

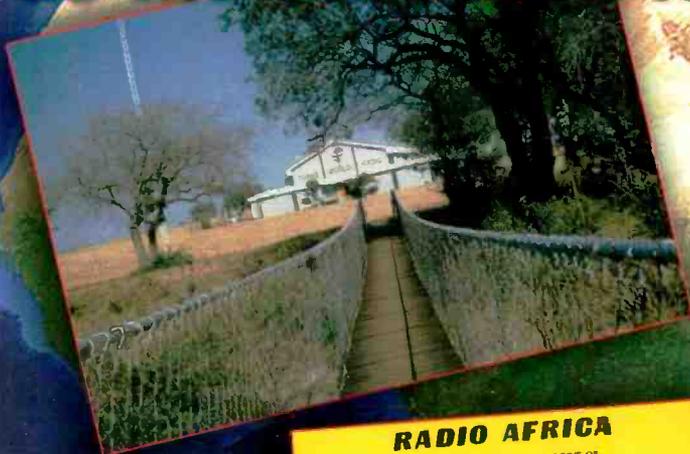
# POPULAR COMMUNICATIONS

## FEBRUARY 2012

Shortwave Listening • Scanning • AM & FM • Radio History

# Out of Africa

## SWLing Opportunities Are as Vast as the Continent Itself

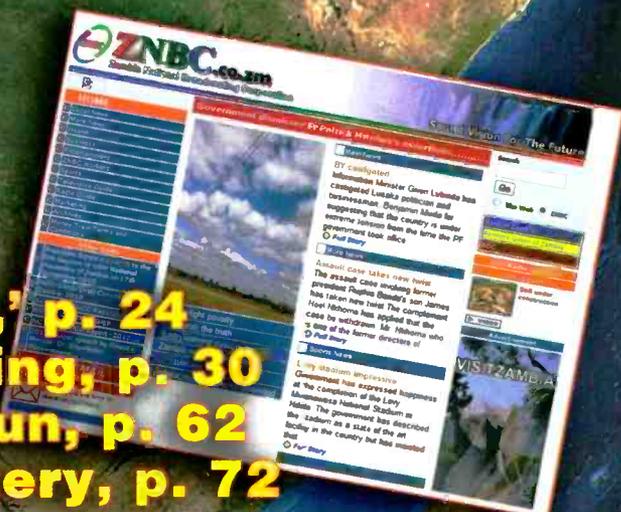


**RADIO AFRICA**

THANK YOU FOR YOUR RECEPTION REPORT OF  
 DATE January 30, 1999  
 TIME 0530 UTC - 0600 UTC  
 FREQUENCY 7190 kHz

RADIO AFRICA BROADCASTS EVERY DAY FROM 500 PM TO 11:00 PM LOCAL TIME IN BATA (1700-2200 UTC).  
 FREQUENCY FROM MAY 14, 1989 ONWARDS 7190KHZ 41 METERS.  
 LISTEN ALSO TO RADIO EAST AFRICA, 9345 KHZ 31 METERS.  
 0500-1400 UTC SATURDAY & SUNDAY

FOR MORE INFORMATION AND A PROGRAM SCHEDULE PLEASE WRITE:  
 RADIO AFRICA  
 10201 TORRE AVE., SUITE 320  
 CUPERTINO, CALIF. 95014 USA



**PLUS:**  
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0282  
0234  
156  
262

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*The first scanner that lets you hear what you want to hear without knowledge of local communication systems!*

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- ▶ The PSR-800 combines simple controls like those used in an MP3 player with the power and sophistication of a state-of-the-art scanning receiver!
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Enjoy exciting international radio reception with the Icom IC-R75-22 communications receiver. With full coverage from 30 kHz to 60 MHz; all longwave, medium wave and shortwave frequencies are supported plus extended coverage to include the 6 meter amateur band. Some innovative features of the R75 include: FM Mode Detection (but not the FM broadcast band), Twin Passband Tuning, Two Level Preamp, 99 Alphanumeric Memories, four Scan Modes, Noise Blanking, Selectable AGC (FAST/SLOW/OFF), Clock-Timer, Squelch, Attenuator and backlit LCD display. Tuning may be selected at 1 Hz or 10 Hz steps plus there is a 1 MHz quick tuning step and tuning Lock. The front-firing speaker provides solid, clear audio. The back panel has a Record Output Jack and Tape Recorder Activation jack. The supplied 2.1 kHz SSB filter is suitable for utility, amateur, or broadcast SSB. However, two optional CW/SSB filter positions are available (one per I.F.). The formerly optional **UT-106 DSP board** is now included and factory installed! Free Icom ball cap. **Order #0012 \$619.95**

**R6** The Icom IC-R6 covers 100 kHz to 1309.995 MHz (less cellular gaps) in: AM, FM Narrow and FM wide. Enjoy local VHF-UHF coverage plus international shortwave broadcast. 1300 memories store: frequency, mode, step size, duplex, CTCSS, tone squelch and skip settings. Other features include: attenuator, LCD lamp, AM ferrite bar antenna, auto power off, CTCSS decoder, weather function and battery save. You can put the world in your pocket for under \$200.00. **Call or visit website for price.**

**R20** The Icom IC-R20 covers an incredible 150 kHz to 3304.999 MHz (less cellular) with 1250 alphanumeric memories, bandscope and SSB/CW. It has: two VFOs, dual watch, voice scan control, NB, large two line LCD and CTCSS/DTCS/DTMF. A built-in IC audio recorder can record up to 4 hours of reception! With charger, Li-ion battery, belt clip and strap. **Call for price.**

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## YAESU

### FT-857D



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### FT-897D



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**FREE** Yaesu canvas urban case with FT-817ND.

The Yaesu FT-817ND is an improved, deluxe version of the hugely popular FT-817. It includes 60 meter coverage plus the new high capacity FNB-85 battery. This radio has an excellent shortwave receiver built-in and is a fully self-contained, battery-powered, low power amateur MF/HF/VHF/UHF QRP transceiver.



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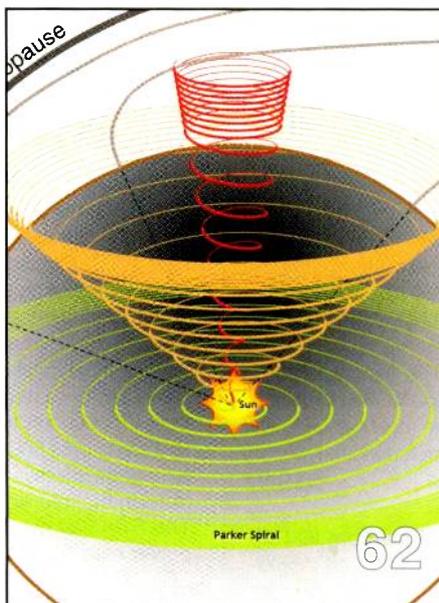
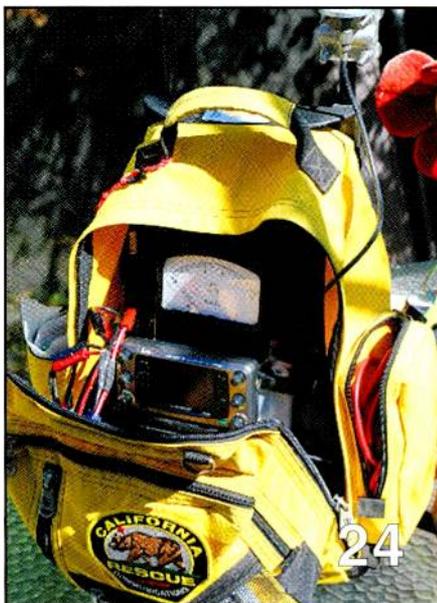
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## ON THE COVER

An array of SWL confirmation cards on a backdrop of Africa gives a clue to the rich listening environment this area of the world can provide — if you know where and when to listen. *Pop'Comm* Shortwave Broadcast expert Gerry Dexter takes us on a safari that provides listening opportunities as vast as the continent itself — both via radio and, in many cases, via live Internet streaming audio. He even challenges you to go after stations he has listed in "Your Africa Station and Country Check Off List." See page 22. (Cover design by Liz Ryan. Satellite image of Africa courtesy of NASA via Zonu.com. SWL cards provided by Gerry Dexter)

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# Tap into secret Shortwave Signals

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



MFJ-462B  
\$199<sup>95</sup>

Plug this self-contained MFJ Multi-Reader™ into

your shortwave receiver's earphone jack.

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

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

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

## Super Active Antenna

"World Radio TV Handbook" says MFJ-1024 is a

"first-rate easy-to-operate active antenna... quiet... excellent dynamic range... good gain... low noise... broad frequency coverage." Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz-30 MHz. Receives strong, clear signals from all over the world. 20 dB attenuator, gain control, ON LED. Switch two receivers and auxiliary or active antenna. 6x3x5 in. Remote has 54" whip, 50 feet coax. 3x2x4 inches. 12 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1024  
\$159<sup>95</sup>

## Indoor Active Antenna

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

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as a preselector with external antenna. Covers 0.3-30 MHz. Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1020C  
\$99<sup>95</sup>

## Compact Active Antenna

Plug this compact MFJ all band active antenna into your receiver and you'll hear strong, clear signals from all over the world. 300 KHz to 200 MHz including low, medium, shortwave and VHF bands. Detachable 20" telescoping antenna. 9V battery or 110 VAC MFJ-1312B, \$15.95. 3/8x1 1/4x4 in.



MFJ-1022  
\$69<sup>95</sup>

## Eliminate power line noise!

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



MFJ-1026  
\$199<sup>95</sup>

## MFJ Antenna Matcher

Matches your antenna to your receiver so you get maximum signal and minimum loss. MFJ-959C Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Select 2 antennas and 2 receivers. 1.6-30 MHz. 9x2x6 in. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-959C  
\$119<sup>95</sup>

## High-Gain Preselector

High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Push buttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18 VDC or 110 VAC with MFJ-1312, \$15.95.



MFJ-1045C  
\$89<sup>95</sup>

## Dual Tunable Audio Filter

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



MFJ-752D  
\$119<sup>95</sup>

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

Monitor Morse code from hams, military, commercial, aeronautical, diplomatic, maritime -- all over the world -- Australia, Russia, Japan, etc.

Monitor any station 24 hours a day by printing transmissions. Printer cable, MFJ-5412, \$11.95.

Save several pages of text in memory for later reading or review.

## High Performance Modem

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

## Easy to use, tune and read

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

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

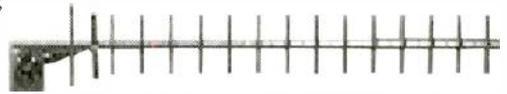
It's easy to read -- front-mounted 2 line 16 character LCD display has contrast adjustment.

Copies most standard shifts and speeds. Has

MFJ AutoTrak™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312D AC adapter, \$15.95. 5 1/4Wx2 1/4Hx5 1/4D inches.

## WiFi Yagi Antenna -- 15 dBi 16-elements extends range



16-element, 15 dBi WiFi Yagi antenna greatly extends range of 802.11b/g, 2.4 GHz WiFi signals. 32 times stronger than isotropic radiator. Turns slow/no connection WiFi into fast, solid connection. Highly directional -- minimizes interference.

N-female connector. Tripod screw-mount. Wall and desk/shelf mounts. Use vertically/horizontally. 18Wx2 3/4Hx1 1/4D inches. 2.9 ounces.

MFJ-5606SR, \$24.95. Cable connects MFJ-1800/WiFi antennas to computer.

Reverse-SMA male to N-male. 6 ft. RG-174.

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

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



MFJ-956  
\$69<sup>95</sup>

## Super Passive Preselector

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



MFJ-1046  
\$119<sup>95</sup>

## MFJ Shortwave Speaker

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



MFJ-281  
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MFJ-1777  
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MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection. Good to 500 MHz. 60 dB isolation at 30 MHz. MFJ-1702C for 2 antennas.

## Morse Code Reader

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MFJ-461  
\$89<sup>95</sup>

## MFJ 24/12 Hour Station Clock

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## EDITORIAL

### Tuning In

by Richard Fisher, KI6SN  
<editor@popular-communications.com>

# You Don't Need A Weatherman . . .

When a news KNX (1070 AM) reported quite matter-of-factly there was a trampoline blowing around in the lanes of one of Southern California's busiest freeways, we knew it was going to be an unusual day. And the sun was not even up.

This part of the country is subject to what weather reporters like to call "wind events" — the famed Santa Anas that blow in from the desert and sometimes wreak havoc. "*Wind Watch 2011, Team Coverage!*"

For some cities, this round of winds turned historic. The night of November 30 and morning of December 1, 2011, gusts were clocked at nearly 100 mph in many areas. There were so many trees lying in its streets, Pasadena shut down the school system and declared a state of emergency. Now, there's something you've never seen during the Rose Parade. (*WATCH: CBS News coverage of Santa Ana wind damage in Pasadena: <<http://bit.ly/tSfz8X>>. — Ed.*)

Later in the day, Los Angeles County declared a state of emergency, as well. Are you getting a sense of the impact of this "wind event?"

Of course, everything is relative and we tend to personalize Santa Anas by measuring the impact they have on our own lives.

Where I live, in an inland valley, winds were pretty brutal, but at my house the headaches were caused by sporadic power outages and loss of the Internet, landline phone and cable TV service — communications bundled from one provider, which obviously was having a bad day of its own.

As the morning progressed, the day turned into an object lesson in disaster preparedness.

**AM-FM Radio.** We were thankful to have been conscientious about keeping a supply of fresh batteries in the refrigerator for powering AM-FM radios. They're handy for flashlights, as well. (*HINT: When buying battery-powered emergency gear, choose items that take similar size cells. Here, we've aligned most everything for AA. It saves the hassle of having to keep the whole alphabet on hand: AAA, C, D cells.*)  
SCORE: High-five.

**The Internet.** We are fortunate to live in city that offers free Wi-Fi to any resident in range of its signal. If you're downtown — no problem. For those of us on the outer valences, though, it is a challenge to make a solid connection.

It had been a couple of years since I'd used the city system and recalled there was a very narrow "sweet spot" to capture the signal somewhere in my house. *But where?*

With laptop in hand, I inched room-to-room, watching the reception bar on the bottom-right of the screen. "*Ooooh, getting hotter. Oh, no, now colder. Wait, hotter again . . .*"

It took me a good 45 minutes to find that connection point — the laptop book-ended between a vase of dried flowers and two candlesticks and pushed against a living room window. An inch or two in any direction and the signal was gone. Even at that, we were registering from one to four bars, depending on the velocity of the wind at the time. At this point, though, we were grateful for any Internet connection at all.  
SCORE: Stinky.

**TV.** Our cable was down and remained so most of the day. Fortunately, we were able to turn to the TV we set up for digital reception. What had served as more of a hobbyist's receiver now took on EmComm suspense. To spin a ham operator phrase: *When cable fails, DTV.* Thank goodness we were bitten by the over-the-air DTV DX bug about a year ago. SCORE: Another round of high-fives.

**Scanners.** To get a handle on what was happening in the immediate area, I rummaged around the garage for 15 minutes to find an old police scanner. It was hot with action after I finally found some AAA batteries to power it. A 2-meter radio gave us

(Continued on page 35)

# Icom has the receivers for the experts...

## IC-R9500 The Ultimate Wide Band Receiver

- 0.005–3335.000MHz\*
- USB, LSB, CW, FSK, FM, WFM, AM
- 1020 Alphanumeric Memory Channels
- P25 (Option UT-122)
- Five Roofing Filters and so much more!



For those just getting started...



## IC-R75 Wide Band Receiver

- 0.03–60.0 MHz\*
- Triple Conversion
- Twin Passband Tuning
- Digital Signal Processing (DSP)

## AND for those on the go!

### IC-R20 Advanced Ops

- RX: 0.150–3304.999MHz\*
- AM, FM, WFM, SSB, CW
- 1250 Alphanumeric Memory Channels
- Dualwatch Receive
- 4-hour Digital Recorder



### IC-RX7 Track Ready

- RX: 0.150–1300.0MHz\*
- AM, FM, WFM
- 1825 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Programmable<sup>2</sup>
- Water Resistance Equivalent to IPX4



### IC-R6 Pocket Compact

- RX: .100–1309.995MHz\*
- AM, FM, WFM
- 1300 Alphanumeric Memory Channels
- 100 Ch/Second High Speed Scan
- Computer Controllable<sup>1</sup>



### IC-R2500 2 Wide Band RX in 1 Black Box

- RX: 0.01–3299.99MHz\*
- AM, FM, WFM, SSB, CW (Main)
- AM, FM and WFM (Sub)
- 1000 Memory Channels
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**ICOM**

# The Weirder Side of Wireless

by Staff



"Cakes" Auville, one of WJFK's "Sports Junkies," describes the scene shortly after a car crashed into the call screening room at "106.7-The Fan" studios outside Washington, D.C. According to news reports, the morning-drive show carried on and there were no injuries. (Internet screen grab from myFOXdc.com, WTTG-TV <<http://bit.ly/rORdIT>>)

## Out-of-Control Vehicle Takes Aim At JFK

The co-host of a popular WJFK-FM sports show on "106.7-The Fan" was tweeting a tune he'd never before done on the Washington, D.C.-area morning drive show:

"OMG a car just crashed into our building," Eric Bickel, a co-host of "The Sports Junkies," sent to fans on Twitter after a sedan careened into a call screener's office — vacant at the 7:45 a.m. moment of impact.

Bickel said the driver, who "is walking around" and "super lucky," said he'd swerved to avoid a pedestrian. According to a report on WTTG-TV, the driver was "charged with failure to maintain proper control."

(WATCH: TV news coverage of the crash: <<http://bit.ly/rORdIT>> and LISTEN: To "The Sports Junkies" on WJFK, Washington, D.C.: <<http://cbsloc.al/ChIWC>>. — Ed.)

"Can't believe nobody is dead," Bickel tweeted. WJFK's studio is located in Fairfax, Virginia. (Source: WTTG, published reports)

## Would They Do It Again? Not Bloody Likely!

This from TorontoSun.com, up Canada-way:

A couple of local morning show hosts learned that not everyone appreciates their brand of ha-ha's. Especially the Niagara Regional Police Service.

Jason Barr — who teams on air with Chris Biggs mornings at 97.7 HTZ-FM, "Southern Ontario's Best Rock" — joined contestants vying for a chance to win a Ford F150 pickup. All they had to do was put on a ski mask and lure people they approached into the F150 with the line: "Excuse me, get in the truck."

"The goal was to get as many people as possible to sit in the truck for 97 seconds," TorontoSun.com reported. "Just over two hours into the bit, the truck, which was covered in radio station decals, was pulled over by police" on the streets of St. Catharines.

Barr and "his posse" were handcuffed as police investigated. Constable Sal Basilone said police received a few

reports about masked people in a truck making "ill advised" attempts to get people into the vehicle.

"They were probably scaring people," he said. "I don't think it's funny and the police service doesn't think it's funny." No charges were filed after the group promised "to stop what they were doing."

"It was certainly not our intention to scare anyone," Barr said, believing people would realize it was a joke.

"He said while the bit got laughs from most of the people they approached — 18 people sat in the truck — it probably wasn't the best idea," the web posting said. "However, he didn't go so far as to say he regretted the prank. 'Was it fun? Yeah. Would we do it again? Not likely,' Barr said."

(LISTEN: To live audio streaming of 97.7 HTZ-FM <<http://www.htzfm.com/>>. — Ed.) (Source: TorontoSun.com <[http://www.torontosun.com](http://www.torontosun.com/)>)

## Not Drinking Any More . . . Or Any Less

A popular United Kingdom radio personality's vow of sobriety "until his 46th birthday (in) April" lasted all of nine days, according to reports in *The Daily Mirror*.

About 8.7 million listeners tune to Chris Evans on BBC Radio 2's Breakfast Show daily — most of which he has done "with a hangover," he admitted in a magazine article.

The teetotal vow was made "as a life-changing decision," Evans said at the time. "But he was spotted . . . downing a pint of Guinness at a party after a charity golf tournament at St. Andrews Fife," the *Mirror* said.

The paper reported that "fellow party-goer, golfer Lee Westwood, joked: 'Not drinking any more, not drinking any less!' The legendary boozier (Evans) had promised in a magazine column not to touch another drop after feeling weird on a recent bender with Prince Harry, saying: 'I don't want to feel like that ever again,'" the story said. "He told readers he wanted to 'achieve more, without the highs and lows of the gay days and fuggy haze of booze.'"

(VISIT: BBC Radio 2's Breakfast Show website: <<http://bbc.in/sbstgL>>.)

"This will come as a major shock to people who know me," Evans, 45, said. "I want to know what I'm like completely sober." (Source: *The Daily Mirror* <[http://www.mirror.co.uk](http://www.mirror.co.uk/)>)

## Teaching Moment: It's Best Not to Talk On CB About Blowing Things Up

A trucker who picked up his Citizens Band radio microphone to declare he "should blow up the Vivian truck scale" sure got the attention of another trucker and authorities along Interstate 90 in South Dakota. They were more than a bit concerned by his "terrorist-type comments," a report on the *Rapid City Journal* website said.

Citing a *Daily Mitchell Republic* story, the *Journal* said the trucker was headed eastbound when officers caught up with him. They had been alerted by another trucker of the transmission.

At gunpoint, the driver was invited to step from the cab, where he explained he was just plain ticked off.

"Lt. Alan Welsh says that the driver was angry because he had received a ticket earlier in the day," the *Journal* story said, adding that "no charges have been filed, but the information was sent to the State's Attorney's Office."

Welsh said the driver's company was notified of the incident, as well. (Source: *The Rapid City Journal* <<http://RapidCityJournal.com>>)

## News, Trends, And Short Takes

by D.Prabakaran  
<bcdxer@hotmail.com>

### Rebel Radio Station Shut Down By Colombian Army

Colombia's Army has shut down the main radio station operated by FARC rebels (*Fuerzas Armadas Revolucionarias de Colombia*, known as the Revolutionary Armed Forces of Colombia), after 15 years on air, authorities said. (*IN DEPTH: For more about FARC, visit: <<http://bit.ly/vurvLi>>. - Ed.*)

Troops captured transmitters and other broadcast equipment when they overran a guerrilla camp in the Meta region. The rebel radio station — Voice of Resistance — broadcast the FARC's revolutionary message across large areas of eastern and central Colombia. The army disrupted its broadcasts last year, as well, but the left-wing rebels got the station back on air.

Troops found the clandestine broadcasting operation in a rebel base protected by some 60 improvised explosive devices. The captured equipment included microphones, computers, amplifiers, a mixing console and a generator.

The capture of the radio operation came two weeks after the FARC leader Alfonso Cano was killed by the security forces. He was replaced by Rodrigo Londono — better known by his alias *Timochenko*.

FARC is the country's oldest and biggest rebel group. It has been fighting to impose a Marxist revolution since the 1960s. Over the past decade FARC has suffered a series of setbacks, losing thousands of fighters and several of its top commanders. But FARC remains a powerful force in large areas of rural Colombia, thanks in part to money gained from cocaine production and trafficking. (*Source: Published reports*)

### UK Broadcaster 'Asian Sound Radio' Plans Arabic Service

United Kingdom broadcaster Asian Sound Radio, an East Lancashire AM station, is planning an extra service on one of its two frequencies. It will continue a full service on 963 kHz and launch programming aimed at Arabic-speaking Muslims on its 1377-kHz frequency.

The 963-kHz service covers Preston, Blackburn, Burnley, Rochdale and Bolton, while 1377-kHz broadcasts to Manchester, Oldham and Stockport. (*LISTEN: To Asian Sound Radio's Internet live audio streaming: <<http://www.asiansoundradio.co.uk/>>. - Ed.*)

(*Source: how-do.co.uk*)

### HD+ Continues Growth Path in Germany

SES announced that its HD offering HD+ <<http://bit.ly/sErzJk>> has continued to grow successfully throughout the first two years of its market presence in Germany.

The service currently reaches 1.9 million German TV households. These are the results of a market analysis conducted by the GfK Group in Germany.

Of the 482,000 customers who started the one-year free trial period with HD+ between November 2009 and October 2010, 305,000 have decided to continue their use of the offering for an annual service fee of 50 euros. The conversion rate therefore stands at 63 percent.

HD+ is a technical platform operated by SES for encrypted broadcasting and reception of commercial-

free TV programs in HD quality. The HD+ offering includes RTL HD, SAT.1 HD, ProSieben HD, VOX HD, kabel eins HD, N24 HD, TELE 5 HD, SPORT1 HD, RTL II HD, sixx HD, Nickelodeon HD and Comedy Central HD.

Following a one-year trial period free of charge, customers pay a fixed technical service fee of 50 euros per year.

SES is a worldwide satellite operator with a fleet of 49 geostationary satellites. The company provides satellite communications services to broadcasters, content and Internet service providers, mobile and fixed network operators and business and governmental organizations worldwide. (*Source: SES*)

### Cuba Alleges the U.S. Is Behind Illegal Wireless Networks

Cuba accused the United States of enabling illegal Internet connections in its territory and said several people were arrested in 2011 for profiting from the wireless networks. The official communist party newspaper *Granma* said those arrested, who were not identified, "had for some time and without any legal authorization, been installing wireless networks for profit."

Using satellite connections to the Internet and equipment that was either stolen or brought to the island illegally, they set up a service to receive international telephone calls that bypassed the state telephone monopoly ETECSA, officials alleged.

Cuba has restricted access to the Internet, giving priority to universities, research centers, state entities and professionals such as doctors and journalists. Because of the U.S. embargo, Cuba cannot connect to the underwater fiber-optic cables that pass near the island, leaving satellite connections with high rates and narrow bandwidths as the main option available to Cuban Internet users.

To overcome those limitations, a Cuban-Venezuelan company laid an underwater cable between the two countries in 2011, but has not been activated.

Cuban authorities have previously accused the U.S. of illegally introducing technology in the island to enable the creation of wireless networks outside state control. One such case was that of U.S. government contractor Alan Gross, who was arrested in December 2009 and sentenced to 15 years prison for bringing IT equipment into the country for distribution. (*Source: Published reports*)

### All India Radio's DRM Transmission Time Increases

All India Radio (AIR) has increased its DRM SW transmission by 8.25 hours to a total of approximately 16 hours a day.

AIR first started digital radio transmissions from Delhi on shortwave using DRM Technology on January 16, 2009 with a target coverage area of the United Kingdom and West Europe. Its Vividh Bharati service on DRM (in NVIS mode) has an approximate coverage area of 800 kilometers (about 500 miles). With the increase in transmission time, more language services have now been added to the External services transmission. (*Source: DRM Consortium*)

# Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher, KI6SN

## Lawyer Files Appeal On Behalf of 'Monkey Man' Roberts

The lawyer representing Pirate Cat Radio founder Daniel "Monkey Man" Roberts has filed a Petition for Reconsideration with the FCC, alleging there is "no proof that Roberts was involved with illegal broadcasts." (*VISIT: The Pirate Cat Radio website: <<http://www.piratecatradio.com/>>. - Ed.*)

The FCC has issued a \$10,000 Forfeiture Order against Roberts for "willfully and repeatedly violating section 301 of the Communications Act of 1934 . . . by operating an unlicensed radio broadcast station" in San Francisco.

According to a report on *RadioSurvivor.com*, in his letter to the FCC, Attorney Michael Couzens asserts the Order "contains no factual evidence that Roberts participated in the establishing, facilitating or operating equipment for the transmissions at (the Corbett Avenue address) in any way. His involvement is merely assumed, based on statements or activities of Roberts and Pirate Cat Radio and the generous use by the government of broad inferences. The Order makes it a violation that the stream was broadcast, without any evidence as to who broadcast it."

Couzens concludes his letter with the concern that the forfeiture order "depicts a new standard of Section 301 enforcement that is vague, amorphous, incomprehensible, over reaching, and Unconstitutional. The Government should reconsider this Order and on reconsideration should vacate the penalty."

"Pirate Cat Radio is no longer broadcasting," the *RadioSurvivor.com* story says, "but former Pirate Cat Radio volunteers (without Roberts) are now running the online-only Mutiny Radio from the former Pirate Cat Radio Cafe." (*Source: RadioSurvivor.com <<http://www.RadioSurvivor.com>>*)

## Senate Committee Considers Obama-Nominated Duo for FCC

Describing their potential as playing "an invaluable role" as Federal Communications Commission commissioners, Chairman Julius Genachowski praised President Obama's choices to replace outgoing commissioners Michael Copps and Meredith Baker.

The Senate Commerce Committee held a nomination hearing in late 2011 to consider Jessica Rosenworcel and Ajit Varadaraj Pai as their replacements.

President Obama nominated Rosenworcel to replace outgoing FCC Democratic Commissioner Copps, whose term ends when Congress adjourns, and Pai would replace Republican Commissioner Meredith Baker, who left her position in March.

In a statement, Genachowski described the nominees as "two outstanding choices." (*READ: Genachowski's brief remarks: <<http://bit.ly/tupcAp>>. - Ed*)

The five-member FCC regulates broadcast media and both wireless and wired telecommunications. (*IN DEPTH: To see up-to-date information on the FCC's leadership, visit: <<http://www.fcc.gov/leadership>>. - Ed.*) (*Source: Published reports, FCC*)

## FCC: Broadband Expansion to Produce 500,000 Jobs

Its initiative to bring broadband high-speed Internet to rural areas of the United States will create 500,000 jobs over the next six years, the FCC said.

An economics professor at Georgetown University's McDonough School of Business, told the *National Journal*, "it is hard to say how good the FCC's (employment) numbers are," but Prof. John Mayo added the FCC methodology is "probably defensible. Mayo says that jobs can be ascribed to broadband spending from directly laying fiber in the ground, but that the number can rise when other effects are included, such as jobs resulting from information flowing more rapidly."

Robert McDowell, a Republican FCC commissioner who voted for the *Connect America Fund* order, told the *Journal*: "That (employment) figure comes from the chairman's office so we don't know what the factual basis is. Therefore, we cannot endorse it."

"The FCC voted in 2011 to spend billions to subsidize broadband businesses in the countryside. The money is not a new outlay — it previously went to the landline operations at rural phone companies," the *Journal* reported.

"The effort will overhaul the so-called 'high-cost fund,' (about \$4.5 billion) . . . so that it goes toward broadband instead of telephone," according to the *Journal*.

The vote in 2011 to overhaul the "high-cost fund" to create a *Connect America Fund* was a major decision by the FCC, "after years of complaints about the program's funding of a dated technology: landline service." (*IN DEPTH: See the full National Journal story: <<http://bit.ly/tKmDAU>>. - Ed.*)

Broadband expansion is expected to provide access to an estimated 7 million Americans who are now unable to get a high-speed Internet connection. (*Source: National Journal, FCC*)

## Senator Backs NFL Fan Group's Opposition to TV 'Blackouts'

U.S. Sen. Sherrod Brown (D-Ohio) is supporting a National Football League fan group's effort to end television blackouts, asking the Federal Communications Commission to reconsider a 1973 regulation that allows sports leagues to black out broadcasts of local games when they don't sell out.

According to a report on *Cincinnati.com*, Brown said he is "urging the FCC to take a fresh look at the Sports Blackout Rule and allow fans to watch their home team play on television. The taxpayers who built many of these stadiums should have broadcast access to them," the *Web* story reported.

(*IN DEPTH: To see the NFL and other sports' blackout policies, visit: <<http://bit.ly/sRPCZD>>. - Ed.*)

"Even if Brown, a Democrat, prevails with the FCC, it's unlikely the NFL will change its policy. Brown asked the NFL to reconsider the policy last year without success." (*Source: Cincinnati.com: <<http://communitypress.cincinnati.com>>*)

# The WINRADIO *EXCALIBUR Pro*<sup>TM</sup> receiver has a *Pause* button to pause the audio while you are away. Neat?



WINRADIO WR-G33DDC 'EXCALIBUR Pro' Receiver - Windows Internet Explorer

http://www.winradio.com/home/g33ddc.htm

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## WR-G33DDC 'EXCALIBUR Pro'

### Overview

The WINRADIO WR-G33DDC 'EXCALIBUR Pro' is a high-performance, low-cost, direct-sampling, software-defined, shortwave receiver with a frequency range from 9 kHz to 49.995 MHz. It includes a real-time 50 MHz-wide spectrum analyzer and 4 MHz-wide instantaneous bandwidth available for recording, demodulation and further digital processing.

This product is an advanced version of the award-winning [WR-G31DDC](#) receiver, offering many additional features and improvements, such as for example:

- 4 MHz instantaneous processing bandwidth
- Low-noise preamplifier
- Configurable preselection filters
- Filter bandwidth adjustable down to 1 Hz
- 0.5 ppm frequency stability
- Test and measurement functions
- Pause function



The receiver's superior performance results from its innovative, direct-sampling, digital down-conversion architecture along with the use of leading-edge components and design concepts.

### Features

- 9 kHz to 49.995 MHz continuous frequency range
- Direct sampling
- Digital down-conversion
- 16-bit 100 MSPS AD converter
- 50 MHz-wide, real-time spectrum analyzer
- 4 MHz recording and processing bandwidth
- Continuously adjustable filter bandwidth down to 1 Hz
- Three parallel demodulator channels
- Pause function
- Waterfall display functions
- Audio spectrum analyzer
- Audio and IF recording and playback
- Recording with pre-buffering
- EIBI, HFCC and user frequency databases support
- Very high IP3 (+31 dBm)
- Excellent sensitivity (0.20  $\mu$ V SSB, 0.10  $\mu$ V CW)
- Excellent dynamic range (107 dB)
- Excellent frequency stability (0.5 ppm)
- Selectable medium wave filter
- User-configurable preselector
- Selectable low-noise preamplifier
- Test and measurement functions
- USB 2.0 interface

The receiver's robust front-end is equipped with an ultra-high linearity amplifier which results in exceptional strong-signal performance. This already robust front-end is further enhanced with a user-selectable preselector that can operate either automatic or user-configurable mode. As many as 119 different filter combinations can be constructed by the user (91 band 14 low-pass and 14 high-pass). The front-end employs 3-subminiature electromechanical relays (rather than often distortion-prone semiconductor switches) to ensure high range.

Internet | Protected Mode: Off

Shouldn't you pause and have another look?  
[www.winradio.com/epro](http://www.winradio.com/epro)

# Thinking About Artificially Intelligent Radios

by Rob de Santos, K8RKD  
<commhorizons@gmail.com>  
Twitter: @shuttleman58

*“There is little doubt that if this technology is applied to SWL and ham radios the impact would be substantial.”*

As spectrum becomes more and more valuable and competition for it intensifies, solutions are being sought to address it. Also growing rapidly is the development of Software Defined Radios (SDRs) <<http://bit.ly/s11Bni>>. These two trends are now leading to the application of Artificial Intelligence (AI) <<http://bit.ly/w2TC89>> research to the radio and this is the genesis of Cognitive Radio (CR).

## What is Cognitive Radio?

The Software Defined Radio Forum has defined Cognitive Radio this way: “An Approach to wireless engineering where in the radio, radio network, or wireless system is endowed with capacities to: acquire, classify, and organize information; retain information; apply logic and analysis to information; make and implement choices about operational aspects of the radio; and network or wireless system in a manner consistent with a purposeful goal.” (SDRF-06-R-0009-V0.06).

What does all that mean? More simply, the radio has the software and hardware capability to react to the environment it is in and, if necessary, change the receiving or transmitting in a way that gets the information through and potentially reduce interference. How does a radio do that?

Radio amateurs and SWLs have been doing this manually for decades. We choose the frequencies and modes we transmit on or listen to depending on the circumstances. What if the radio could do that for you? For many, that would be significant. Anyone who tried to interpret solar data or avoid interference will understand. (That’s not to say there won’t continue to be times when you choose to control it all on your own!).

Current research on CR is focused on applications such as allowing primary and secondary users to share spectrum — television stations and other potential users of the same UHF spectrum — and on applications in transportation — for example, cars that interact with each other and the road.

There is little doubt, though, that if this technology is applied to consumer products — including SWL and ham radios — the impact would be substantial.

## Putting the Technology to Work

In the shared spectrum application, it is situations such as finding space for more high-speed data networks that is the hot topic. Perhaps you’ve seen the messages from the television station lobby warning you that you might lose access to your local TV channel if the FCC gets its way. The adverts are, of course, slightly misleading — but the battle behind the message is exactly the example I mentioned above: Should secondary users be allowed on over-the-air TV frequencies? One proposed solution is the application of CR technology so that

the secondary-user radios adapt to the presence of other users and avoid interfering with them.

Another area of interest is in transportation. As more and more passenger cars get Internet access, the potential load on mobile networks increases. New applications such as “smart cars” or cars that are able to drive themselves will add to the demand for spectrum.

As a result, researchers are exploring how to share spectrum in bands already in use. For example, applying the 802.11a specification for use of 5.850 to 5.925 GHz by home wireless devices would be very valuable and with the existing product base easy to implement in vehicles. However, with only seven 10-MHz data channels, there is already potential crowding and interference. CR is one proposed solution.

A vehicle capable of doing things such as cooperatively adjusting speed in relation to other vehicles, automatically getting out of the way of emergency vehicles, avoiding crossing railroad tracks if it is unsafe, and avoiding collisions all require the ability to react in a smart and safe way.

Having dependable spectrum for the necessary communication is a must. Customers are not going to trust the car to do these things unless they are convinced the vehicle does it at least as safely as they can do it themselves.

## Practical Applications in Communications

CR for you, the reader, is speculative. But it is easy to see clear applications in the amateur radio, SWL, and scanner arenas. Application of propagation — for example, beacons — and solar weather data is one of the first and more obvious applications. The radio can decide which frequencies to try so that you can make that contact.

Another would be deciding on which frequency to listen to a broadcast based on the time of day, propagation, season and so on — without the need by the user to try every available frequency. For newer listeners it is often confusing to understand the hour-to-hour and season-to-season shifts of shortwave broadcasters and a smarter radio should be able to sort this out for them.

## Additional links:

- Software Defined Radio Forum: <<http://bit.ly/uUyYIK>>
- Cognitive Radio: <<http://bit.ly/uwGwN2>> and <<http://bit.ly/u4Oqld>>.

*What applications would you have for a CR? I look forward to hearing from you by the communications method of your choice. I’ll have more on the new horizons in communications technology next month.*

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# An SWLing Safari

## Past and Present, Voices On the Airwaves from Africa Are As Vast As the Continent Itself

By Gerry Dexter

**E**arly in my teenage years, I acquired a copy of John Gunther's 1955 book *Inside Africa* <<http://tinyurl.com/7ydj5gj>>. I was fascinated by the book and probably read this huge volume at least three times over the next few years.

I was already into shortwave by then, so I knew the countries involved, but I had much trouble with all of those confusing, hard-to-spell names — not to mention keeping track of who was king, president or prime minister of what! I rather wish I still owned that book, even though nearly all of the country names and governments have changed and a dozen or two new ones have been created in the several decades since.

A few countries in Africa have largely managed to retain their traditional names: Egypt still has its, as does Algeria, Morocco, Kenya, Ethiopia, South Africa and Zambia — all managing to survive revolutions, assassinations, rebellions, revolutions, mass starvation and every other kind of disaster imaginable.

Other countries changed names around 1960, when Africa caught independence fever and European capitals granted them freedom left and right. French Equatorial Africa and French West Africa, two giant areas, had several smaller countries carved out of their territories. This may have kept the cartographers at the *National Geographic* up nights, but on the plus side, it created numerous fascinating DX targets in the process and really juiced up the North American Shortwave Association's country list: <<http://www.naswa.net>>.

We SWBC DX'ers had it made in the 1960s and '70s. Then by the 1980s and '90s it all began to go downhill, as one by one,

*“Put on your pith helmet, grab some mosquito netting and come along on our SWLing Safari.”*

political changes, a tribal war here and there, and ill-maintenance of broadcast equipment succumbed to Africa's inhospitable climate.

Time and other negative elements ate away a good portion of the *World Radio-TV Handbook* (WRTH) table of contents: <<http://www.wrth.com>>.

(The 2012 edition of WRTH is available from the CQ Communications online bookstore: <<http://bit.ly/s7PKfJ>>. — Ed)

That all-too-sad tale gives way to a look at what you can log — or try to — these days. Here's a country-by-country rundown of how things currently stand. Included, as well, is a station list you can use to check them off as you get them.

So put on your pith helmet, grab some mosquito netting and we'll be off on our safari.

(NOTE: Stations in these listings designated with an asterisk — \* — are not included in the accompanying chart: “Your Africa Station and Country Check Off List.” Also, the Web addresses listed with the following entries are subject to change.



Back in the John Gunther era, Radio Brazzaville from French Equatorial Africa was an afternoon regular for me on 11970.



Across the river in the Belgian Congo, Radio Congo Belge was heard almost daily on 31 meters.



August 4, 2005

Richard A D'Angelo  
2216 Burkey Drive  
Wyomissing PA 19610  
U S A.

Dear Richard.

**CONFIRMATION/ACKNOWLEDGEMENT**

I write to acknowledge the receipt of your letter of verification dated 18<sup>th</sup> July, 2005. We are quite delighted with your report on the reception of Radio Nigeria Abuja 7275 KHz in your city.

I therefore wish to confirm to you that your report in your observation were quite in order.

Please note:

0530 hours Nigerian time 0430 utc.	Transmission commences on 7275KHz 41 meters
2230 hours Nigerian time	Transmission closes

Once again accept our best wishes.

**Ben Obeta**  
For: Executive Director

Radio Nigeria from Abuja on 7275.

*If the link provided is incorrect, please perform an Internet search for the radio station listed to obtain an updated URL. – Ed.)*

**ALGERIA**—Radio Algerienne <<http://www.radioalgerie.dz>>, **Website A**, operates from studios in Algiers but its programming departs from antennas at Issoudun (France), and operates daily on 7295 in Arabic from 0400 to 0558. Also listed is 11955 from 1800-1958 in Arabic. Both frequencies carry the Holy Qur'an Service.

**ANGOLA**—This former Portuguese colony, once had many private stations to seek out. But over the years they're down to just the government's Radio Nacional de Angola <<http://www.rna.ao/>>. It's very occasionally heard on 4950 using 25 kW operating around the clock. Despite the passable power level, reception is largely dependent on seasonal changes. Much less likely is the lower-powered Radio Nacional outlet that operates on 7217 for most of the day. It's running 15 kW. The few off hours involved would not in any way work for us. Late afternoons or evening hours are best shots but — to be blunt — I've only seen one or two reports of this one in the hobby press in several years past.

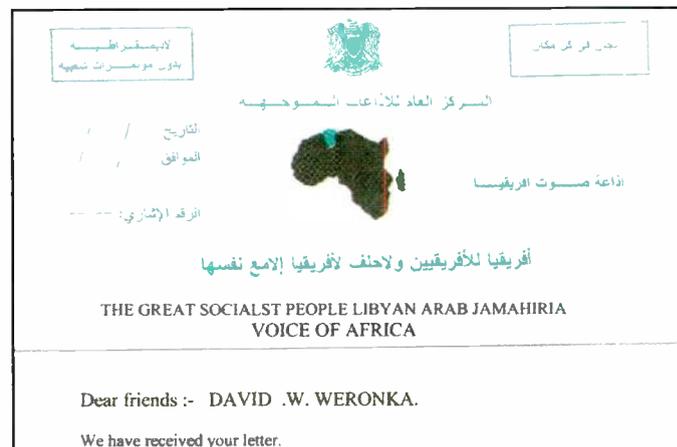
**ASCENSION ISLAND**—This is home to the BBC's Atlantic Relay at English Bay operated by Babcock International. Relays, typically, are twice-a-year hopscoth players, so you never know where they'll light. Let's pick 11810 in English between 1800-2100. Several other broadcasters use the Ascension facility for relays, as well. We can't get into those complex relationships here. Similar difficulties exist in the cases of Meyerton, South Africa; and Kigali, Rwanda.\*

**BENIN**—Office de Radiodiffusion et Television Radio Parakou <<http://www.ortb.bj>>, Radio Parakou is buried under Cuba's Radio Rebelde on 5025, broadcasting from 0500 to 2300 in French and local dialects. Does Rebelde ever go silent? If that should happen would propagation from Africa cooperate?

**BOTSWANA**—Voice of America's IBB Relay at Mopeng Hill is available on many frequencies. But when and where to find transmissions changes with the broadcast seasons. The one reliable is 4930, airing the usual VOA programming which is usually heard from about



From the old days of Senegal, in French West Africa, used 4 kW on 4890.



After Kadaffi, Libyan Radio discontinued its Voice of Africa slogan.

0300 almost any evening. There are a few hours in Shona and Ndebele, but those are programmed during our daylight hours and, thus, are out of our reach.

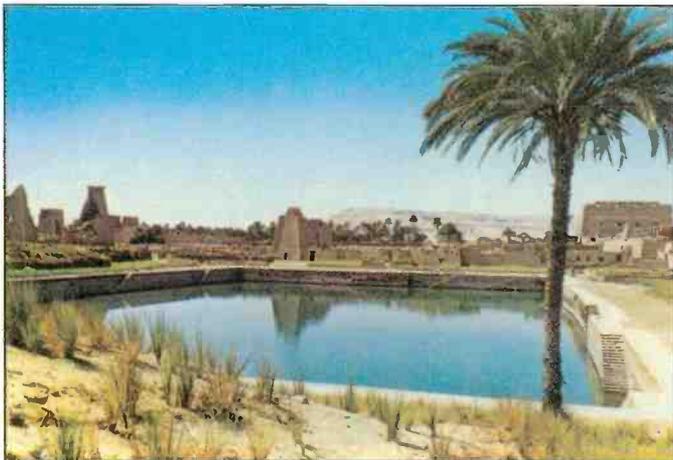
**BURKINA FASO**—Radio Burkina <<http://www.rtb.bf>>, **Website B**, from Ouagadougou operates on from 0530 until 0800 and then again from 1700 to 0000. That schedule allows you to have shots at it at sign-on and sign-off. But its 50 kW isn't much of a performer, as it seems to be rarely received and you are more than likely to be disappointed in your attempts.

**BURUNDI**—Radio Television Nationale de Burundi <<http://www.rtnb.bi>> uses a hard-to-believe power of 100 kW to operate on 6140 daily in French and Swahili from 0300 through to 2100. If it really used the listed power, people would actually hear the signal! But getting a signal from Burundi is about as rare as attending a wedding reception between a Tutsi and a Hutu!

**CENTRAL AFRICAN REPUBLIC**—Radio Centrafrique <<http://tinyurl.com/6mjapjb>> from Bangui uses 5035 with 20 kW. If that information didn't cast a pall over your hearing hopes, the hours probably will. Sign on is at 0600 and broadcasts are in French or Sango run until our early afternoons (1905). This, again, does not fill a person with hope!

**CHAD**—ORNT Radio Nationale Tchadienne operates one of the few *big fella* transmitters on the continent — 250 kW puts 6165 on the map from 0425-0730 and is also on in our afternoon hours usually until 2300 close. In use in French is 7120 from 1500 to 2130. Shown as a standby, as well, is its traditionally used 4905.

**CONGO (Democratic Republic)**—This one represents one of the really sad broadcast situations. I can easily remember regular — almost daily — tune-ins of Radio Congo Belge on 31 meters when the coun-



Egypt's "Sacred Lake."

**RADIO AFRICA**

THANK YOU FOR YOUR RECEPTION REPORT OF  
 DATE JANUARY 30, 1994  
 TIME 0530 UTC - 0600 UTC  
 FREQUENCY 7190 KHZ

RADIO AFRICA BROADCASTS EVERY DAY FROM 6:00 PM  
 TO 11:00 PM LOCAL TIME IN BATA (1700-2200 UTC).

FREQUENCY FROM MAY 14, 1989 ONWARDS 7190 KHZ 41 METERS.

LISTEN ALSO TO RADIO EAST AFRICA, 9585 KHZ 31 METERS,  
 0500-1400 UTC SATURDAY & SUNDAY

FOR MORE INFORMATION AND A PROGRAM SCHEDULE  
 PLEASE WRITE:

RADIO AFRICA  
 10201 TORRE AVE., SUITE 320  
 CUPERTINO, CALIF. 95014 USA

Radio Africa, transmitting from Equatorial Guinea, fills mid-mornings to mid-afternoon with religious programs, brokered from an office in California.

try was the Belgian Congo. Today you've had a spectacularly lucky day if you can hear anything out of the Democratic Republic of Congo.

Radio Kahuzi <[www.radiokahuzi.com](http://www.radiokahuzi.com)>, operates on 6210 with less than a kilowatt from 0700 to 2000 in French, Lingala and Swahili.

A second active station is Radio Tele Candip from Bunia on 5066. You have something like 200 watts more punch coming from this outlet. Unfortunately far greater power resides with WWCR on 5070, which would obliterate any signal from Candip. Broadcasts are in French, from 0400 to 0700.

A third broadcaster is *in* the Congo, but not *from* the Congo. Radio Okapi <<http://www.radiookapi.net>>. This one actually radiates from antennas at Meyerton, South Africa. The broadcasts are in French and Lingala on 11690 from 0400-0500 and 11795 from 1600-1700. Both segments are quite regularly heard.

**DJIBOUTI**—Radio Djibouti <<http://www.rtd.dj>>, is a near semi-regular on 4780, signing on around 0300 and going through to 2100 in French, Arabic and Afa. It runs 50 kW. You will note recitations from the Koran a few minutes past the 0300 sign on.

**EGYPT**—Radio Cairo <<http://www.ertu.org>> is on many frequencies in several languages. You won't understand all of them — heck, with their troubled modulation, it's hard to understand even the English! Try almost any one of the following: 6270 in Arabic from 0030-0430, Udru at 1600-1800, Italian at 1800-1900, German at 1900-2000, French 2000-2115, English 2115-2245 and 2300-0030; 9250 in Spanish from 0045-0200, Arabic at 2330-0045, Turkish at 1700-1900, Russian at 1900-2000, French at 2030-2230, and Portuguese at 2215-2330; 9305 in Arabic from 0000-0700 and 1900-0045; 9315 in Spanish from 0045-0200 and English at 0200-0300; 9745 in Swahili at 0400-0500; 9855 in Arabic from 2000-2200; and 9990 in Hausa at 1800-2100.

Also, 13650 in Setswana from 0400-0600; 15160 in Arabic at 1300-1600; 15160 in Uzbek from 1500-1600; 15285 in Afar from 1600-1700. Somali at 1700-1730 and Amharic 1730-1900; 15345 in English at 1600-1800; 15450 in Afar at 1600-1700; 17810 in Indonesian at 1230-1400, Persian (i.e. Farsi) 1330-1530, Swahili at 1530-1730; 17870 in English 1215-1330; and 17480 in Arabic at 1015-1215. Transmissions come from sites at Abis and Abu Zaabal.

**EQUATORIAL GUINEA**—You'd think there'd be no broadcast activity in his inhospitable place. Not quite. There is Radio Guinea Nacional, at Bata on 5005 airing in Spanish from an 0500 sign on and Radio Nacional at Malabo on 6250, also in Spanish and also at variable 0500 sign on, although 6250 may be off the air at present.



Trans World Radio, transmitting from Manzini, Swaziland, is regularly heard on 4775.

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Station de Djibouti

STATION DE DJIBOUTI

RADIODIFFUSION

TYPE	Fréquence	P. max	Langue	Service
FM	101.5	100 kW	Arabe, Français, Anglais, Somali, Amharic	Radio Okapi
FM	101.5	100 kW	Arabe, Français, Anglais, Somali, Amharic	Radio Okapi

TELEVISION

STATION DE DJIBOUTI

**RADIO OKAPI**

MONUC | Fondation Hirondelle

Radio Okapi is a FM and shortwave broadcasting network serving the whole of the Democratic Republic of the Congo. It is a joint project of the Fondation Hirondelle and the United-Nations. The radio aims to contribute to the restauration of peace in the country by broadcasting news and information programmes that are professional, credible, and reliable.

QSL for: Richard D'Angelo

We are pleased to verify your reception of Radio Okapi, Kinshasa, RDC

Date: 23 October 05

Time: 0400 - 0420 UTC

Frequency: 11 690 kHz

Lausanne Signature

19.01.06

Fondation Hirondelle  
Hope for Peace and for an Africa

Radio Okapi, in the Democratic Republic of Congo, actually sends its signal from Meyerton, South Africa.

Tune 4780 at around 0300 and you are likely to hear Radio Djibouti.

Pan American broadcasting, based in California, operates Radio Africa on 15190 renting times to religious broadcasters from 0530-1200 and 1415-2300. These segments can be picked up about 30 percent of the time.

**ERITREA**—Voice of the Broad Masses (of Eritrea). This one, originally a clandestine, has come a long way. The station now uses higher power and several additional frequencies that are frequently changed, probably to get out from under jamming efforts from Ethiopia. Changes are noticed on an almost weekly basis. The list involves 7120 in various African and Horn of Africa-based languages from 1400-1830; 7165 in Arabic, Somali and other local languages from 0930-1800; 7175 from 0300-2000 in Amharic, Arabic and vernaculars; 7220 at 1400-2000 in Amharic, Arabic, Somali and local languages; and, 9715 from 1400-1800 in the same languages and finally 9720 in Arabic and Amharic. These frequencies are not all in use at one time; there may only be two or so active at a time in each band.

**ETHIOPIA**—Radio Ethiopia <<http://www.erta.gov.et/>>, **Website C**, does its thing on 7235 and 9560 in Somali from 0700-0800, 1200-1300 and 1800-1900; Afar at 1300-1400, Arabic 1400-1500, English 1600-1700, French 1700-1800; with 9560 adding Tigrina/Somali at 1800-1900, 9705 in Amharic 0300-2000; English 1330-1500 and back to Amharic/Oro and Tigrinya at 1500-2100.

Radio Fana, Addis Ababa <<http://www.radiofana.com/>> is active in Amharic on 6110 and 7210 from 0300-2100 in Amharic, Tigrinya, Oromo, Afar and Somali. Both frequencies will occasionally pop through the QRM around the sign on time.

Radio Oromia <<http://www.orto.gov.et/>>, uses 100 kW on 6030 at 0330-0600. This is a busy channel but occasionally this one will slide through. Programs are in Oromo.

Voice of the Tigray Revolution <<http://www.dimtsiwoyane.com/>>, **Website D**, uses 100 kW on 5960 from 0300-1900 with programming in Tigrinya. WYFR's huge signal on 5950 is a spillover problem here so it will take a fine filter, conjoined with good conditions from that area.

Amhara State Regional Radio, <<http://www.amma.gov.et/>> signs on at 0300 in a local language with 100 kW on 6090 which, unfortunately, is occupied by the Caribbean Beacon. Good luck on getting through; you'll need one of those rare times when Caribbean Beacon is off.

**GABON**—Africa Number One <<http://www.africa1.com/>>, **Website E**, has cut down a bit in recent years. Its former 17-MHz frequency is long gone. Despite rumors of doom and disasters, the 250-kW Moyabi transmitter keeps pumping out music and French talk from 0500 through 2300. That makes it one of the continent's better heard outlets.

**GUINEA**—Radio Television Guinee <<http://www.rtg-conakry.com/>> holds out on 7125 and operates Monday through Saturday in French and local dialects with 100 kW from 0500-2300. Sign on is 0800 on Sundays.

A second and much less-known station in Guinea is Radio Familia <<http://www.familiafm.com/>>. It relays its local FM service using 1 kW on 4900 in French between 1800 to 0000. I don't think this has been reported anywhere by anyone.

**LIBYA**—The several frequencies Libyan Radio Television employed during the Khadaffi years seem to have been dropped, along with several of the frequencies. The most commonly being reported is 11600 in French between 1600 and 1800. Also "scheduled" are 11805 in Hausa from 1800-1957; 17725 in Swahili at 1200-1400, English at 1400-1600 and French 1600-1700, all from the Sabrata site, all running 500 kW.

**MADAGASCAR**—Radio Madagasikara <<http://radio-longo-madagasikara.info/>> recently added 4910 to its frequency collection and employs 100 kW there from 0300-0500 and 1500 1900-2100 in Malagasy. A more traditional spot is 5010 — another 100-kW voice, active in Malagasy from 0200-1500. Both channels are often noted around their sign on times. Active, as well, is 7105 with 20 kW in Malagasy from 0500-1500.

The new kid on the block is Madagascar World Voice, which is due on at any time — maybe by now — from New Life Ministries (KNLS). Here is an early schedule, however, we can't be sure of its accuracy: 7365 from 0600-0630; 9565 at 0630-0700 and 0800-0830; 9585 at 1030-1100; 11870 at 0700-0730, 0830-0900 and 1100-1130; 13630 at 0900-0930; 13635 at 0730-0800; and 13650 at 1130-1200. All of these time segments are said to be in various languages. The site is at Mahajanga and is listed for 100 kW.

**MALI**—ORT du Mali <<http://www.ortm.ml/>> operates in French on 7285 from 0800-1800; 5985 at 0600-0800 and 1800-0000. You can catch 5985 around 0800 and just before sign off both using around 50 kW. Also active is 9635, which signs on at 0800 and is often caught at that hour.

**MAURITANIE**—Radio Mauritanie <<http://bit.ly/rS701q/>> seems to have abandoned its long-used 4845 spot in favor of 7245 which operates from Nouakchott with 100 kW in French and Arabic. Hours in use

depend on what day of the week you're listening, but, essentially it's on a 24-hour basis. It's often quite easily heard.

**MOROCCO**—Radio TV Marocaine, <<http://www.snr.ma>> uses the odd 15341 frequency from 0800-1400 and then 15345 from 1410-2100 both in Arabic and both from the Nador site, both using 250 kW. Late afternoon receptions on the latter frequency sometimes become QRM'd by Argentina as it starts out behind and quickly takes over.

A second Moroccan is Radio Medi Un <<http://www.medi1.com>> also broadcasts from the Nador site, using 9575 mostly in

Arabic on a near 24-hour schedule. It uses 250 kW here and is often well received.

**NIGER**—La Voix du Sahel <<http://bit.ly/rxCAoU>> from Niamey is a frequent visitor, lately pumping 100 kW on 9705. Programming starts at 0455-0700, then 0755; 11815 and 2000-2300. Programs are mostly in French but include Hausa and some local languages during our afternoon hours.

**NIGERIA**—The Voice of Nigeria maintains one of the few "international services" used in Africa. A 250-kW transmitter at Ikorodu operates from 0800-1730 variously in Igbo, Hausa, English, Swahili and Yoruba. Its



**Website A.** Radio Algerienne <<http://www.radioalgerie.dz>> operates from studios in Algiers but its programming departs from antennas at Issoudun, France. (Internet screen grab)



**Website B.** The banner, in French, across the top of the Web page reads "The RTB, always to the heart of the big events! Radio Burkina <<http://www.rtb.bf>>, operating from Ouagadougou, is on at 0530 until 0800 and then again from 1700 to 0000. (Internet screen grab)



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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 or NTSC or PAL live 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 APCD-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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\*Government version, cellular blocked for US consumer version.

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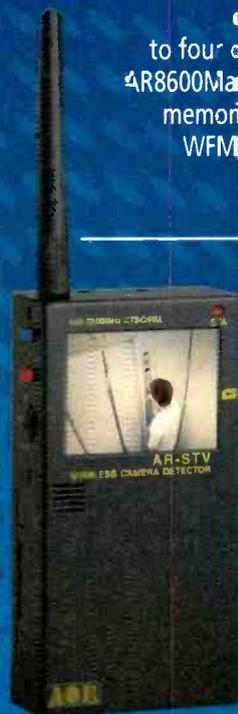


## AR8200 Mark III World Class Portable Receiver

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 R, 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, WDR and Narrow AM, JSB, LSB and CW.



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*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.*



**Website C.** Ethiopian Radio's Internet website <<http://www.erta.gov.et/>> is a gateway to both the service's National Radio and FM Addis 97.1 — both with live streaming audio. (Internet screen grab)

wide all-Afrikaans service operating on 3320 from 1800-0500; 7285 from 0500-0800; and 9650 at 0800-1700. The lower frequencies are your best bet for this one.

SW Radio Africa <<http://www.swradioafrica.com/>>, **Website G**, is intended for Zimbabwe but is beamed from Meyerton on 4880 from 1700-1900. It is rarely, if ever, heard in North America.

**SOMALI**—Radio Hargeisa supposedly operates daily on 7125 from 0300 to 2000 mostly in Somali with some Arabic and some English at hours that don't work for us. Twenty-five kilowatts or no, it still doesn't work.

**SWAZILAND**—Trans World Radio-Africa, is programmed in South Africa but broadcast from Manzini using 4775 for English at 0400-0500, and Lomwe and German on either side of that hour. Also used are 6025 and 6130 during our daytime hours; 9500 in various African languages (different days) from 1630 to 1730; and 15360 in Urdu for all of 15 minutes at 1400.

**TUNISIA**—Radio TV Tunisienne <<http://www.radiotunisienne.tn/>> is generally a regular, any day you want it. For example: 7225 with a whopping 500 kW in Arabic from 1655 to 2110; 7275 in Arabic from 0400-0630; 7335 in Arabic from 0600-0810; 7345 in Arabic from 2000-0010; 9725 down to 250 KW in Arabic; and 12005 from 0300-0610 and 1600 to 2110. 7275, 9725 and 12005 are the most commonly reported.

**UGANDA**—UBC Radio <<http://ubconline.co.ug/radios.php>> sometimes comes through from Kampala with 10 kW on 4976. It's on in English and vernaculars from 0215-0600 and 1300-2105. And 7195 is supposedly active from 0600-1300.

**ZAMBIA**—Zambia National Broadcasting's Radio Zambia <<http://www.znbc.co.zm/>>, **Website H**, runs 100 kW from Lusaka on 4910. Its Radio One service is on this channel from 0240 all through the evening hours and again in the late mornings-to-early afternoons from 1600. Its 5915 frequency is pretty regularly heard from 0515. Its 6165 frequency is also active from 0200-2215 in English.

CVC One Africa from Lusaka uses 4965 with 100 kW for English from 1700-0500 and is easily heard in our evenings. Also, 6165 is in use from 0500-1700 and 13590 is heard well in the afternoons. It's active from 0500-2200.

**ZANZIBAR**—The Voice of Tanzania-Zanzibar uses 6015 from Dole in Swahili from 0300-0600. The formerly very-well-heard 11735 is still shown as active from 1500-2100, with English news shown for 1800-1810. The 25-meter channel hasn't been noted in a long time.

**ZIMBABWE**—Voice of Zimbabwe <<http://www.zbc.co.zw/>> needs good conditions from southern Africa to catch its 3396 broadcast in the evenings — on for most of 24 hours. Its 4828 is also rarely heard on the 0530-1630 schedule. It'll take some doing.

Zimbabwe Community Radio

**Website D.** Voice of the Tigray Revolution <<http://www.dimtsiwoyane.com/>>, uses 100 kW on 5960 from 0300-1900 with programming in Tigrinya.

15120 frequency is variously in English, French and Arabic from 0500 through to 1900 and is noted quite often in North America.

A second government channel is Radio Nigeria from the capital, Abuja, running 100 kW at 0530-1200 in Hausa and vernaculars on 7275.

And a third channel is Radio Nigeria at Kuduna on 6090 broadcasting in Hausa from 0400-2300. This one is not as regularly heard as the other two.

**RWANDA**—Radio Rwandaise broadcasts with 50 kW on 6055 from 0255 to 1835. Once in a great while this one makes it through around sign-on time in French and local languages. But easy, it is not!

Deutsche Welle, Germany's government broadcaster, runs a large relay station at Kigali. DW via Kigali is much more easily heard than Radio Rwanda. One of the best bets is 11865 in English between 2100-2200.\*

**SAO TOME**—Voice of America Relay, Pinheira, is much like the VOA Botswana Relay — there are many frequencies in use which change with the biannual seasons. The

one constant is 4960 with 100 kW, which airs daily from 0300 to past 0700 and then runs again through most of our daytime when it's not to be heard in North America. In addition to English, there are some half hours in Hausa and French.

**SOUTH AFRICA**—Channel Africa <<http://www.channelafrica.org/>>, **Website F**, is probably the largest and most extensive African operation. Its schedule includes 3345 and 6120 which are in use in English from 0300-0400 with 100 kW (all frequencies from Meyerton). 7230 is on from 0400-0659 in English; 9625 carries English from 0800-1200, 1500-1559, Portuguese from 1400 with a couple of local languages sandwiched between the two; 15235 carries French from 1600-1655 and English 1700-1755 and 0600-0655; and 17770 operates in Swahili from 1456 and 1555. The lower frequencies are the better heard of the set. Meyerton, run by Sentech PBY, airs broadcasts from the BBC, in addition to several other major and minor broadcasters.\*

Another broadcaster is Radio Sondergrense <<http://www.rsg.co.za/>> is a nation-



Website E. From Gabon, Africa Number One <<http://www.africa1.com>> is one of the continent's better heard outlets. Its 250-kW Moyabi transmitter keeps pumping out music and French talk from 0500 through 2300. (Internet screen grab)



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Website F. Channel Africa, at <<http://www.channelafrica.org>>, is "probably the largest and most extensive African operation," Gerry Dexter says. (Internet screen grab)



Website G. "SW Radio Africa <<http://www.swradioafrica.com>> is intended for Zimbabwe but is beamed from Meyerton on 4880 from 1700-1900. It is rarely, if ever, heard in North America," Gerry Dexter writes. (Internet screen grab)



<<http://www.zicora.com>> transmits to Zimbabwe from Meyerton, South Africa with 50 kW on 6045 running 24 hours per day. I've never seen a report of this one being heard.

## In Conclusion . . .

That's it. There are a few transmissions which have been left out — namely those from Ascension, Meyerton and Kigali. Those relay stations carry a number of other international broadcasters which do not have an African flavor. And remember: Those station followed by an asterisk — \* — are not included in the log check off listing.

## An SWL Safari to the Past: Africa On the Air in 1955

Here is what shortwave broadcasters in Africa looked like back in 1955 when John Gunther's *Inside Africa* was published:

ALGERIA: Radio Algeria

ANGOLA: Radio Clube de Agnola, Radio Clube de Benguela, Radio Clube do Bie, Radio Diamang, Radio Clube Huambo, Radio Clube de Huila, Radiodifusora Lobito, Radio Clube Mocemedes, Radio Clube de Melange, Radio Clube do Sul, Radio Clube do Cuanza Sul

BECHUANALAND: ZNB Broadcasting Station

BELGIAN CONGO: Radio Congo Belge, Radio College, Radio Leo, Radio Elizabeth

FRENCH CAMEROON: Radiodiffusion Douala

CAPE VERDE ISLANDS: Radio Clube de Cabo Verde, Radio Clube Mindelo

DAHOMEY: Radio Contonou

EGYPT: Radio Cairo

ETHIOPIA: Radio Addis Abeba

FRENCH EQUATORIAL AFRICA: Radio Brazzaville

GOLD COAST: Gold Coast Broadcasting Service

PORTUGUESE GUINEA: Emissora de Guine

SPANISH GUINEA: Emissora de Radiodifusion de Santa Isabel

IVORY COAST: Radio Abidjan

KENYA: Kenya Broadcasting Service

LIBERIA: ELWA

MADAGASCAR: Radio Tananarive

MAURITIUS: Mauritius Broadcasting and News Service

FRENCH MOROCCO: Radio Maroc

MOZAMBIQUE: Radio Clube de Mocambique, Emissora Radio Clube da Beira.

NIGERIA: Nigerian Broadcasting Service (sites at Lagos, Kaduna, Enugu, Ibadan)

NORTHERN RHODESIA: Central African Broadcasting Station

REUNION ISLAND: Radio Reunion

SOUTHERN RHODESIA: Federal Broadcasting Service

SAO TOME: Radio Clube do Sao tome.

SENEGAL: Radiodifusion Federal

ITALIAN SOMALILAND: Radio Mogadishu

BRITISH SOMALILAND: Radio Somali

SUDAN: Sudan Broadcasting Service

TANGANYIKA: Dar-es-Salaam Broadcasting Station

TANGIER: Radio Africa Maghreb, Radio Africa Tangier, Pan American Broadcasting Station, RadioTangier International, Radio Tangier, Voice of Tangier, VOA relay

TUNISIA: Radio Tunisia

UGANDA: Uganda Broadcasting Service

UNION OF SOUTH AFRICA: South African Broadcasting Service

ZANZIBAR: Radio Zanzibar

— Gerry Dexter

Website H. Zambia National Broadcasting's Radio Zambia <<http://www.znbc.co.zm/>>, runs 100 kW from Lusaka on 4910. (Internet screen grab)

STATION	COUNTRY	BEST FREQ HRD QSL
Radio Algerienne	ALGERIA	7295
R. Nacional Angola	ANGOLA	4950
Radio Parakou	BENIN	5025
Voice of America Relay	BOTSANA	4930
Radio Burkina	BURKINA FASO	5030
Rado Bujumbura	BURUNDI	6140
Radio Centrafrique	C. AFRICAN REP	7220
RN Tchadienne	CHAD	6165
Radio Kahuzi	CONGO (D.R.)	6210
Radio Candip	CONGO (D.R.)	5066
Radio Okapi	CONGO (D.R.)	11690
Radio Djibouti	DJIBOUTI	4780
Radio Cairo	EGYPT	6270
"Radio Nac, Malabo"	EQ. GUINEA	6250
Radio Africa	EQ. GUINEA	15190
R. Nac. Bata	EQ.GUINEA	5005
V of Broad Masses	ERITREA	7175
Radio Ethiopia	ETHIOPIA	9705
Rado Fana	ETHIOPIA	6110
Radio Oromiya	ETHIOPIA	6030
V of Tigray Revolution	ETHIOPIA	5950
Africa No. One	GABON	9580
Radio Conakry	GUINEA	7125
Radio Famila	GUINEA	4900
Voice of Africa	LIBYA	17725
Radio Madagasikara	MADAGASCAR	5010
Madagascar World V.	MADAGASCAR	7350
Radio Malienne	MALI	5995
R. Mauritanie	MAURITANIA	7245
Radio Medi One	MOROCCO	9575
RTV Marocaine	MOROCCO	15345
La V. du Sahel	NIGER	9705
V. of Nigeria	NIGERIA	15120
"Radio Nigeria, Abuja"	NIGERIA	7275
"Radio Nigeria, Kaduna"	NIGERIA	4775
Amara Regional Radio	NIGERIA	6090
Radio Rwandaise	RWANDA	6055
V. of America Relay	SAO TOME	4960
Radio. Hargeisa	SOMALIA	7145
Channel Africa	SOUTH AFRICA	7230
Radio Sondergrense	SOUTH AFRICA	3320
Radio Tunisienne	TUNISIA	12005
UBC Radio	UGANDA	4976
Trans World Radio	ZAMBIA	4775
CVC One Africa	ZAMBIA	4965
NBC Radio	ZAMBIA	5915
V. of Tanzania	ZANZIBAR	11735
SW Radio Africa	ZIMBABWE	4880
Zimb. Community Radio	ZIMBABWE	4895
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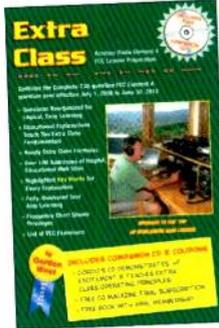
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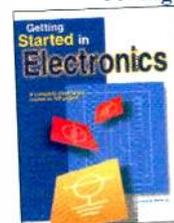
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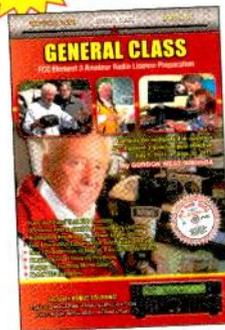
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# When Amateur Radio Operators Become FRS ‘Repeaters’

## Work Your FRS/GMRS Equipment Into Your Ham EmComm Nets

By Gordon West, WB6NOA

I know, repeaters are not allowed in some parts of the Federal Communications Commission’s Personal Radio Services — also known as Part 95 <<http://bit.ly/rrgonH>>. In particular, we’re referring to the Family Radio Service, under Part 95, Subpart B <<http://bit.ly/s1D1Bx>>.

Sure, ham operators have their own repeaters, and so does the licensed General Mobile Radio Service (GMRS) covered under Part 95.29 <<http://bit.ly/vW1JZj>>.

It is the ham radio connection that may lead to improved emergency communications (EmComm) by relaying what licensed radio amateurs monitor on a nearby FRS channel — Part 95.627 <<http://bit.ly/rZGPxH>>. The radio amateurs become *human repeaters*, so to speak.



**Photo A.** Gordon West, WB6NOA, uses a roller bag for toting gear in a remote set up. Monitoring FRS channels is part of his emergency communications plan. On the amateur bands he uses an ICOM dual-bander.  
(All photographs courtesy of WB6NOA)

*“This concept could lead to improved emergency communications by relaying what licensed hams monitor on an FRS channel.”*

If you’re unfamiliar with FRS, here are its channels and corresponding operating frequencies:

### Family Radio Service

Channel 1	462.5625
Channel 2	462.5875
Channel 3	462.6125
Channel 4	462.6375
Channel 5	462.6625
Channel 6	462.6875
Channel 7	462.7125
Channel 8	467.5625
Channel 9	467.5875
Channel 10	467.6125
Channel 11	467.6375
Channel 12	467.6625
Channel 13	467.6875
Channel 14	467.7125

The Family Radio Service came about as the result of a petition submitted by ham radio operator Robert Miller, K2RM, **Photo C**, a strong advocate of local safety communications on unused frequencies between GMRS input and output channels.

“The public needed a low-cost, half-watt UHF 14-channel radio that might signal to a next door neighbor after a big tornado hits town,” said Miller, an active radio amateur and technically astute on half-watt UHF FRS range — or the lack thereof! — Part 95.191 <<http://bit.ly/s1TtSt>>.

Like milliwatt cell phone technology, the limited one- or two-block range of FRS would be excellent in search and rescue communications, homing in on a signal from a trapped resident in a storm shelter. There were many “saves” in Joplin, Missouri, credited to rescue groups tracking down FRS *Mayday* calls after the twister hit town.

### Putting Programs In Place

But with 14 channels, what is *the* emergency channel? In 2006 REACT legend, Ron McCracken, KG4CVL, began a campaign



**Photo B.** The Automatic Position Reporting System (APRS) and a radio amateur location “reader” help FRS operators see the hams around them on the screen.

called “The National SOS Program” where FRS Channel 1, 462.5625 MHz, could be considered the unofficial channel. Midland Radio, for several years, helped support Ron’s effort.

Here in Southern California, some cities established Family Radio Service equipment classes for their local Community Emergency Response Team (CERT) members. The classes continue today, most recently with the Santa Ana (Orange County, California) CERT training — Part 95.143 <<http://bit.ly/rQ4eTw>>.

“We first monitored all 14 FRS channels and selected a quiet one that was interstitial (between) two GMRS 467 MHz repeater input frequencies,” Santa Ana Fire Department Capt. Steve Snyder said. That “minimizes 462-MHz repeater output bleed over,” said Larry Wilson, K6SCH, Santa Ana Response Team (SART) Communications Officer. He suggests Channels 8 through 14 for FRS communications.

The plan is straight forward, following the success of the city of Costa Mesa



**Photo C.** Bob Miller, K2RM, formerly with RadioShack®, drafted the petition to the FCC calling for the development of the Family Radio Service. “It took some doing, but we made it happen,” Miller said, showing off one of the first prototypes of a RadioShack® FRS radio.

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## How the GMRS and FRS Frequency Puzzle Goes Together

Listed are frequencies for **GMRS base, mobile relay, fixed, and mobile stations** — indicating repeater output with mobile talk around. The **FRS interstitial frequency and channel** is shown between each GMRS channel.

GMRS 1	462.550
FRS 1	462.5625
GMRS 2	462.575
FRS 2	462.5875
GMRS 3	462.600
FRS 3	462.6125
GMRS	4462.625
FRS 4	462.6375
GMRS 5	462.650
FRS 5	462.6625
GMRS 6	462.675
FRS 6	462.6875
GMRS 7	462.700
FRS 7	462.7125
GMRS 8	462.725

Listed are frequencies for **GMRS mobile stations, control stations, or fixed stations, operating duplex**. The **FRS interstitial channel and frequency** are shown between each GMRS channel. **FRS channels 8 through 14 channels** are recommended for primary use by Larry Wilson, K6SCH, Santa Ana (California) Response Team (SART) Communications Officer.

GMRS 1	467.550
FRS 8	467.5625
GMRS 2	467.575
FRS 9	467.5875
GMRS 3	467.600
FRS 10	467.6125
GMRS 4	467.625
FRS 11	467.6375
GMRS 5	467.650
FRS 12	467.6625
GMRS 6	467.675
FRS 13	467.6875
GMRS 7	467.700
FRS 14	467.7125
GMRS 8	467.725



**Photo D.** This Midland-manufactured C.Crane multi-band base radio for FRS — with external microphone — has been a fabulous performer.

FRS program, with weekly FRS check-ins within local neighborhoods. (*SEE: The FCC-designated GMRS frequencies: <<http://bit.ly/v7SUBP>>. – Ed.*)

### ‘Ham Operator Repeaters’ Come Into Play

How can these “tiny” signals reach out for help during a widespread city emergency?

“We have enlisted ham radio operators who take part in these weekly nets, *monitoring* their specific neighborhood FRS channel for radio traffic.

Suppose Suzy, at 2414 College, reports (as a drill) that she is trapped under a bookcase toppled by an earthquake. She needs help.

Since local neighbors are also pre-instructed to monitor this specific FRS channel in a major incident, help may soon be on the way. But *added* help will come from licensed radio amateurs who overheard this call.

Almost any type of ham rig that easily tunes — receive only — outside of the 70-cm ham band can be used to listen on the 462/467 MHz FRS frequencies.

These radio amateurs, many using a simple dual-band, 2-meter/440 MHz handheld ham radio, tie their little HT into an outside dual band antenna, and typical reception range is 5 to 10 blocks, or more! Thus, the ham becomes an “FRS repeater,” receiving (only) monitored emergency traffic from unlicensed FRS handhelds, writing down the information, and then passing it on to their local Emergency Operations Center team members.

### But Wait, There’s More

It gets even better! The Costa Mesa Neighborhood Watch FRS program, under the direction of Paul and Diane Hill, KG6WBN and KG6WBO, is such a suc-

cess that it obtained a General Mobile Radio Service (GMRS) license, as well, allowing them to transmit from type-approved GMRS gear with 5-watt ERP power levels on GMRS/FRS interstitial shared channels 1 through 7. (Part 95.135e, <<http://bit.ly/uwBC5a>>)

But it is not so much the 5-watt ERP power output that extends the range on these seven shared channels, but rather the capability to tie into an outside, higher gain, 70-cm antenna to better hear every FRS operator in the city! But 5 watts is the limit! Antennas are limited to a 20-foot maximum in height. (See FCC Part 95.25f, <<http://bit.ly/uouOhS>>.)

### ‘Close Talk’ and ‘Up Talk’

One technical note — the GMRS equipment, on FRS interstitial channels,



**Photo E.** Uniden FRS radios are big, loud and waterproof — great for CERT responders.

Conversely, FRS non-licensed users must be taught to *talk up* directly into the microphone in order to be heard by ham operators using a conventional non-narrowband FM receiver.

For CERT training, driving to CERT meetings, and neighborhood “disaster” picnics, everyone is encouraged to monitor the specific adopted FRS channel. The emergency instructions are clear — after any major event such as an earthquake, tornado, hurricane, or tsunami, turn to the FRS agreed-upon channel and establish communications with neighbors to determine which individual or family will help which individual or family.

Radio amateurs have similar standing orders — they need to switch on their FRS/GMRS equipment, go to their local neighborhood FRS emergency channel, and listen for incoming distress reports. (Part 95.181, <<http://bit.ly/t8dCKC>>)

These reports are then relayed by ham operators on amateur radio channels to their local emergency operations center.

### Now, Let's Be Frank

The FRS operator's biggest challenge will be with the ham radio operators. Some have *no* interest in working with unlicensed groups. Other hams may get frustrated and drop out if undisciplined radio calls come in on the dedicated channel.

Some hams will just get bored, and claim its too much QRM (interference) to sort — hearing a gaggle of incoming sig-



**Photo F.** These Uniden FRS radios charge in their two cup holders, in about three hours.

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nals on the same channel. Ham operators who are REACT members are the secret to this program's success!

“During Katrina, FRS operation could have sped the operation tremendously

and saved lives — especially from victims trapped in attics with rising water. Some rescue helicopters did have FRS radios aboard, and if those below, on rooftops, or at windows had inexpensive



**Photo G.** CERT operators work drills and actual call down on FRS with great success. Contacts with these radios were made as far as a mile away.

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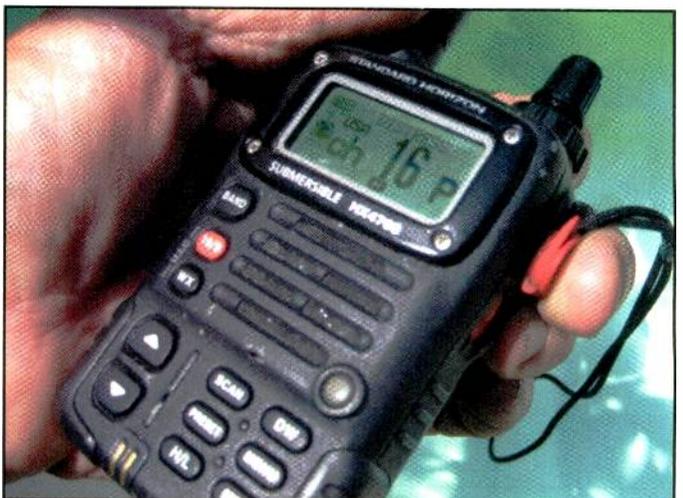
**Photo H.** Even in the rain, these CERT members had excellent contact on the FRS radios.

tims trapped in attics with rising water. Some rescue helicopters did have FRS radios aboard, and if those below, on rooftops, or at windows had inexpensive FRS radios, rescuers could have evaluated the most serious cases first.

"Instead, the rescues were random efforts with little or no communications, so some flood victims were lost," Ron McCracken said in his September 2006 Orange County REACT memo.

With a C.Crane XT511 Base Camp FRS base station by Midland, **Photo D**, selling for under \$79 <<http://www.CCrane.com>> and individual FRS handhelds selling in pairs for under \$39, do as I do every Monday night, and work your FRS/GMRS equipment into your local ham radio emergency communications nets.

(Gordon West, WB6NOA, is a charter member of one of the nation's first Hallicrafters REACT teams in the late 1950s — in San Pedro, California — 11W2534. He credits Class A UHF CB and Class D HF CB, as the launch point of his half-century ham radio education career. Gordo asks: "Anyone remember the UHF Class A Vocaline?" If you do, he asks that you contact him at <[WB6NOA@ARRL.net](mailto:WB6NOA@ARRL.net)> or visit: <<http://www.GordonWestRadioSchool.com>>. — Ed.)



**Photo I.** This marine radio from Standard Horizon has FRS operation, as well. It is the HX-470S, with a fixed rubber antenna to meet FCC rules.

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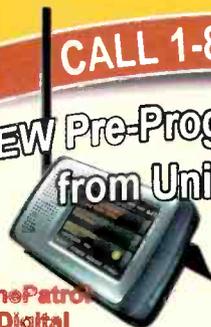
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# Ahoy! Radio Seagull Calling

## *It's a Story of Triumph and Tragedy in a Checkered Broadcasting Past*

by Bruce A. Conti  
<contiba@gmail.com>

*“While the era of offshore pirate radio may be long gone, the salt-air experience is being kept alive through Radio Seagull.”*

**P**irate radio is the familiar term associated with unlicensed or illegal broadcast activities. The most infamous unlicensed broadcasts have been from ships anchored in international waters to avoid government rules and regulations, thus the pirate analogy that applies today to land-based broadcasting outlaws as well.

While the era of offshore pirate radio may be long gone, the salt-air experience is being kept alive through a unique seafaring signal from Radio Seagull in the Netherlands, **Photo A**.

### **Radio Seagull's Pirate Past**

Arguably among the most notorious of shipboard pirate radio stations in history was Radio Caroline, **Photo B**, which first signed-on in 1964 from two locations off the coast of the United Kingdom. Ironically, although Radio Caroline

was operating outside the parameters of government control, the radio station was named after Caroline Kennedy, daughter of President John F. Kennedy. Back then she was considered a free spirit in the Kennedy clan, an image the radio station wanted to convey as an anti-establishment broadcaster.

Radio Caroline began broadcasting from aboard the appropriately-renamed MV Caroline and later in the same year acquired the MV Mi Amigo from pirate broadcaster Radio Atlanta for its second offshore location. Caroline continued broadcasting from the MV Mi Amigo on and off at various AM frequencies while constantly dodging government regulators until 1980 when the adrift and badly dilapidated ship sank in a severe storm.

During a prolonged Radio Caroline absence from the airwaves, the original Radio Seagull was launched from aboard the MV Mi Amigo in 1973 by Ronan O'Rahilly, who happened to be the main man behind Radio Caroline. Seagull was short-lived, eventually morphing into a resurrected Radio Caroline. It wasn't until 2005 that Radio Seagull returned to the air honoring the free form of pirate radio under the guidance of Dutch businessman and former Radio Caroline associate Sietse Brouwer. (*IN DEPTH: For more on Sietse Brouwer and to LISTEN to Radio Seagull online, visit: <<http://bit.ly/w462mK>>. – Ed.*)

Seagull began transmitting legally from land and shipboard facilities shared with Radio Waddenzee in northern Holland, licensed for 1,000 watts on 1602 kHz. *Radioseagull.nl* added 24/7 Internet broadcasting in 2008.

### **Welcome Aboard the Jenni Baynton**

Radio Seagull can be heard transmitting on 1602 kHz from the world's last working radio ship, the *Jenni Baynton*, **Photo C**, harbored in the small coastal town of Harlingen in the northern part of the Netherlands. The AM radio signal has been received as far away as Finland, Germany, Norway and Switzerland. The *Jenni Baynton* was



**Photo A.** “The salt-air experience is being kept alive through a unique seafaring signal from Radio Seagull,” Bruce Conti writes. Here you see the station’s studio — complete with porthole views. (Images courtesy of Bruce A. Conti)

**warning: it is illegal  
to listen to**

**RADIO  
CAROLINE**   
**ON 319m**

**Photo B.** Caroline Kennedy was considered a free spirit in the Kennedy clan, an image the radio station wanted to convey as an anti-establishment broadcaster.

built in 1949 and served in various capacities as a lightship, lastly as the British Lightship LV8 before being purchased and restored by Radio Seagull in 2005. The restoration includes a replica of the Continental valve transmitter that once powered Radio Caroline from aboard the MV *Mi Amigo*, and a 45-meter, center-fed antenna mast, now used to broadcast Radio Seagull, **Photo D.** The radio ship was named the *Jenni Baynton* in memory of the wife of Seagull engineer Dave Francis, although Sietse Brouwer tells of a heartbreaking turn of events that gave the name deeper meaning.

“There is a story behind the reason why the ship was renamed and — funny enough — the reason to call the ship after Jenni was not Jenni herself, but a man called Dave Francis,” recalls Brouwer. “When Radio Seagull was in her first years struggling to survive, a very loyal and devoted member of the crew was Dave Francis. He got involved in offshore radio in the ‘60s when Radio Caroline anchored off the Isle of Man.

“He never became the DJ he might have wanted to be deep in his heart, but he did contribute to the offshore station in many ways. I was there in 1997 or 1998 when Dave proposed to Jenni Baynton on the Radio Caroline ship *Ross Revenge*, at that time moored at Queenborough on the Isle of Sheppey. Sadly after some time, Jenni was diagnosed with cancer and passed away July 15, 2000.

“Dave Francis had become a very important mainstay for Radio Seagull and we tried to find a way to compensate his effort one way or another. When we bought the LV8, I suggested to him to rename the ship after Jenni, which moved him to tears.

“In September 2005, Dave was holding the brand new transmitter for 1602 kHz in his workshop and we had made arrangements to move the transmitter to Harlingen. A transmitter engineer who was traveling to Holland to install it met up with Dave. After Dave had put the transmitter in the boot of the engineer’s car, he collapsed.

“A few days later, after having had surgery, he passed away. So, the reason why we called the ship after Jenni was Dave’s love for her. Luckily, he did know we were going to name the ship after her. Unfortunately he never saw the ship, let alone saw that the name Jenni Baynton is kept alive by everyone who mentions the ship.

“Dave was a very dear friend to the Seagull in general and to me in particular. Knowing the last thing he did in his life was carrying the transmitter for Radio Seagull makes it a bit bizarre. When there are radio sets in heaven I know for sure that Dave and Jenni have theirs tuned to Seagull and every time the *Jenni*

*Baynton* drops anchor at sea they will look at each other and smile, just like I do when I think of them.”

## Seagull Tests the Water on 1395 kHz

Last October and November, Radio Seagull conducted tests on 1395 kHz. They were performed after 2130 UTC when co-channel Radio Tirana from Albania signed off for the night, leaving the frequency clear in Europe. Sietse Brouwer reports that the 1395 kHz tests were extremely successful.

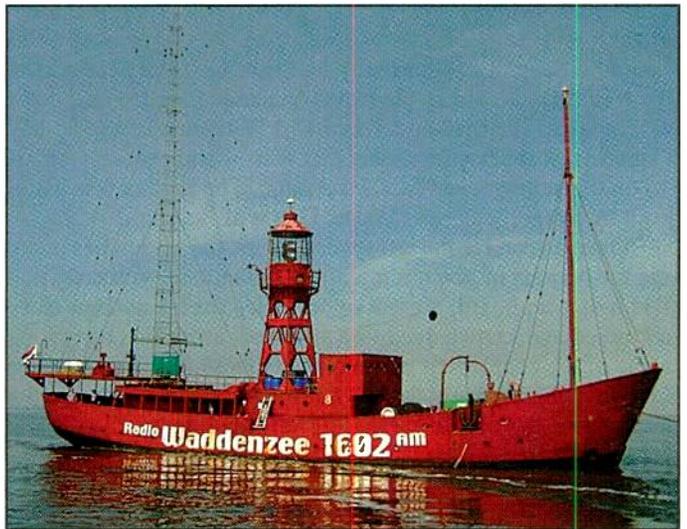
“The six-week test on 1395 from various locations with a variety of antenna configurations and with output running from less than one to over 5 kW have provided us with an abundance of information,” said Brouwer. “The test was cooperation a between the licensee, the Dutch Telecom Agency, and Radio Seagull.”

Radio Seagull presenter and Radio Caroline alumni Steve Conway heard the test signal more than 300 miles away in Ireland.

“I reported during the summer on the construction of a custom built, old-style valve (tube) transmitter for high-power AM on board the Radio Seagull ship, the *Jenni Baynton*, located near Harlingen, in northern Holland,” said Conway. “For the last week (of the tests), the transmitter has been operating on a higher power setting, and in addition to providing coverage throughout the Netherlands it has been possible to listen much further afield, the signal reaching many parts of the UK, and latterly Ireland. Not a bad reach for a hand-built rig on a little lightship.”

One of the most distant reception reports was by Allen Willie listening in Newfoundland, Canada. Using a barefoot Sony SRF-M37W “ultra light” radio, Willie reported hearing the “Three by One Backspin” program featuring three songs in a row by an artist or group. “One segment featured three from Fleetwood Mac – As Long as You Follow, The Chain, and Rhiannon,” said Willie. “During the Fleetwood Mac segment the signal was very strong at peak.”

Future plans for Radio Seagull on 1395 kHz are undetermined at the moment according to Sietse Brouwer.



**Photo C.** Radio Seagull transmits on 1602 kHz from the *Jenni Baynton*, harbored in the small coastal town of Harlingen in the northern part of the Netherlands. (Courtesy of Bruce A. Conti)

## This Month in Broadcast History

75 Years Ago (1937): Philco Radio & Television Corp. gave the first public demonstration of television using a 441-line electronic scanning system which became the U.S. standard until 1941 when scanning was increased to 525 lines. Harold H. Beverage and Harold O. Peterson patented an invention that combined signals from geographically-separated antennas to eliminate propagation fading. (SEE: A photo gallery of Philco TVs from 1950-59: <<http://bit.ly/tu3luG>>. – Ed.)



50 Years Ago (1962): “Hey Baby” by Bruce Channel topped the WHBQ Official Big 56 Survey in Memphis, Tennessee. (LISTEN: To “Hey, Baby,” by Bruce Channel: <<http://bit.ly/tViQ68>>. – Ed.)

25 Years Ago (1987): *Billboard* magazine began charting music on R&B crossover radio stations with “Looking for a New Love” by Jody Watley the first number one song on the survey. (WATCH: Jody Watley’s music video of “Looking for a New Love” <<http://bit.ly/vLifri>>. – Ed.)

“Unfortunately we cannot tell you anything yet because we don’t know ourselves,” he said. “The outcome of the evaluation will be that the licensee, the Telcom Agency, and Radio Seagull have a good impression of the potential. That impression will be the guideline for the future.”

### Radio Seagull Today

From <<http://www.radioseagull.nl>>:

“The home of progressive rock and alternative music, Radio Seagull brings you music you cannot find or hear on other radio stations either on air or on the Internet as defined by our motto: *There is more to music than hits alone*. Radio Seagull plays the best progressive rock, the coolest album tracks and the finest alternative music. We also feature specialist music programs which include blues, smooth jazz, world music, Americana and vintage soul.”

Radio Seagull can normally be heard on 1602 kHz AM in the Netherlands, across the North Sea and along the east coast of England. The transmitter is a 15-kW replica of the 50-kW Continental Electronics model that was — and probably still is — on the shipwrecked MV *Mi Amigo*. The replica was hand-built by Seagull engineer Walter Gralle of Belgium.

“Once a year, for the last several years, the station has put to sea for periods of about a month each summer, with crew and DJs living on board, a great opportunity for friendships to be rekindled and knowledge to be swapped, as well as recreating some of the excitement of the old offshore radio days,” writes Conway. “A number of the Seagull presenters, me included, are veterans of the former offshore pirate stations such as Radio Caroline.”

### Occupy Radio

A new voice is taking over the airwaves. The Occupy movement has discovered radio and Internet broadcasting as a forum for change across the U.S. and worldwide.

Occupy Wall Street Radio is being broadcast by 99.5 WBAI.

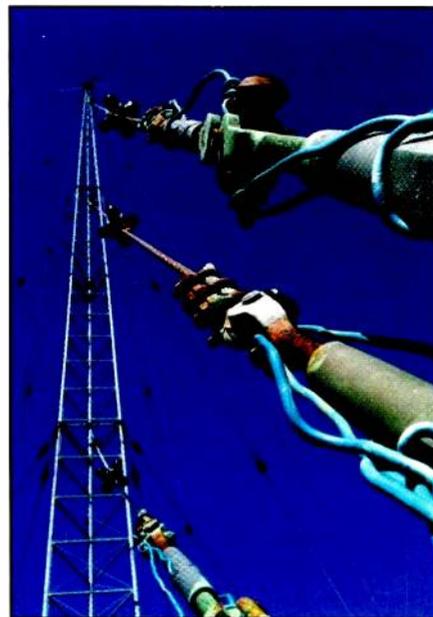


Photo D. A view of the shipboard antenna system for Radio Seagull.

“Free Speech Radio” in New York City <<http://bit.ly/uYf97P>>, and on Pacifica Radio flagship stations 94.1 KPFA, Berkeley, California <<http://www.kpfa.org/>>; 90.1 KPFT, Houston <<http://kpft.org/>>; 89.3 WPFW, Washington, DC <<http://www.wpfwm.org/>>; and 90.7 KPFK, Los Angeles <<http://bit.ly/sab0au>>.

Meanwhile, Occupy Wall Street protestors established their own independent unlicensed microbroadcast FM station at 107.1 FM to serve as a source of information for occupiers in the city.

Tune in 89.7 KUMM “The U-90 Alternative” <<http://kumm.org/>> every Thursday at noon for the latest from Occupy Minnesota. Hosts Kristian Nyberg and Andy Showalter talk about current events and defending the working class.

Occupy Radio Austin <<http://www.occupyradioaustin.org/>>, billed as the unofficial broadcast station for the ongoing Occupy protests in Austin, Texas, is said to be the first of its kind. Occupy Radio Austin has been broadcasting 24/7 with live coverage of events at Freedom Plaza in Austin via their own website and [live365.com](http://live365.com), while filling remaining airtime with Occupy stories and alternative music submitted by listeners.

New national “radio” networks are invading the Internet and social networking sites including Facebook and Twitter with names like Occupy Radio FM, Occupy Talk Radio, and the Occupy Radio Network.

The radio movement is signing on overseas as well. Occupy Radio NL is occupying 88.3 FM in Amsterdam, Netherlands <<http://bit.ly/s1fhn1>>. Viral Internet rumors of a Dutch offshore Occupy Radio pirate ship have been unsubstantiated.

Whether or not any of the Occupy Radio endeavors will take hold remains to be seen, but it does seem like a natural extension of the movement from public places to public airwaves.

In the meantime, from politics to pirates and everything in-between, please let us know what’s occupying the radio dial at your monitoring station.

73 and Good DX!

# Pop'Comm February 2012 Reader Survey

Your feedback is important to us at *Pop'Comm*. It helps guide us to make the magazine even more valuable to you each month.

Please take a few minutes to fill out this month's Reader Survey Card and circle the appropriate numbers corresponding to the questions below. We'll pick a respondent at random for a year's free subscription or an extension of an existing subscription as thanks for your participation — so don't forget to fill in your mailing address and other contact information.

We encourage your comments and suggestions in the space provided, as well. Thank you.

*Last, but not least:* You can now take this survey online. See details below.

## I enjoy monitoring because: (choose all that apply)

- What I hear is so darned fascinating. I'm addicted. . . . . 1
- Listening relaxes me and "takes me to far-away places." . 2
- It challenges my abilities as listener and hunter. . . . . 3
- It "makes me a kid again," and I feel good . . . . . 4
- It allows me to determine the abilities of my gear. . . . . 5

## The "monitoring bug" bit me when I was:

- 10 years old or younger . . . . . 6
- Between 11 and 15 years . . . . . 7
- Between 16 and 20. . . . . 8
- Between 21 and 30. . . . . 9

- Between 31 and 55. . . . . 10
- As a senior citizen . . . . . 11

## I was first introduced to the fun of monitoring:

- When visiting a friend. . . . . 13
- When on an overseas assignment. . . . . 14
- When I read about it in a magazine . . . . . 15
- When someone gave me a receiver. . . . . 16
- Other . . . . . 17

**What brings you the greatest joy as a communications monitor? (Use the comment line.)**

## Take This Reader Survey Online

You can now participate in this reader survey via the Internet. Simply go to *Pop'Comm On the Web*: <<http://www.popcommagazine.blogspot.com/>> and click the link to the *Pop'Comm February 2012 Reader Survey*. It's quick and easy.

## And the Winner Is . . .

For participating in the *Pop'Comm Readership Survey*, the winner of a free subscription or extension is **Mike Adams, N3JW, of Lynn Haven, Florida**. *Congratulations, Mike! And thanks for your suggestion about doing more stories on inter-agency communications interoperability. A good idea and a very important topic.* — Ed.

## Tuning In (from page 4)

access to the buzz on local amateur radio repeaters. SCORE: Lousy. (*NOTE TO SELF: Not having an operating police scanner at arm's length is a crime.*)

**Overall:** With this *Gilligan's Island*-style lash-up, we were slowly reconnecting to 21st Century civilization. But *Gilligan* and *slowly* are not words that inspire confidence in a dialogue about emergency communications. SCORE: F, for *Phooey*.

## Even Worse . . .

Adding insult to injury following this pathetic display:

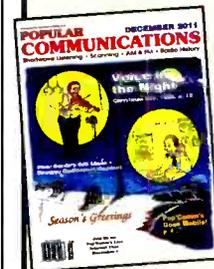
- I had just edited Kirk Kleinschmidt, NTØZ/KPCØZZZ's, *Ham Discoveries* column: "Expecting the Unexpected: Around Home and the Radio," appearing this month on page 67. He underscores the importance of safety and emergency preparedness — both as a communications receiver and as a sender.
- This month, as well, is Gordon West, WB6NOA/WPC6NOA's, feature: "When Amateur Radio Operators Become FRS 'Repeaters'" — an excellent piece on how emergency communications can be exponentially enhanced by integrating Family Radio Service, General Mobile Radio Service and Amateur Radio Service communications in times of need. It begins on page 24 and will have special resonance for anyone who has been through an emergency, or knows someone who has. That would be *all of us*.

## Mea Culpa

Dylan got it right: "You don't need a weatherman to know which way the wind blows," especially a Santa Ana. This was a wake-up call for me to get my EmComm house in order — with a focus on safety, preparedness and contingencies. So, what about you?

Sometimes the preciousness of communication isn't fully appreciated until we have to struggle to achieve it. *Lessons learned!*

— Richard Fisher, KPC6PC/KI6SN



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# Yesterday and Today: The Monitoring Community's Place in the World of SWLing

By R.B. Sturtevant,  
KPC7RBL/AD7IL

*“Listener organizations, in some ways, have been a lifeline to shortwave broadcasters. Ultimately it is the monitor who will determine the future of SWLing.”*

**M***onitoring: The listening to, and reporting of radio signals received at a specific place and time. It is probably as old as radio itself.*

Those of us who were not alive as radio emerged as a consumer product, may have trouble fathoming that radio — in its early days — hit America with all the impact that computers and the Internet would have on our society decades later, **Photo A**.

Back then, young boys suddenly began loving oatmeal — previously thought to be poisonous or worse, *good* for you. Why this gluttony? It was to get the round box the cereal came in so they could wrap wire around it in the approved method then attach the magical galena crystal.

The box was the inductor of a crystal set receiver, **Photo B**. Any and all receptions were reported to friends and family with about the same excitement as the discovery of gold in your basement. “I got Philadelphia last night,” replaced, “I scored the winning run in the championship game.”

If we consider that a club is a group of people who meet from time to time to discuss a certain activity or interest, then there was a radio club in every school yard within 100 miles or so of a broadcast tower.

## Can You Hear Us Now?

The first official request for monitoring reports came on November 2, 1920 from KDKA near Pittsburgh, Pennsylvania. That was the night that the Westinghouse-owned station asked its listeners to report on their reception of the Harding-Cox Presidential election results. Historians report that KDKA's entire audience that night was about 50. The station had been built to encourage the sales of Westinghouse radios. It must have been judged successful since KDKA is still on the air. (*SEE: KDKA's modern website: <<http://cbsloc.all/uOzYJY>>*)

At first, monitoring as an activity was limited to broadcast band listening and foreign shortwave programming. Inside the U.S., shortwave was used by stations to transmit their programming to others in distant parts of the country for replay by smaller stations, for the most part. The broadcast band was particularly active with new stations coming on line.



**Photo A.** In this classic period photograph by George W. Ackerman, a farm family gathers around to listen to the radio. Archivists believe the picture was taken in Ingham County, Michigan, August 15, 1930. (*Courtesy of National Archives and Records Administration, Records of the Extension Service*)

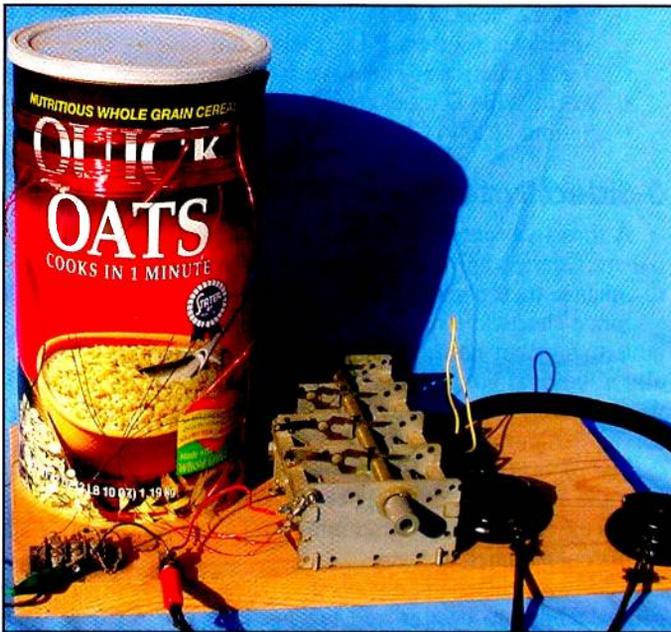
In 1920 KDKA was the lone signal. By March 1922 there were 98 licensed broadcast stations. By August, 253. In October, the total reached 502.

The Department of Commerce, predecessor of the FCC, was receiving three or four new license applications per day. Stations were going on the air so fast that it was impossible for monitors to discover new ones with any degree of accuracy. Word of mouth through radio clubs was the only way to know what new voice was being heard.

## Monitoring Publications and Clubs

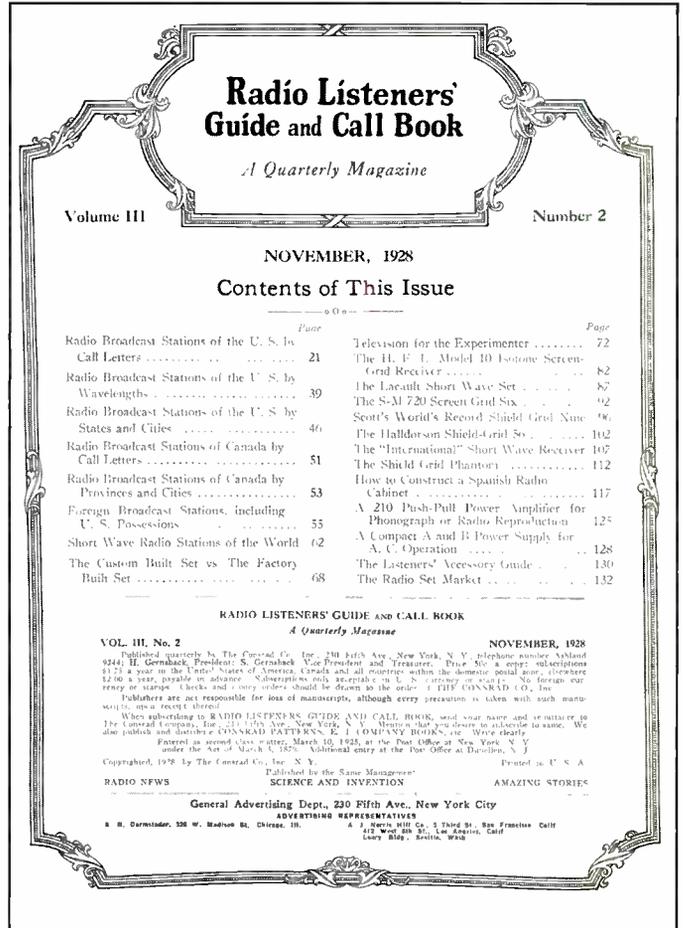
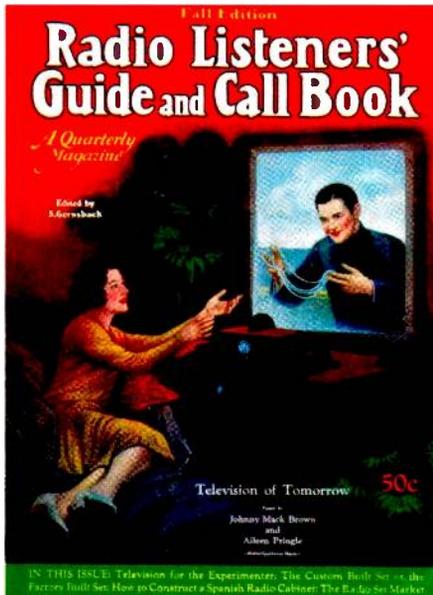
The same was true about shortwave listening, which was very popular in the 1930s. If a shortwave listener picked up a new station, they might be the only one in the area who knew about it.

Radio EAQ in Spain; NHK in Japan; Hitler's Deutscher Kurzwellensender; and the BBC in London would happily send you their program guide — but that was only for one station. In those pre-war years, a lot of countries wanted to get the



**Photo B.** In the early days of radio, young boys took a sudden liking to oatmeal. It seems the more they ate, the sooner they'd get a perfect cardboard form on which to wind the inductor for a crystal radio set. (Courtesy of KPC6PC)

**Photo C.** The *Radio Listeners' Guide and Call Book* was a quarterly magazine edited by S. Gernsback. It was one of the many periodicals focused on shortwave and broadcast band listeners. This edition mused about "Television of Tomorrow." (Courtesy of Wikimedia Commons)



**Photo D.** The index of the November 1928 issue of *Radio Listeners' Guide and Call Book* featured radio broadcast stations of the U.S. in separate listings by call letters, wavelength, and states and cities. Stations in U.S. possessions and Canada were shown, as well. Feature stories included "The H.F.L. Model 10 Isotone Screen-Grid Receiver" and "How to Construct A Spanish Radio Cabinet." (Courtesy of Wikimedia Commons)

- Radiodiffusion Nationale Belge, Belgian Congo
- Radio Australia <<http://www.radioaustralia.net.au/>>
- Radio Nederland <<http://www.rnw.nl/english>>
- Swiss Shortwave Service
- Radio Deutsche Welle (after World War II)

<<http://www.dw-world.de/>>

word out about their point of view. The shortwave listener had to tune up and down the dial very slowly to get all the new stations coming on air.

Listeners delighted in tuning in:

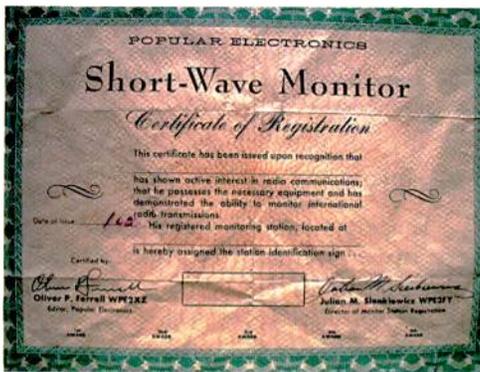
- Radio Moscow (Now "Voice of Russia") <<http://english.ruvr.ru/>>
- HCJB, "Voice of the Andes" from Quito, Ecuador <<http://www.hcjb.org/>>
- Radio South Africa <<http://bit.ly/uPIJhd>>
- Voice of America (beginning in World War II) <<http://bit.ly/tgns7Z>>
- EAO from Geneva, Switzerland
- IZJ from Broadcast Corporation of Japan

Again, monitoring clubs became the best source of information with the members providing the reports for the club bulletin. Informal guides like this were, of course, limited by the level of activity of the clubs leadership, many of whom had been drafted into positions they were not prepared for — or not very willing — to fill.

While some club newsletters were excellent, others weren't and faded away.

Some dyed-in-the-wool shortwave listeners took the final step toward providing professional quality by publishing for-profit magazines, guides or logs which were published annually, quarterly, bi-monthly, or monthly. Their object was to get the signal reports to the readers as soon as possible in the most professional manner possible so the reader could catch the signals they were interested in.





**Photo F.** *Popular Electronics* magazine sponsored a shortwave listener program that issued station identification signs to people who met its requirements and sent in a request. This 1963 Certificate of Registration was issued to Kenneth Shenkel, WPE6EGZ, of Hanford, California. It was signed by PE Editor Oliver P. Ferrell, WPE2XZ, and Julian M. Sienkiewicz, WPE2FY, Director of Monitor Station Registration. (Courtesy of Wikimedia Commons)

Some listened, in loosely organized grass roots efforts, to report the names of prisoners of war without delay to the soldier's family.

Others taught radio intercept operators how to monitor the enemy. Many SWL monitoring stations went off the air while radiomen and women focused on the war effort.

## After the War: A New Global Perspective, Via Shortwave

At World War II's end, the Nazis were all but gone. Germany and Japan, though, wanted to sell their new image to the world. Shortwave radio seemed the way to show they had changed their ways and were trying to rejoin the family of nations.

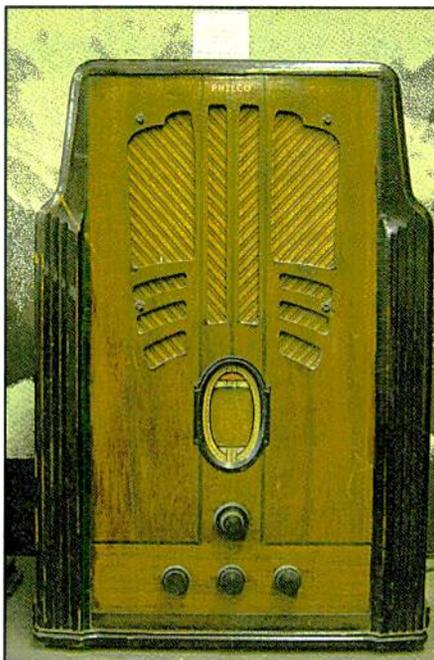
Other nations saw the public relations opportunities that accompanied short-wave broadcasting.

There was a lot of wrangling among war-torn nations to reestablish, realign and reform themselves. Communism was trying to influence the world and had a lot to say about what should be happening globally. Again, stations and situations were changing so fast it was up to the listeners to keep their fellows informed through reports to publications.

After the war came much-improved radios and a lot more information on antennas that had resulted from wartime innovation and development.



**Photo G.** A poster, printed in the early to mid-1940s by the Office of War Information, Domestic Operations Branch, Bureau of Special Services, stressed the freedom Americans have to "hear both sides of a question and form your own opinion." (Courtesy of National Archives and Records Administration)



**Photo H.** The 1935 Philco tombstone-style Model 116-121 radio covered both the broadcast band and shortwave frequencies. This model was photographed at Shoreline Historical Museum, Shoreline, Washington. (Courtesy of Joe Mabel via Wikimedia Commons)

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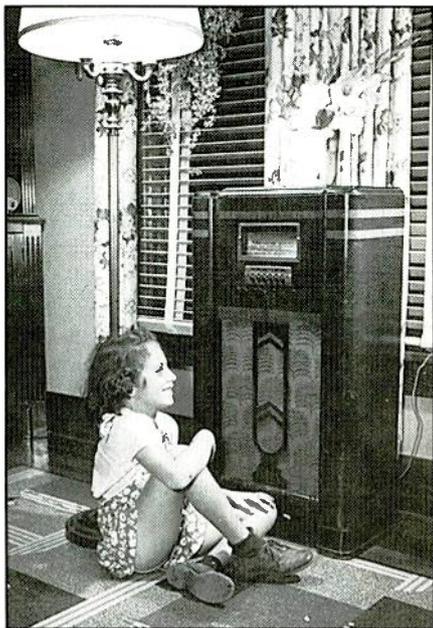
Shipping & Handling: USA - \$7 for 1st book, \$3.50 for 2nd, \$2 for each additional. CN/MX - \$15 for 1st, \$7 for 2nd, \$3.50 for each additional. All Other Countries - \$25 for 1st, \$10 for 2nd, \$5 for each additional.

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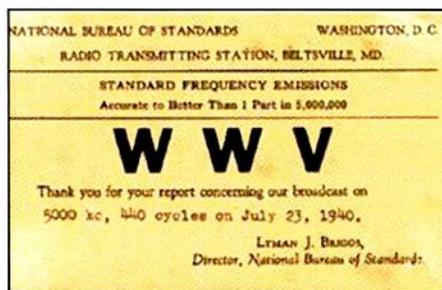
The SWLer had reception from much greater distances and could hear better than ever before. Listener reports began flowing to the magazines and club newsletters that had survived the war. There were more people who had traveled to faraway places of the world and were accustomed to using shortwave to keep informed.

## Carrying On the Legacy

One thing seemed to have failed, however: SWLers had not been able to intro-



**Photo I.** A young girl listens to the radio — an important information delivery channel during the time the country was held in the grips of the Great Depression. (Courtesy of Wikimedia Commons)



**Photo J.** Dated July 23, 1940, WWV's transmitting station at Beltsville, Maryland issued a reception confirmation — QSL — card to a shortwave listener. "Standard Frequency Emissions Accurate to Better Than 1 Part in 5,000,000," the card proudly states. (Courtesy of National Institute of Standards and Technology)

duce large numbers of would-be listeners to the hobby. Hams came back from the war and started a slow, but steady increase in numbers over the years. But even today, many people are unaware of the programming available for radio listening. Many buy radios with shortwave bands available but never use them.

Those who return to shortwave listening find a dial-full of stations to tune. And the logs flow in. Not everyone has the self-confidence and initiative to make the necessary reports: "Who would want to hear from me?"

Historically, though, those who have made regular reports are the ones who have had an influence on how interna-

**Photo K.** For many people through the years, radio has been a key conduit to the outside world. In this photograph taken during World War II at Manzanar Relocation Center, a Japanese-American internment camp at Manzanar, California, "Lucy Yonemitshu, former student from Los Angeles, California, enjoys a few free moments from her household duties and listens to swing music from her familiar and favorite Los Angeles radio station." (Courtesy of Stewart Francis, War Relocation Authority photographer, National Archives and Records Administration) →

tional shortwave broadcasting is conducted. For example, if certain programs are appreciated and mentioned, a station might increase its airtime.

## Reality Check

Times are hard. It seems they have often been. As signal reports to the stations diminish and listings to the publications fall off, whether the station has listeners or not, that signal may be doomed. Fiscal pressures are greater than ever.

Listener organizations, in some ways, have been a lifeline to shortwave broadcasters. Ultimately it is the monitor who will determine the future of SWLing.



## New Members: Pop'Comm Monitoring Station Program

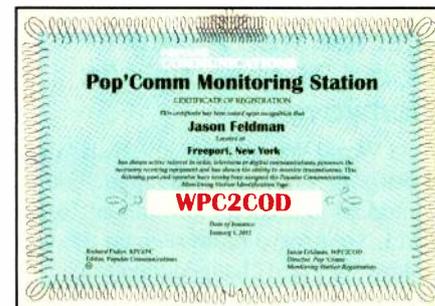
Here are the newest station monitors granted a station identification sign, authorized to receive a Certificate of Registration and welcomed to Pop'Comm's Monitoring Station Program. They are listed by name, station identification sign, and monitoring station location.

Kirk Kleinschmidt, **KPCØZZZ**, Rochester, Minnesota; Dan Srebnick, **KPC2DLS**, Matawan, New Jersey; John Fisher, **KPC6JF**, Newport Beach, California; Megan Moss, **KPC6MM**, Newport Beach, California; Richard Fisher, **KPC6PC**, Riverside, California; R.B. Sturtevant, **KPC7RBS**, Soap Lake, Washington; Mitch Gill, **KPC7US**, Ravensdale, Washington.

Also: Bruce A. Conti, **WPC1CAT**, Nashua, New Hampshire; Dick Ross, **WPC2A**, Northport, New York; Jason Feldman, **WPC2COD**, Freeport, New York; Shannon Huniwell, **WPC2HUN**, Fulton, New York; Richard Moseson, **WPC2RIY**, Bloomfield, New Jersey; Tom Kneitel, **WPC4A**, (in memoriam); Dottie Kehrweider, **WPC4DK**, Pompano Beach, Florida; Katie Fisher, **WPC4KT**, Charlotte, North Carolina; Gordon West, **WPC6NOA**, Costa Mesa, California; and Gerry Dexter, **WPC9GLD**, Lake Geneva, Wisconsin.

For complete information on the Pop'Comm Monitoring Station Program and how to join, visit *Pop'Comm Monitors On the Web*: <<http://www.PopCommMonitors.blogspot.com>>.

— Richard Fisher, **KPC6PC/KI6SN**



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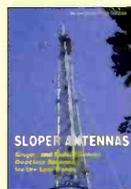
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# BROADCASTING

## World Band Tuning Tips

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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	11750	BBC, Singapore Relay	Bengali	0300	5755	WTWW, Tennessee	
0000	11765	Super Radio Deus e Amor, Brazil	PP	0300	5900	Radio Bulgaria	RR
0000	11780	Radio Nacional Amazonia, Brazil	PP	0300	5935	WWCR, Tennessee	
0000	11815	Radio Brazil Central	PP	0300	5960	Radio Japan	JJ
0000	11885	China Radio International		0300	6000	Radio Havana Cuba	
0000	11905	Radio Sri Lanka	Hindi	0300	6070	CFRX, Canada	
0000	11920	HCJB Global, Ecuador, via Chile	PP	0300	6145	BBC, via South Africa	
0000	15275	Radio Thailand		0300	6185	Radio Educacion, Mexico	SS
0000	15650	Voice of Greece	Greek	0300	7200	SRTV, Sudan	AA
0000	6135	Radio Santa Cruz, Bolivia	SS	0300	7450	Radio Tirana, Albania	
0000	9580	Radio Romania International		0300	9515	Voice of Turkey	
0030	9830	Radio Austria International	GG	0300	9630	Radio Exterior Espana, Spain, Costa Rica	SS
0100	3250	Radio Luz y Vida, Honduras	SS	0300	9645	Radio Romania International	
0100	9780	Voice of America, Sri Lanka Relay		0300	9660	Vatican Radio, via Madagascar	
0100	11710	Radio Argentina al Exterior		0300	9725	RTV Tunisienne, Tunisia	AA
0100	15180	Voice of Korea, North Korea		0300	9735	Voice of Russia	SS
0100	15190	Radio Inconfidencia, Brazil	PP	0300	9750	BBC, Seychelles Relay	
0100	6025	Radio Amanecer, Dominican Republic	SS	0300	9760	Radio Free Europe/Radio Liberty, USA	RR
0200	3320	Radio Sondergrense, South Africa	Afrikans	0300	9815	Adventist World Radio, via Germany	Amharic
0200	3350	Radio Exterior Espana, Costa Rica Relay		0300	9820	Voice of the Broad Masses, Eritrea	vernacular
0200	4985	Radio Brazil Central	PP	0300	9845	Radio Free Europe/Radio Liberty, USA	RR
0200	5010	Radio Madagasikara, Madagascar	Malagasy	0300	9855	Voice of America, Northern Marianas Relay	
0200	5910	Alcaravan Radio, Colombia	SS				
0200	5915	Zambia National Broadcasting Corp.	vernacular	0300	9905	Islamic Republic of Iran Broadcasting	SS
0200	7375	Voice of Coatia		0300	11625	Vatican Radio, via Madagascar	Somali
0200	9665	Voice of Russia, via Moldova		0300	11920	Islamic Republic of Iran Broadcasting	
0200	9725	FEBA Radio, England, via UAE	Dari	0300	15110	China Radio International	
0200	9895	BBC, Cyprus Relay	Dari	0300	15310	BBC, Oman Relay	
0200	9925	Croatian Radio, Croatia	Croatian	0300	15355	Radio Sultanate of Oman	AA
0200	15745	Radio Sri Lanka		0300	6110	Radio Fana, Ethiopia	Amharic
0200	5860	Radio Farda, USA	Farsi	0300	9570	Super Radio Deus e Amor, Brazil	PP
0200	6010	La Voz de su Concenica, Colombia	SS	0300	12005	RTV Tunisienne, Tunisia,	AA
0200	4815	Radio El Buen Pastor, Ecuador	SS	0400	7430	Deutsche Welle, Germany, via England	
0300	9685	International Radio of Serbia		0400	4055	Radio Verdad, Guatemala	SS
0300	3185	WWRB, Tennessee		0400	4960	Voice of America, Sao Tome Relay	
0300	3240	Trans World Radio, Swaziland		0400	4965	CVC-One Africa, Zambia	
0300	3255	BBC, via South Africa		0400	6090	Caribbean Beacon, Anguilla	
0300	4780	Radio Djibouti	AA	0400	6175	Voice of Vietnam, via Canada	VV
0300	4930	VOA Relay, Botswana		0400	7240	Deutsche Welle, Rwanda Relay	
0300	5025	Radio Rebelde, Cuba	SS	0400	7310	BBC	
0300	5040	Radio Havana Cuba	SS	0400	9560	Voice of Eritrea, via Ethiopia	Tigrina

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0400	9705	Radio Ethiopia	Amharic	1200	6035	La Voz del Guaviare, Colombia	SS
0400	9805	Radio France International		1200	6075	Magadan Radio, Russia	RR
0400	9820	Radio 9 de Julho, Brazil	PP	1200	7235	RTM, Malaysia	vernacular
0400	9825	WHRI, South Carolina		1200	9650	KBS, South Korea, via Canada	
0400	9915	BBC	AA	1200	9890	Radio Thailand	
0400	11560	Miraya FM, Sudan, via Ukraine	EE/AA	1200	13695	All India Radio	
0400	11715	Vatican Radio	AA	1200	15400	HCJB Global, Australia	
0400	12070	Radio Rossii, Russia	RR	1200	15450	Voice of Turkey	
0400	15120	Voice of Nigeria		1200	5765	Armed Forces Radio, Guam	usb
0400	15720	Radio New Zealand International		1200	6145	China Radio International, via Canada	
0400	11690	Radio Okapi, Congo, via South Africa		1200	9820	Beibu Bay Radio, China	VV
0430	6165	Radio Nationle Tchadienne, Chad	FF	1200	12020	Voice of Vietnam	
0500	4885	Radio Clube do Para, Brazil	PP	1300	9570	China Radio International, via Cuba	
0500	4975	Radio del Pacifico, Peru	SS	1300	9580	Radio Australia	
0500	4990	Radio Apinte, Suriname	DD	1300	9625	Voice of Indonesia	
0500	7250	Vatican Radio		1300	11710	Voice of Korea, North Korea	KK
0500	7275	Radio Tunisienne, Tunisia	AA	1300	11715	KJES, New Mexico	
0500	7295	Radio Algerienne, Algeria	AA	1300	11870	Radio Veritas Asia, Philippines	Hindi
0500	7300	Radio Bulgaria	Turkish	1400	9330	WBCQ, Maine	
0500	7320	Channel Africa, South Africa		1400	21505	Broadcasting Svc of Kingdom, Saudi Arabia	AA
0500	9235	Galei Zahal, Israel	HH	1500	15185	Radio Free Asia, No. Marianas Relay, USA	
0500	9500	Trans World Radio, Swaziland		1500	12080	Voice of America, via Germany	
0500	9575	Radio Medi Un, Morocco	AA	1600	15110	Radio Farda, USA via Germany	Farsi
0500	9675	Radio Cancao Nova, Bolivia	PP	1600	15595	Vatican Radio	
0500	9895	Radio Nederland, via Germany	DD	1600	17560	Broadcasting Svc of Kingdom, S. Arabia	AA
0500	11715	Radio Japan	RR	1700	15300	Radio France International	FF
0500	11725	Radio New Zealand International		1730	15190	Philippine Broadcasting Service	
0500	11970	Radio Japan, via France		1800	11670	All India Radio	
0600	3290	Voice of Guyana	EE/DD	1800	15495	Radio Nederland, via Germany	
0600	9660	Radio Australia		1800	17850	Radio Exterior Espana, Spain, Costa Rica	SS
0600	6160	CKZN, Canada		1800	21610	Radio Exterior Espana, Spain, Costa Rica	AA
0700	6170	Radio New Zealand International		1800	15540	Radio Kuwait	
0700	7245	Radio Mauritanie, Mauritania	AA	1900	15345	Radio Marocaine, Morocco	AA
0800	9635	Radiodiffusion Malienne, Mali	FF	2000	12080	Radio Australia	
0900	4865	Radio Alvorada, Brazil	PP	2000	13670	Radio Havana Cuba	SS
0900	6175	Radio Tawantinsuyo, Peru	SS	2030	9665	Radio PMR, Moldova	
0900	3310	Radio Mosoj Chaski, Bolivia	SS	2100	7400	Radio Bulgaria	
0900	5990	Radio Senado, Brazil	PP	2100	9445	All India Radio	Hindi
1000	3250	Radio Madang, Papua New Guinea	Tok Pisin	2100	9580	Africa Number One, Gabon	FF
1000	3330	Ondas del Huallaga, Peru	SS	2100	15110	Radio Exterior Espana, Spain	SS
1000	4747	Radio Huanta 2000, Peru	SS	2100	15235	Radio Canada International	FF
1000	4775	Radio Tarma, Peru	SS	2100	15850	Gale Zahal, Israel	HH
1000	4790	Radio Vision, Peru	SS	2100	21690	Radio France Intl, Fr. Guiana Relay	FF
1000	6010	Radio Mil, Mexico	SS	2200	9705	La Voix du Sahel, Niger	FF
10000	3717	Radio Yura, Bolivia	SS	2200	9830	Voice of Turkey	
1030	12085	Voice of Mongolia		2200	11620	All India Radio	
1100	2385	ABC No. Territory Service, Australia		2200	11935	Radio Romania International	SS
1100	2310	ABC No. Territory Service, Australia		2200	15265	Radio Japan, via Bonaire	JJ
1100	3275	Radio Southern Highlands, PNG	Tok Pisin	2200	17560	Radio Havana Cuba	SS
1100	3385	Radio New Britain, Papua New Guinea	Tok Pisin	2200	17680	CVC-La Voz, Chile	SS
1100	3925	Radio Nikkei, Japan	JJ	2200	9760	Cyprus Broadcasting Corp.	Grk, wknds
1100	5020	Solomon Islands Broadcasting Corp.		2200	7125	Radio Guinee, Guinea	FF
1100	9465	Family Radio, via Taiwan		2300	11990	Radio Canada International	SS
1100	3205	Radio Sandaun, Papua New Guinea	Tok Pisin	2300	5952.5	Radio Pio Doce, Bolivia	SS
1100	4755	The Cross, Micronesia		2300	5960	Radio Romania International	
1100	5960	Radio Fly, Papua New Guinea	Tok Pisin	2300	5995	Radiodiffusion Malienne, Mali	FF
1100	9920	KNLS, Alaska	CC	2300	9855	VOA Relay, Botswana	
1100	9975	KTWR, Guam	CC	2300	11700	Radio Bulgaria	
1200	9840	Voice of Vietnam		2300	15245	Radio Argentina al Exterior	SS

# Communications Trivia and a 'Toon

by R.B. Sturtevant, AD7IL

**Q:** I've heard that when Lt. Colonel Jimmy Doolittle's Raiders attacked Japan four months after Pearl Harbor they narrowly missed the Radio Tokyo transmitter which was one of their main targets. Is that true?

**A:** That is not true. Realizing their attack was mostly an attack on Japanese morale, Doolittle instructed the bomber pilots to go for as many targets as possible rather than going for the most effective attack on fewer targets. The only two targets that were not on the list to be hit were the Imperial Palace, viewed by many Japanese as a religious site, and Radio Tokyo.

The transmission facilities and antenna towers were definitely not to be hit. It was the radio that told most Americans about Pearl Harbor and the Army Air Corps wanted the same effect to hit the Japanese through the same medium. (**WATCH:** An interview with Jimmy Doolittle about the famous raid on Tokyo: <<http://bit.ly/tinYBD>>. - Ed.)

**Q:** I understand that the first "act of war" at the beginning of World War I, for the British at least, was to sever all the under seas cables they could find. Knowing that the German and Austro-Hungary had 21 wireless stations (together), what good did this do?

**A:** Undersea cables were very useful to anyone conducting a war — particularly since they were secure against enemy monitoring. (That is, of course, unless the British left them intact as they did with a

few of the lines. Because some of the Germany-to-South America lines went through Britain they were left in working order. One of these lines carried the famous Zimmerman telegram with which Germany tried to get Mexico to attack America's southwest and hopefully keep Americans out of Europe.)

By forcing the Axis powers to use their wireless stations, Axis traffic was open to monitoring by the Allies. This gave the Allies a good picture of what the Axis planners were up to. The British Empire was covered by 47 wireless stations, France had 18, and the Russians had 28. We can only imagine that a lot of people were listening to a lot of other folks during that war.

**Q:** Back in the early days of radio, before standards of measurement were developed, what kind of measurements was the average amateur/experimenter able to take? How accurate were they?

**A:** I suppose you mean before most of the experimentation that we now take for granted was done and cross referenced. The accuracy was pretty high but it wasn't done with gauges and meters as we do today. Back in 1914 it was more like: "This set up is more or less effective from the one I set up yesterday."

One of the most useful and earliest was called the *detector*. It was nothing more than a magnetized needle held over a wire. If the needle was held facing north and south (90 degrees from a wire) it was showing that no current was flowing through the wire. If the needle lined up with the wire and stayed parallel, it proved the wire was carrying current. If the pointed end of the needle was the north end of the magnet, the current was flowing in the direction of the needle point.

Since AC current was unknown, it was enough to tell you had a working circuit. Most people performed this test with a regular compass. As time passed, more complicated equipment was developed to find this information and the Galvanometer <<http://bit.ly/v5oyc9>> came into being. (**WATCH:** Video of a galvanometer in action: <<http://bit.ly/tBPV2N>>. - Ed.)

**Q:** One of the amazing things about radio hobbies is that there are so many of them. There are so many people using the airwaves to do different and interesting things with antennas, transmitters, receivers, transceivers and all the other things we use. What was the first hobby related to radio?

**A:** Well, we are going back a long way — definitely before 1912 when records about radio started to be kept in this country. AM broadcasting and radio amateurs came out of the experimentation that was going strong by 1912. The only real show before that time was listening to shortwave stations around the world. The aficionados of that day were either interested in hearing news and entertainment or DXers who were trying to get stations at greater and greater distances. So I suppose that we can say that SWL (short-wave listening) was the first on the scene. Since most radios in that time were kits or homebrew, we'd have to throw in set building. Collecting QSL cards came in about this time.



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The SportSync SR-202 AM/FM Delay Radio features a slide that allows you to delay the radio broadcast so it synchs with the TV broadcast. (Courtesy of ScannerMaster)

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# Is a Shortwave Target From the Past Returning? We Hope So!

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

*“We’ve seen several seldom-logged broadcasters have re-appeared on the bands, mostly the result of shifting propagation conditions, and more . . .”*

Something different is going on. It may even be a revenant for all we know. Seems an old *and real* DX target has — or is about to — return. **Radio Nacional Angola** plans to re-institute one of its former regional stations and return it to shortwave. And it’ll not just return but it’ll return with 25 kW of punch from Moxico Province — that’s on the other side of the country southeast of the capital, Luanda.

These Angolan provincial stations were great DX targets 30 to 40 years ago. I remember hearing this in 1970 running one kilowatt on 5192. Many of the Angolans could be heard in the late winter afternoons up on the 31-meter band. Most were pretty reliable in the verification department as well, which was definitely a bonus. Changes in government philosophies eventually killed any independent broadcasting there.

**Radio Tirana** in Albania appears to have had a bump or two in the road to deal with lately. It seems the Shijak transmitter site has been having technical problems since mid-summer. And, until the problem is corrected, its programs in English are in a questionable state.

**The Voice of Greece** is under the gun — which, I guess, is not surprising considering all the financial difficulties the country has had an extensively reported by the world media. The station we know as **Radiofonikos Strathmos Makedonias** — also known as ERT — broadcasting from Thessaloniki — is about to be closed due to government budgetary cuts. It is the station transmitting to Europe over the main Greek facility at Avlis on 7450 and 9935. Both frequencies are frequently noticed in North America. An immigrant and workers group has appealed the decision so that may have delayed the silencing.

The frequency of 3995 is now hosting German language programming from **HCJB Global**. Operation is from 0400-0800 UTC and 1800-2200 UTC running a whopping 3 kW but probably going to be increased thrice — up to 10 kW before long. The transmitter site is at Kall-Krekel in East Freisland — in the former East Germany. This should be an interesting station to target, especially in these months that are short on the daylight side.

Lately we’ve seen several seldom-logged broadcasters have re-appeared on the bands, mostly the result of changing seasons, shifting propa-

gation conditions and in some cases diminishing QRM sources.

**Radio Alvorada** on 4865 from Londrina being tentatively noted around 0945 (yawn!); **Radio El Buen Pastor**, Saraguro, Ecuador on 4815 sometime before 1100 (and also around 0100); **Radio Pio Doce**, Siglo Viente, Bolivia on 5952.5; **Rado Cultura Amauta**, Huanta, Peru on 4955 prior to 1100; and **Radio Pilipinas**, 15190, opening at 1730 in Tagalog, with some EE words. Some stuff to chew on!

## A Word From You . . .

**Charles Maxant** (WV) tells me he’s heard from WRNO saying that it is waiting for a new transformer from its Costa Rican transmitter manufacturer. (I presume they refer to Elcor.)

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 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.

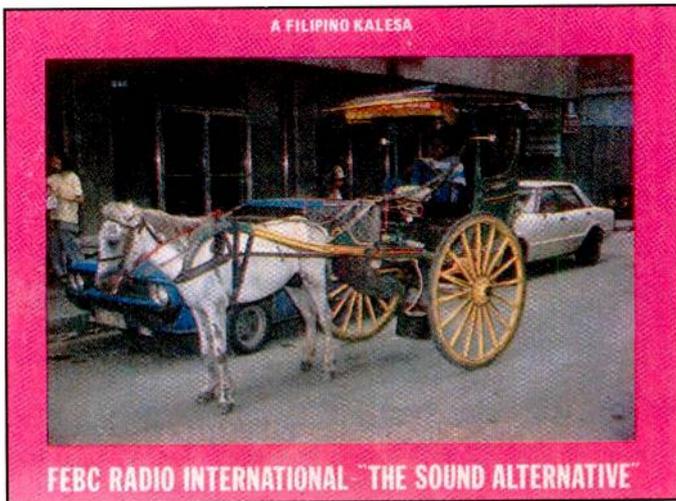
**ALBANIA**—Radio Tirana, 7450 at 0335 on Albania’s economy. (Maxant, WV)

**ALGERIA**—RT Algerienne, 7295 via Issoudun with Koran at 0532.(Parker, PA)

**ANGUILLA**—Caribbean Beacon, 6090 at 0413 with religious sermon. (MacKenzie, CA)

**ARGENTINA**—Radio Argentina al Exterior, 11710 General Pacheco in JJ at 0105. (Parker, PA) 0158 with IS, ID in SS and EE, M/W ancrs. Weak and flutery. (Arthur, NY) 0200 with time pips and multilingual IDs. (Coady, ON) 1120 with futbol coverage. Also Radio Nacional, 15345 General Pacheco with futbol in SS at 2230 (Rippel, VA) 2255. (Alexander, PA; MacKenzie, CA)

**AUSTRALIA**—Radio Australia, 5995 at 0805 with world news and 9660 at 0615 with rugby match and 15515 at 0415 on an oil tanker breaking up.



FEBC-Philippines, advertises itself as "The Sound Alternative" but does not explain what the slogan has to do with a horse-drawn cart!

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Gospel of Jesus Christ

Dear Friend,  
thank you for your report, with we herewith verify as fully correct.  
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Wertachtal, Germany, in Somali

Date: 2008-02-24  
Hour: 2022-2045 UTC  
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MEDIA

The IBRA organization is on shortwave with programming from Sweden, aired via Wertachtal, Germany, and some other sites.

(Maxant, WV) 5995-Shepparton at 1505 with newscast, 6020 at 1050 in Tok Pisin. (Barton, AZ) 12080 on technology in Australia at 2045. (Linonis, PA)

ABC Northern Territories Service: 2310-Alice Springs (p) at 1034 with long talk by M. (Rippel, VA) 2325-Tennant Creek at 0955 with M anc. (Barton, AZ) 11045 (p) seemed parallel to 2310. (Rippel, VA) 4910-Tennant Creek at 0800. (Wilkner, FL)

**AUSTRIA**—Radio Austria International, 9830 at \*0030-0057\* with sudden sign on and M with news in GG. (D'Angelo, PA)

**BOLIVIA**—Radio Yura, Yura, 4716.2 at 1009 with SS ID. Seems to sign on between 0950 and 1020. (Wilkner, FL)

Radio Lipez, Uyuni, with music and SS at 0950. (Wilkner, FL)  
Radio Pio Doce, Siglio Vicente, 5952.4 in local Aymara or Quechua at 2355 with M/W, a selection at 0000, then all talk at 0004. (Coady, ON)

**BONAIRE**—Radio Nederland Relay, 6165 in DD at 0418 with two men with comments and 6190 in DD at 0323. Anthem at 0326 and off at 0327. (MacKenzie, CA)

**BOTSWANA**—Voice of America Botswana Relay at 0320, 9855 ending news at 0305 and 11670 on the Palestinian request for UN membership. (Sellers, BC) 15580 at 1933 with a promo for *Reporters Notebook*. (Coady, ON) 9855 at 0347 with an economic talk. (Parker, PA)

## Help Wanted

We believe the Global Information Guide — month after month — offers more logs than any other monthly SW publication! (Nearly 415 shortwave broadcast station logs were processed this month!) Why not join the fun and add your name to the list of GIG reporters? Send your logs to Gerry Dexter, Global Information Guide, 213 Forest St., Lake Geneva, WI 53147 or email them to <gdex@wi.rr.com>. See the column text for formatting suggestions.

*\*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.*

**BRAZIL**—(all in PP – gld) Radio Municipal, Sao Gabriel da Cachoeira, 3375.3 with a good signal at 0830. (Wilkner, FL)  
Radio Difusora d Amazonas, Manaus, 4805 noted at 0950. (Wilkner, FL)

Radio Alvorada, Londrina, 4865 at 0940 with man preaching, ID and frequency anmt at 1001 f/by song and a second preacher. (D'Angelo, PA)

Radio Clube do Para, Belem at 0513 with M/W in conversation. (Parker, PA)

Radio Daqui, Goiania, 4915 at 1214 with dM talks, IDs between pops numbers. Carrier cut in mid-song at 0003. (D'Angelo, PA) 0911 with talks and music. (Wilkner, FL)

Radio Brazil Central, Goiania, 4985 at 0210 with M anc and pops. And 11815 at 0026 with W talks, ads, ballad. (Parker, PA)

Super Radio Deus e Amor, Curitiba, 6059.8 at 0735 with religious preacher and 9564.9 with preacher at 0102. (Alexander, PA) 11765 at 0040 with boisterous game show host and cheering audience. (Parker, PA)

Radio Banderientes, Sao Paulo, 9645.4 at 0045 with talk and sound effects, weak on //11925.2 (Alexander, PA)

Radio Cancao Nova, Cachoeira Paulista, 9675 at 0525 with religious programming and 2315 with religious and inspirational music. (Alexander, PA)

Radio 9 de Julho, Sao Paulo, 9820 at 0034 with M talks and music. (D'Angelo, PA) 0425 with w anc and pops. (Parker, PA)

Radio Nacional Amazonas, Brasilia, with M taking calls at 0035. (Parker, PA)

Radio Inconfidencia, Belo Horizonte, 15190 at 0050 with talk, jingles, local ballads. Weak on //6010. (Alexander, PA) 0236 with anc talking about "musica bonita" (Sellers, BC)

**BULGARIA**—Radio Bulgaria, 5900-Plovdiv in RR at 0353 with pops and 7300-Plovdiv in TT with W talk. (Parker, PA) 7400 in RR at 0448. (MacKenzie, CA) 11600 with domestic music and DX pgm. (Maxant, WV) 11700 with *Keyboard Bulgaria* at 2330, //9700. (Coady, ON)

**CANADA**—Radio Canada International, 11990-Sackville in SS at 0030 with talk in international issues, //13760. (Linonis, PA) 2357 in SS. Off suddenly at 2258. Also 15235 in FF at 2108, //15330. (MacKenzie, CA)

CFRX, Toronto, 6070 at 0220 with call-in pgm of "How you got sober." (Sellers, BC) 0810 with a call-in pgm. (Maxant, WV)

CHU, Ottawa, 7850 and 14670 at 0420. (Maxant, WV)

**CHAD**—Radio Nationale Tchadienne, 6165 at \*0427 with open carrier until Balafon IS, NHK World opened in SS at 0429. Chad anc heard only weakly under Japan. (D'Angelo, PA) 220-2229\* with FF talk, Afropops, NA at 2228 and off 2229\*. (Alexander, PA)

**CHILE**—CVC-La Voz, Santiago in at 2236 with two M talks in SS. (MacKenzie, CA)

**CHINA**—China Radio International, 6020 via Canada at 0403, 9655 via Brazil in SS at 0350, 9790 via Cuba at 0355, 11885 via Canada

# CQ Books

## Lew McCoy on Antennas

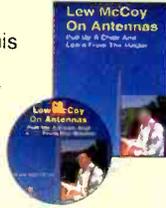
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P.O. Box 2642  
Quezon City, 1166  
Philippines

## Radio Veritas Asia

The Spratly Islands consist of more than 100 islands. The Spratly are surrounded by fertile fisheries and fossil-fuel deposits. The deserted islands territories are disputed by the China, Malaysia, Taiwan, Vietnam and the Philippines. About 1/2 (48) islands are populated by a few military from China, Malaysia, Philippines and Vietnam. The Islands are located in South China Sea, east of Vietnam to south of Palawan, the Philippines.

This entry was posted on Tuesday, November 20th, 2007 at 1:01 am and is filed under [Philippines History](#).

The Spratly Islands are seen on this QSL to D'Angelo from Radio Veritas Asia. The 45-island archipelago has seen skirmishes or claims by China, Taiwan, Vietnam, Philippines, Brunei and Malaysia.

at 0015 and 11975 via Canada in CC at 0003. (MacKenzie, CA) 6100 in rapid RR at 1225. (Barton, AZ) 11820-Zi'an in Cantonese at 0012. (Parker, PA) 15110-Kashi at 0328. (Sellers, BC)

China National Radio, second network, 11845-Xianyang with w in CC at 0014. (Parker, PA)

Firedrake jammer 7970 at 1045//12230, 12500 and 12600. (Barton, AZ) 8400 heard at 0925, //7970 which remained on after 1030. (Barton, AZ)

COLOMBIA—Alcaravan Radio, Puerto Lleras, 5910 at 0251 with Latin music, IDs, time pips at 0300 and formal SS ID. (D'Angelo, PA) 0336 with Caribbean EZL music and ID. (Parker, PA) 0954 with Latin folk music, brief SS talk. Killed by DW sigh on at 1000 on 5905. (Perry, IL)

La Voz del Guaviare, Puerto Lleras. 6035 heard at 1215 in SS with (p) religious pgm. (Linonis, PA)

CROATIA—Voice of Croatia, 7375 via Germany at 0200 with "Glas Hrvatska" ID then man with "This is the Voice of Croatia"

ID and into Croatia Today pgm. (Coady, ON) 9925 via Wertachtal in CC at 0227. (Parker, PA)

CUBA—Radio Havana Cuba, 5040 in SS at 0325, 6000 at 0359, 13670 in SS at 2055, 15230 in PP at 2258, 15370 in SS at 2250 and 17560 in SS at 2240. (MacKenzie, CA)

Radio Rebelde, 5025 in SS at 0320. (MacKenzie, CA)

DJBOUTI—Radio Djibouti, 4780 at 0304 with Koran recitations in AA. (D'Angelo, PA)

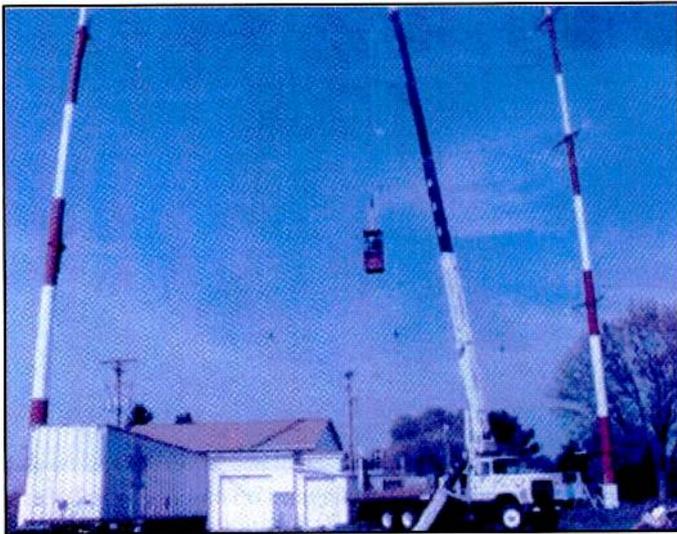
ECUDOR—HCJB Global, 11920 via Santiago in PP at 0002. (Parker, PA) 0013 in PP with M and comments over choir. (MacKenzie, CA)

ENGLAND—BBC, 3255 via South Africa at 0300 sign on beginning The World Today. Several audio dropouts during the first few minutes. (Sellers, BC) 5970-Skelton in AA at 0325 and 6145 with pgm Network Africa, 15310 Oman Relay on an Australian parliament vote, 15365 with pgm Click. (Sellers, BC) 3255 via South Africa at 0345 on African subjects. (Coady, ON) 0401 with news. (D'Angelo, PA) 5875 at 0358 with men-

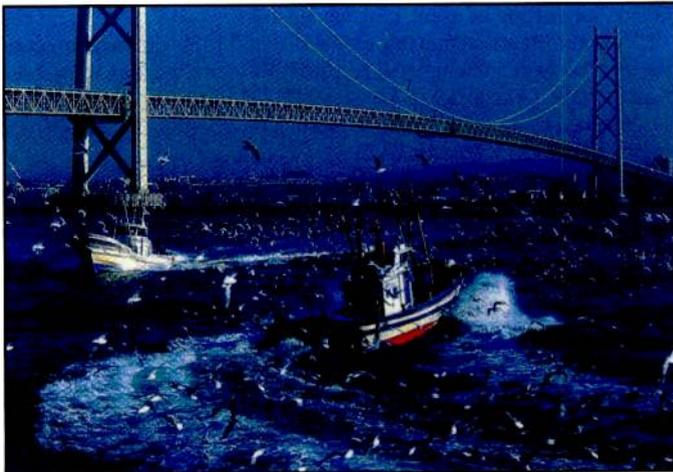
## This Month's Winner

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 prize winner is **Rich D'Angelo** in Pennsylvania, who received a copy of the book *King of the Satellites — Six Five O* by Thomas Baier, which is all about the Grundig Satellite 650 receiver. The book is published by Universal Radio Research — and you'll find it (along with dozens and dozens of others) in the catalog and website at <<http://www.universal-radio.com>>. That website also has the full Universal Radio catalog that covers receivers, ham equipment, antennas, headphones, books, shack clocks, parts and beyond. You can also get a printed catalog by calling (618) 866-4267. Universal is your superior source for quality equipment and superior all from 6830 Americana Parkway, Reynoldsburg, OH, 43068.



The WMLK tower in Pennsylvania being erected a few years back. (Courtesy of Charles Maxant)



Boats, birds and bridge are shown on this Radio Japan QSL, received by David Weronka (NC) for reception via Sackville.

tions of 9/11, 9915-Skeltyon in AA at 0413, 9895 Cyprus Relay in Dari at 0234, 12095-Skelton at 0445 with an Obama clip, (Parker, PA) 7310 to Africa at 0450. (Maxant, WV)

Far East Broadcasting Assn., 9725 via UAE at 0257 in (I) Dari with songs, ID and address. Tunisia sign on at 0257, without het. (Sellers, BC)

**ERITREA**—voice of the Broad Masses, 9720 in vernacular at 0303 with talk and HOA music, //7175 and 9820 at 0344 with vernacular and Europops, //7175. (Alexander, PA)

**ETHIOPIA**—Radio Ethiopia, 9705-Gedja with vernacular pops at 0413. (Parker, PA) 2010-2058\* with local HOA music, Europops and Amharic talk with abrupt sign off. (Alexander, PA)

**FRANCE**—Radio France International, 9805-Issoudun at 0400 with W and EE news, //11995. (Sellers, BC) 0408 with EE news. (Parker, PA) 15300 at 1729-1745 in FF, (p) o Africa talking about European bailout of Greece. (Linonis, PA)

**FRENCH GUIANA**—Radio France International Relay, 21690 in FF at 1825. (MacKenzie, CA)

**GABON**—Africa No. One, 9580 at 2115 with FF small talk and into highlife music to full ID at 2137. (Coady, ON)

**GERMANY**—Deutsche Welle, 7240 at 0425 on websites. (Maxant, WV) 7240 Rwanda Relay at 0414 on African children and GG lesson at 0415, 9885 Rwanda Relay at 0359 with IS, GG sign on

## Here's Your "Blast From the Past" For This Month:

Radio Norte, YVMG, Maracaibo, Venezuela, 4807 with 1 kW in SS at 0515, on November 13, 1954.

and into news. (Sellers, BC) 7240 Rwanda at 0454-0457 on 9-11, abruptly off at 0457, 7430-Rampisham on Mugabe, 9545 Portugal Relay at 0620, 15640 Rwanda at 2117 on the opening of the French Senate, 21840 Sri Lanka Relay at 1534 in Swahili. (Parker, PA)

**GREECE**—Voice of Greece, 15640 in Greek at 0030 with traditional Greek music. (Linonis, PA)

**GUATEMALA**—Radio Verdad, Chiquimula, 4055 at 0245 with M preaching in SS with guitar between segments. (Coady, ON) 0309 with W and organ with hymn, M speaker. (Sellers, BC) 0455 with chora anthm. (Wilkner, FL) 0520 with EE preacher. (Parker, PA) 0545-0606\* with EE religious pgm, closing multilingual ID at 0555. Long NA at 0602. (Alexander, PA)

**GUYANA**—Voice of Guyana, 3290 at 0347 with M in EE, taking phone calls from listeners on local Georgetown problems. (D'Angelo, PA) 0617 with BBC pgm. (Parker, PA) 0900. (Wilkner, FL)

**HONDURAS**—Radio Luz y Vida, San Luis, 3250 at 0000 with SS religious message to 0020. (Wilkner, FL)

**IRAN**—Islamic Republic of Iran Broadcasting, 9605 at 0405 talking about New York City, (Maxant, WV) 0420 discussing Yemen, ID and schedule at 0434, also 11920 on British economy. (Sellers, BC) 9905 in SS at 0324. (MacKenzie, CA) 9905 0230 in SS, W with ID and anthem. (Parker, PA) 11710 at 1230 in CC, //15190. Also 15150 in AA at 15425. (Arthur, NY)

**INDIA**—All India Radio, 9445//11670 at 2215 with traditional music. (Linonis, PA) 11620-Bangaluru with M and news in EE. (Coady, ON) 11570 at \*1756-2230 sub-continental music, EE talks on Hindu religion. (Rippel, VA) 2115 with Indian vocals. (Maxant, WV) 2211 with EE commentary, ID and sports pgm. (D'Angelo, PA) 13695 at 1236 in Teluu Service, sub-continental music, M ancr. (Wilkner, FL)

**INDONESIA**—Radio Republik Indonesia, 3325-Palangaraya (Kalimantan), at 1350 with M/W in II, repeated notes on electronic keyboard at 1400, time pips, W with ID. (Sellers, BC) 9680-Jakarta at 1024 in II with pgm ID, RRI jingle, anmts and back to music, interlude of drums and then Noran. (Rippel, VA)

Voice of Indonesia, 9525 at 1300 with II ID then into EE with ID, pgm lineup and news. (Sellers, BC) 1320 on insurance collections there. (Maxant, WV)

**ISRAEL**—Galei Zahal, 9235 in HH with pops, W ancr, //15850. (Sellers, BC) 2320 with HH talk, local pops and 15850 in HH at 2105 with local ballads //9235. (Alexander, PA)

**JAPAN**—Radio Japan, 5960 via Canada in JJ at 0344 and 15265 via Bonaire in JJ at 2206. (MacKenzie, CA) 5975 at 0505 with newscast and 6110 via Canada at 0515 with *Tokyo Calling* pgm. (Maxant, WV) 9835 at 1720 holding on as the band was dying. (Barton, AZ) 11715 at 0526 with IS, sign on in RR. (Sellers, BC)

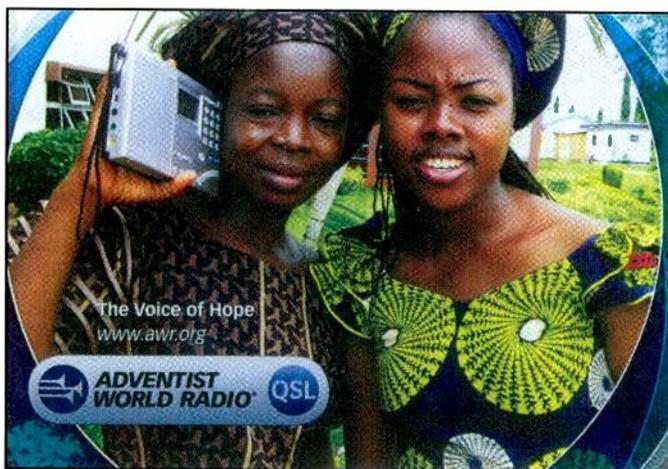
Radio Nikkei (p) at 1055 with JJ talks by W, little ARO QRM. (Rippel, VA)

**MADAGASCAR**—Radio Madagasikara, 4910 at 0216-0255 (carrier + USB) with Afropops, Malagasy talk. Choral anthem at 0227, Malagasy talk and light instl music, more Afropops. 5010 at 0213 with Afropops, NA 0228, light instl music, Malagasy talk. (Alexander, PA)

**MALI**—Radiodifusion Malienne, 5995-Bamako at 2326 with W in FF hosting call-in pgm with short pops between phone calls. Cllsedown by W at 2356, f/by Choral anthem. (D'Angelo, PA) 9635 at \*0803 abrupt sign on with vernacular talk, local guitar, rustic tribal vocals. (Alexander, PA)

**MALAYSIA**—RTM Sarawak FM, 7235-Kuching at 0457 with M briefly in local language and bits of music. Just above noise floor. (Parker, PA)

**MAURITANIA**—ORTM-Radio Mauritanie, 7245 in AA talk,



That looks like a Grundig YachtBoy 400 on this Adventist World Radio QSL, received by D'Angelo for reception via Wertachtal.



A fortified church in Romania, pictured on one of Radio Romania's QSLs. (Courtesy of Rick Barton, AZ)

phone calls, local chants. Not usually on this early. Also \*0609 abrupt sign on with Koran. (Alexander, PA) 7245 at 0654 with M in AA, ME music, M/W alternating talk. Into news pgm at 0703. (D'Angelo, PA)

**MEXICO**—Radio Educacion, Mexico City, 6185 in SS with classical music at 0330. (MacKenzie, CA) 0820 with classical music. (Maxant, WV)

**MOLDOVA**—Radio PMR, 9665 at 2045 in (p) Moldovan with folk songs pgm. (Linonis, PA)

**MONGOLIA**—Voice of Mongolia, 12085 in briefly at 1030-1045 just above noise level. (Linonis, PA) 1045 in unid language, short musical interlude at TOH, promptly off at 1100. (Rippel, VA)

**MOROCCO**—RTV Marocaine, 15345 at 1730-1750 in FF with Mideast music. (Linonis, PA) 1815 with ME music to 1823 and Koran. (Barton, AZ)

Radio Medi Un, 9575 at 0516 with news in AA. (Sellers, BC)

**NEW ZEALAND**—Radio New Zealand International, 6170 with Mario Lanza song at 0710, 11725 at 0510 with newsreel pgm and 15720 at 0425 on returning to homes in Christchurch and government repairs. (Maxant, WV) 6170 at 1050 with jazz to closing anmts at 1057 and 9655 at 1100 with IS, time pips and world and Pacific news. (Coady, ON) 9655 with music pgm and needle-bending signal at 1045. (Barton, AZ) 15720 at 0020 with South Pacific news. (Linonis, PA)

**NETHERLANDS**—Radio Nederland, 9895 via Germany in DD at 0503 with talks. (Parker, PA) 15495 via Germany at 1853 with *The State We're In* pgm. (Coady, ON)

**NIGER**—La Voix du Sahel, 9705 noted both to 2258\* closing in FF with flute IS and choral anthem and from \*0500 opening with test tone, choral anthem, flute IS and talk in unid language. Koran at 0503, talks at 0507. Poor and mixing with co-channel Radio Ethiopia. (D'Angelo, PA)

**NIGERIA**—Voice of Nigeria, 9690 at 0905 with music, national anthem and address. Also, 15120 at 0445 with recorded ID "This is Lagos calling." (Maxant, WV) 1529 in EE but only poor to fair (Arthur, NY)

**NORTH KOREA**—Voice of Korea, 9335 at 1303 after NA and into EE with ID, pgm lineup and news. Ancr had trouble pronouncing her "Rs." (Sellers, BC) 11710 in EE at 1100 with march music, possible speech by Kim Jung Il. (Linonis, PA) KK at 1255 with music and talk. (Maxant, WV) 1502 with NA and EE anc opening EE segment. Also, 15180 at 0120 with patriotic opera. (Coady, ON) 11735-Kujang, in SS at 0054 with W talk. (Parker, PA)

**OMAN**—Radio Sultanate of Oman, 15355 at 0302 with W and news, ID: "This news comes to you from Radio Sultanate of Oman." News ended at 0309 and into anmts, which were too weak to copy. (Sellers, BC)

**OPPOSITION**—Voice of Eritrea, 9559v via Ethiopia at \*0346

opening with HOA music, talk in (l) Tigrinya, maybe some US rock. Good, but drifting as usual. (Alexander, PA)

Voice of Mesopotamia to Iran/Kurdistan, 11530 via Ukraine opening at 0400 with anthem, local Kurdish music, indigenous vocals and Kurdish talk. (Alexander, PA)

National Democratic Front (to North Korea), 3480 via South Korea fair in KK at 1115. (Barton, AZ)

**PAPUA NEW GUINEA**—Radio Madang, Madang (New Guinea), 3250 with pops and talks at 1040, into island music. (Rippel, VA)

Radio Southern Highlands, Mendi (Papua), 3275 at 1030 with M in rapid-fire talk. (Rippel, VA)

Radio East New Britain, Rabaul (New Britain), 3385 at 1047 with DJ speaking with a W on phone and into local music, possible advertisement. (Rippel, VA)

Radio Fly, Tabubil (New Guinea), 5960, 1131 with back-to-back-music, ID by M at 1315, adv or promo at 1144. (Rippel, VA; Linonis, PA)

**PERU**—Ondas del Hauallaga, Huanaco, 3329.5 on early at 1000 with ID and rapid SS. (Wilkner, FL)

Radio Huanta 2000, Huanta, 4747 at 1035 with excited SS talk. Definite mention of Peru, but very weak. (Coady, ON)

Radio Tarma, Tarma, 4775 (p) heard and later confirmed by several DXer receptions lately in the 1000 hour. (Perry, IL) 1005 in SS. (Wilkner, FL)

**PHILIPPINES**—Philippines Broadcasting Service, 15190 at \*1730 with M and snippets of their broadcast schedule. One second time pips at 1900 and ID by M. (Rippel, VA)

**PIRATES**—WBNY, 6924.5 at 2339 ancd as "The Poet Pirate Loggers' Circus" pgm with rock, lots of criticism of the Poet's behavior with the ex-Crystal Ship, parody songs. Off at 0006\* (Zeller, OH)

Commander Bunny/Crystal Ship, 6930 at 0332 with comedic plugs for Commander Bunny and rock. Some sort of network mention and an email address. (Sellers, BC)

Captain Morgan, 6925.1 at 0135 with mostly old blues tunes. <captainmorganshortwave@gmail.com> (Zeller, OH) 6924.5 at 0305 with blues and email. (Alexander, PA)

Radio Pisano, 9625.1 at \*0028-0058 with annual Columbus Day pgm. Quite a few Italian songs. <radiopisano@gmail.com>. (Zeller, OH) 0040-0057 with Italian themed pgm. (Hassig, IL)

"Family Radio," 6924.6 at 0029 with apparent transmitter trouble, various carriers interfering with each other. Multiple IDs, call letters (WFMRD) or similar and Family Radio IDs as well. Seems not to be a WYFR parody. Also at 2149-2253\* with classic rock, new age and Celtic music, several IDs as WFRN, Family Radio. Some discussion of the importance of family values. (Zeller, OH) 0050-0201\* with test tones, music, IDs and audio clips. (Arthur, NY)



A banner from Radio Verdad, Guatemala, (now) on 4055 and widely heard in local U.S. evenings and early mornings. (Courtesy of Rich D' Angelo)

Wolverine Radio, 6950u at 0202 with swing jazz, old pops and newer pop tunes. Still going past 0200. (Hassig, IL)

Radio Gaga, 6935u at 0006 with pop/rock. Later down to 6925 where they had QRM from at least two other operators. Email to <radiogaga6925@gmail> has not bounced. (Hassig, IL)

Rave On Radio, 6925u at \*0015-0120\* mainly things by Dylan and related types, multiple IDs, gave <raveonradio@gmail.com> and FRN for reports, said "broadcasting from a studio in the woods." (Zeller, OH)

Radio Anonymous Intl, 6926.5u 2246-2253\* with mostly talk. At close said "Our frequencies are legion. Expect us." (Arthur, NY)

Radio Ronin Shortwave, 6924.8 at 0000-0058 with classic rock pgm. <radioroinin-shortwave@gmail.com> for reports, or to FRN. (Zeller, OH)

Northern Relay Service, 6930 at 0204 with Bob Dylan ID at 0207. (Arthur, NY)

XFM Shortwave, 6925u at 0342 with live pgm, time checks, frequency IDs, rock and listener requests. Reports to <xfmshortwave@gmail.com>. (D'Angelo, PA)

Red Mercury Labs, 6925 at 0125 with rock, mentions of Captain Ron, DJ chatter. Email as: <redmercurylabs@yahoo.com>. (Alexander, PA)

Renegade Radio, 6930 at 0440 with punk and rock things, IDs. (Alexander, PA)

Radio Appalachia, 6935 at 0005 with pgm of bluegrass and old time country, Johnny Cash in concert. Gave no address. (Hassig, IL)

Ann Hoffer Live, 6925u at 2357-0006\* with classic rock "covered" by Ann. Her low voice makes her sound almost like a man. (Zeller, OH)

**POLAND**—Radio Polonia, 9770 via Germany at 1700 with bilingual ID with *News From Poland*. (Coady, ON) 1715 with EE news and commentary. (Linonis, PA)

**ROMANIA**—Radio Romania International, 5960 at 2300, //7345 with ID and frequencies and into their *Radio Newsreel*. (Coady, ON) 9645 at 0314 with interview of an American and his thoughts on Bucharest. (Maxant, WV) 0350 with comments and ID at 0353, more comments. (MacKenzie, CA) 9770-Galbeni in Romanian with pops at 0415 and 11955-Tiganesti at 2354 in SS with sked anmt, IS and off at 2357.

(Parker, PA) 11895 at 0313 with commentary, ID and into *European House* pgm. //7335 and 9645. (Sellers, BC)

**RUSSIA**—Voice of Russia, 9665 at 0253 via Moldova with interview discussing Western policies towards the Islamic nations and 15425-Petrovavlovsk-Kamchatsky in EE with jazz pgm at 9350. (Sellers, BC) 9665 at 2245 with music pgm, news and feature and 9800 at 2339 poor, but very good by 2345. (Barton, AZ) 9735 in SS at 0345 in SS. (MacKenzie, CA) 9945 via Dushanbe at 0223 with talks. (Parker, PA)

Magadan Radio, 6075 in RR with news and commentary at 1220-1245. (Linonis, PA)

Radio Rossii, 12070-Moscow in RR at 0446 with M/W discussion. (Parker, PA)

**SAO TOME**—Voice of America Relay, Pinheira, 4960 at 0413 with African news features and several IDs f/by news at 0430. (D'Angelo, PA) 0527 in Hausa and FF after the bottom of the hour. (Parker, PA) 11895 at 1600 with ID and news. Very strong, (Barton, AZ)

**SAUDI ARABIA**—Broadcasting Service of the Kingdom, 17660 at 1555 with call to prayer and sudden close at the top of the hour. (Barton, AZ) 1618 in AA with Koran. (Parker, PA) 21505-Riyadh in AA at 1435. (Fraser, ME)

**SEYCHELLES**—BBC Indian Ocean Relay, 9750 at 0318 with interview on US political scene. Replaced by 11860 for the current B-11 season. (Sellers, BC)

**SINGAPORE**—BBC Far Eastern Relay, 11750 in Bengali at 0051. (Parker, PA) 15335 at 0116 with *World Briefing*. (Coady, ON) 0015 on the Asian stock markets. (Linonis, PA) 15745 (p) with country songs at 0244. (Sellers, BC)

**SOLOMON ISLANDS**—Solomon Islands Broadcasting Corp., 5020 with songs, W in Tok Pisin, IDs for SIBC and Radio Happi Isles, frequencies and NA at 1200. (Sellers, BC)

**SOUTH AFRICA**—Channel Africa, 3255-Meyerton at 0402 with news. (D'Angelo, PA) 7230 at 0503 with W and news. (Sellers, BC)

Radio Sondergrense, 3320 at 0221 in Afrikaans with mix of domestic and international pops, ID at 0234. (Coady, ON) 7285 at 0534 in Afrikaans. (Parker, PA)

**SOUTH KOREA**—KBS World Radio,

9650 via Canada at 1200 with N. Korea IS co-channel, and KBS doing news. (Barton, AZ)

**SPAIN**—Radio Exterior Espana, 3350-Costa Rica Relay, in SS at 0315, 9630 Costa Rica in SS at 0357, 15110-Nobelias in SS at 2105, 17850 Costa Rica in SS at 1834 and 21610-Nobelias in AA at 1838. (MacKenzie, CA) 3350 Costa Rica in SS at 0239 (Coady, ON) 9535 in SS at 0115, 11680 poor at 0100, time pips at TOH and 11795 at 0110 in (I) Sephardic. Poor to fair. (Barton, AZ)

**SRI LANKA**—Sri Lanka Broadcasting 11905 at 0115 in possible in AA with Koran. (Linonis, PA) 15745 (p) with country songs and EE DJ at 0244. (Sellers, BC)

**SUDAN**—Sudan Radio TV, 7200 with AA vocals at 0253, time pips at 0301 in AA with ID, news. (D'Angelo, PA)

Radio Miraya FM (p) 11560 with African pops at 0357, M with "Good Morning" at 0400, M/W with news in EE and another language. But poor so no ID caught. (Sellers, BC)

**SURINAME**—Radio Apinte, Paramaribo, 4990 at 0523 with pops and DD host. (Parker, PA) 0600 with music. (Wilkner, FL)

**SWAZILAND**—Trans World Radio, 3200 at 0250 with IS, ID, and into *Unshakable* pgm, but very poor. Also 3240 at 0252 with IDs and into Shona. Also, 9500 at 0457 with ID and 0500 with *The Living Word*. (Sellers, BC)

**THAILAND**—Radio Thailand, 9890 signing on at \*1157 with OC f/by ID, IS and EE anmt for their World Service, mentioning the next pgm would be in Malaysian. Also, 15275 at 0012-0029\* with promo anmt, ID and EE news by M/W. (D'Angelo, PA) 15275 at 0030-0045 with talk about the Philippines. (Linonis, PA)

**TUNISIA**—RT Tunisienne, 7275-Sfax, in AA at 0540 with usual AA music. (Parker, PA) 0445 in AA. (MacKenzie, CA) \*0400 open with AA singing and carrier on at 0357, then some 30 seconds of tone before voice and music. (D'Angelo, PA) 9724 at 0300 sign on with W in AA and into AA news. QRM from FEBA Radio. (Sellers, BC)

**TURKEY**—Voice of Turkey, 9515 at 0321 with Turkish music, TT language lesson. (Sellers, BC) 0325 with EE frequency anmts and schedule times. Also, 15450 at 1305 with Voice of Turkey addresses. (Maxant, WV) 9830 at 2242 with TT folk music and *Question of the Month* pgm. (Coady, ON) 15450-Ermiler at 1230 sign on. (Fraser, ME)

**UNITED STATES**—Voice of America, 5970 Biblis Relay at 0324 in Farsi with mentions of Pakistan. EE ID at bottom of the hour. (Parker, PA) 9780 Sri Lanka Relay at 0100 opening EE pgm. (D'Angelo, PA) 9855 (t) Northern Marianas Relay at 0330 with ID and W with comments. (MacKenzie, CA) 12150 Sri Lanka Relay at 1255 on current events with emphasis on Asian areas. (Barton, AZ)

Radio Free Asia, 15185 Saipan Relay in unknown language at 1505. (Arthur, NY)

Radio Free Europe/Radio Liberty, 9760 Lampertheim Relay, in RR at 0417 and 9845 Biblis Relay in RR at 0350. (Parker, PA)

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World Harvest Radio, 9825 at 0401 with DX pgm. (Sellers, BC) 21630 in EE at 1830. (MacKenzie, CA)

WWCR, Tennessee, 3215 at 0313 and 9535 at 0340. (MacKenzie, CA)

KJES, New Mexico, 11714 at 1325 (Maxant, WV) 15385 at 1813. (MacKenzie, CA)

Radio Farda, 15110 Biblis Relay with M in Farsi at 1603. (Parker, PA)

Family Radio, 9280, via Tiawan in CC at 1125 with talks over music, Oakland address spelled out slowly and 11520 via Paochung, Taiwan, with M in Tagalog, (Parker, PA) 9465 at 1045 via Taiwan with Harold Camping and Bible Study. (Barton, AZ) 9365 Family Radio via Kazakhstan at 1404 ending music and into *Searching the Scriptures* pgm. (Sellers, BC)

Adventist World Radio, 9815 via Wertachtal at 0351 in Amharic. Off at 0359. (Parker, PA)

WTWW, Tennessee, 5755 at 0330 with *Preach to the World*. (MacKenzie, CA) 9480 at 2220 with Pastor Pete Peters. (Barton, AZ)

WBCQ, Maine, 9370 with *Insight for Living* pgm at 1425. (Fraser, ME)

WWRB, Tennessee, 3185 at 0307 carrying Overcome Ministries. (MacKenzie, CA)

WEWN, Alabama, 11520 at 0640 with a call-in pgm. (Maxant, WV)

Sudan Radio Service, 17745 via Portugal at \*1500 with local music and indigenous vocals, occasional AA anmts but mostly continuous African music. No EE heard. (Alexander, PA) 1506 (p) with vocals and instls and a handful of AA anmts. No EE heard. (D'Angelo, PA)

**VATICAN**—Vatican Radio, 7250 at 0505 with EE to Europe reporting on famine in the Horn of Africa, not //9660 to Africa. 9660 via Madagascar with EE ID for African Service at 0309, 9900 Via Novosibirsk at 1222 with on/off tone, 1230 IS and W with CC sign on, 11625 via Madagascar at 0345 beginning Somali pgm. Off suddenly



WBNY and Commander Bunny "present" their QSL to Rich D'Angelo.

**Welcome to HCJB Australia** Transmitting from Kununurra in the northwest of Australia. Lat 15°47'53" - Long 128°41'06"

Transmitted Melbourne  
TO: **Robert Brossell**  
We wish to thank you for your reception report. We acknowledge our appreciation with this verification.

Date	Time UTC	Frequency kHz
17 Sept 2011	1247-1300	15400

Robert Brossell, (WI) was pleased to get an HCJB Global QSL for reception of their 15400 transmission from Kununurra.

after IS at 0358, 11715 at 0430 with IS, trumpet calls, sign on in AA. (Sellers, BC) 9660 at 0520 on Pope's trip to Germany. (Maxant, WV) 11730 via Tashkent in Hindi at 0057. (Parker, PA) 15595 at 1624 with W and church news, brief interviews, IS at 1629 and off. (Coady, ON)

**VIETNAM**—Voice of Vietnam, 6175 via Canada in SS at 0315. (MacKenzie, CA) 9840-Sontay at 1245 in EE with M/W ancrs with music bridges. (Parker, PA)

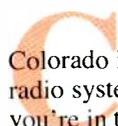
**ZAMBIA**—ZNBC, 5915 at 0244 with Fish Eagle IS, choral anthem, and local African music. (Alexander, PA)

CVC-One Africa, 4965 heard at 0415 with talk on the Bible. (Maxant, WV)

Hats off and high fives to the following good guys who checked in this month: Rich D'Angelo, Wyomissing, PA; George Zeller, Cleveland, OH; Mark Coady, Petersborough, ON; John Arthur, Belfast, NY; Charles Maxant, Hinton, WV; William Hassig, Mt. Pleasant, IL; Stewart MacKenzie, Huntington Beach, CA; Robert Wilkner, Pompano Beach, FL; Brian Alexander, Mechanicsburg, PA; Rick Barton, El Mirage, AZ; Harold Sellers, Vernon, BC; Charles Rippel, Chesapeake, VA; Rich Parker, Pennsburg, PA; Ralph Perry, Wheaton, IL; Jack Linonis, Hermitage, PA; and Robert Fraser, Belfast, ME. Sincere thanks to each of you! Until next month, good listening!

# Scanners Fly High in the Thin Air of Colorado

by Ken Reiss  
<radioken@earthlink.net>



Colorado is best known for the *Mile High City* of Denver and in fact, that's where most of the large radio systems in the state are to be found. But there's lots of conventional scanning statewide, so if you're in the area, see what you can hear!

*“There’s lots of conventional scanning statewide, so if you’re in the area, see what you can hear!”*

## Colorado State Patrol

The Colorado State Patrol (CSP) largely operates on the statewide Digital Trunked Radio System (DTRS), however it does maintain a few analog simplex frequencies, as well. It is not clear when those are used, but with the rugged terrain in the state, my guess is there are areas that are simply not covered well by the Trunked system.

*(IN DEPTH: For a detailed view of the CSP, visit: <<http://1.usa.gov/vSC3FN>>. – Ed.)*

A little bit of history: The CSP was established in 1935 under the name Colorado State Highway Courtesy Patrol and was at the time one of only four law enforcement agencies in the state.

Forty-four men were chosen as the initial force. Unfortunately, radios were not installed until 1949, so getting word to or from the officers was very difficult. One method was to phone gas stations along the route of the officer and relay the message of a call. The attendant would then post a red flag alongside the highway alerting the officer to stop. Seems like radios would have helped a lot, but the red flag method did work.

Today, the CSP has grown to more than 900 personnel, both sworn officers and civilians. The state is deploying a statewide digital trunked system to provide next generation communications to many agencies and communities statewide.

### Colorado State Patrol Conventional Frequencies:

Frequency	Tone	Description
154.90500		Statewide Aircraft
155.47500		NLEEC Statewide Interagency
154.69500		Statewide Tactical
460.42500		CLEER
154.28000		FERN 1
154.29500		FERN 2
154.26500		FERN 3
154.75500	151.4 PL	Grand County
154.93500		Pitkin County Dispatch
154.90500		Pitkin County Tactical 3
154.74000		Troop 4A
155.56500		Troop 4A
154.83000		Troop 4B Primary
154.77000		Troop 4B
154.93500		Troop 4C Primary
154.68000		Troop 4C TAC
155.73000	103.5 PL	Troop 4C - Eagle County
154.68000		Troop 5A
154.69500		Troop 5B Dispatch
154.84500		Alamosa County
154.90500		Alamosa County
154.75500	156.7 PL	Montrose (5C) Dispatch
155.84500		Troop 5C TAC
154.77000		Troop 5C
155.70000		Troop 5C
156.01500	156.7 PL	Troop 5C - Montrose County (Red Mtn. Pass)
155.50500		Troop 6 Simplex/Talkaround

155.44500		Troop 6B
154.69500	136.5 PL	Garfield County - Tactical
154.90500		Garfield County
154.93500		Garfield County - West
154.93500		Garfield County Dispatch
155.58000	136.5 PL	Moffat County

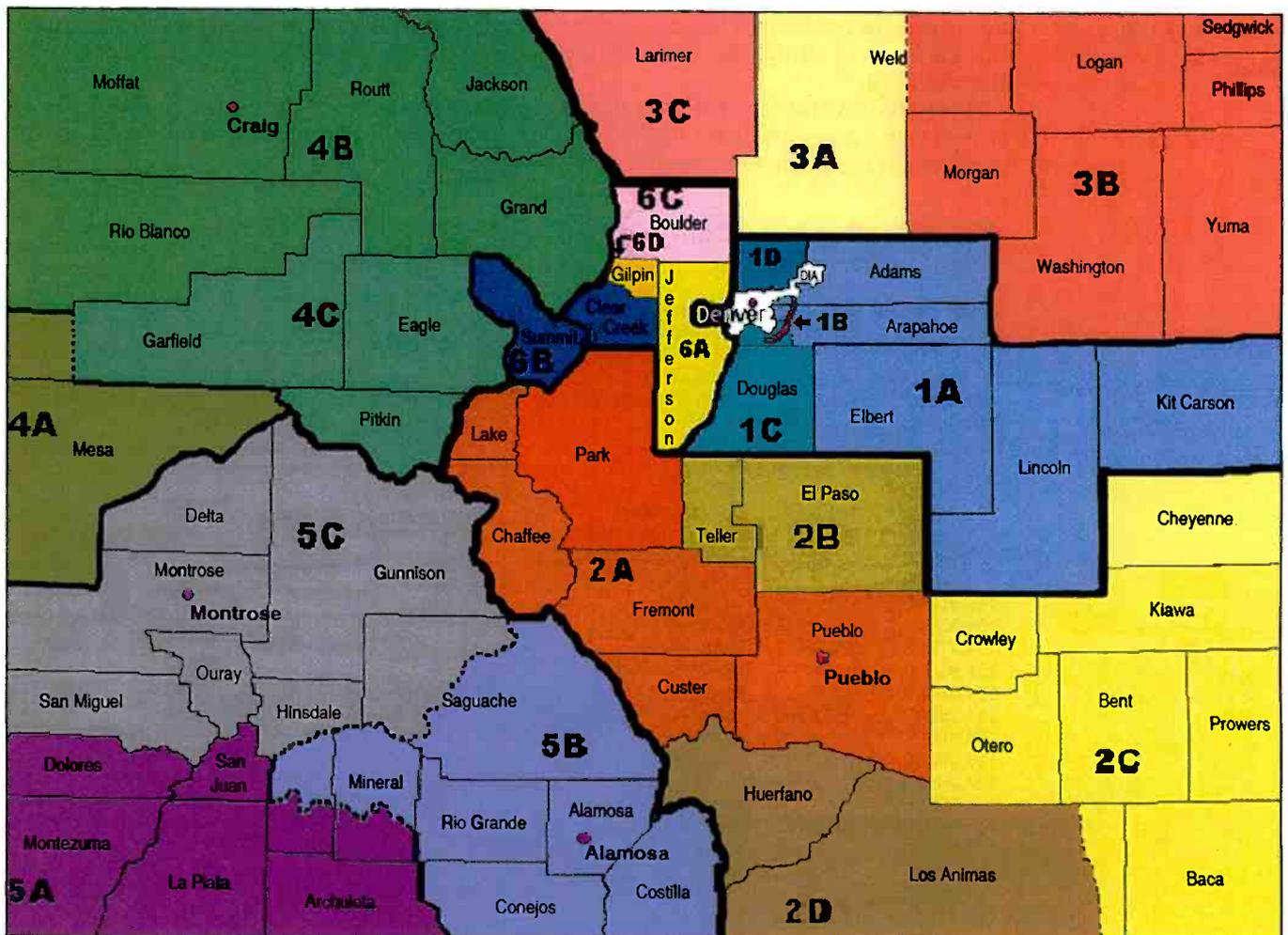
### Colorado Trunked System:

This system operates on APCO 25, so you'll need a digital scanner to hear it. Some channels may be encrypted, but it has not been widely reported.

### Frequencies for the system:

County	Freqs		
Arapahoe	851.2250	851.7750	852.1000
	852.3625	852.93750a	853.23750c
	853.43750a	853.66250a	
Jefferson	851.3500	851.6000	851.9250
	852.1750	852.5875	852.7375
	853.1750	853.3375	853.58750a
	853.91250c	854.1375	
Douglas	851.3000	851.8250	852.1375
	852.3875	852.7000	852.92500a
	853.20000a	853.52500c	
Douglas	851.0375	851.2750	851.6875
	851.97500a	852.31250a	852.90000a
			853.93750c
Gilpin	851.1250	851.6250	851.8000

Gilpin	852.0875 853.16250a 854.7125	852.2375 853.3375 855.5875	852.6625 853.55000a 856.0125	852.9875 853.97500c	Grand	851.1125 852.81250a	851.4375 853.83750a	852.28750a	852.56250c
Clear Creek	851.1625 852.1875 853.1125	851.4750 852.4500 853.45000a	851.6375 852.6250 853.61250a	851.8625 852.9500 853.85000c	Custer	852.3125 853.93750a	852.90000a	853.11250c	853.40000a
Arapahoe	764.9313 851.2750 852.2875 853.40000a	765.1813 851.4500 852.4750 853.62500a	765.4313 851.7375 852.7125 853.87500c	851.1125 852.1500 853.1750	Teller	851.6875 853.75000a	852.2250	853.30000a	853.53750c
Jefferson	851.1125 851.9875 852.4875 853.77500c 856.0625	851.4000 852.0375 853.06250a 854.1625 856.5125	851.4875 852.2000 853.41250a 855.4375 857.7875	851.6875 852.4125 853.48750a 855.8375	Prowers	851.7875 853.23750c	852.10000a	852.60000a	852.93750a
Denver	851.1500 853.67500a	851.9500 853.96250c	852.7000	853.47500a	Denver	770.2813 773.9063 852.81250a	770.6563 851.4375 853.70000c	770.9063 852.3625	772.5563 852.56250a
Douglas	852.1375 853.95000a	852.9750	853.25000c	853.50000a	Clear Creek	851.2250 853.43750a	851.77500a	852.36250a	852.87500c
Grand	851.2625	851.41250c	853.22500a	853.57500a	Lincoln	851.2375 853.31250a	851.85000a	852.72500a	853.13750c
Boulder	775.0563 851.3500 852.42500a	775.3063 851.6125 852.80000a	775.5563 851.9500 853.38750a	775.7938 852.1875 853.98750c	Elbert	851.1375 853.28750c	851.32500a	851.83750a	853.03750a
					Gilpin	851.4625 853.46250c	851.9625	852.46250a	852.96250a
					Las Animas	851.2000 853.2000	851.7250	852.78750c	853.0500



Here is a district map of Colorado State Patrol showing statewide distribution of police districts. (Courtesy of CSP)

Kiowa	851.0500 853.76250c	851.28750a	852.05000a	853.07500a	Huerfano	852.0875	852.23750a	852.66250a	853.55000c
Baca	851.6125 853.98750a	852.42500a	852.80000c	853.38750a	Prowers	851.1250 853.77500c	851.6375	851.8000	853.4125
Bent	851.1875 852.12500a	851.36250a	851.56250a	851.88750c	Park	851.2375 853.31250a	851.8500	852.72500c	853.13750a
Prowers	851.0375 853.06250c	851.40000a	852.20000a	852.41250a	Park	851.3000 953.52500a	851.8250	852.38750a	852.92500c
Kit Carson	851.7125	851.91250a	852.68750a	852.91250c	Arapahoe	774.3063 851.5375 853.51250c	774.5563 852.0375	774.8063 852.35000a	851.2125 852.6625
Las Animas	851.1625 853.61250c	851.8625 853.85000a	852.4500	852.62500a	El Paso	851.0500 852.78750a 855.2875	851.2000 853.05000c 856.0625	851.38750a 854.3625 856.6625	851.72500a 854.6625 856.8375
Huerfano	851.1500 853.47500a	851.9500 853.92500c	852.70000a	852.95000a	Fremont	851.0625 852.32500a	851.3125 852.96250a	851.7625 853.42500c	852.0625 853.97500a
Cheyenne	852.8875	853.35000a	853.65000a	853.90000c	Chaffee	851.1125 852.81250c	851.4375 853.70000a	852.28750a	852.56250a
Crowley	851.2250 853.43750a	851.7750 853.86250a	852.36250a	852.87500c	Custer	851.2500 852.46250a	851.4875 852.68750c	851.7125 852.91250a	851.9125 853.4875
Pueblo	851.5875 852.86250a	852.1000 853.27500c	852.37500a	852.65000a	Huerfano	852.1625 853.90000a	852.88750a	853.35000a	853.65000c
Kiowa	852.1375 853.95000c	852.97500a	853.25000a	853.50000	Park	851.42500a 853.98750a	851.7500	852.25000a	853.18750c
Arapahoe	852.1000	852.6000	852.93750c	853.23750a	Bent	851.7375 853.60000a	852.1500 853.87500a	852.71250a	853.17500c
Lincoln	851.0875 853.21250c	851.3375	852.43750a	852.75000a	Las Animas	852.2500 853.72500c	852.77500a	853.08750a	853.32500a
Pueblo	851.4625 853.16250a	851.9875 853.4875	852.48750a 853.70000a	852.9875 853.98750c	Las Animas	851.1375 853.28750c	851.32500a	851.83750a	852.33750a
Lincoln	851.2625	851.41250a	853.22500c	853.57500a	Fremont	851.6625 853.15000a	851.9375 853.46250a	852.5375 853.96250c	852.83750a
Baca	851.0625 852.32500a	851.31250a	851.76250a	852.06250c	Las Animas	851.2625 853.57500c	851.41250a	852.18750a	853.22500a
Otero	851.2125 853.51250a	851.53750a	852.35000a	853.26250c	Pueblo	851.0375 852.41250a	851.4000 852.60000c	851.7875 853.06250a	852.2000 853.23750a
					Pueblo	851.1875 852.12500a	851.3625 852.38750a	851.5625 852.93750a	851.8875 853.58750c
					Pueblo	851.3000 852.92500a	851.4750 853.33750c	851.8250 853.52500a	852.1750 853.91250a
					Lincoln	851.6625 853.15000c	851.93750a	852.53750a	852.83750a
					Arapahoe	769.2563 852.1750 856.3125	771.5563 852.6000 858.3125	773.1313 852.87500a 859.3125	851.7875 853.83750c 860.3125
					Pueblo	770.5938 772.26875a	771.0938 772.86875a	771.3438 773.39375c	771.99375a
					Pueblo	770.8438 772.5313	771.6063 772.86875a	771.99375a 773.6438	772.26875a 774.66875c
					Otero	851.2750 853.62500a	851.4500 853.83750a	851.97500a	852.47500c
					Crowley	851.1125 852.81250a	851.43750a	852.28750a	852.56250c



A Colorado State Patrol car is parked outside the agency's Denver headquarters. (Courtesy of O'Dea via Wikimedia)

Denver	769.4063 770.40625c	769.65625a	769.90625a	770.15625a	San Juan	851.2750 853.62500a	851.45000a	851.97500a	852.47500c
Denver	769.68125a	769.93125a	770.18125c	770.43125a	Montrose	852.3125 853.93750c	852.90000a	853.11250a	853.40000a
Elbert	771.3938 773.1938	771.6688 774.69375c	772.1938	772.6438	Grand	852.2125	853.03750a	853.56250a	853.80000c
Mesa	851.2375 853.31250c	851.8500 853.57500a	852.7250 853.83750a	853.13750a	Routt	851.3750 853.26250a	851.81250a	852.40000a	852.61250c
San Juan	852.1375 853.95000c	852.97500a	853.25000a	853.50000a	Lake	852.3750	852.65000a	852.86250c	853.27500a
Routt	851.3125	851.76250a	852.06250a	852.32500c	Lake	851.5750 853.63750a	852.57500a	852.85000a	853.10000c
Chaffee	851.1250 853.77500c	851.63750a	851.80000a	853.41250a	Delta	851.6125 853.98750c	852.42500a	852.80000a	853.38750a
Montrose	853.0625	853.42500a	853.70000a	853.88750c	Eagle	851.7375 853.87500c	852.15000a	852.71250a	853.17500a
Rio Blanco	851.2000	851.72500a	852.78750a	853.05000c	Rio Blanco	851.1250 853.77500a	851.63750a	852.80000a	853.41250c
Summit	851.2500 852.91250c	851.71250a	851.91250a	852.68750a	Routt	851.2750 853.62500c	851.45000a	851.97500a	852.47500a
Montezuma	851.5375	852.0375	852.35000a	853.51250c	Ouray	852.2500 853.72500c	852.7750	853.08750a	853.32500a
La Plata	851.3375	852.43750a	852.75000a	853.21250c	Moffat	853.18750a	853.46250a	853.66250c	853.82500a
Montrose	851.3750 853.26250c	851.81250a	852.40000a	852.61250a	Costilla	851.33750a	852.43750c	852.75000a	853.21250a
Garfield	851.4125 853.65000a 858.2625	852.1625 853.90000c 859.4375	852.88750a 854.8625	853.35000a 855.7375	Moffat	851.8625	852.62500a	853.61250c	853.85000a
Mesa	851.8625	852.62500a	853.61250a	853.85000c	Rio Grande	851.2000 853.58750a	851.47500a 853.91250a	852.17500a	853.33750c
La Plata	852.5750	852.85000a	853.10000a	853.63750c	Mesa	851.6625 853.15000a	851.93750a	852.53750a	852.83750c
Chaffee	851.3375 853.60000a	852.43750a	852.75000c	853.21250a	Gunnison	852.2250	853.30000a	853.53750a	853.75000c
Moffat	851.4375	852.28750a	852.56250c	852.81250a	Taos	851.1250 853.41250c	851.6375 853.77500a	851.80000a	852.07500a
Garfield	851.7875 853.23750c	852.10000a	852.60000a	852.93750a	Montrose	851.3500 852.73750c	851.60000a	851.92500a	852.58750a
San Miguel	851.6750	852.11250a	852.76250a	853.73750c	Eagle	852.1375 853.9500	852.9750	853.2500	853.50000c
Archuleta	851.8625	852.6250	853.61250c	853.85000a	Dolores	851.4625 853.96250c	851.96250a	852.46250a	852.96250a
Chaffee	851.1875 852.12500c	851.3625	851.56250a	851.88750a	Rio Blanco	852.1750	853.33750a	853.58750c	853.91250a
Moffat	851.4625 853.45000a	852.4500 853.97500c	852.9500	853.16250a	Eagle	852.2500 853.72500a	852.77500a	853.08750a	853.32500c
Mesa	851.2250 853.43750c	851.77500a	852.36250a	852.87500a	Delta	851.3000 853.52500a	851.82500a	852.38750c	852.92500a
La Plata	851.2375 853.31250a	851.85000a	852.72500a	853.13750c	Alamosa	851.3000 852.92500a	851.8250 853.52500c	852.38750a	852.67500a
San Miguel	851.1500 853.92500c	851.95000a	852.70000a	853.47500a	Fremont	852.10000a	852.60000a	852.93750c	853.23750a
Moffat	852.08750a	852.23750a	852.66250a	853.55000c	Saguache	851.3500 852.73750a	851.6000 853.83750a	851.92500a	852.58750c
Garfield	851.1500 853.22500a	851.4625 853.47500c	851.9500 853.92500a	852.70000a	Eagle	851.6875 853.75000a	852.2250	853.30000c	853.53750a
Mineral	851.0375 853.06250c	851.40000a	852.20000a	852.41250a					

Grand	851.6750	852.76250a	852.83750a	853.20000c
Summit	852.3125 853.93750a	852.90000a	853.11250a	853.40000c
Montrose	851.0625 852.32500a	851.31250a	851.76250a	852.06250c
Eagle	851.9000 853.88750a	852.07500a	853.42500a	853.70000c
Mesa	851.2500 852.91250a	851.71250a	851.91250a	852.68750c
Rio Grande	851.2125 853.51250a	851.53750a	852.03750a	852.35000c
Archuleta	851.1750 853.86250c	851.42500a	853.37500a	853.67500a
Gunnison	852.4500 853.97500a	852.95000a	853.16250a	853.45000c
Grand	851.0500 853.76250a	851.28750a	852.05000a	853.07500c
Gunnison	851.6250 853.55000a	852.08750a	852.23750a	852.66250c
Pitkin	851.1750 853.86250c	851.42500a	853.37500a	853.67500a
Routt	852.42500a	852.80000a	853.38750c	853.98750a
Mineral	852.1625 853.90000a	852.88750a	853.35000c	853.65000a
Chaffee	851.2750 853.62500a	851.45000a	851.97500a	852.47500c
San Juan	851.1125 852.81250c	851.43750a	852.28750a	852.56250a
La Plata	851.1375 853.28750c	851.32500a	851.83750a	852.33750a
San Miguel	851.63750a	851.80000a	853.41250a	853.77500c
Routt	851.2250 853.43750a	851.77500a	852.36250a	852.87500c
Montezuma	851.2000 853.20000a	851.72500a	852.78750a	853.05000c
Montrose	851.5500 853.71250c	852.67500a	853.12500a	853.36250a
Summit	851.3875 852.82500c	851.70000a	851.87500a	852.27200a
Eagle	854.2625 859.43750c	856.26250a	857.26250a	858.26250a
San Miguel	851.4875 853.48750a	851.98750a	852.48750a	852.98750c
Hinsdale	851.6500 853.80000a	852.21250a	853.03750a	853.56250c
Routt	851.2375 853.3125	851.8500	852.7250	853.13750c
Rio Blanco	851.0500 853.07500a	851.2875 853.76250c	852.05000a	852.46250a



This little cart is used by Denver for public safety events and public relations. Note the traffic sign mounted on the roof that can display moving messages.  
(Courtesy of Jeffrey Beall)

Garfield	851.2125 852.96250a	851.5375 853.51250a	852.03750c	852.35000a
Garfield	851.4875 853.48750c	851.98750a	852.48750a	852.98750a
Montrose	851.0500 853.76250a	851.28750a	852.05000a	853.07500c
Mesa	851.1125 852.81250a	851.4375 853.66250a	852.28750a	852.56250c
La Plata	851.6625 853.15000c	851.9375 853.83750a	852.53750a	852.83750a
Moffat	852.2500 853.72500c	852.7750	853.0875	853.3250
Delta	851.7375 853.87500a	852.15000a	852.71250a	853.17500c
Larimer	851.3750 852.61250a	851.5500 852.82500a	851.9000 853.26250c	852.33750a
Weld	851.4125 853.18750a	851.7750 853.66250c	852.25000a	852.63750a
Weld	851.6500 853.80000c	851.8125	853.03750a	853.56250a
Morgan	851.2250 853.43750c	851.7750	852.36250a	852.87500a
Washington	852.1375 853.95000a	852.97500a	853.25000a	853.50000c
Logan	851.0625 852.32500c	851.3125 852.5875	851.7625 852.88750a	852.0625 853.35000a

Washington	851.9500	852.70000a	853.47500c	853.92500a	El Paso	851.3750 856.98750a	852.1125 857.98750a	854.7125 858.98750a	856.7625 859.98750c
Logan	851.60000a	851.92500a	852.73750c		El Paso	851.5500 852.4000 853.38750a	851.6750 852.61250a 853.4625	851.8750 852.85000a 853.71250c	852.0750 853.1000
Adams	770.3563 771.7313 772.73125a	770.6063 772.1563 772.74375a	771.1063 772.4813 772.98125a	771.4813 772.4938 772.99375c	El Paso	854.3875 856.9625 857.9625 858.96250a 859.96250c	855.9625 857.4625 858.6125 859.4625	856.0125 857.7625 858.7625 859.76250a	856.9375 857.9375 858.9375 859.93750a
Larimer	851.3500 852.73750a	851.60000a	851.92500a	852.58750c	El Paso	851.1250 853.82500c	851.7000	852.21250a	853.12500a
Weld	851.4500	851.97500a	852.47500a	853.62500c	Teller	851.57500a 853.2625	851.81250a 859.7375	852.42500a	852.67500c
Weld	851.0375 853.13750a	851.2375 853.31250c	852.4000 853.57500a	852.72500a	El Paso	851.0750 852.3375 853.0750 853.76250a	851.6125 852.7625 853.3625 853.88750c	851.9000 852.8000 853.56250a	852.2750 853.63750a
Weld	852.1500	852.71250a	853.17500c	853.87500a	El Paso	852.2625 856.7375 859.23750c	855.4875 857.23750a	855.7375 857.73750a	856.4875 858.23750a
Logan	851.4875 853.48750c	851.98750a	852.48750a	852.98750a	El Paso	851.2875 853.66250a	852.05000a 853.73750c	852.63750a	853.1875
Morgan	851.5875 853.27500a	852.37500a	852.65000a	852.86250c	El Paso	853.8000	857.48750a	858.48750a	859.48750c
Yuma	851.9000 853.88750a	852.07500a	853.42500a	853.70000c	Park	851.2875 853.73750c	852.0500	852.63750a	853.66250a
Boulder	852.1375 853.95000c	852.97500a	853.25000a	853.50000a	El Paso	854.2625 857.21250a	855.2125 858.43750a	855.7125 859.43750c	856.4625
Larimer	851.0875 853.21250a	851.33750a	852.43750a	852.75000c	El Paso	852.6375 855.23750a	854.1125 855.93750a	854.28750a 856.23750c	854.4625 856.4625
Washington	851.3000 853.52500a	851.82500a	852.38750a	852.92500c	El Paso	854.0125 855.0875 859.81250a	854.1625 856.8125 860.81250c	854.3375 857.91250a	854.4875 858.81250a
Sedgwick	852.3125 853.93750a	852.90000a	853.11250a	853.40000c	<b>Mutual Aid Talkgroups</b>				
Washington	851.67500a	852.11250a	852.76250c	853.73750a	These talk groups will generally be heard only on sites in or near the appropriate mutual aid region when incidents require their use.				
Yuma	852.1500	852.71250c	853.17500a	853.87500a	<b>DEC</b>	<b>Description</b>			
Adams	770.6188 772.16875c	771.11875a	771.49375a	771.74375a	2286	Network First - Fire Mutual Aid NE Denver Metro			
Larimer	851.53750a	851.78750a	852.07500a	853.82500c	2287	Network First - Law Enforcement Mutual Aid NE Denver Metro			
Phillips	853.16250a	853.45000c	853.97500a		2297	Network First - Fire Mutual Aid SE Denver Metro			
Boulder	769.2938 773.88125a	770.3063 774.88125c	771.15625a	772.03125a	2298	Network First - Law Enforcement Mutual Aid SE Denver Metro			
Weld	771.8438 773.41875c	772.09375a	772.39375a	773.16875a	2288	Network First - Fire Mutual Aid SW Denver Metro			
Boulder	769.2813 772.91875a	769.5563 774.20625c	771.58125a	772.65625a	2290	Network First - Law Enforcement Mutual Aid SW Denver Metro			
Logan	851.4625 853.46250a	851.9625 853.96250a	852.46250a	852.96250c	2295	Network First - Fire Mutual Aid NW Denver Metro (Linked to 155.25 in Boulder)			
Larimer	851.0750 852.27500c	851.3250	851.72500a	852.1125	2296	Network First - Law Enforcement Mutual Aid NW Denver Metro (Linked to 156.03 in Boulder)			
Larimer	851.0750 852.76250a	851.3250 853.22500a	851.6750 853.73750c	852.11250a	34903	Network First - Denver Metro Command/Control-1			
Larimer	851.3875 852.85000a	851.5750 853.10000a	851.8750 853.28750a	852.5750 853.63750c	2299	Network First - Denver Metro Command/Control-2			
Larimer	851.1750 853.12500a	852.6750 853.36250a	852.7875 853.71250a	853.0500 853.88750c	2289	Network First - Statewide EMS Mutual Aid-1			
Larimer	851.8375 853.76250c	852.05000a	852.93750a	853.20000a	2291	Network First - Statewide EMS Mutual Aid-2			
					2292	Network First - Denver/Auraria/Glendale Mutual Aid			
					2293	Network First - Denver Metro Federal Mutual Aid			
					3997	Metro Net (Console to Console)			
					3998	NE Net (Console to Console)			
					3999	SE Net (Console to Console)			

8070 SW Net (Console to Console)  
 8071 NW Net (Console to Console)  
 4000 Metro Denver (Region 1)  
 4001 Metro Denver (Region 1)  
 4002 Metro Denver (Region 1)  
 4003 Metro Denver (Region 1)  
 4004 Northeast (Region 2)  
 4005 Northeast (Region 2)  
 4006 Northeast (Region 2)  
 4007 Northeast (Region 2)  
 4008 Southeast (Region 3)  
 4009 Southeast (Region 3)  
 4010 Southeast (Region 3)  
 4011 Southeast (Region 3)  
 4012 Southwest (Region 5)  
 4013 Southwest (Region 5)  
 4014 Southwest (Region 5)  
 4015 Southwest (Region 5)  
 4016 Northwest (Region 4)  
 4017 Northwest (Region 4)  
 4018 Northwest (Region 4)  
 4019 Northwest (Region 4)  
 4020 Statewide (All Regions)  
 8396 Southwest Regional Interoperability Channel-A (Region 5)  
 8397 Southwest Regional Interoperability Channel-B (Region 5)  
 8398 Southwest Regional Interoperability Channel-C (Region 5)  
 8399 Southwest Regional Interoperability Channel-D (Region 5)  
 8161 Statewide Hospital Emergency Room Mutual Aid  
 168 Statewide EMS Mutual Aid Channel

### Colorado State Patrol Talkgroups

DEC	Description
2459	Troop 1A Dispatch (E. Adams, E. Arapahoe, Elbert, Kit Carson, Lincoln)
2461	Troop 1A Tactical
2301	Troop 1C Dispatch (W. Arapahoe, Douglas)
2303	Troop 1C Tactical
2305	Troop 1D Dispatch (W. Adams)
2307	Troop 1D Tactical
2520	Troop 2A Dispatch (Chaffee, Custer, Fremont, Lake, Park)
2521	Troop 2A Tactical
2522	Troop 2B Dispatch (El Paso, Teller)
2523	Troop 2B - East Tactical
2519	Troop 2B - West Dispatch
2704	Troop 2B - West Tactical
2524	Troop 2C Dispatch (Baca, Bent, Cheyenne, Crowley, Kiowa, E. Las Animas, Otero, Prowers)
2525	Troop 2C Tactical
2526	Troop 2D Dispatch (Huerfano, Pueblo, W. Las Animas)
2527	Troop 2D Tactical
2451	Troop 3A Dispatch (W. Weld)
2453	Troop 3A Tactical
2477	Troop 3B Dispatch (Logan, Morgan, Phillips, Sedgwick, Washington, E. Weld, Yuma)
2479	Troop 3B Tactical
2455	Troop 3C Dispatch (Larimer)
2457	Troop 3C Tactical
8102	Troop 4A Dispatch (W. Garfield, Mesa)
8103	Troop 4A Tactical
8104	Troop 4B Dispatch (Grand, Jackson, Rio Blanco, Routt, Moffat)
8105	Troop 4B Tactical
8100	Troop 4C Dispatch (Eagle, E. Garfield, Pitkin)
8101	Troop 4C Tactical
8110	Troop 5A Dispatch (Archuleta, Dolores, S. Hinsdale, La Plata, Montezuma, San Juan)
8111	Troop 5A Tactical
8112	Troop 5B Dispatch/ARCC 1 (Alamosa, Conejos, Costilla, C. Hinsdale, N. Mineral, Rio Grande, E. Saguache)
8113	Troop 5B Tactical
8114	Troop 5C Dispatch (Delta, Gunnison, N. Hinsdale, Montrose, Ouray, W. Saguache, San Miguel)

8115 Troop 5C Tactical  
 2381 Troop 6A Dispatch (Jefferson)  
 2383 Troop 6A Tactical  
 2385 Troop 6B Dispatch (Clear Creek, Summit)  
 2387 Troop 6B Tactical  
 2694 Troop 6B Park Dispatch (Park)  
 2695 Troop 6B Park Tactical (Park)  
 2389 Troop 6C Dispatch (Boulder)  
 2391 Troop 6C Tactical  
 2401 Troop 6D Dispatch (Gilpin)  
 2403 Troop 6D Tactical  
 2362 Troop 8A Aircraft  
 2347 Troop 9B Dispatch (Executive Security Unit, Capitol Complex Security)  
 2361 Troop 9B Tactical  
 2397 Statewide  
 2441 Officer In Trouble  
 2405 District-1 Special Operations (Denver)  
 2407 District-6 Special Operations (Denver)  
 2703 District-3 Special Operations  
 8108 District-4 Special Operations (Western Slope)  
 8116 District-5 Special Operations - Durango (Craig Dispatch)  
 2393 HAZMAT  
 2696 Pueblo HAZMAT  
 8109 District-4 HAZMAT  
 8117 District-5 HAZMAT  
 2409 Denver Metro Dispatch  
 2439 Motorcycle Tactical  
 2399 Motor Carrier Safety  
 2363 CSP Headquarters  
 2437 Investigative Services Section

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# Flipping Out: See the Somersaulting Sun

by Tomas Hood, NW7US,  
<nw7us@arrl.net>

*“We expect an increase in coronal mass ejections as we move closer to the Sun’s magnetic somersault.”*

Every 11 years, the Sun’s magnetic field does a somersault. Normally, the Sun, like our planet, has a north and south magnetic pole. However, during the course of every solar cycle in which sunspots increase from the quiet period of solar cycle minimum through solar cycle maximum, then back to minimum, the Sun’s magnetic poles get all jumbled, with one virtually disappearing, and the opposite pole emerges to take its place.

Yes, the Sun will even have two north or south magnetic poles during this reversal period! During the last solar cycle, for example, the Sun’s southern magnetic pole migrated north and became a band of south magnetic flux around the Sun’s equator, while there were two solar north poles. This is a fairly normal side effect of the Sun’s magnetic dynamo reorganizing itself during the course of the solar cycle.

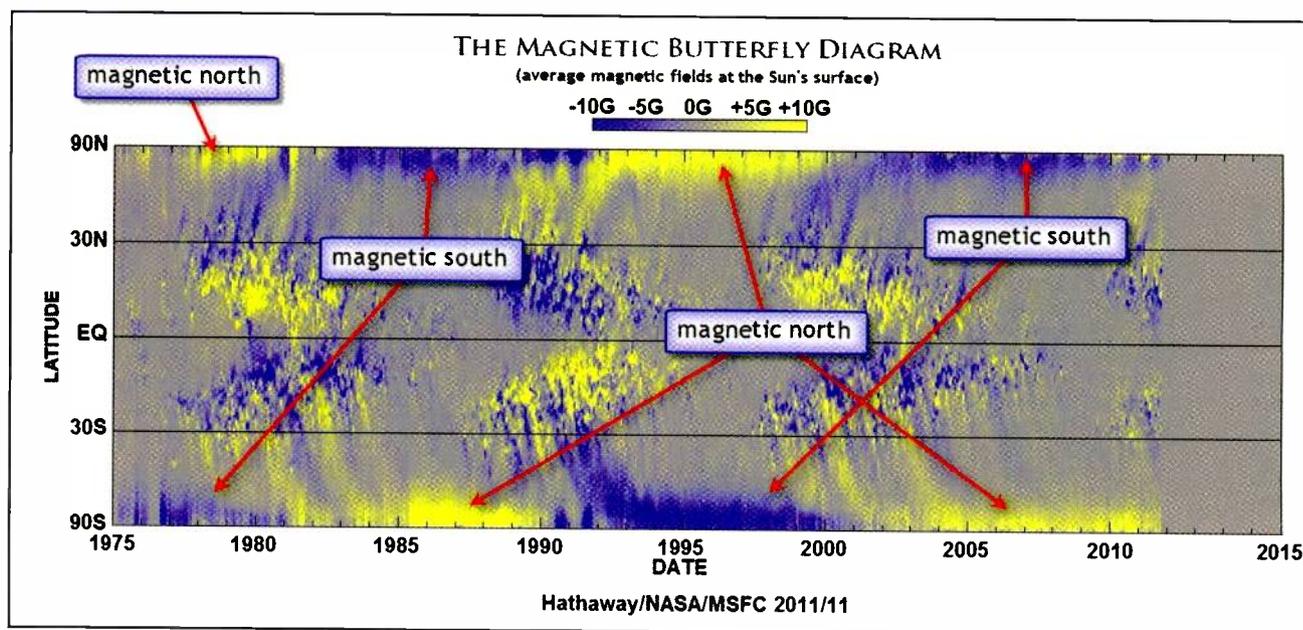
During the last solar cycle, Cycle 23, the Sun’s south magnetic pole migrated up to the solar equator in a complex pattern, but within a month (during May 2000) had returned to the Sun’s southern

spin axis. But it did not stay there. By 2001 the solar magnetic field completely flipped. The solar magnetic north pole became fixed at the southern solar spin axis, while the magnetic solar south pole became fixed at the northern solar spin axis. This will change sometime during this current solar cycle (Cycle 24), during the phase of the cycle when there will be maximum sunspot activity.

It takes about 11 years for the Sun’s activity to go from quiet to active and back again. Our study of the Sun in past solar cycles has revealed a normal reversal of the solar magnetic field, usually occurring near the period of maximum solar activity.

## How the Reversal Happens

Research with the Solar and Heliospheric Observatory (SOHO) spacecraft has revealed the process by which this reversal may be accomplished. Studies have revealed that coronal mass ejections (CMEs) play a major role in this rever-



**Figure 1.** In this “magnetic butterfly diagram,” yellow regions are occupied by south-pointing magnetic fields; blue denotes north. At mid-latitudes the diagram is dominated by intense magnetic fields above sunspots. During the sunspot cycle, sunspots drift, on average, toward the equator — hence the butterfly wings. The uniform blue and yellow regions near the poles reveal the orientation of the Sun’s underlying dipole magnetic field. Each solar cycle, the Sun’s magnetic poles flip — they reverse! (See text.) (Courtesy of David Hathaway, Marshall Space Flight Center/NASA)

sal. The Sun's magnetic flipping is the cumulative effect of more than a thousand of these huge eruptions that blast billions of tons of electrified gas into space. These CMEs carry the Sun's old magnetic field away, allowing a new one with a flipped orientation to form.

The data shows that it takes more than a thousand CMEs, each carrying billions of tons of gas from the Sun's polar regions, to clear the old magnetism away. When it's all over, the Sun's magnetic stripes are running in the opposite direction, the reversal of flipping of the Sun's magnetic poles complete.

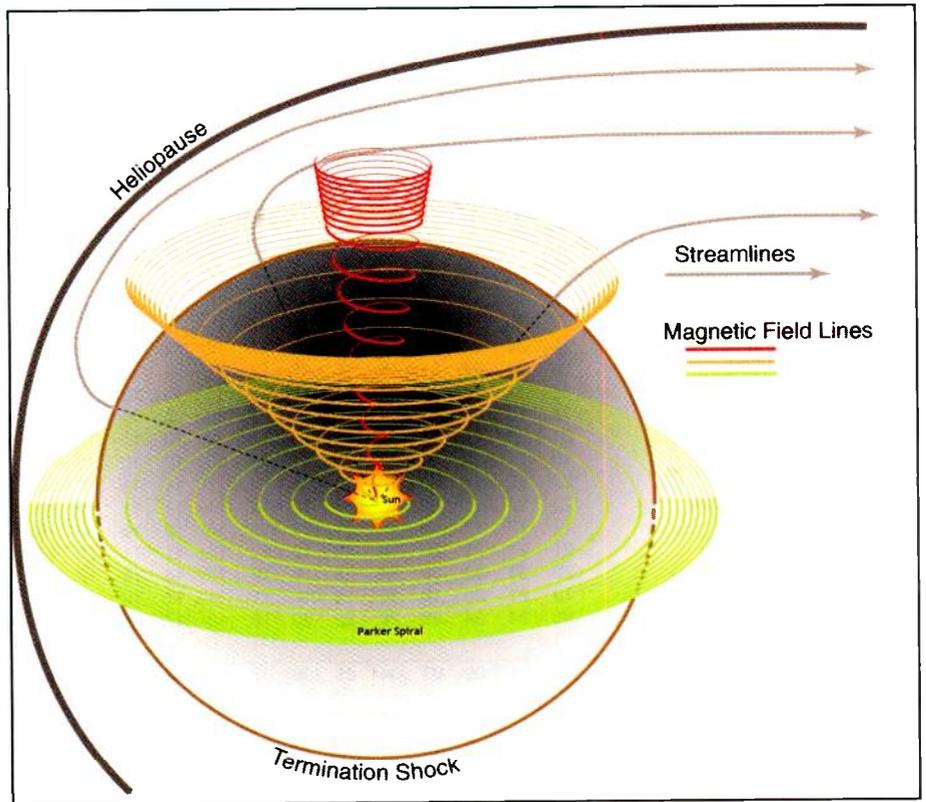
Apparently random CMEs turn out to be signs of the Sun's diligent housekeeping. It keeps sweeping away, out into space, untidy magnetic fields created by sunspots and other contortions in its atmosphere. It leaves the Sun with its main magnetic field completely overturned, and its north and south magnetic poles swapped around. The process can be long and drawn-out, and can be quite violent. The climax comes in a busy period of CME activity after the count of sunspots has peaked, every 11 years. We expect the peak for the current Cycle 24 sometime between 2013 and 2015. Therefore, we expect an increase in coronal mass ejections as we move closer to the Sun's magnetic somersault.

## What It Means to Earth

How does the Sun's magnetic pole reversal affect our planet? How does it affect the propagation of radio signals?

The Sun's magnetic field permeates the entire solar system, and beyond. This region is called the heliosphere. The magnetic field is called the Interplanetary Magnetic Field (IMF), which interacts with the Earth and is a primary cause of space weather. Sprawling out away from the Sun is a *current sheet* — a vast expanding surface where the polarity of the Sun's magnetic field changes from north (plus) to south (minus) — that is 10,000-km thick and extends past the orbit of Pluto. The entire heliosphere is organized around this giant sheet, which carries an electrical current that is about sixteen orders of magnitude less than that of the current carried in an ordinary light bulb.

Ordinarily, the current sheet circles the Sun's equator, spreading out in a wavy area that might resemble a dancer's skirt that flies up while the dancer is spinning around. During the period when the Sun has multiple south or north poles, the current sheet is radically disturbed. It is



**Figure 2.** The magnetic field of the Sun is carried outward by the solar wind. Because the Sun rotates, the field is drawn into Archimedean spirals. These spirals are shown here, for three magnetic field lines at solar latitudes of 6, 45 and 84 degrees north (green, orange and red, respectively). As the Earth orbits the Sun, it "wades" through the Parker Spiral, and is always exposed to the solar wind. Coronal mass ejections ride the solar wind and if the CME is Earth-directed, the CME will collide with the Earth's Magnetosphere, possibly triggering geomagnetic storms. (See text). (Courtesy of Steve Suess, NASA/MSFC)

altered so much that its topology changes from a skirt to a giant seashell.

As Earth orbits the Sun, it dips in and out of the wavy current sheet. On one side the Sun's magnetic field points north, or toward the Sun. On the other side it points south, or away from the Sun. South-pointing solar magnetic fields tend to cancel Earth's own magnetic field. Solar wind energy can then penetrate the local space around our planet and fuel geomagnetic storms. (We report the IMF's orientation using the  $B_z$  index. When the  $B_z$  is negative, it indicates a southerly-orientated IMF). During the Sun's reversal, we see a clear change in the predominant orientation of the IMF, going from, say, positive to negative, giving a clear rise to the number of geomagnetic stormy days.

As the reader knows, geomagnetic storms cause a degradation of radio signal propagation as a result of ionospheric recombination. This recombination is similar to what takes place during

the hours of darkness, with a lowering of the frequencies each ionospheric layer can refract.

On the other hand, a stormy geomagnetic field can spark auroras, which can support Aurora-mode VHF propagation. Geomagnetic storms can cause long-term (hours to days) degradation, or depression, of the maximum usable frequencies (MUFs), reducing the critical frequencies by as much as 50 percent of normal.

As we move closer to the solar cycle maximum, and the reversal of the Sun's magnetic poles, we see a normal rise in geomagnetic activity and the frequency of coronal mass ejections.

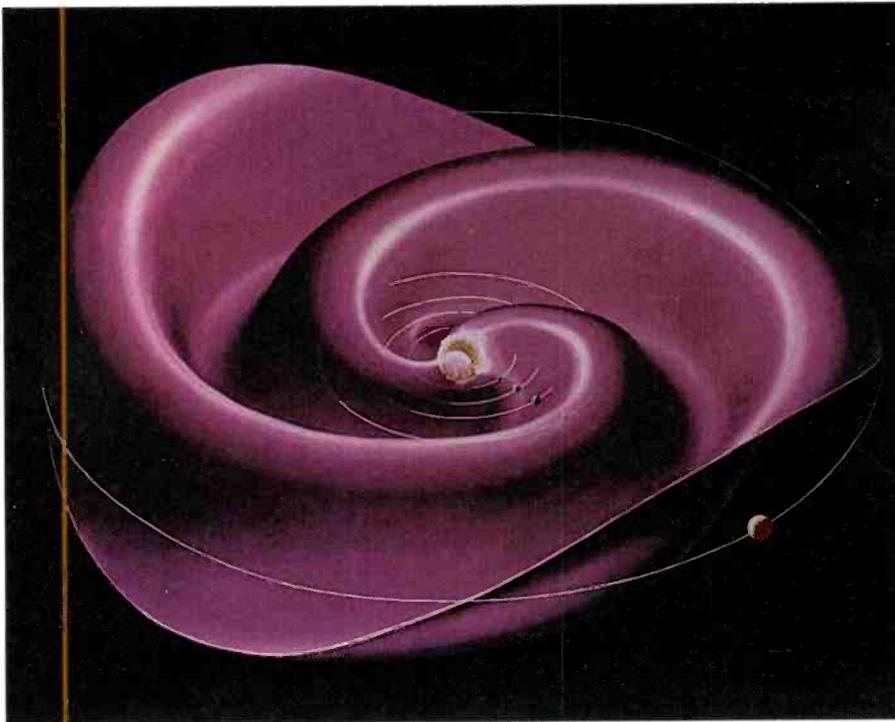
This will be a year of higher sunspot activity, but also of geomagnetic activity due to this increase in CME events.

## High Frequency Propagation

We are starting to approach the end of the winter season. The period of darkness

## Optimum Working Frequencies (MHz) - For February 2012 - Flux = 131, 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
<b>TO/FROM US WEST COAST</b>																								
CARIBBEAN	24	21	17	14	13	13	12	12	11	11	11	11	11	10	18	22	24	25	26	26	26	26	26	25
NORTHERN SOUTH AMERICA	33	31	27	20	19	18	17	16	16	15	15	15	14	14	20	27	30	32	34	35	36	36	35	34
CENTRAL SOUTH AMERICA	33	30	26	19	18	17	16	16	15	15	15	14	14	14	23	29	31	32	33	34	35	35	35	34
SOUTHERN SOUTH AMERICA	35	33	30	25	22	20	19	18	17	16	16	15	15	14	26	30	32	33	34	35	35	36	36	36
WESTERN EUROPE	11	10	10	10	10	10	10	10	10	10	10	10	10	10	13	17	18	19	18	17	16	12	11	11
EASTERN EUROPE	10	10	10	9	9	9	9	10	10	10	10	10	10	10	10	12	12	12	11	11	10	10	10	10
EASTERN NORTH AMERICA	26	24	20	15	15	14	13	13	13	12	12	12	12	12	20	24	26	27	28	29	29	29	28	27
CENTRAL NORTH AMERICA	15	14	13	10	8	8	8	7	7	7	7	7	7	7	7	12	13	15	15	16	16	16	16	16
WESTERN NORTH AMERICA	8	8	7	6	4	4	4	4	4	3	3	3	3	3	3	4	6	7	8	8	8	8	8	8
SOUTHERN NORTH AMERICA	25	24	21	16	14	13	13	12	12	12	11	11	11	11	11	20	23	25	26	27	27	27	27	26
HAWAII	23	23	22	21	19	16	13	12	11	11	10	10	10	10	9	9	16	19	21	22	23	23	23	23
NORTHERN AFRICA	11	11	10	10	10	10	10	10	10	10	10	10	10	10	15	18	19	20	21	19	13	12	12	11
CENTRAL AFRICA	14	13	13	12	11	11	11	10	10	10	10	10	10	10	14	17	19	20	20	17	16	15	15	14
SOUTH AFRICA	24	22	17	14	14	13	13	12	12	12	12	12	11	20	23	25	26	27	27	27	27	26	25	25
MIDDLE EAST	10	10	10	10	10	11	11	10	10	10	10	10	10	10	10	15	17	18	13	12	12	11	11	11
JAPAN	22	22	21	20	19	17	12	12	11	11	11	10	10	10	10	10	10	10	10	10	10	17	20	21
CENTRAL ASIA	22	22	21	20	19	17	12	12	11	11	11	10	10	10	10	10	10	10	13	13	12	12	17	22
INDIA	17	17	17	16	13	11	11	10	10	10	10	10	10	9	9	9	10	10	10	9	9	11	14	16
THAILAND	21	21	21	20	18	16	12	12	11	11	11	10	10	10	10	10	10	14	14	14	13	13	13	12
AUSTRALIA	29	30	32	32	29	25	19	18	17	16	16	15	15	14	14	14	19	18	17	18	22	24	27	
CHINA	19	21	20	19	18	15	12	11	11	11	10	10	10	10	10	10	10	10	10	10	10	10	10	16
SOUTH PACIFIC	33	34	34	32	29	22	20	19	18	17	16	16	15	15	15	14	18	18	18	22	25	28	30	32
<b>UTC TO/FROM US MIDWEST</b>																								
CARIBBEAN	26	23	19	18	16	16	15	14	14	13	13	12	12	19	24	27	29	30	31	31	31	30	30	28
NORTHERN SOUTH AMERICA	30	27	23	21	20	18	17	16	15	15	14	14	13	18	23	26	28	30	32	33	33	33	33	31
CENTRAL SOUTH AMERICA	31	28	23	21	20	19	18	17	16	16	15	15	15	14	27	29	31	32	33	34	35	35	35	34
SOUTHERN SOUTH AMERICA	34	31	27	24	23	21	20	18	18	17	16	16	15	16	26	28	30	32	33	34	35	35	36	35
WESTERN EUROPE	11	10	10	10	10	10	10	10	9	10	10	10	10	16	19	20	20	20	19	18	17	14	12	11
EASTERN EUROPE	10	10	10	10	10	10	9	10	10	10	10	10	10	14	16	16	16	15	14	11	11	10	10	10
EASTERN NORTH AMERICA	18	16	11	11	10	10	9	9	9	9	9	9	9	13	17	19	20	21	21	21	21	20	20	20
CENTRAL NORTH AMERICA	9	8	7	5	5	4	4	4	4	4	4	4	4	4	7	8	9	9	9	10	10	10	9	9
WESTERN NORTH AMERICA	15	14	13	10	9	8	8	7	7	7	7	7	7	7	12	14	15	15	16	16	16	16	16	16
SOUTHERN NORTH AMERICA	17	16	14	10	9	9	9	8	8	8	8	8	8	8	13	16	17	18	19	19	19	19	18	17
HAWAII	27	26	24	22	16	14	13	13	12	12	12	11	11	11	11	11	20	23	25	27	27	27	27	27
NORTHERN AFRICA	14	13	12	11	11	11	10	10	10	10	10	10	12	18	20	21	22	23	23	23	19	15	15	14
CENTRAL AFRICA	14	13	12	11	11	11	10	10	10	10	10	10	12	18	20	21	22	23	23	21	18	17	16	15
SOUTH AFRICA	24	19	18	17	16	15	15	15	14	14	14	19	27	31	33	34	35	35	35	34	32	29	26	26
MIDDLE EAST	10	10	10	10	10	10	10	10	10	10	10	10	10	16	19	20	21	19	16	13	12	11	11	11
JAPAN	21	21	19	17	12	12	11	11	11	10	10	10	10	10	10	10	10	10	10	10	10	16	19	21
CENTRAL ASIA	21	20	19	17	12	12	11	11	11	10	10	10	10	10	10	12	13	13	13	12	12	13	22	22
INDIA	13	15	14	12	11	11	11	10	10	10	10	10	10	10	14	17	16	14	11	11	10	10	10	10
THAILAND	20	19	18	15	12	11	11	11	10	10	10	10	10	10	10	14	15	15	14	14	13	13	13	12
AUSTRALIA	29	31	31	28	21	18	17	17	16	15	15	15	14	14	14	16	20	19	18	17	19	22	25	27
CHINA	18	19	18	15	12	11	11	11	10	10	10	10	10	10	10	11	11	10	10	10	10	10	10	14
SOUTH PACIFIC	34	34	31	28	22	21	19	18	17	17	16	15	15	15	14	20	19	18	20	24	27	29	31	33
<b>UTC TO/FROM US EAST COAST</b>																								
CARIBBEAN	21	17	16	15	14	13	12	12	11	11	11	10	13	18	21	23	24	25	25	25	25	25	24	23
NORTHERN SOUTH AMERICA	27	25	22	20	19	17	16	15	14	14	13	13	14	19	22	25	26	28	29	29	30	30	29	28
CENTRAL SOUTH AMERICA	31	28	25	23	21	20	19	18	17	16	16	15	22	25	27	29	31	32	33	34	34	35	35	33
SOUTHERN SOUTH AMERICA	33	30	28	25	23	22	20	19	18	17	16	16	18	24	27	29	31	32	33	34	35	35	36	35
WESTERN EUROPE	11	10	10	10	9	9	9	9	9	9	9	14	18	19	20	21	21	20	20	19	17	15	11	11
EASTERN EUROPE	10	10	10	10	10	10	9	9	10	10	10	12	17	19	19	19	19	18	17	16	13	11	11	11
EASTERN NORTH AMERICA	8	6	5	5	5	5	4	4	4	4	4	4	5	8	9	10	10	10	10	10	10	10	10	9
CENTRAL NORTH AMERICA	19	16	12	11	11	10	10	10	9	9	9	9	9	14	18	20	21	22	22	22	22	21	20	20
WESTERN NORTH AMERICA	26	24	20	15	15	14	13	13	12	12	12	12	12	12	21	24	26	28	29	29	29	29	28	28
SOUTHERN NORTH AMERICA	21	18	14	13	12	12	11	11	10	10	10	10	10	10	15	19	21	23	24	24	24	24	23	22
HAWAII	27	25	21	16	15	14	14	13	13	13	12	12	12	12	13	13	12	22	26	28	29	30	29	28
NORTHERN AFRICA	14	13	13	13	12	12	12	12	12	12	12	12	21	24	27	28	29	29	29	27	25	21	16	14
CENTRAL AFRICA	15	14	14	13	13	13	12	12	12	12	12	12	21	25	27	28	29	29	28	26	23	20	18	17
SOUTH AFRICA	23	21	20	19	18	17	16	16	15	15	15	22	29	32	34	35	35	35	35	35	34	32	29	26
MIDDLE EAST	13	12	11	11	11	10	10	10	10	10	10	16	19	21	22	23	23	23	21	16	15	14	14	13
JAPAN	19	17	12	12	11	11	11	10	10	10	10	10	10	11	10	10	10	10	10	10	10	10	10	10
CENTRAL ASIA	18	16	12	12	11	11	11	10	10	10	10	10	10	15	14	14	13	13	13	12	12	12	12	20
INDIA	10	10	10	10	10	10	10	10	10	10	10	10	14	18	18	17	17	16	15	12	11	11	10	10
THAILAND	15	12	12	11	11	11	10	10	10	10	10	10	12	17	18	16	16	15	14	14	13	13	13	12
AUSTRALIA	30	30	25	19	18	17	17	16	15	15	15	14	14	14	23	21	20	19	18	17	19	23	25	28
CHINA	16	13	12	11	11	11	10	10	10	10	10	10	10	12	11	11	11	10	10	10	10	10	10	10
SOUTH PACIFIC</																								



**Figure 3.** As the Sun rotates, its magnetic field twists into a Parker spiral, a form of an Archimedean spiral, named after its discovery by Eugene Parker. As the spiraling magnetic sheet changes polarity, it warps into a wavy spiral shape that has been likened to a ballerina's skirt. The cause of the ballerina spiral shape has sometimes been called the "garden sprinkler effect" and likened to holding a lawn sprinkler, and moving it in your hand vertically up and down, while your body rotates. The stream of water represents the solar wind, and moves radially outward at all times. The Earth is always moving through the Parker spiral, exposed to the solar wind and the Interplanetary Magnetic Field (IMF). When the IMF is oriented "southward", it "reconnects" with the Earth's magnetic field, and a sort of window opens in our atmosphere through which solar plasma riding on the solar wind (such as coronal mass ejections) enters, then follows the Earth's magnetic field lines down to the North and South poles, triggering geomagnetic disturbances and storms, and possibly aurora. (Courtesy of NASA)

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. That's helpful in overcoming the increasing geomagnetic activity expected.

Additionally, noise levels are still low, so reliable DX is possible. The solar activity is finally high enough to provide HF ionospheric propagation on higher frequencies — even some low-VHF. F-region propagation has been observed since late 2011.

General conditions are expected to be good to excellent for HF propagation throughout February. Specifically, 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 layers to drift upward and add to the F<sub>2</sub> region. The F<sub>2</sub>

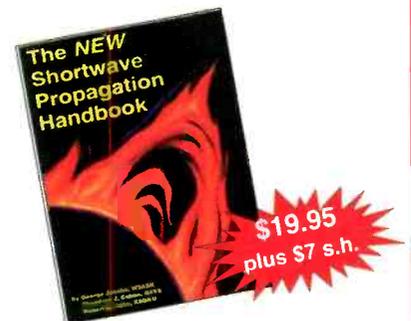
region contains the maximum ion density (foF<sub>2</sub>), which usually defines the maximum usable frequency (MUF) for DX paths.

Throughout these winter months, the foF<sub>2</sub> increases slowly day-by-day until it reaches the highest monthly average of the year sometime during this quarter.

On the shortwave bands above 22 meters, expect paths to 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.

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 NEW Shortwave Propagation Handbook



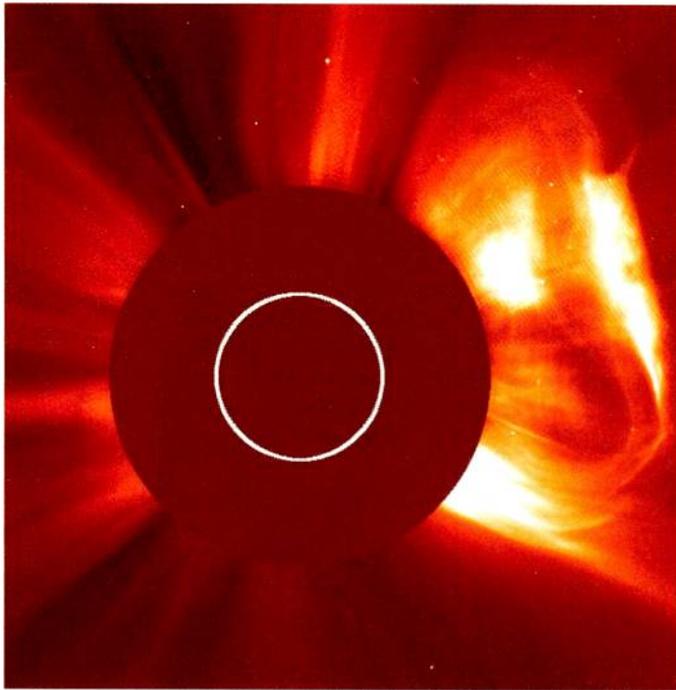
- Principles of ionospheric propagation
- Solar cycle predictions
- Stunning photography
- Ionospheric forecasting
- Specific predictions for Cycle 23
- Analysis of HF propagation prediction software
- Unusual HF and VHF ionospheric propagation
- Expansive references and data sources
- How to access NOAA's geophysical databases
- "Do-it-yourself" propagation predictions/charts
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**Figure 4.** On November 26, 2011, a solar flare hurled a coronal mass ejection (CME) at about 930 km/s or 2 million mph into space. This fast moving CME impacted Earth on November 28. The impact of the ionized particle cloud triggered a geomagnetic disturbance, in turn causing a degradation of shortwave radio propagation. (Courtesy of LASCO C2/NASA)

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.

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 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. With the higher sunspot numbers, the possibility for some low-VHF, F-region propagation exists on paths such as between Eastern USA and Western Europe.

Auroral activity often occurs during periods of geomagnetic storminess. Look for days where the planetary K index ( $K_p$ ) reaches 6 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 2011 is 88.0. The lowest daily sunspot value of 48 was recorded for October 8. The highest daily sunspot count was 136 on October 21. The 12-month running smoothed sunspot number centered on April 2011 is 41.8. A smoothed sunspot count of 79, give or take about 9 points, is expected for February 2012.

**The Dominion Radio Astrophysical Observatory** at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 137.2 for October 2011. The 12-month smoothed 10.7-cm flux centered on April 2011 is 100.4. The predicted smoothed 10.7-cm solar flux for February 2012 is 131, give or take about 9 points.

**The observed monthly mean planetary A-Index ( $A_p$ )** for October 2011 is 7, which is quiet. The 12-month smoothed  $A_p$  index centered on April 2011 is 7.5. Expect the overall geomagnetic activity to be varying greatly between quiet to stormy during February. Refer to the Last Minute Forecast published in *CQ* magazine or on the author's website <<http://sunspotwatch.com>> for the outlook on what days that this might occur.

## I'd Like to Hear From You

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. On Twitter, please follow @NW7US (and if you wish to have an hourly-automated update on space weather conditions and other radio propagation-related updates, follow @hfradio-spacewx). I invite you to visit my online propagation resource at <<http://sunspotwatch.com/>>, where you can get the latest space data, forecasts and more, all in an organized manner. If you are on Facebook, check out <<http://www.facebook.com/spacewx.hfradio>> and <<http://www.facebook.com/NW7US>>.

Speaking of Facebook — check out the *Popular Communications* magazine fanpage at <<http://www.facebook.com/PopComm>>. This is a great place for the *Popular Communications* community, for you, to participate and share information, tips, DX spots, and photos of your antennas, radios, or your excursions into the field with your radio gear for that DX hunting trip.

Until next month,

73 de NW7US, Tomas Hood  
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@NW7US  
@hfradiospacewx  
(P.O. Box 1980, Hamilton, Montana 59840)

# Expecting the Unexpected: Around the Home and the Radio

by Kirk Kleinschmidt, NTØZ  
<kirk@cloudnet.com>

*“If you instill good habits up front you’ll lessen the chances of serious consequences later on.”*

The onset of winter in Southeastern Minnesota offers useful insights into the nature of an often overlooked aspect of amateur radio: Safety, and more specifically, *planning* for safety. That can also be thought of as *expecting the unexpected*.

It’s late November as I write this month’s column, and we Minnesotans had been lucky so far with generally warm and hospitable fall weather. No Halloween blizzards, no ice-covered roads, no Thanksgiving travel madness or 50-car pileups. Just plenty of, “Hey, I can still ride my bicycle this late in the season?” It’s the kind of weather that garners few complaints. *Until today*.

I had been busy the past two weekends cleaning out the garage so I could — for once — park a car inside. What a concept! As I looked outside this morning, however, I knew my efforts had come up a bit short.

Although it wasn’t exactly a raging blizzard, it was snowing and “raining ice” in a way that signaled asphalt would be as slippery as a lumpy skating rink. Contrary to popular belief, everyone in Minnesota does not own a Zamboni! (*WATCH: A backyard rink Zamboni in action: <<http://bit.ly/tPat13>>. — Ed.*

## Nothing Unusual, Until . . .

Having endured many Minnesota winters, I wasn’t surprised, just disappointed. Where’s Global Warming when you need it, anyway? This uncomfortable weather was in my personal comfort zone. I knew what to expect, how to prepare, how to dress, how to safely navigate across the slippery surface, the whole nine yards.

Before heading to the external garage I put on a jacket with a built-in hood, leather gloves and my “traction boots” that I use for shoveling and snow blowing chores. As I stepped outside I carefully tested the icy-looking sidewalk for the tell-tale textural signs that indicate the *Midwestern Coefficient of Friction* which, if violated, is coldly unforgiving. This traction test is important because pavement can look icy when it’s merely wet, and if you get caught doing the “ice walk” on pavement that isn’t actually icy, you’re subject to ridicule!

Sure enough, the sidewalk was icy, and my experience-based testing told me that the ice walk was indeed necessary, so I carefully made my way toward the garage looking like an overdressed

ninja stalking some unseen prey. Things were going quite well until . . . *Boom!* I found myself on the ground looking up at the sky!

Thankfully, I wasn’t hurt. And because nobody came to investigate, I’m pretty sure nobody in the condo-plex saw me hit the deck, which eliminates the uneasy teasing that follows many such incidents. The worst possible outcome would be if someone saw me go down but didn’t respond . . . Therefore, I choose to believe that I was the only participant!

Despite years of experience, proper preparation and training, plenty of sleep, no drugs or alcohol, and a careful, measured approach to the task at hand, I was still flat on my back with my face serving as a backstop for an unending stream of ice pellets!

## Safety Considerations for the Radio Amateur

Ham radio can be that way, too, and every year a few of us are killed when we get in over our heads or are simply caught by surprise. Like icy sidewalks, high-voltage AC mains and high-powered RF are coldly unforgiving.

As I proved by hitting the deck this morning, even the most experienced among us can still go past the point of no return. Still, as hams we must be properly trained, prepared and equipped when doing those things that can cause death or injury. And no matter how experienced and prepared we may be, we must always expect the unexpected.

For most of us, safety is a boring topic:

- **Fun:** Working DX.
- **Not:** Worrying about the rats’ nest of wires that run behind your radio gear.
- **Fun:** Making contacts via a new digital mode.
- **Not:** Setting your shack up in a way that maximizes electrical and RF safety for you and your family.
- **Fun:** Putting up a new tower and antenna (relatively).
- **Not:** Installing sufficient lightning protection.

You get the idea. The word on the street is: “Fun, good; safety, boring!”

True as that might be in the modern era. Take

a minute to realize that ham radio — interesting, fun and friendly though it is — can kill you in a jiffy if you don't play it safe.

It mostly comes down to common sense, good habits, and observing "good amateur practice." And if you instill good habits up front you'll lessen the chances of serious consequences later on.

## What Not to Do

Anyone who's been around DIY (do it yourself) hams long enough will have amassed a collection of safety-related horror stories. Mine isn't extraordinarily long, but there are some real shockers on it (pun intended), including some antics from my years as a teenage ham.

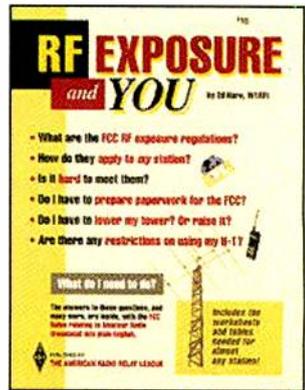
When I was helping a company set up rural wireless Internet nodes, I was shocked to learn that the techs routinely bolted 30-foot Rohn 25-style towers to the tops of 90-foot grain silos, and they'd work at the top of the now-bolted-on towers with no guy wires in place and a "seat-of-the-pants," non-standard "mount" attaching the whole mess to the silo.

When the tech mentioned he had installed 30 of these things I actually told him I was surprised he was still alive!

As a teenager, my garden-variety dipole was hit by lightning, which melted its four-inch sewer pipe mast — lots of current! — causing the upper portion to fall to the wooden porch deck with a boom that rivaled the thunderclap that followed.

RG-8 coax ran from the antenna feed point, through a basement Plexiglas window, to a home-brew antenna tuner in my

**Photo A.** As hams, we're used to thinking about electrical safety, but we need to pay more than lip service to understanding and meeting the FCC's RF exposure regulations for amateur radio installations. Now in its third printing, the ARRL's 320-page *RF Exposure and You* provides simple step-by-step instructions and worksheets to help you determine if your station complies with the rules. Beyond mere compliance, you'll also know that you, your family and your neighbors are safe! The book is available from your libraries, amateur radio booksellers or from: <<http://www.arrl.org>>.



basement shack. The tuner had exploded into small fragments and was scattered around the room.

The coax was "melty" in several spots along its length and had to be replaced. A beefy, bare copper ground wire that ran along the basement block wall was intact, but a searing black arc traced its path along the wall. Thankfully disconnected at the time, my trusty Tempo One transceiver was undamaged. All this from what I'm sure wasn't a direct lightning strike.

My station had the same rudimentary (read that: *minimal*) lightning-protection features used by most hams — a heavy wire running from my gear to an existing electrical safety ground. It's better than nothing, but it's still not very good. Proper lightning-protection techniques can be expensive and tedious to install, but are worth it in the long run if you value life and property. A good place to start your search for safety-related information is: <<http://www.arrl.org/safety>>.

Years later I had just moved into a house and hadn't had time to install my ham gear. Good thing, as that house had a major lightning event. A nearby strike pumped enough current into the AC mains to turn the underground wires between the utility pole and my basement service panel into a fuse! Yes, those giant wires (probably 4-gauge) melted through. Every electrical device in the house, from the TVs to the well pump, was slagged. After grouching about my insurance deductible it was Christmas in July!

Radio amateurs are killed every year when the vertical antennas they're installing accidentally touch overhead power lines or the towers they're working on fail in some way. A lifelong ham with thousands of hours behind the key and test bench was fatally shocked when he touched a high-voltage line inside his linear amplifier.

The powerful jolt burned a hand completely off his body. More than a few hams have been killed by lightning strikes. And recently, two prominent contesters were killed in separate tower incidents.

Remember: It doesn't take high voltage to cause death or injury. Lower voltages can also be deadly, and strong RF fields can cause severe burns and can damage tissues and organs. Working on rooftops and towers also calls for caution and common sense.

Although it involves electrical wires, hot soldering guns and plenty of RF, amateur radio isn't an overly dangerous hobby, especially if you use your head. Learning and practicing the

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right safety techniques isn't a guarantee of safety, but it's a step in the right direction that we should all take.

## The Right Information

Every *ARRL Handbook* and *ARRL Antenna Book*, published since the dawn of the radio era, has a ton of good advice on safety and safe amateur practices (electrical, RF and physical). If you don't have a copy, your nearest library probably does.

For targeted, helpful information about ham safety, especially RF safety, point your web browser to: <http://bit.ly/vgNDYb>. That's a URL with especially good information. Among the many PDFs and linked resource pages you'll find

*RF Exposure and You*, **Photo A**, a definitive book written by my old friend Ed Hare, W1RF1.

And to the lists of good advice you'll find above, I'd like to remind everyone who uses mobile ham radio gear to be especially vigilant and attentive while driving! Death and destruction on America's roadways are following in the wake of increasing smart phone and tablet computer usage.

Make sure you're not part of the problem — and be extra alert for people texting and playing Angry Birds while driving.

Yes, this safety stuff can be a bit boring, but it's in your best interest to sit up and pay attention! As for me, I'm thinking about adding crampons to my traction boots!

## New Rules and Modes for 60 Meters

In my August 2011 column I hinted that the FCC was thinking about taking action on ET Docket 10-98, which addressed possible changes to the amateur service rules for 60 meters. On November 18, the word was given: New modes, greater output power and a new "frequency" would become reality for ham radio's only channelized allocation at HF.

Formerly limited to five discreet channels, USB voice and 50-W ERP, the Commission's changes swap a less-busy channel for an always-busy channel, increase power output to 100 watts — in line with typical ham transceivers — and add CW, PSK and PACTOR-III emission modes. (**WATCH/LISTEN:** *To a 60-meter USB contact between K8NG/7 and KD6HDX at:* <http://bit.ly/tlJSA> — Ed.)

If you haven't read it by now, full details can be found at: <http://fcc.us/vOHkSr>.

Because amateur use of 60 meters was originally granted on a secondary, shared basis as an emergency communication "bridge" between 80 and 40 meters — and because FCC bureaucrats have to appease commercial and government (NTIA) primary users — the way these new changes are implemented are a bit unusual. Some just don't seem to make much sense at all!

Exchanging a busy channel (5368 kHz) for a quiet channel (5358.5 kHz), **Photo B**, and increasing power output levels are straightforward decisions. The way CW, PSK31 and PACTOR-III are accommodated — not so much! As hams, we know that we can fit several CW and PSK31 QSOs comfortably into the bandwidth occupied by a single USB voice channel, but the FCC, siding with the NTIA, is apparently allowing only a single carrier in the center of each "channel," limiting the usefulness of the newly allowed modes. And PACTOR-III, a closed-source, proprietary HF data mode, barely qualifies as an amateur mode at all.

The FCC thinks PACTOR-III communications may one day be interoperable with government disaster communication efforts in the field, but I have my doubts. If the horrible mess that defines APCO 25 public safety "interoperability" after the 9-11 attacks is any indication, PACTOR-III will never be a bridge between ham and government emergency communicators. It will, however, undoubtedly confuse many government and ham operators who hear PACTOR-III signals on any of the shared 60-meter channels. My guess is that everyone will assume the signals to be governmental in nature!

Many hams who commented on the proceedings pointed



**Photo B.** Welcome to the newest amateur radio frequency available to U.S. hams: 5358.5 kHz. As soon its official use is cleared by the FCC you might hear CW, PSK31, PACTOR-III or USB voice communications on the newest addition to the 60-meter ham "band." (As with the other 5-MHz ham channels you probably won't set your ham transceiver to this exact frequency.) See text for more information. —NTØZ

out that PACTOR-III isn't an inherently narrowband mode, tends to be disruptive in typical amateur HF operating environments, more than 99 percent of all hams can't even decode PACTOR-III to identify its traffic on frequency. It's expensive, proprietary and closed-source. Despite the logic, the FCC wasn't persuaded!

Oh, well. Sixty meters has been an usual creature from Day One, and its inception certainly didn't cause a mass migration. In fact, in many parts of the country it's difficult to even hear an occasional QSO. So, PACTOR-III and a few additional odd *rules of the road* aside, these changes can only expand our ability to use those five interesting channels at 5 MHz.

Be sure to follow up regarding the exact implementation date of these changes and any last-second additions or fixes. Who will log the first PACTOR-III to Morse code QSO?

—NTØZ

## This Month's Feedback from Pop'Comm Readers

### From Hedy Lamarr to the Monitoring Station Program, and More

*Pop'Comm appreciates and encourages comment and feedback from our readers. Via email, please write: <editor@popular-communications.com>. Our postal service address is: Editor, Popular Communications, CQ Communications, Inc., 25 Newbridge Rd., Hicksville, NY 11801-2953 USA. – Richard Fisher, KI6SN*

#### About 'Spread Spectrum,' and Heads-Up On Hedy

Editor, *Pop'Comm*,

I enjoyed Kent Britain, WA5VJB's, article "Spread Spectrum: Taking it Apart, Putting it Back Together," on page 55 in the November 2011 issue of *Popular Communications*.

Kent mentioned that the first frequency-hopping technique he had been able to find was the "Wolf" used by the Soviets in World War II.

I wanted to point out that spread spectrum was co-invented by a movie star — Austrian-born Hedy Lamarr. Back in the '40s and '50s she played in a number of Hollywood movies including "Samson and Delilah" in which she starred as the title-role vixen who cut off Samson's hair. (**WATCH:** The 1949 trailer for the movie blockbuster "Samson and Delilah" with Hedy Lamarr: <<http://bit.ly/ubVomb>>. – Ed.)

She and a composer/musician, George Antheil, came up with spread spectrum as a way of preventing the frequency jamming of radio guided torpedos. (**INDEPTH:** Learn more about George Antheil: <<http://bit.ly/ulvBp6>>. – Ed.)

Their idea was to use specially-cut identical piano rolls in the torpedo and in the radio guidance transmitter. The holes in the piano rolls, normally used to operate a player piano, would be synchronized to keep switching the transmit and receive frequencies, thus



Austrian-born movie actress Hedy Lamarr was honored with George Antheil in 1997 for their pioneering work in the invention of spread spectrum technology. (Courtesy of Wikimedia Commons)

avoiding the jamming. They gave their patent to the U. S. military, which failed to follow up, so it was never used during the war.

In 1997 Lamarr and Antheil were honored for their pioneering work in the earliest days of spread spectrum technology. (**VISIT:** <<http://bit.ly/uyH4YQ>>. – Ed.)

Kent, thanks for your good work.

Ray Lovell,  
Honolulu, Hawaii

(*Ray: Yes, I'm very familiar with that part of the story. And while patents were filed, "Wolf" was the first system I know of where hardware was actually put in the field. The Germans did monitor "Wolf" using a wall of receivers — each tuned to a "Wolf" channel. It seems they did capture a wolf system and figured out its relatively few channels — by today's standards, anyway. In January's Pop'Comm I wrote about how SDR radios can be used to monitor manufacturing activities in foreign factories. A good thing to know when destructive devices might be in the works! And I am working on one about Spread Spectrum RADARs. Always good to hear from readers — Kent Britain, WA5VJB*)

#### Thanks for the Pop'Comm Format Improvements — and Manageable URLs

Editor, *Pop'Comm*,

As I read the November 2011 issue of *Popular Communications*, I noticed that the URLs (Internet addresses) were no longer underlined, and they are a lot easier to read now. Thank you!

But even after noticing that, I did not anticipate seeing my earlier email in *Across the Spectrum, Correspondence from Readers*. I was pleasantly surprised to see it. It will be interesting to see if other readers pitch in on the discussion of formatting changes.

In my first email, I really should have commented and thanked you on the use of the *bit.ly* (Internet address) links, which are much shorter and easier to use than some of the giant URLs that appear — especially since one has to type them in.

For instance, a few minutes ago I clicked on one in an email that was three lines long, totaling 229 characters. *Ugh!* If I had to type it, I would have just decided to skip it.

Gene E. Bloch,  
Redwood City, California

(*Gene: Thanks for writing. Glad you find the Web addresses a more reasonable length and easier to read.*)

By the way, by subscribing to Pop'Comm's digital edition, you'll not only save yourself from having to type in the URLs carried throughout the magazine, but you are able to click on them and be linked directly to the supplemental content on the Internet. It's a great time-saver and opens up many more layers of information to our readers. Something to think about. —Richard Fisher, KPC6PC/KI6SN)

## Proud to Display His Monitoring Station ID: KNY2SC

Editor, *Pop'Comm*,

In reference to June 2011 *Pop'Comm*'s "Tuning In" editorial ("Should Pop'Comm Launch A Monitoring Station (Identification) Program?" page 4), back in the days when CRB Research was an entity to itself, instead of a small part of a super-sized conglomerate. I got a "Vanity Station ID" from them.

If you check back on all the letters I have written to *Pop'Comm*, you'll note, as with this letter, I use that registered monitoring station identification — KNY2SC. My only regret is, over the years, the *suitable for framing* certificate has gone missing.

Richard C. Berger,  
Registered Monitoring Station KNY2SC,  
Belle Harbor, New York

## WPEØAVD: Great Monitoring Memories With An NC-240D

Editor, *Pop'Comm*,

I remember how excited I was to open that envelope so long ago! Inside was my certificate for WPEØAVD.

I was a "little kid" and already totally fascinated with radio! Remember, TV was only radio with pictures!

Anyhow, now as an official listener I tried to DX with about any old junk table radio I could find. Finally my Dad took me over to a ham's house and bought me a well-used National NC-240D — which

I still have. (To see the NC-240D receiver and get details on its performance, visit: <<http://bit.ly/ouAehV>>. — Ed.)

The die was cast! I went on to become WNØLST and received my "First Radiotelephone" license, as well.

I've spent my life in radio: Two-way, high-power broadcast engineering, tower maintenance-repair, and communications consulting and contracting.

You bet. I've still got that original WPEØAVD certificate posted in my ham shack!

Jan Parker, WAØLST, WPEØAVD,  
Kearney, Nebraska

## Monitoring Station ID Signs: Yes!

Editor, *Pop'Comm*

Thanks for having the courage to address the idea. Bring them back! Certificates, awards and all. It's an all-around win for the hobby and for broadcasters.

We especially need our youth involved in media other than phones and computers. Shortwave is more relevant now with many hot spots in the world.

A political science teacher just recruited me to get his class set up for a shack. It worked for me when I was a kid. Let's keep 'em off the streets after 9 p.m.!

I'm sure some of us old timers would love to have our old (station identification) signs activated again. I have been using mine and QSLing with WDX2P since 1981, and listening since 1966. I still have the certificate! I eventually became a ham in 2005 as KC2NWV, now N2VIG.

SWLers should have (station ID signs) whether or not they become hams. The reality is, and always will be, that not everyone wants to, or can become a ham radio operator for various legitimate reasons.

Thanks for bringing it to the forefront, and let's do this!

Frank Viglietta, WDX2P and N2VIG  
Ringwood, New Jersey

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## The Defunct Radio Stations' Valentine's Puzzle

by Shannon Huniwell  
<melodyfm@yahoo.com>

*"It doesn't take a mystery writer to decipher the metaphor between rejected young love and broadcast FM of the early 1950s . . ."*

**W**hen my sister and I found that vintage TV girl Valentine's Day card and put two-and-two together," emailed a woman from the Lone Star State, "we feared that it probably held a colorful family secret."

Paula and her twin, Barbara, contacted me after a *Pop'Comm*-subscribing uncle in their native Bay City, Texas, advised them that I'd be better equipped to help them than he would.

According to Paula, his suggestion was oddly reluctant; like he knew something but was afraid to divulge it. His normally loquaciously affable attitude went suddenly silent when they showed him a wrinkled brass fastener-equipped envelope stuffed with the Valentine written in their mother's hand, about two dozen love letters penned by a disc jockey who identified himself with the ubiquitous radio name Mike Michaels, and a motel postcard stamped, *Return to Sender*.

Clearly evident within the correspondence, however, were two sets of radio station call letters and one lopsided romance. That is to say that while the young woman's feelings seemed highly directed toward her boyfriend, his strongest signal appeared to be focused upon himself and his broadcasting career.

After Paula emailed me scans of the aforementioned documents, she phoned with background details. Her mom had died last fall, about six months after her father's passing. Paula said her parents were devoted to each other, though she always thought it curious how her mother, a vivaciously stunning brunette, and her very plain and soft-spoken dad had ever gotten together.

"Except for the strange snippet that they'd been wed in a hospital, they never discussed the history of their courtship with me or Barb, nor had any pictures of their wedding," Paula noted. "In fact, when it came time for that talk about the birds and bees, Mom matter-of-factly covered the mechanical particulars and then emphasized that an authentically happy marriage could only be based on truly knowing that your spouse would do something difficult for you and then stick by you."

I began feeling more like a family counselor than broadcast historian, so I switched the subject to the stations mentioned in those late 1940s love letters, KIOX, and KTHT-FM. Paula figured they were names of radio outlets over which her mother's long-ago paramour spoke, though the assump-

tion hit a dead end when she and Barb discovered that both facilities had been deleted by government regulators as long as half a century ago.

While I had no way to promise a connection between those defunct Texas call signs and the twins' genealogy, my pledge to try caused me to send an *S-O-S* ("searching old stations") to Jan Lowry and his radio antiques files. Jan quickly agreed that if I'd look into the short life of obscure KTHT-FM, he'd check out KIOX Bay City's past.

### Sittin' on the FCC's Docket of the Bay City AM

After receiving the odd bits of correspondence Paula had sent me, I determined that arranging them chronologically, hitting Jan's exposé, and then delving into my shelf of dog-eared Broadcasting Yearbooks might put the radio Valentine puzzle pieces into some kind of workable order.

The first was a short note from October 1948 on what looks to be a mimeographed half sheet of paper sporting an amateurishly sketched microphone — captioned Mike Michaels' Mic — topped with an equally penciled-in KIOX identification flag. Apparently in response to fan mail from a pretty high school senior, who would later become Paula's and Barbara's mother, the reply from this Mike Michaels read, "Of course I remember you, Pretty Young Lady! You're the brunette who liked the slow songs. Here's hoping you had as much fun at the dance broadcast as I did MC'ing the music there. Don't forget to keep listening. I'll be thinking of 'ya'll whenever I spin a ballad on KIOX."

According to the Lowry Files, Bay City, Texas' KIOX spun its first tune on November 10, 1947. Details in the original construction permit (issued in March 1946) stipulated that KIOX would debut as a 1,000-watt daytimer on 1110 kilocycles.

It appears, though, that the station's licensee — Bay City Broadcasting Company — sought a quick upgrade, and was granted permission to move to 1270 kc, build a three-tower directional antenna system, and run that kilowatt day and night.

With the exception of typical personnel changes and various program directors trying to find the perfect balance between Top-40/pop and

country music, with some Spanish language thrown into the mix, KIOX cruised along as Bay City's hometown voice.

The station ownership remained within the family of its founder — theater operator John G. Long — and Mutual Broadcasting System network affiliation until a 1985 sale. That's when KIOX went to a full-time country music format sans any content from MBS.

Three years later, it got sold again and its programming tightened-up to a shorter "Hit Country" playlist. By spring of 1990, KIOX was joined by an FM in nearby El Campo, Texas that took the Bay City AM's surname so this frequency modulator could more conveniently originate an even more upbeat "Hot Country" format for both AM and FM outlets.

March 1994 saw KIOX (AM) flip to an all-news schedule with the help of CNN content. By year's end, however, a big headline in Bay City was that KIOX and KIOX-FM were bankrupt and had been sold. A few months later, the buyers became sellers and got rid of both stations — separately.

### It's Not Nice to Fool Fox-Charlie-Charlie

Tied-up in the Bay City AM's troubles was an expiring lease on its long-time transmitter site at 77404 Highway 35 East. After the vacate deadline occurred in early spring 1995, KIOX officials decided it would be a good time to finagle a repositioning of the facility within city-grade earshot of Houston, a much bigger venue than Bay City, and located about an hour northeast of KIOX's licensed home.

Commission records indicate that KIOX management sent a request to Washington for "Special Temporary Authority to move its transmitter to a new site in rural southwest Harris County." (Quick calculations with a road atlas show this spot to be some 70 miles out of compliance!) Without waiting for an FCC OK, owners of the revamped AM "built a 180-foot tower at (the) unapproved site" so it could transmit "brokered Spanish-language religion/Urban Variety programming" that a Houston station had recently abandoned. Quite possibly, KIOX brass believed that their transmitter locale transgressions would be forgiven if they could show that the station was serving needs of minorities.

In any event, the Commission directed KIOX to get back to Bay City, and noted that the new tower was so far away from Bay City that it had no chance in the world of providing city-grade service to that community.

Sometime in May 1995, an FCC inspector made a surprise visit to both the original transmitter address and the questionable Houston RF (radio frequency) source. The big-wig was so convinced of wrongdoing that he recommended license revocation hearings take place as soon as possible.

Jan's findings fly in the face of what any reasonable licensee might do to appease the government regulators; KIOX's owners filed a call letter change request which, when soon granted, defiantly re-branded the station's name to KFCC! The wheels of justice rolled slowly, but eventually decreed that KFCC's license be taken away due to "numerous instances of misrepresentation and lack of candor." By February of 2003, the former Bay City-turned Houston AM outlet was out of luck and off the air. Its in-your-face callsign was immediately deleted.

### Any Other Texas Radio Connection to Our Valentine Mystery?

Paula's paperwork reveals that her Mom visited the KIOX



Among the love letters found stuffed on top of the tubes in an old FM tuner, was this broadcast-themed valentine card. Concealed under the panel containing the vase of flowers is a rather romantically suggestive message addressed to "My Dearest One," then declared, "Stay tuned because for your eyes only, in our Houston hideaway, I'll star in your show!" And behind the cardboard door that covers the TV screen, the naughty note culminates with the words, "Mr. KOPY-FM, Announcing that on Valentine's night, you'll find that I've decided to be a real push-over!" The card writer's daughters aren't sure if this Valentine was ever sent to whoever the mysterious radioman was, but it sure made them curious as to his identity. (Images courtesy of Shannon Huniwell)

Bay City studios at least three times between late November 1948 and shortly after she graduated high school in June 1949.

This is based on a half-dozen letters from Mike Michaels — each one increasingly more "familiar." Much of the message reveals his overblown ego and more than a hint of leading the reader into some hyperbolic storybook romance.

The last such communiqué referencing KIOX outlined plans for a career move and a desired reward for having "conquered the big time broadcasting world!" Michaels wrote. "Opportunity knocked and I opened the big 'ole studio door to a genuine Houston AM and FM."

The heady fellow also told his gullible reader that she could be part of his broadcasting success no matter what name he used on the air and whenever she decided "to be a grown-up Houston gal."

Then he asked in a thinly-veiled attempt to be cryptic: "Do you KOPY my meaning, Pretty Lady?" Several additional mentions of K-O-P-Y led me to see if there was such a callsign connected to Houston. And, it turns out that the KOPY calls show up in that Texas town in late 1947 when the Lone Star State's pioneering frequency modulation facility took those calls after a year of being known as KTHT-FM.

For more in-depth coverage of some fascinating Texas radio days-gone-by, visit: <<http://houstonradiohistory.blogspot.com>>. That's where I found out about radio pioneer, Roy Hofheinz, and a scintilla of detail about Mike Michaels (or whomever our story's antagonist was).

Anyway, Hofheinz was a bona fide broadcasting enthusiast/entrepreneur. He'd fired up KTHT in 1944, one of only a handful of broadcast stations allowed to be built during World War II. And, this AM was no slouch — rather it chimed-in at a respectable 790 kilocycles on the dial with a decent 5-kilowatts day and night, directional. Still, Hofheinz yearned for a notable broadcast "first," if only in his home market of Houston. Better yet, he surmised, what if I could beat all of my other radio colleagues throughout Texas by getting an FM on the air without any competition!

No sooner had that idea percolated when he mailed an application to the FCC and got a positive response. Commission staffers dated Hofheinz's FM Broadcast Station construction permit August 2, 1946. Twenty days (and nearly a grand in frantic long distance phone calls to equipment suppliers) later, he sent an FM signal into the Houston area airwaves.

His KTHT-FM might have been only 250 watts, but it made news. *The Houston Chronicle* had to admit that Hofheinz's little 98.5-MHz facility bested the paper's own pledge to make its planned KTRH-FM Texas' winner in the new radio race.

The Chronicle's FM debut didn't happen until the following year. Of course, being such a frequency modulation early bird in an AM world didn't matter much, as some sources figure that there were less than 2,000 FM radios in the Houston footprint.

At first, KTHT-FM was made to stand on its own. The aforementioned website says, "programming was sold in one hour blocks with sponsors receiving one 60 second commercial per quarter hour. (The station manager) said five sponsors had already signed on."

An early December 1946 program schedule showed the station running from 1 in the afternoon until 10 at night with a full kilowatt and call letters truly its own; KOPY(FM).

Hofheinz became a bit more candid regarding his understanding of the public's lack of interest in FM, but surmised that this apathy was due to people not having heard how strikingly clear the medium sounded. To that end, his sales staff gave FM radios to businesses that pledged to play them within customers' earshot.

Folks were undoubtedly impressed with such an FM vs. AM comparison, though tended to spend their late 1940s electronics budget on TV sets rather than FM radios — receivers that were relatively costly (about \$50) when compared to an affordable (approximately \$15) 5-tube "All American" standard broadcast table model radio.

Even though KTHT-FM output was again boosted higher to 2,000 watts, and according to the *1949 Broadcasting Yearbook*, way up the ladder to 268,000 watts (admittedly, perhaps just on FCC paper) along with a fall 1949 frequency shift to 97.9 MHz, there wasn't much evidence of marketable listener power.

No doubt that's the reason why, by summer 1947, Hofheinz had chopped his FM's daily transmitter time to about six hours. Those KOPY calls were prophetically selected, as KOPY(FM) simulcast or copied programming from its AM sister for the last couple years of the otherwise historic Houston FM's short life. Hofheinz, who had served as head of the trade group Frequency Modulation Association of America, must have felt terrible about ordering his engineers to take KOPY(FM) dark.



Imagine this place set in winter and you can picture the sight the young woman in our story saw as she and her "radio star" boyfriend arrived at this Texas motel by taxi. The teen's life took an unexpected turn there that eventually and especially impacted the lives of three others. Someone receiving the post card at the headquarters of a defunct Cleveland, Ohio-area FM station apparently read between the lines of its urgent message and wanted to set the poor girl straight about disreputable radio people.

The station's transmitter tubes cooled permanently sometime in early 1950. That year's *Broadcasting Yearbook*, which claimed its "data (was) corrected as of December 6, 1949," contained nothing about KOPY(FM), though KTHT AM remained on the encyclopedia's venerable roster. This conspicuous absence is a likely indicator that Hofheinz knew the end was near, so either didn't complete the publication's information request or simply wrote atop the form: "Station to go off air/license to be surrendered."

Writing on the back of a postcard from some Houston motel takes our story in yet another direction. This time a search through dusty station listings for a northern Ohio FM that came and went almost as quickly as waves breaking against the Lake Erie shoreline near the flash-in-the-pan's city-of-license.

## The Cleveland-Area FM That Drifted Away Without a Clue

Truth be told, that heading isn't 100 percent accurate, but it does refer to the frustrating brand of detective work that Paula's mother attempted throughout the summer and fall of 1950. And, in trying to link the then 19 year old's letters with details about now defunct radio stations, I struggled to discover a few key plausible facts out of the evidence in the manila envelope. Bear with me and we'll eventually get to Buckeye State via a hasty trip out of Houston-town.

Without meaning to divulge more of the young woman's personal information than is necessary to convey this story, suffice it to say that the documentation reveals a love affair between she and the radio guy known as Mike Michaels.

Reading between the lines, I can speculate that he didn't care nearly as much for her as she did for him. A series of four letters Michaels hastily penned between July 1949 to the first week of February 1950 chronicles how great he's doing in Houston radio (though his examples, such as "co-announcing a commercial for the Houston Transit Company," seem pretty mundane), complaints about his landlady's "prudishness," and indi-

# RSGB Books



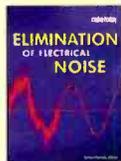
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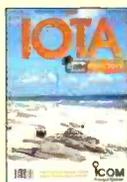
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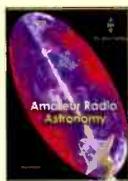


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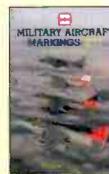


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cations that if the reader decided to spend more than just a few hours visiting Houston, he'd "make it worth (her) while and find a swanky place for (them) to have a good time."

It could be this is where that girl with the TV Valentine card comes in. While it's apparent she ultimately thought its message to be too obvious and didn't want to come across as cheap, she perhaps sent some other Valentine with more ladylike wording.

No matter, Michaels got the message, post scripting in his February 7, 1950 note that "things are all set for our romantic getaway soiree on the 14th." He would meet her at the bus station and then they'd "take a cab to their hideaway."

The one paragraph letter made no mention of KOPY(FM), but did hint that they'd have several days "to be together in loving paradise" because "things are changing at the station." It's unlikely that the couple spent much time talking radio.

Evidence points to a motel called Cactus Court as the site of their romantic rendezvous. I'm figuring that because of a postcard from the hip-roofed establishment and the business letter-size envelope in which it was found. Sadly, the card read, "Please come back to me or at least let me know where you are. Remember our pre-honeymoon? I really, really need you doubly much now! I'll be so good to you. I have news you'll want to know. Call collect anytime -soon!"

The envelope had been addressed, Mr. Mike Michaels, FM Radio Station, near Cleveland, Ohio. That same wording was also scribbled on a slip of lined paper under the jotted heading, Keystone 5535 — the phone number of KTHT and silent sister KOPY(FM). It would seem that the desperate girl called the Houston station to inquire about Mike Michaels and hit upon a sympathetic receptionist who was probably wise to the guy's pickup lines and asked around for any scuttlebutt capable of tracking him down.

That's where the long envelope's vague address originated. All around it, several postal clerks had added their picasized guesstimates: WHK-FM, WJW-FM, WERE-FM, WSRS-FM and WTAM-FM, each with a question mark following the suffix. Right under the September and October 1950 postmark-drenched stamp was a suggestion scribed in thick red pencil lead: "Try Lakewood?" Somebody must have, as yet another U.S. Mail official had printed, around the circumference of the circular Lakewood,



This little grainy publicity shot, circa 1948, proudly highlights the then just completed studio/transmitter site of WLAL(FM) at Lakewood, Ohio. Great hope for success likely went into the placement of every brick in that suburban Cleveland station's home. Note the neon call letters signage and the FM dial position clearly stated between a clock over the vestibule window. Even the landscaping had been nicely arranged for staff, guests, and passersby to enjoy as they considered the facility's interesting kitty-corner entranceway. Check out the double rows of wires secured by six insulators along the structure's driveway wall. While some of that juice was needed to enliven the station's (presumably) 250-watt transmitter and tower lighting, the image of the ample cabling now hints that WLAL(FM)'s owners anticipated adding a more powerful RF generator once FM audiences grew to sufficient numbers by, say, 1950 or 1951. Unfortunately, those were over-optimistic targets that turned out to be too far away for WLAL(FM) and other Truman-era standalone FM outlets to reach.

Ohio postmark; "Station no longer functioning. Forward to United Garage."

Finally, penned tersely and presumably by whomever got the mail at this United Garage, was the pronouncement; "Employee dismissed. Return to sender."

Albeit a dead end, that thread sent me to my tattered radio directories and straight into the Ohio, FM Stations sections. Lakewood — about 5 miles west of downtown Cleveland — first appeared as a city-of-license in the 1947 Broadcasting Yearbook. No call sign was assigned to a "conditional grant" there for a new FM to be built by United Garage and Service Company, but its proposed specifications were evident: 104.9 MHz with 580 watts.

One of United Garage's partners, Arthur B. McBride, operated a Yellow Cab taxi franchise in greater Cleveland, as well as owned the Cleveland Browns football team. McBride was fair game for helping fund promising business ideas, and FM radio had been touted by its pioneering proponents to offer excellent opportunities to clearly reach listeners day and night and in any kind of weather.

According to a brief article in the Lakewood Post, United Garage's venture into this new type of broadcasting officially got underway on the evening of May 14, 1948 when WLAL (FM),

Lakewood, took to the airwaves. The paper noted that WLAL(FM) could transmit a circular signal covering approximately 45 miles, but would focus on its hometown and Cleveland's west side. Programming from 7 a.m. to midnight consisted of local news followed by word of national and international events, school sports, and lots of music — reportedly reaching from light popular tunes to classical and operatic selections.

In a world where transcription technology was barely beginning to use CBS' new long-playing 33.3-rpm albums and RCA's 45-rpm singles, one can only imagine the fidelity throwaway of airing scratch-prone 78-rpm discs. It was kind of like using a Rolls Royce to drive to the dump with one's trash.

My small-print radio annuals mention WLAL (FM) in 1948 and 1949. The 1950 Broadcasting Yearbook acknowledges the independent FM, though only scantily: Just calls, licensee, and frequency/power. It's completely gone from 1951 statistics.

A 1990 piece in the *Lakewood Sun-Post* reminisces that WLAL (FM) broadcast "from 1948 to 1952 from a new one-story brick building it erected, replete with tall antenna tower, at 14587 Madison, just east of Warren." It would

seem from the anecdotal fall of 1950 “Station no longer functioning” envelope information, however, something *iffy* had happened at the pioneer FM prior to 1951.

The *Sun-Post* does say that “WLAL (FM)’s tower was dismantled and the building was sold to the Society for Crippled Children in 1952.” My guess is that the facility probably sat vacant for a year or so before United Garage made the final decision to take down its poor little station’s tower.

Closing the books on the long-gone Lakewood, Ohio FM, I composed an email to Paula and Barbara. While my research didn’t reveal for sure that their story’s Mike Michaels ever worked there, it is certainly possible that the mysterious man would have thought Cleveland to be a career step up from Houston, especially since his services were apparently being reduced by the closure of KOPY(FM). Plus, he was in a position to convince WLAL (FM) management that he possessed valuable experience in frequency modulation.

While learning of this Valentine drama, I imagined — as perhaps you have, too — a young woman infatuated with a “radio star,” however dubious, and the Truman-era mores that eventually left her with sole responsibility for having committed an inescapable mistake.

The teen’s plea — to someone who was arguably careful enough not to divulge his real name — about needing him “doubly” approximately six to seven months after the Houston Valentine’s Day visit, led me to tactfully ask Paula if she and her twin might agree that this Mike Michaels could have been their birth father.

She replied that enough evidence had come her way for she and her sister to take our collective findings to their reticent uncle and try getting him to fill in blanks that only a family member around in 1950 could do.

After a trio of visits beseeching their elderly relative, he admitted that the girls were products of their mother’s romance with “some smooth-talking radio DJ who conveniently blew town and disappeared into the Midwest using another stage name.”

The gentleman Paula and Barb had always thought to be their biological father had been volunteering at a Texas hospital when he happened to wheel a depressed and very pregnant girl into her maternity ward room. He was instantly smitten. She needed a husband and some-

one to make the twins — that the doctor predicted would arrive within the next day — legal. Though his parents disinherited him for throwing his life away, he proposed and the impromptu couple exchanged vows about an hour before the girls debuted.

“I always wondered why Mom never cared to hear the radio when we were kids,” Paula concluded in her last email to me. “Now I know why she preferred listening to whatever the wonderful father who raised me had to say.”

It doesn’t take a mystery writer to decipher the metaphor between rejected young love and broadcast FM of the early 1950s. Both are palpably one-sided, with FM operators back then offering their best of what was clearly a radio service possessing wide ranging promise; vows that listeners often acknowledged, but wouldn’t commit to before early post-World War II FM station owners decided they’d been left at the altar.

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# Restoring: The Heathkit Mohican GC-1A Receiver, Part II

## Strategies for Fixing Other Peoples' Mistakes Can Be Helpful in All Repairs

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

We left off last month after dealing with a few cosmetic and mechanical issues on our newly acquired Heathkit model GC-1A communications receiver. The GC-1A was a full-fledged transistorized and revolutionary communications receiver introduced in the early 1960s.

Unfortunately, once I started digging into it deeper the electronics restoration involved much more than I anticipated, but that is the fodder that feeds this column! (*IN DEPTH: Get details on the Mohican receiver in the Heathkit Virtual Museum: <<http://bit.ly/spSKZJ>>. WATCH and LISTEN: To a GC-1A in action: <<http://bit.ly/tCFxkY>>. – Ed.*)

### Kits And Possible Problems

There are several problems with factory-produced kits that, for the most part, no longer exist. Here's my short list of possible kit woes:

- The factory supplied mislabeled or defective parts.
- The kit builder installed parts in the wrong places.

- The kit builder does a terrible soldering job.
- The kit was never finished and parts are missing; or the kit was finished and never worked right from day one.

I've seen examples of all these. My IT-28 capacitor checker was acquired from a retired electrical engineer. (*SEE: A photograph of the Heathkit IT-28: <<http://bit.ly/uUaaOL>>. – Ed.*)

The assembly was flawless, and you'd swear it was made at the factory. The high-voltage leakage test never worked properly. Eventually I traced the problem to a mismarked resistor that was off value exactly by a factor of 10!

One bit of advice: always try to find the complete assembly manual for a kit that you may come to own. Many vendors supply partial manual reprints that omit the detailed step-by-step assembly instructions. But, this is the information you will need to find some of more obscure problems!

Kit manufacturers have to design a product that can be put together in a home environment, often on the kitchen table! That means that

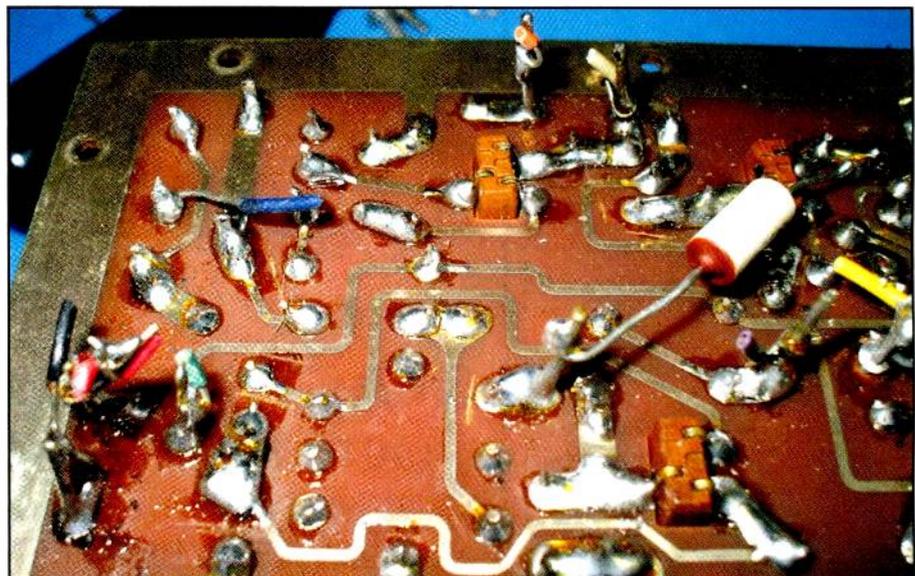


Photo A. The soldering on the Mohican's IF circuit board left a lot to be desired!  
(All images courtesy of K1ZJH)



**Photo B.** A large magnifying lamp and a good soldering iron are essential.

instead of using rivets, etc. the product is built using screws, washers and nuts. These can loosen after years of use, and can cause poor electrical connections between solder lugs or PC boards and the chassis they are mounted to. The assem-

bly manuals had to be well written and illustrated to ensure the builder was successful in his kit-building venture. This added an additional layer of expense to the kit compared to a factory made model.

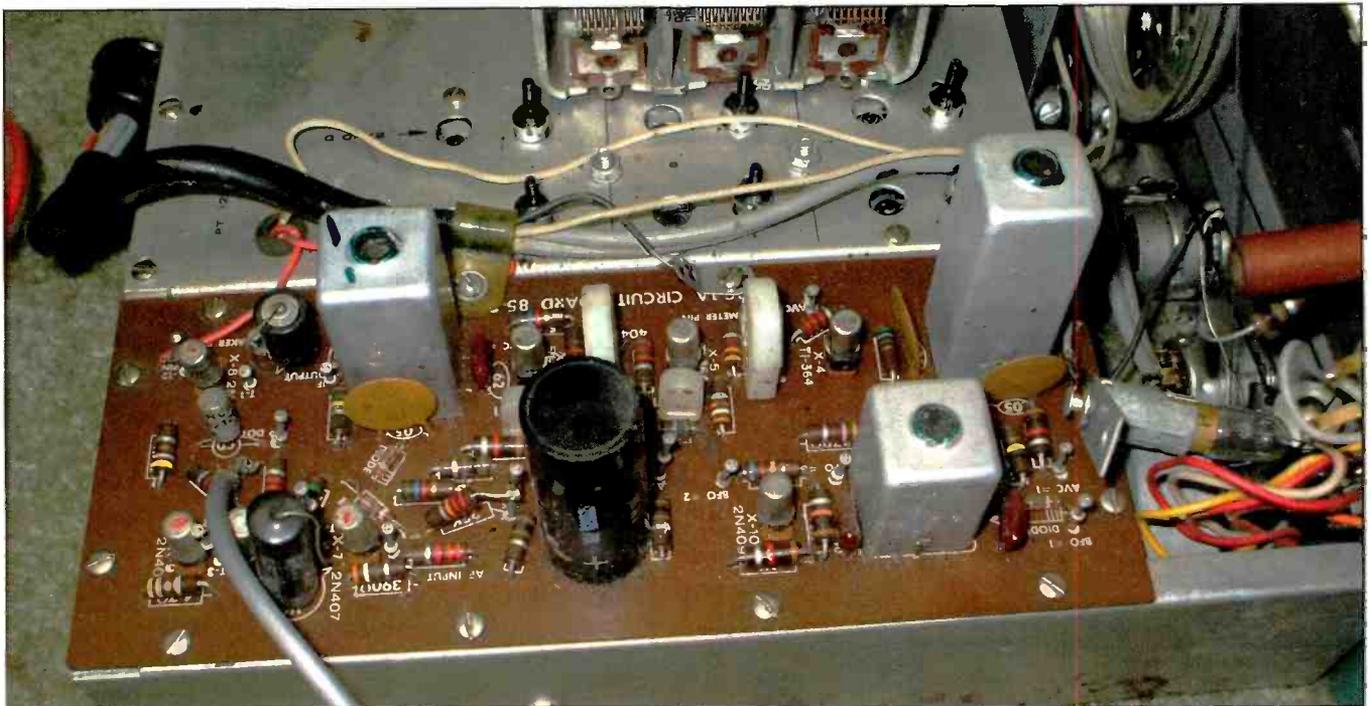
Take a look at **Photo A**. This is a close-

up of the solder side of the Mohican IF amplifier printed circuit board. This was the first time the builder had encountered printed circuit boards since it appears he made all of the common mistakes.

There is way too much solder on many of the connections. If you look closely, you can see where the soldering is a hilly blob on many joints, but yet it never properly flowed around the wire leads to make a neat and clean joint. I also encountered solder PC board donuts — this is where the through hole leads are soldered to the printed circuit boards — that were overheated, causing the foil to separate from the phenolic board.

If someone pushed down on the part associated with that lead, the foil would break and separate at the solder joint. The builder managed to brush the hot barrel of his iron against many of the PVC insulated wires while trying to make connections on the board. I'll need to redo a few of the wire harnesses as a result.

One problem with the GC-1A IF printed circuit board is that the holes drilled for the through-mount component were too big in diameter. You'd normally insert the part leads until the part body is flush with the top of the board, and then flow solder around the lead and PC board run to make the connection. Unfortunately if the gap between the lead and PC run is too large, it will require more solder than should be needed to make the joint. I pre-



**Photo C.** The top of the IF circuit board looks better, but it is better to install the resistors with the color bands reading left to right.

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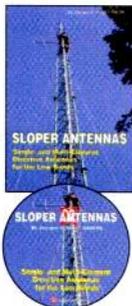
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fer to trim the lead, and bend it over so it rests on the PC board run. This ensures a good electrical contact that requires a minimum amount of solder.

## Use The Right Soldering Iron!

Most folks think that is best to use a lower temperature iron to avoid damaging PC boards. I use a hot tip, around 725 to 750 degrees F, with the goal being to get in and make a good solder connection as quick as possible, and then quickly remove the heat when the job is done.

Keeping the soldering iron tip clean and well tinned is crucial. My two main soldering tools are temperature-controlled Weller EC1201A soldering stations. This allows me to keep my two favorite tips ready for use.

I use a small fine-tipped conical tip for general soldering and PC board repairs, while the other station is equipped with a bigger tip with more thermal mass to handle bigger work. I have 300-watt solder guns and larger irons that are used when needed to do antenna work, or to solder directly to a metal chassis, but the two Weller stations do 99 percent of the actual soldering in the shop.

Photo B shows one of the irons in its holder; the electronic control box is out of view. Note my large OC White magnifying lamp — these lamps are a blessing for my aging and tired eyes, and are a necessity for doing printed circuit board repairs. I also keep a pair of reading glasses close at hand and a small hand magnifier.

The other soldering implement is a Denon SC7000Z de-soldering tool. While great for IC removal, I usually prefer using good quality de-soldering braid for solder removal. The Denon is a great tool, but it is better suited for more detailed printed circuit board repairs. It clogs up fast when used on vintage radios and point-to-point wiring terminals, and the small solder chamber fills quickly.

De-soldering braid isn't cheap, but it does a good job. I apply the braid to the joint to be de-soldered, and the soldering iron tip to the other side. I've learned one important step when using braid is to feed some fresh solder between the tip and braid to get the heat transfer started. If you don't do this step the braid may simply discolor and oxidize.

The component side of the IF printed board — Photo C — looks a lot better, but there is room for improvement. Color band coded parts, such as resistors, should be mounted in the same direction;

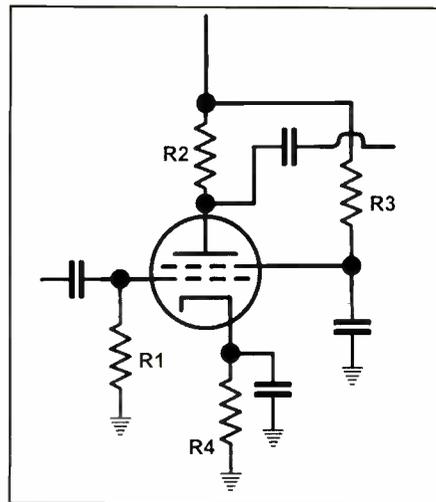


Figure 1. This tube circuit shows why we can test most resistors in circuit.

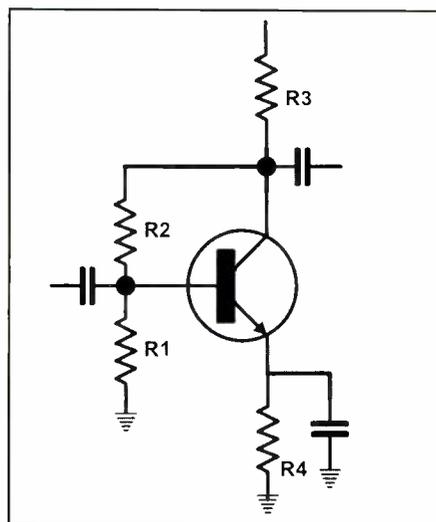


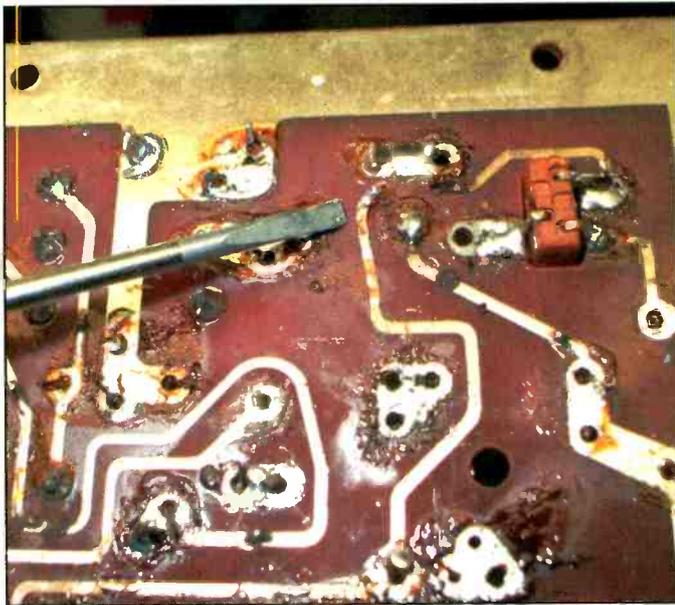
Figure 2. Resistors in transistor circuits are more difficult to test in-circuit because of stray paths.

so all values can be read from left to right. Resistors aren't polarized, and it makes sense to do so — this aids troubleshooting and component identification.

## Checking Resistor Values and Capacitors

Most of us routinely check the resistor values and replace all of the wax-paper capacitors in vintage tube gear because we've learned it is foolish not to do so. Resistors can go up or down in value, depending on if the drift is caused by heat or exposure to moisture during storage.

We find many vacuum tube receivers are insensitive after years of use. This is often caused by screen resistors going up in value and decreasing stage gain in the RF and IF sections.



**Photo D.** While removing the old resistors, capacitors and excess solder, I discovered a burned PC board run. This could be caused by a short on the 12-volt supply bus, or even by reversed voltage. The radio is positive ground.

Take a look at **Figure 1**. This is a rather generic tube amplifier stage, but it shows that in most instances we can check resistor values in a circuit without needing to cut a lead to do so. The plate, screen grid, control and cathode resistors have no parallel paths across them. When the tube is cold, it is nothing more than a glass insulator, unless it has an internal short. But it is easy to remove the tube should a question arise.

My general rule is: If a resistor reads high, it is. If it reads the correct value, it is probably good. If it reads low, I look for a parallel path that I may have missed, and if none assume the part is bad.

The transistor stage in **Figure 2** is more problematic. Unfortunately there is more likelihood that surrounding components will influence ohmmeter readings taken on any of the resistors. Germanium transistors will conduct with as little as 0.2 volts across the junctions, and many ohmmeters have higher test voltages on the leads than this! Many early analog ohmmeters are also capable of damaging small-signal transistors.

I decided to rebuild the Mohican IF board, and this gave me the chance to verify the resistor values. I was surprised to find they were all well within tolerance, and I'd expect that the resistors in other Mohicans would test the same.

I also replaced the original electrolytic capacitors on the board. Again, the original electrolytic capacitors tested fine on my shop's ESR meter. Nonetheless, I'd advise replacing 40-year-old electrolytic caps since they will fail sooner than later.

While working on the board I noticed a burned PC board run — the minus 12-volt supply voltage. The damaged run is shown in **Photo D**. Damaged runs can be fixed by bridging the damaged area with a cut lead from an old resistor or capacitor, or an insulated wire can be run between two points on the board to bridge the open run.

## Let's Talk Transistors

We haven't covered any solid-state radio restorations in the column. The Heathkit Mohican is a good candidate to break the



**Photo E.** The RCA WT-501A transistor tester will test transistors in or out of circuit.

proverbial ice. As mentioned last month, the Mohican marked a new era for Heathkit, which had primarily dealt with vacuum tube-based equipment in the past. Primitive by today's standards, the 1960s era Mohican used newly-designed, high-frequency drift type PNP transistors that were then cutting edge technology. Today they are collectibles in their own right. Unlike tubes, it is hard to find the exact replacements for many of these vintage semiconductors.

Like tubes, I rarely use a tester, but usually prefer to test by substitution if a question arises. The RCA WT-501A transistor tester has graced my bench for 30 years, and I'll admit I never used it once! It would be good material for a future column.

All of the Mohican transistors are socketed, and can be removed and inserted into the RCA test sockets to make gain and leakage measurements. If you find a WT-501A, be aware that the tester uses two D batteries that are soldered in! Many of these have the original batteries inside; and most likely they have leaked and caused major damage as a result. My WT-501A is shown in **Photo E**.

If your digital meter has a diode test function, you can do some quick tests on transistors to see if they are shorted or open. For example, in **Photo F**, my Fluke 177 digital meter is shown in a diode test mode that permits measuring voltage drop across a junction.

With the black lead on the diode cathode, the diode will conduct. The near 0.6-volt drop indicates it is a silicon device. Germanium junctions will show a much lower voltage drop.

Transistors will test like diodes between the base lead to either the collector or to the emitter lead. **Figure 3** illustrates

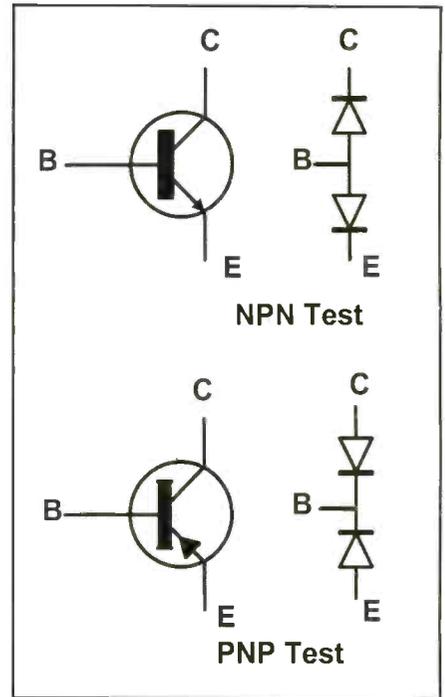
**Photo F.** Simple junction and leakage tests can be made on most transistors using a digital meter — such as this Fluke model 177. These tests don't measure gain or other parameters, but will find devices that have failed catastrophically. →

the equivalent circuits for both PNP and NPN devices. For a PNP device, you will see conduction between the base to either the collector or emitter when the black lead is on the base.

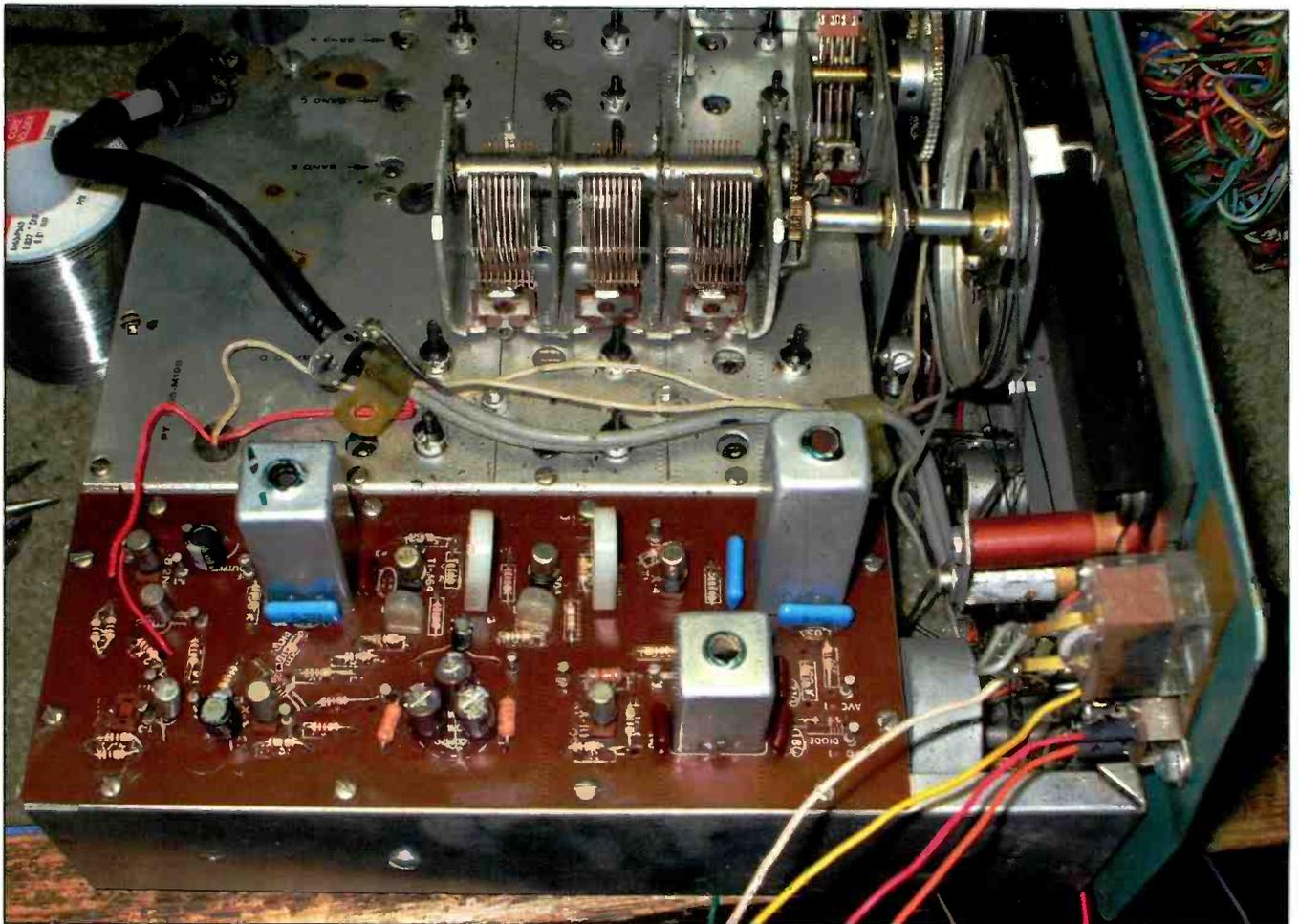
Check for shorts or leakage between the emitter and collector. Also, reverse the leads and retest the base to collector and emitter junction for unwanted leakage.

I'll leave you with the last picture — **Photo G** — taken earlier this afternoon, just after the rebuilt IF board was reinstalled in the receiver. Hopefully next time around we'll be making some progress and move on to tackle the power supply and alignment.

*Until then, keep those old tube radios glowing, and those soldering irons warm!*



**Figure 3.** Transistor junctions act like back-to-back diodes, and can be tested on a digital ohmmeter.



**Photo G.** The reworked IF board is reinstalled back in the Mohican receiver chassis. Much more work remains.

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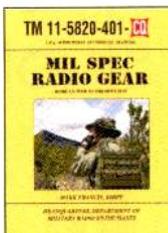
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## An S-38E, Mud and the Absolute Stupidity of Youth

by Bill Price, N3AVY  
<chrodoc@gmail.com>

**T**he *Feb-YOU-aree. Feb-RU-aree.* My high school algebra teacher (the one with the worst accent in the entire school and chosen to make the daily announcements on the PA system) called it “**FEBEEYAREE.**”

My dad and Lincoln shared the same birthday. Other than that, it’s a gloomy time. Ground Hog Day is about the best it has to offer in the way of holidays. Cold, short days kept me inside as a kid, but radio got me through ‘til springtime brought its mud.

The previous Christmas brought a Halli-crafters S38-E shortwave receiver. None of the newness had worn off by February, and I didn’t care what the weather was like, because each day after school I warmed up the “rig” and began cruising the dial. I was still unaware of what bands were active at what times, but I just kept tuning ‘til I found something interesting. I had learned a few letters of the Morse code and was happy when I heard one that I recognized.

*(WATCH/LISTEN: The Hallicrafters S-38E multi-band receiver: <<http://bit.ly/rSBICL>>. – Ed.)*

The weather may have been cold, but my ears were warmed by the Bakelite “cans” I wore. Even though they squashed my ears, I was determined not to use the “ordinary” speaker that was built into the receiver. It just wasn’t cool when I could be wearing the very same cans the shipboard radio operators wore in the movies.

But soon, February yielded to March, and the beginning of the mud season where I lived. Rather than waiting for the school bus, I could walk home and get there quicker, particularly if I avoided all straight roads and their square corners, and cut across a couple of cornfields — the hypotenuse always being the best route home.

These were days when a young person could not wear sneakers to school — only “dress shoes,” which were then always made of leather. And for some reason, my shoes always seemed to be new around the first of March. Therein hangs a tale of mud and the absolute stupidity of youth.

I would rather have walked over burning coals than to walk an extra mile by staying on the nice straight roads when there was a wonderful diagonal shortcut just calling my name. I had used this shortcut during the winter when the snow wasn’t

too deep, and now there was no snow at all. What mud there was appeared to be pretty dry, and there were enough cornstalks to walk on to keep me out of it — at least for the first couple hundred feet.

The “hypotenuse” in this case was about a mile through the cornfields, and the cornfields had a perpetually damp low-lying section in the middle of my shortcut. I remember the first time I took this route in spring, and how my new shoes sank deeper and deeper into the mud, and how I planned to just wipe the mud off before I went into the house.

Pilots always talk about *the point of no return* when crossing a body of water, and I quickly reached mine. It was just about as far to continue forward as it would have been to turn back, and turning back meant I would then have to walk even farther down the straight roads with their 90 degree turns.

There is something about such a trek that makes a person, or a dumb kid, feel very alone during the worst part — that being the endless, very soft, wet mud that had begun to cover the top of my shoes and run inside them, soaking my socks right to the toes, and up to the ankles.

I had planned to beg forgiveness and claim stupidity as I squished on. The tops of my socks were now completely covered with mud, as were the cuffs of my dress pants. Eventually, my path led me toward drier cornfields and the road home.

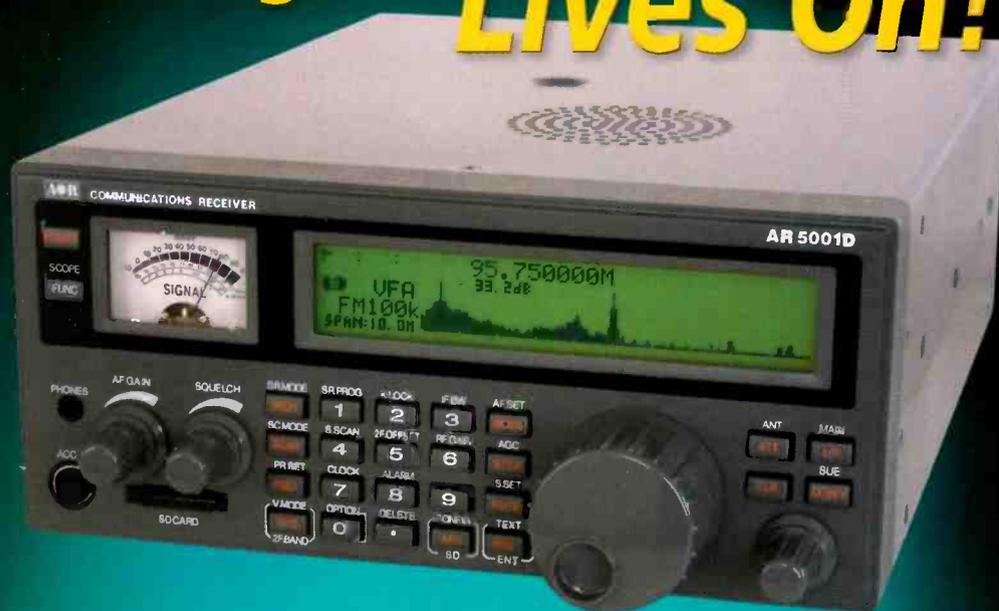
My mother’s look and questions and — even worse — my pathetic answers, should have been enough to teach me the error of my ways. But no, even with the day’s events, the cleaning and polishing of the shoes, the long discussions of how bad my choice was and how the field would remain wet until at least August, the next day, I did it again — absolutely certain that the field had dried sufficiently for me to cross and arrive home with clean, dry shoes.

Riding the bus for the rest of the school year wasn’t as bad as I had thought it would be.

*Price’s parents tried enrolling him into a nice, safe military school. But after his initial interview (during which the mud incident came up) the commandant said there were no openings at the present time, nor did he expect any in the near future. – Ed.)*

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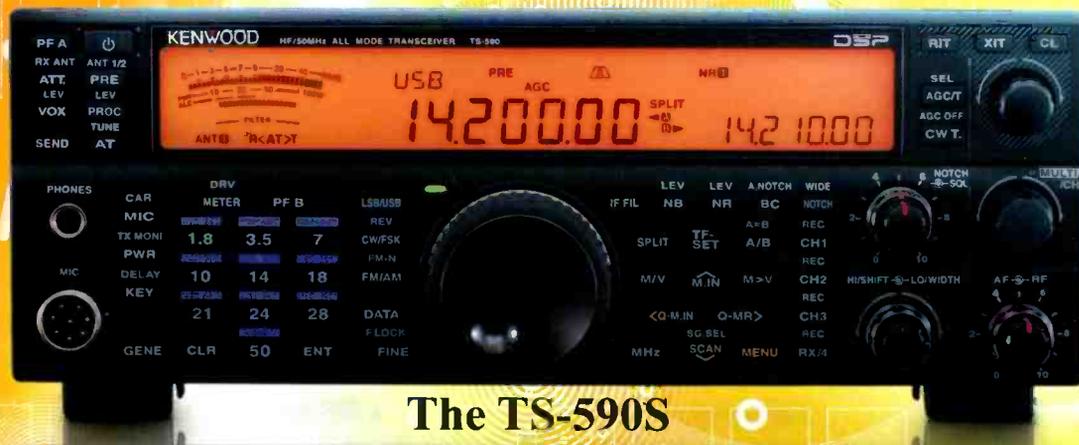
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