon West,
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LDG Electronics of St. Leonard, Maryland, is well known for its complete line of antenna tuners and couplers. For many of us, it has now become the standard for making sure solid-state transceivers for HF always see a perfect match.

Recently, as LDG tech gurus were working up antenna tuner products for some Yaesu radios, they discovered that tiny jack located on the bottom of the front panel of the FT-857 and FT-897 rigs. I'm guessing that even if you own one of these radios you didn't know the jack was there. Don't feel bad—it's one of those little secrets known only to bench technicians.

So what did LDG do with this discovery? They came up with a multimeter readout that simply plugs into this tiny jack to enable some big-meter readouts for these Yaesu radios (including the D models), as follows:

ON RECEIVE:

- S-meter
- Discriminator for FM
- DC Voltage

ON TRANSMIT:

- Power Output
- Modulation
- ALC action
- SWR
- Voltage on transmit

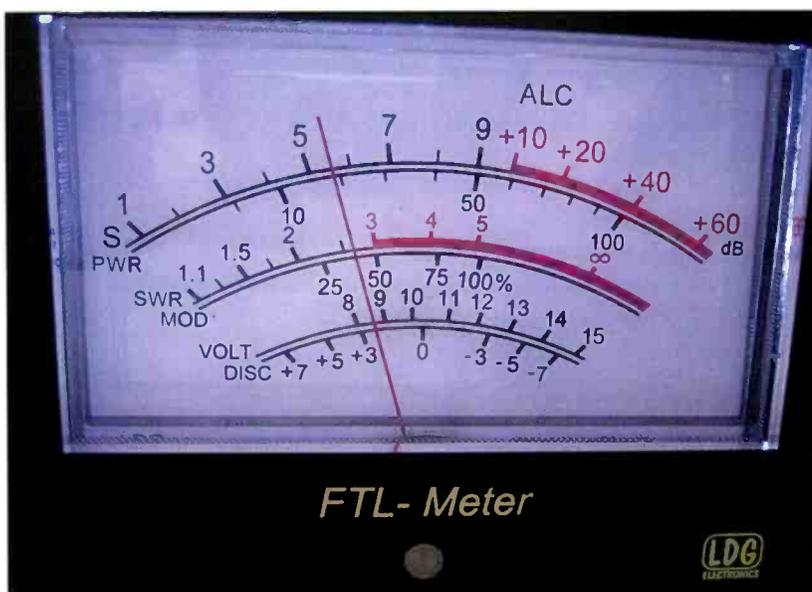
"Our LDG meters provide accurate and precise readings for a wide range of receive and transmit parameters," says Jennifer Kincaid, president of LDG. And to give radio operators an option, two different size display models are offered: the FT-Meter (small) and the FTL-Meter (large).

"Most hams will start out using the receive S-meter function, and power output watts function on transmit. Because both the Yaesu rigs and our little plug-in meters are so portable, it will give the weary DXer on a DXpedition a big heads-up display on incoming and outgoing signal levels," adds Kincaid. ICOM owners, don't feel left out: LDG also has products to make your lives easier, too.

The shortwave listeners out there will also really appreciate these meters as they let SWLs easily see incoming signal strength when switching from one receive antenna to another. The meters' large display added to an existing radio is a viewing pleasure!

The instruction manual ("Jump start, or Real Hams Don't Read Manuals") is fun to read. It tells you just to plug the supplied cable (which can be mono or stereo) into the tiny jack on the bottom of the front panel. Tip is active. The other end, with an elbow, goes into the meter. Now that's easy.

Likely, your Yaesu's smallish front panel meter is set to where the factory ships the equipment: S meter on receive and power out on transmit. But did you know there are menu items to feed different settings to this tiny jack? The meter will display any two parameters you select: one on transmit and one on receive. You need to get to the radio's extended setup menu. You do this by pressing and holding the Function button, rotating the Select knob to menu item 1, labeled EXT menu, and turning the right main tuning knob until the setting in "ON."



A close up of the LDG Electronics' FTL-Meter for certain Yaesu radios. It's shown with the adjustable LED backlight on.

“LDG...came up with a large multimeter readout that simply plugs into this tiny jack to enable some big-meter readouts for these Yaesu radios...”

Now go to EXT menu items 60 and 61, and marvel at the big meter's options:

Menu 60 RECEIVE

- S meter
- FM discriminator center meter
- Power supply voltage
- Idle off

Menu 61 TRANSMIT

- Power out
- Automatic level control
- FM deviation level
- Power supply voltage
- Standing Wave Ratio
- Idle off

“You can even change parameters while operating in this Extended menu mode,” says Kincaid.

I myself made the great discovery that Yaesu front panel LCD meter readouts are independent of the big needle meter readout. By putting power output on the big meter and looking at SWR on the radio's meter you can learn some cool things.

For instance, for VHF and UHF work, the FM discriminator function is quite useful when you have someone playing games on the air. Go to repeater input, and look at their signal on the discriminator. Most signals are slightly off by a few hundred Hertz, and after a while, you can begin to map “signatures” of everyone's FM signal!

The meter may be backlit by an external 12-volt source. On the back is an on/off switch for the back light, and with a small screwdriver, you can even adjust the level of illumination. The meter does not need 12 volts for operation.

Check 'Em Out

LDG Electronics' list price for the FTL-Meter is \$79.99; the FT-Meter lists for \$49. For more information on these meters, as well as the company's similar offerings for ICOM radios, contact them via the Web at www.ldgelectronics.com, or call them at 410-586-2177, weekdays 9-5 EST.



LDG offers these meters in two different sizes: big readout and *really* big readout!

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The Zenith 8G005 Trans-Oceanic Restoration Challenge—Part II

by Peter J. Bertini
radioconnection@juno.com

As mentioned in our last column, the Zenith Trans-Oceanic 8G005 models are the most challenging restorations in the Zenith TO series. The under chassis layout very crowded, exceptionally difficult to work on, with a quantity of rubber insulated wiring that needs to be replaced. Unfortunately, the Zenith factory schematics are poorly drafted and difficult to follow, and the intricacies of both the electronics and mechanics aspects of these sets present unique challenges for the uninitiated. Nonetheless, these are rugged sets, and once the concerns of a proper restoration are addressed they should provide years of reliable service for many decades to come.

This column will continue with the electrical

“Trust me: you want to avoid that horrible onset of panic that strikes as you’re putting a radio back together and realize you don’t have a clue were the rat’s nest of cut wires are supposed to reconnect to.”

restoration and initial testing of the restored 8G005; following columns will deal with alignment and cabinet restoration. Let’s get started.

Rebuilding The Electrolytic Capacitors

I elected to rebuild, instead of replacing, the original Zenith wax paper capacitors. Newer modern components are much smaller, and would have opened enough free spaces under chassis to mount replacement electrolytic capacitors. That would be fine if the goal were to restore the radio to good playing condition, without preserving the under chassis areas that no one may ever see.

Two electrolytic capacitor cans had to be removed from the chassis to facilitate rebuilding. Before starting any work, it’s a good idea to take several close-up digital pictures of the wiring—and perhaps make sketched notes—to avoid confusion once the capacitors are rebuilt and it’s time to put things back together. **Photo A** is a view of the wiring associated with the three-section can capacitor that houses capacitors C30, C31, and C32; these legends refer to the part legends shown on the Zenith factory schematic. I’m not showing a full schematic in the magazine because of the very poor quality of the original drawings. Instead, I’ll refer you to one of many website URLs where this schematic can viewed: www.suertenich.com/html/zenith/zenith_8g005.yz1.html. Now, we’ll get back to the details for these three internal capacitors and their values.

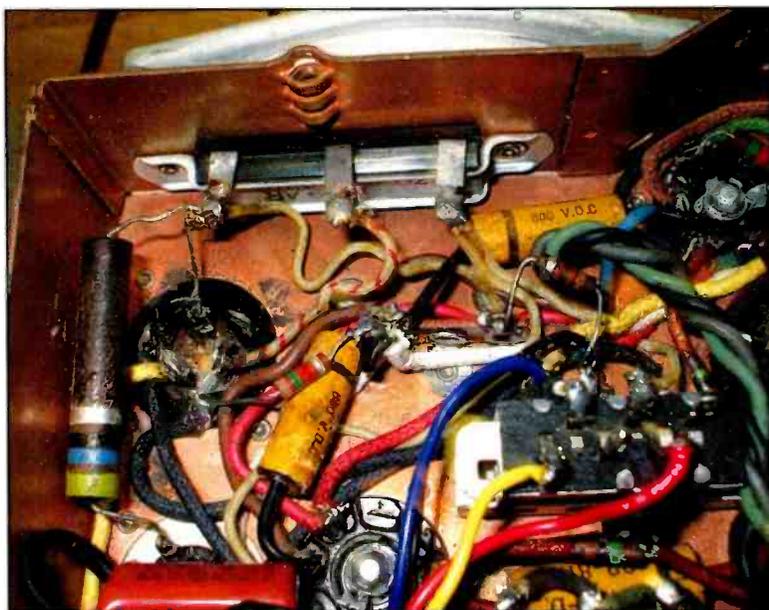


Photo A. The upper view of the chassis corner reveals R18, the 56-ohm wire-wound resistor, to the left, and the dual candohm resistor (R19, R20) that is riveted to the front chassis apron. The Phenolic mounting plate for one of FP-style electrolytic can capacitors is visible just below the body of R18.



Photo B. The two FP capacitors removed for rebuilding. Two NOS caps, shown below, will be gutted and used for the restoration. They are new, but still are at the end of their life-cycle after decades of storage. I save them for rebuilding instead of tossing them out.



Photo C. Gently heating the cardboard tube while constantly rotating the capacitor body assures even heating. Once the tar is softened the cardboard shell easily slides free of the metal can.



Photo D. The cardboard capacitor insulators after removal. These will be reused, so be sure to put them aside and save them.

Here's how I rebuilt the two electrolytic capacitors. I'm probably going into more detail needed, but I'd rather be a bit verbose and cover the topic in depth than take the chance of missing something important.

These are FP-style capacitors that normally attach to the chassis using a companion mounting plate. These are either metal or made of an insulating Phenolic material. The capacitor ground lugs align with slots in the plates, and once the capacitor body is fully seated against the plate, the lugs are given a slight twist to firmly lock and secure the capacitor in place. Replacement caps were usually supplied with one of each included in the box. The Zenith chassis uses the insulated mounts to insulate the metal cans (which is the common negative return for the internal capacitors) from the chassis. Keep in mind these are AC/DC radios.

Take Photos And Make Notes—Then Begin

To repeat myself, I took several close-up shots using the macro focus feature of my digital camera and also made a few hand sketches to keep track of where things were originally connected. Trust me: you want to avoid that horrible onset of panic that strikes as you're putting a radio back together and realize you don't have a clue where the rat's nest of cut wires are supposed to reconnect to.

Once everything is documented, the wires attached to the two twist-mount can capacitors may be carefully cut free and the parts removed. Zenith riveted the Phenolic mounting plates in place. To avoid damaging them, and to avoid the need to remove them, carefully desolder the leads attached to the capacitors' ground lugs. Once they are completely clean and free of solder and free wire ends, they can be twisted parallel with the slots in the plates, and then capacitors may be lifted from the plate.

Photo B shows both multi-section electrolytic caps after removal from the 8C40TZ1 Zenith chassis that was used in the 8G005TZ1 radio. The two new capacitors are new old stock, but they are very old parts that have likely degraded to point of becoming unreliable. I kept them in case I needed a clean can body for a restoration project. Since they are the same physical size with the same number of internal capacitor sections, I gutted them for use as the foundation for the rebuilds. The original capacitor housings would have served equally well.

The Zenith electrolytic can capacitor shells are electrically floating above chassis ground, and for that reason the cans have a protective insulating black cardboard cover over their bodies. This cover insulates them and protects the user from exposure to AC line voltages on the floating common bus used in this AC/DC radio. They are held in place with a tar-based adhesive, and a heat gun is the best way to free the cardboard shells without damage. **Photo C** shows a hot air gun being used to heat the capacitor. The part is being rotated to assure that the entire surface is heated evenly. Once the tar softens, the cardboard shells will slide off, as shown in **Photo D**. These shells will be reused.

Opening The Capacitors

It's possible to open these can capacitors, rebuild them, and seal them up to look as if they've never been touched. That's good for caps that are in full view atop a chassis, but since these capacitors are hidden in cardboard shells I opted for a more practical approach. A sharp utility knife is more than capable of slicing through the thin aluminum housing. I sliced the caps in half



Photo E. I cut the metal cans open using a sharp utility knife. Once exposed, the old electrolytic capacitors were removed and discarded. The old capacitor body can be seen on the wood board at the rear of the photo.



Photo G. If you looking closely you can see how the wire leads from the new caps pass through the holes and wrap on the adjacent solder lugs.



Photo F. Because the replacement caps will be hidden inside, I use a drill to make small wire gauge holes for the new leads to pass through. These will be soldered to the lugs on the base insulator.



Photo H. Space is tight and all of the available room was needed to house the three replacement caps in this can. Note that heatshrink tubing or insulating "spaghetti" covers any exposed leads. A few dabs of hot glue hold the parts in place.

and discarded the top portion of the metal shell. **Photo E** shows the saved bottom half after the internal capacitor body was removed. If the capacitor body is stuck firm, heating will help soften the bond and allow easier removal. The old capacitor innards can be seen in the background, and the radial lead replacements to be used rebuilding are seen in front. Any chemical residue can be washed out using warm, soapy water. These chemicals are not particularly hazardous.

Next, as shown in **Photo F**, I used a very tiny wire drill to open access holes for the 22-gauge wire leads of the replace-

ment capacitors. The holes are drilled adjacent to the terminal lugs, and one other hole is needed in the very narrow recessed area between where the aluminum shell is crimped over the metal plate that holds the metal mounting legs. The three negative leads for the replacement capacitors are soldered together inside the can, and only one lead needs to be brought out through this hole and soldered to the nearest ground lug. This plate is steel and can be soldered.

Photo G shows how the individual positive leads of the replacement caps are routed through the holes, and connected

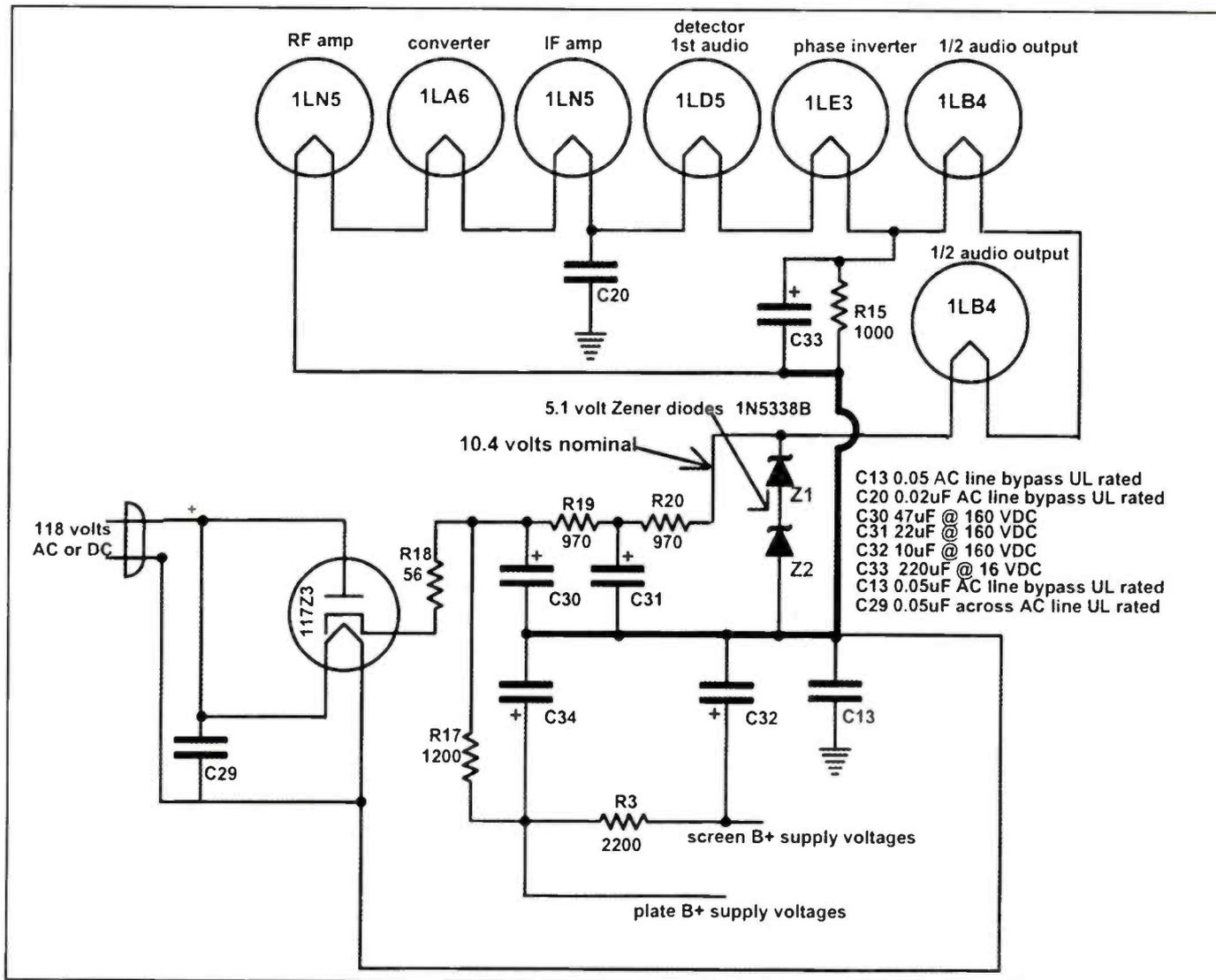


Figure. This greatly abridged drawing of the Zenith 8C40 chassis power supply shows what's involved for supplying the plate and screen DC voltages—and the important 10.4-DC voltage for powering the battery filaments—during line power operation. A complex A and B battery pack, with a second 1.5-volt zinc carbon F cell, are needed for portable operation.

to the appropriate terminals on the component wiring side of the capacitor. The three replacement caps are shown in **Photo H**. Exposed leads were heat shrink-wrapped, and the capacitors are held in place with hot glue. Excessive amounts of hot glue may block the capacitor vent holes, which are needed for the safe release of pressure if the part fails and overheats. It doesn't look pretty with the cardboard cover off. But the replacement electrolytic capacitors are probably only good for 10 or 15 years of service, and they are easy to replace if the metal can isn't epoxied shut. The results are shown in **Photo I**.

The cardboard shell was reheated to soften the remaining tar. Once pushed back on the capacitor can it will cool and secure the tube. A dab of hot glue will also do the

job if there isn't enough tar. The end result is a capacitor that looks as good as the original. Only a very close inspection of the bottom solder lugs will reveal the truth.

There are two can capacitors on this chassis, housing a total of five electrolytic capacitors. The second can houses capacitors shown as C33 and C34 on the Zenith schematic, and in the **Figure**. They are seen comfortably nestled inside the cleaned capacitor base, shown in **Photo J**. The cardboard shell is seen in the background. Once glued back on, this capacitor is ready to go.

The Power Supply

I want to spend some time looking at a few details of the power supply. It's a bit unusual since the supply also provides

the equivalent A+ DC battery voltages to operate the battery-type vacuum tube filaments for line operation.

The **Figure** is very abridged schematic that I drafted to show the major sections of the supply. The complex switching arrangement for transferring between line and battery pack operation is omitted for clarity. The AC line voltage is rectified by a type-117Z3 seven-pin miniature one-half wave rectifier. The tube's filament is directly powered from the AC/DC line. This tube is not used, or needed, when using battery power. Note that the radio operator had to reverse the plug if there was no reception when using DC power mains—the rectifier tube will only conduct when the line cord polarity is correct with the positive line voltage going to the rectifier plate.



Photo H. Space is tight and all of the available room was needed to house the three replacement caps in this can. Note that heatshrink tubing or insulating "spaghetti" covers any exposed leads. A few dabs of hot glue hold the parts in place.

To reiterate, the parts legends shown on the Figure correspond to those shown on the Zenith factory drawings. Referring back to Photo A, in addition to the bottom connections for the capacitor can housing C30, C31 and C32, you can see R8, a 56-ohm wire-wound resistor, R19 and R20, which is a dual section candohm resistor mounted to the chassis.

I haven't yet mentioned the capacitor values or voltage ratings. This information is embossed on the cardboard tubes. The original capacitor values are now obsolete and harder to find, but they may be replaced with the next higher standard values. I also used replacement caps with slightly higher DC voltages for extra safety margins. Any caps between the chassis and common negative return, or across the line, were replaced with modern UL rated capacitors (wax paper capacitors C13, C29, and C20, for example).

Replacement Capacitor Suggestions

I replaced the caps in the three-section can with 160-VDC-rated capacitors. C330 was originally 40 μf , and was replaced with a 47- μf value. C30 is now 22 μf instead of the original 20- μf value, and for C31 a 10- μf capacitor directly replaced the original 10- μf value. The remaining two electrolytic capacitors in the second can were replaced with a 220- μf (originally 200 μf) at 16 VDC capacitor for C33, and a 160 VDC at 47- μf (originally 40 μf) for C34. Note that C33 is part of the filament decoupling for the push-pull audio tubes; these tubes all are directly heated cathode battery tubes and don't have cathodes. The 220- μf capacitor prevents degenerative feedback in the same way a cathode bypass capacitor would.

Also note that the tube filaments are series strung. The filament voltages also provide the tube biasing, with the tubes along the string each having progressively higher grid biasing volt-



Photo I. Once the original cardboard shell is reattached it becomes almost impossible to tell that the part was ever disturbed! Yet, the cardboard can be quickly removed if the capacitors ever need to be replaced in the future.

ages. A positive filament voltage makes the grid more negative than the filament (cathode), in the same manner as cathode biasing. The audio tubes require the greatest amount of biasing, and logically their filaments are at highest potential.

Adding Zener Diodes To Limit Filament Voltage

The Figure clearly shows this serried wiring of the seven tube filaments. Each tube is rated for a filament operating voltage of 1.2 to a maximum of 1.6 volts. Ideally, each tube would have about 1.4 to 1.45 volts on its filament. Thus, the optimum filament supply voltage measured at the end of R20 shouldn't be over 10.5 volts for best tube life.

The radio was designed for 118-volt line operation, but obviously the designers realized these globetrotters would be found in countries with less than ideal power systems. Here's what I'd suggest doing. Add Zener diode regulation from R20 to the chassis common bus to clamp the maximum filament voltage. Two 5.1-volt 1N5338B 5-watt Zener diodes, wired in series, will clamp the filament supply so it can't rise above 10.2 volts, keeping the individual tube filament voltages at 1.45 volts or less. I've added these to the drawing in the Figure in case anyone desires to do this modification.

Stay Tuned

I'm going to leave you with a teaser. Can you explain why the designers included the 1000-ohm resistor R15 between the filament string and common return? All the tube filaments are 50mA, but the answer is close at hand if you think hard about C33 and its purpose in the circuit.

Well, that's it for this time. In the next installment we'll go through the Trans-Oceanic alignment, and finally we'll show a few tricks for sprucing up the cabinet—all in time for the upcoming warm spring weather, when this old TO will be on the porch playing in the gentle breezes during the opening of baseball season!

In the mean time, keep those solder irons warm, and those old tubes glowing!

readers' market

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Two Blind Squirrels Find The Acorn

by Bill Price, N3AVY
chrodoc@gmail.com

I've got to say, writing for *Pop'Comm* is much better than my HPJIE*. Don't ask me how, but I'm sure that it's helped keep me sane. Maybe it's the quirkiness involved.

Just before settling in to write, I got an email from Fred in El Paso, discussing some of the finer points of electric fence maintenance. Texans know about cow stuff.

I get a lot of email from readers. It's nice. I keep up a running correspondence with David G., and some of you may remember Joe Maurus, our EMT/ham friend from Pumpkin Center, Louisiana, who now refers to himself as "EMSPUDJOE," a gentleman farmer in Idaho—just about as far as a person can get from Louisiana without a passport. He's a veteran snow-shoveler now.

Of course Norm (my cow-orker from that place that shall not be named) and Beezer (from the same place) stay in touch pretty often to give me fodder for the columns. Norm has by far outdone any of the craziness I could ever come up with on my own, and if only the statute of limitations would run out on some of Beezer's activities, I'd have some great new tales to tell about him.

Last time Beezer was up here on a business trip, he left Cowfield County with a new air rifle. Since I had shown him how I shoot from my living room into the dining room, he figured his hallway back home would make a good indoor range in the inclement weather. So far, he tells me he hasn't put a hole in the wall or broken a single window.

Beezer and Norm still persist in trying to get me on the air. Even David G. gives me a nudge from New England to put up an antenna. They're all out to get me, I swear.

Back at my HPJIE, the boss and I have solved a baffling mystery that would have put us into the ranks of the unemployed if we hadn't solved it when we did. Our employer provides microwave digital television in a major metropolitan area, and just as we had ironed out the last bug or two in the new system, blanket interference began knocking our signal completely "off the air" so to speak. Searching with an antenna and spectrum analyzer wasn't easy, nor was it fun. And combining a dense RF environment with dense population, dense traffic, and some equally dense people regarding roof access, double-parking, and whether or not we were part of the Ghost Busters has not been fun, either.

I know that many TV shows glamorize people riding in clandestine vans, scanning the horizon with microwave antennas, analyzing signals, and

"We really thought about trying to charter a helicopter, but after a budget discussion, we thought about raising the antenna on helium balloons."

zipping through congested traffic and driving like crazed cabbies, but I think I'd have rather been crimping F connectors for a cable company.

Every signal bounces off every structure in a city. Metalized windows make you think your signals are coming from every which way but the way from which they're really coming, and you really can't learn anything from street level.

You haven't run up against a real brick wall until you've tried to get onto the roof of a downtown building in today's suspicious world. We really thought about trying to charter a helicopter, but after a budget discussion, we thought about raising the antenna on helium balloons.

Simple triangulation, you say. Get onto three high points, find the signal, draw three lines on the map, and bingo! You've got your location.

Not so easy, broadband-breath! The details of this fox-hunt would be too boring to write here, and if it weren't for the typical downtown characters you find in every big city, we'd have had nothing to laugh about for the weeks of driving through the same neighborhoods looking suspicious to all who observed us.

I have a great boss, and we get along great. We'd have to, to be stuck riding around in traffic, day after day, with a corner-reflector antenna and spectrum analyzer on the dashboard without losing our marbles completely while way too many people kept calling on cell phones telling us what we were doing wrong.

In the end, we were right. We found our needle in the haystack. Everything "they" told us was wrong turned out to be right. We can't name the source; however, the interferers acknowledged the problem and fixed it. And my boss and I are not the bumbling idiots everyone thought us to be. Well, I'm still not too sure about him, and he thinks the same about me, but to the others involved, we were vindicated.

We did not get raises. And I don't remember any pats on the back, but we do both still have our HPJIEs.

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