

POPULAR COMMUNICATIONS

JUNE 2012

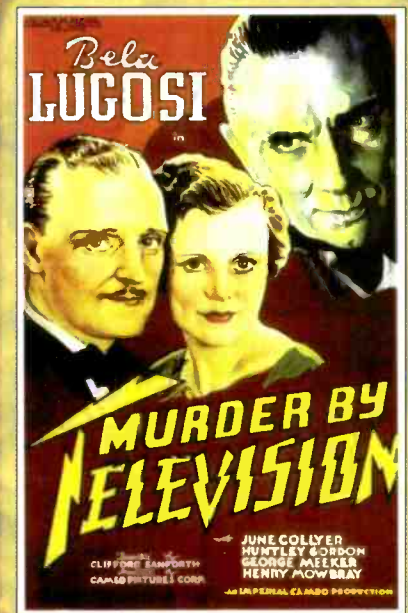
Shortwave Listening • Scanning • AM & FM • Radio History

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ON THE COVER

Put on your thinking cap and settle in for a tutorial on one of the most important aspects of Sun activity. When it comes to understanding radio propagation, you won't want to miss Tomas Hood, WPC7USA's, *Sunspots 101*. ALSO: The remarkable AOR AR5001D receiver is reviewed by Pop'Comm's WPCØKR. If it's June, there's magic in the air(waves) on 6 meters, NTØZ reminds us. And, Shannon Huniwell solves The Mystery of the TV Bed and Breakfast. (Cover photography courtesy of NASA, AOR Communications, YouTube and WPC2HUN.)

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EDITORIAL

Tuning In

by Richard Fisher, KPC6PC/KI6SN
<editor@popular-communications.com>

Why Shortwave Will Always Matter

On Leap Day Eve an email arrived at *Pop'Comm* from Charles Hargrove, N2NOV/WPC2NOV and Robert Kozlarek, WA2SQQ/WPC2QDX, who put out listener bulletins on behalf of the New York DX Association SWL/Scanner Net, <<http://bit.ly/GWm4En>>.

The content is always interesting and often provocative — the February 28 bulletin being a fine example, written by SWLer Rick Barnes with the headline “*This Is Where It Began . . .*”

Barnes makes the case for why shortwave broadcasting “should continue to exist vs. Internet (live streaming audio) broadcasting,” as WPC2NOV and WPC2QDA point out.

Barnes should know: He is Telecommunications Manager, Radio Operations at the Voice of America.

“In the dimly lit back room of the house where I grew up,” Barnes writes, “when I was an elementary-school-aged kid in the mid-1950s, my Mom and Dad used to have a World War II-era shortwave radio receiver . . . connected to a long-wire antenna that spanned the entire length of our backyard. I used to listen to it for hours.”

Barnes recalls the “strange voices in other languages” that captured his imagination. “Basking in the amber glow of its dial and vacuum tubes, I heard my first strains of jazz music — no doubt as part of a Willis Conover broadcast from the Voice of America (VOA) — which motivated me to become a music major in college” and embark on a 20-year U.S. Army career as a military musician.

In this new millennium, Barnes believes, “shortwave radio still has its place, although many decision makers don’t seem to realize it. As Dr. John Lenczowski, the founding president of the Institute of World Politics in Washington, DC so eloquently states, it is shortwave radio that has the power to create hope and community among desperate and disenfranchised people throughout the world.”

Barnes writes that he has heard “Dr. L. state to members of the U.S. Congress and their staffs that there is a *metaphysical* reason for the existence of VOA. It goes well beyond just factually reporting the news. It goes to shortwave radio’s ability to provide hope and support to people who have to deal with human rights abuses on a daily basis.”

The Internet and its social media platforms aren’t the answer, Barnes insists.

“How can you effectively communicate on the Internet with impoverished people throughout the world whose towns and villages lack any kind of electrical infrastructure whatsoever or with people whose Internet access is blocked by the local regimes?”

In these cases, the communication of *hope* and *solidarity* can be achieved through shortwave radio, he says, “where the transmission infrastructure is located well away from the signal footprint and target audience,” and that audience has access to wind-up or solar-panel powered shortwave radio receivers.

(NOTE: See *InfoCentral* on page 7 for details about an initiative to distribute *Lifelayer* hand-cranked, solar-powered shortwave radios to remote Rawandan farming communities. — KPC6PC)

Barnes asserts that for this reason, shortwave broadcasts from “Western powers in Cantonese, Vietnamese and Tibetan — among other languages — must continue. In this way, shortwave radio can remain an inspiration to disparaged people throughout the world today as much as it was to a five- or six-year-old kid from upstate New York in the 1950s.”

Of course, we wholeheartedly agree. And, via the NYDXA’s email bulletin, we appreciate Rick Barnes’ perspective and ability to so succinctly underscore why, even in the *hyper-digitalized* 21st Century, shortwave matters — *and why it will always matter*.

(IN DEPTH: To see Rick Barnes’ full narrative and a photograph of a shortwave radio similar to the one he listened to as a child, visit the *USG Broadcasts*, *BBG Watch Facebook* page at: <<http://on.fb.me/Hf3SjU>>. See Barnes’ Facebook page at: <<http://on.fb.me/H0euTk>>. LINK: To the NYDXA homepage at: <<http://www.nydxa.info/>>. — KPC6PC)

Combined Pop'Comm-WRO Live Internet Chat, June 3

Every month you’re invited to a casual Internet chat session for *Pop'Comm* and *WorldRadio Online* readers. This month’s session begins at 8 p.m. Eastern time, Sunday, June 3, (Sunday midnight, 0000 UTC) on the *WorldRadio Online Blog*. At chat time visit <<http://www.WorldRadioOnline.blogspot.com>> and click on the *Cover It Live* box.

We sure hope to see you there.

— Richard Fisher, KPC6PC/KI6SN

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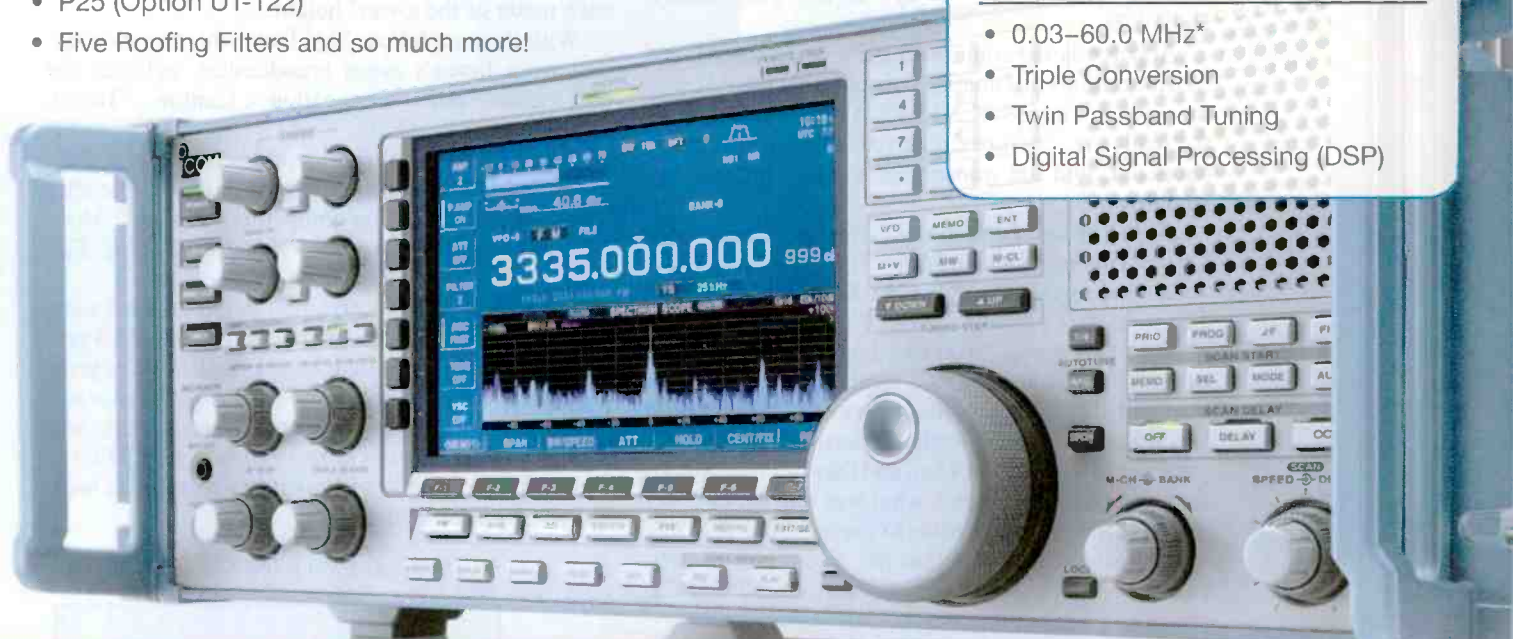
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The Weirder Side of Wireless, and Beyond

Compiled by
Richard Fisher,
KPC6PC

'Don't It Make My Eimacs Blue'

"Perhaps you've already heard the yarn about radio stations where the engineering department blacklisted the playing of Crystal Gayle tunes," **Photo A**, notes *Strange Radio Stories of Yore*, <<http://bit.ly/HcEHkP>>.

Apparently the country singer's voice "could, and did, hit certain combinations of notes that would cause the grids in Eimac's 4CX15,000A's to vibrate sympathetically . . . the tubes' internals would vibrate and short out, and the transmitter would overload and shut down."

(WATCH and LISTEN: *To a live performance of Crystal Gayle's "Don't It Make My Brown Eyes Blue,"* <<http://bit.ly/GX90NM>>. **CAUTION:** *Cover your Eimacs before playing.* – KPC6PC)

The item notes: "You can imagine the skeptical response that this story first received. After they got up from the floor laughing, however, Continental Electronics engineers — whose transmitters were tripping — did a little field work and they did finally confirm that this was, indeed, what was happening."

(NOTE: *We found little to corroborate this tale* <<http://bit.ly/GR4VZ8>>, *but the thought is so delicious, we're bringing it to you anyway.* – KPC6PC)

What's That Broadcast Tower's Fragrance?

Japan's Tokyo Sky Tree, deemed in 2010 by the



Photo A. Crystal Gayle, who has quite the Facebook following, apparently had some broadcast radio engineers scratching their heads when their transmitters shut down every time they played her country hit "Don't It Make Your Brown Eyes Blue." (*Internet screen grab*)

Photo B. The Tokyo Sky Tree reigns as the world-record holding tallest broadcast tower — at 634 meters in height, or about 2,080 feet. And it has its own fragrance! (*Courtesy of Brücke-Osteuropa via Wikimedia Commons*) →

Guinness Book of World Records, <<http://bit.ly/GWhcsX>>, as the tallest free-standing broadcasting tower at 634 meters, has its own fragrance. Shiseido, the cosmetics giant, has produced 634 bottles of *Tokyo Sky Tree Parfum*, <<http://bit.ly/HaDVXI>> — one for each meter of the tower's height.

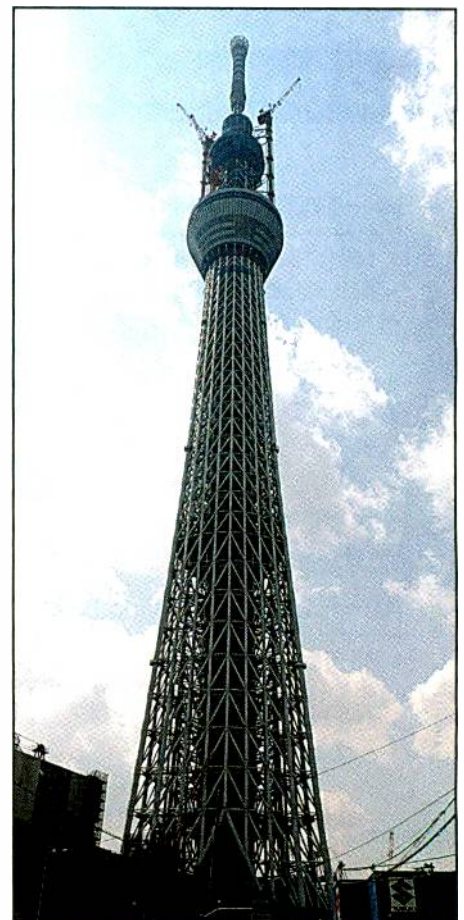
With its completion, Sky Tree, which carries signals from Japan's major broadcasters, eclipsed the 600-meter tall Guangzhou Canton Tower, <<http://bit.ly/GXx07E>>.

According to published reports, Tokyo Sky Tree, <<http://bit.ly/GWhFLz>>, **Photo B**, got its name after a vote of the public. Its competitors included *Mirai (Future) Tower*, *Rising East Tower* and *Tokyo Edo Tower*.

Tokyo Sky Tree received 30 percent of the vote, with Tokyo Edo Tower coming second with 28.4 percent. **(NOTES:** *There were no televised debates prior to this election we're aware of. ALSO: If Shiseido had measured in feet instead of meters, it would have produced 2080.052 bottles of its parfum.* – KPC6PC)

By the way, the tower has its own color, as well: Tokyo Sky Tree White.

(Continued on page 82)



News, Trends, And Short Takes

By D. Prabakaran
<bcdxer@hotmail.com>

New Radio Technology Comes to Remote Rwandan Communities

U.S.-based SC Johnson has distributed 225 MP3-enabled *Lifeplayer* radios to remote farm communities in northern Rwanda, company officials said.

SC Johnson is the first to use this new technology in an educational project to support pyrethrum (py) farmers. Pyrethrum is a plant-based natural insecticide. Initially, the project will benefit more than 5,000 Rwandan py farmers — approximately 60 percent of the total — by sharing farming news, market trends and wellness information. (**WATCH:** *Video of pyrethrum farmers in action:* <<http://tinyurl.com/ctfuauc>>. — KPC6PC)



Photo A. The *Lifeplayer*, developed by Lifeline Energy, is a solar-powered, wind-up device that combines AM/FM/SW radio with an MP3 player. (Internet screen grab, <<http://bit.ly/HcJwsY>>)

To help alleviate past problems around communication access, the *Lifeplayer* radios will allow farmers to listen to pre-loaded, pre-recorded programming and broadcasts that impact their livelihood and quality of life, SC Johnson said.

The *Lifeplayer*, developed by Lifeline Energy, is a solar-powered, wind-up device that combines AM/FM/SW radio with an MP3 player. In addition to providing traditional radio broadcasts, programming can be pre-loaded onto flash drives and then played back for farmer listening groups. (**IN DEPTH:** *Learn more about the Lifeplayer radio at:* <<http://bit.ly/GUZ0mh>>. **WATCH and LISTEN:** *To a demonstration of the Lifeplayer:* <<http://bit.ly/HcJwsY>>, **Photo A.** — KPC6PC)

— Source: SC Johnson

Radio Pakistan: Listen to Us Via Telephone in the U.S.

Radio Pakistan has launched a new service enabling Pakistanis living in the United States to listen to its programs by dialing a United States local number. Programming of FM-93, FM-94, FM-101, NBS and

the current affairs channel of Radio Pakistan — National Broadcasting Service — can now be heard by dialing (832) 280-0683 in Houston, Texas.

People living in the United States can either call this number from landline phones or from their mobiles. If they are calling from mobiles and have unlimited packages, they will not be charged for this call for listening to Radio Pakistan, but if they do not have unlimited packages, they will be charged at normal rates. (**NOTE:** *Check with your phone carrier for rate information and details.* — KPC6PC)

The new service has been launched for the people who do not have Internet or Smart phones.

— Source: Radio Pakistan,
<<http://www.radio.gov.pk/>>

Bangladesh Bans 'Banglish' to Protect Local Tongue

The use of English slang known as *Banglish* on television and radio stations has been outlawed by a Bangladesh court — a move welcomed by people who worry about a foreign invasion of their language, according to AFP reporter Shafiq Alam.

The order “to uphold the sanctity of our mother tongue” — Bengali — was issued by the Bangladesh High Court, the story noted. The language has a 1,000-year-old past, a state prosecutor said.

“The history of Bengali, which is spoken by at least 250 million people on the subcontinent, is wrapped up with the creation of Bangladesh as a country in 1971,” the story said.

Alam reported that private television and radio stations that “have sprouted in Bangladesh over the last five or six years” feature music and talk-shows aimed at listeners in their teens and 20s. “Use of *Banglish*, in which Bengali and English words are mixed seamlessly together, is widespread,” the story says, “as is *Hinglish* in India — a combination of Hindi and English.”

— Source: AFP, <<http://bit.ly/GXOj0I>>

NHK to Sell Analog Transmitter Facilities

Japanese broadcasting giant NHK — Japan Broadcasting Corp. — is in negotiation to sell about 1,050 analog broadcasting stations to Softbank Mobile Corp., according to a posting by *Japan Times Online*.

“The mobile phone service provider will use the stations — rendered obsolete by the nationwide switch to digital broadcasting last July — mostly as cell towers in mountainous areas because of complaints about reception in rural areas,” the *Times Online* reported.

The story further noted that “by improving its network, the carrier hopes to gain an advantage in the competition for radio bands for next-generation, high-speed data communications that might be allocated by the Internal Affairs and Communications Ministry.”

NHK entertained offers in December. Softbank Mobile was the only bidder, sources said.

— *Japan Times Online*, <<http://bit.ly/GUXtMY>>

Capitol Hill And FCC Actions Affecting Communications

by Richard Fisher,
KPC6PC/KI6SN



Study of Amateur Radio Piggybacks on Payroll Tax Bill

Sponsors of ARRL-backed bills to mandate a study of “impediments to enhanced Amateur Radio Service communications” — such as homeowner association antenna restrictions — tucked the language deep in a bill Congress passed in mid-February to retain current payroll tax cuts through the end of 2012, according to a report posted on the *CQ Newsroom*.

The *ARRL Letter* reports section 6414 of the *Middle Class Tax Relief and Job Creation Act of 2012* directs the FCC, in consultation with the Department of Homeland Security, to study the “uses and capabilities” of amateur radio in emergencies and disaster relief and to identify “impediments to enhanced (amateur radio) communications, such as the effects of unreasonable or unnecessary private land use restrictions on residential antenna installations.”

The law, which was signed by President Obama on February 22, also requires the FCC to make recommendations “regarding the removal of such impediments” and to report back to Congress with its findings within six months.

— Source: *CQ Newsroom*, <<http://www.cqnewsroom.blogspot.com/>>

FCC Issues Orders to Open LPFM Landscape

In a move to allow more low-power FM community radio stations onto U.S. airwaves, the FCC released two orders on March 19 addressing the implementation of the Local Community Radio Act.

(*IN DEPTH: Read the FCC news release at: <<http://bit.ly/GUgak7>>. — KPC6PC*)

According to analysts, most significant is the FCC’s decision to prioritize the establishment of LPFM stations in underserved urban areas, “many of which did not qualify for stations under the rules that existed prior to the passage of the LCRA,” according to a posting on *RadioSurvivor.com*.

“One of the main challenges facing the FCC is the backlog of 6,500 applications for FM translator repeater stations,” the website reported. “Because of the relaxed spacing requirements enacted by the LCRA, many of these translator applications would compete for spaces on the dial that would otherwise be suitable for a new LPFM community station.”

— Source: *Radio Survivor*, <<http://bit.ly/HdKiay>>

Obama Administration Opposes FCC Reform Bill

The Federal Communications Commission Reform Bill, put forth by Republicans in the House of Representatives, faces opposition from the Obama

Administration on grounds it would hamper the Commission’s ability to protect consumers.

House Democrats opposed H.R. 3309, as well, according to a report from John Eggerton posted in March on *Multichannel News*.

Eggerton explains that the bill, among other things, would require the FCC to:

- Justify regulations according to costs and benefits
- Survey the state of the marketplace periodically
- Reveal regulatory cost efficiencies before initiating any new rulemakings
- Take other steps to assure the public is getting *bang for its regulatory buck*
- Apply *shot clocks* to decisions
- Put a *narrowly-tailored* restriction on all merger conditions

The Office of Management and Budget, part of the executive office of the President, opposes the bill “because it would limit the ability of the FCC to exercise its statutory duty to protect the public interest in its review of transactions affecting the vital communications industry,” adding that H.R. 3309 would “create a separate Administrative Procedures Act for the FCC.”

— Source: *Multichannel News*, <<http://bit.ly/GU6TfG>>

GOP Balks at FCC Proposal to Disclose Source of Political TV Ads

GOP members of the House Appropriations Subcommittee put FCC Chairman Julius Genachowski on the hot seat in March over the Commission’s proposal to require TV stations to identify buyers of political ads and how much they spent — and to post the information online.

The proposal “comes just as TV stations are preparing for one of the biggest political advertising windfalls ever, which could add up to more than \$3 billion this year, per various estimates,” writes Katy Bachman, *ADWeek* Washington bureau chief, on *ADWeek.com*.

“Implying that the FCC’s interest in the move might be more political than practical, Rep. Jo Ann Emerson (R-Missouri), chair of the Subcommittee on Financial Services and General Government, asked Genachowski: ‘Why do you care about this? You have more important things to worry about. Why in the world is this a big priority?’” the report said.

Genachowski explained the idea “was part of a broader rulemaking proposal to move TV stations’ public disclosure files online.”

“Across the board,” he said, “the FCC has been looking to move from paper to digital.”

Robert McDowell, the only Republican commissioner, “warned of ‘unintended consequences’ of a proposal that he said was more FCC ‘mission creep’ that might better be served by the Federal Election Commission,” Bachman wrote.

In support of the measure, Jose Serrano, (D-New York), ranking member of the subcommittee, said: “We should know who is paying for political ads.”

— Source: *ADWeek.com* <<http://bit.ly/GTrYOE>>

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The SDR in Scannerville and AM/FM Radio

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

Twitter: @shuttleman58

“If the consumer isn’t demanding the product, there isn’t pressure to make the investment.”

Every once in a while there are products that would seem obvious to those of us in the radio hobby but which aren’t yet on the market. Some are bound to appear eventually, while others may never be made. Two come to mind this month.

There is a revolution underway with Software Defined Radio (SDR) and already there are commercial products out there. SDRs have been discussed in this column and in this magazine a number of times.

We already have a number of excellent SDRs on the shortwave radio market. There are a number of SDR kits and small products in the ham market. Some parts of the radio world don’t yet have any significant SDR presence: Scanners and consumer AM/FM radio.

Compatibility, Cost and Mobility

Scanners would seem to be a market that is a natural for the SDR. The scanner is a product that has to evolve with the radio system the radio was designed to monitor. New radio systems used by police, fire and other agencies require software and hardware changes by scanner manufacturers. What better way to do that than to make the radio an SDR? At this time, the most technically advanced scanners run from downloadable databases — and in one instance, has a touch screen.

Of course, the scanner SDR isn’t quite that simple. Some of the decryption needed has never been implemented in software. In other cases, certain functions of a scanner when implemented in software, will require faster computer chips (and therefore more expensive ones) than have been used in scanners in the past.

If the shortwave SDRs are any indication, the resulting product will still be less expensive than the traditional hardware product due to the reduced number of parts required.

Another issue with scanner SDRs would be mobility. Traditionally even base scanners have had some ability to be used in mobile applications. This would obviously be limited for a scanner SDR. At least at this time, there are scanners that allow for updates to the firmware but none that are true SDRs.

The Business Model

In the consumer radio market, it is different.

At the low end of the market, the low prices simply don’t provide any incentive for manufacturers to introduce SDRs and probably won’t for a very long time. However, at the higher end for stereo components and car radios, that isn’t as much an issue. If you pay several hundred dollars for a stereo receiver or a custom car radio, you are not likely to replace it for many years. Thus, it would make sense for manufacturers to provide products which may be upgraded by the end user, presumably, requiring some sort of upgrade fee.

From a technical standpoint, it’s hard to see much in the way of technical obstacles for consumer radios as SDRs. The technology requirements aren’t significantly different for the AM or medium-wave side than those of a shortwave radio.

For the FM side, or the ability to add features such as Internet radio, satellite radio, or other features, it shouldn’t be too difficult to implement since almost everything except the chip required to decode satellite radio encryption, have already been done in software.

No Demand, No Supply (Yet)

Why haven’t we seen these products? Aside from the technical considerations, there is simply no inertia on the part of manufacturers. If the consumer isn’t demanding the product, there isn’t pressure to make the investment.

For many consumer users of these products, they have never seen an SDR nor would they welcome having to keep their computer connected to the radio. If, however, the radios could operate without the need to be continuously connected to the computer, perhaps with a touch screen for basic functions, then it might work.

Another way of thinking of this would be a hybrid radio. Provide some basic functionality and control via a touch screen, but enhanced performance with a computer attached. In the automotive setting, there should be sufficient processing power in most vehicles already. With the advent of systems like the Ford “Sync” system and others, we shouldn’t be too far away.

On the horizons of communication, is there a product you think should be out there? Let me know what you think using the method of your choice. More next month. — K8RKD

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Citizens Band: The People's Radio

By Mark Haverstock

Long before *Smokey and the Bandit*, the truckers, and C.W. McCall's song, *Convoy*, became a part of pop culture; Citizens Band (CB) radio had already existed for about three decades. Small businesses, volunteer fire companies and families used them as an inexpensive way to communicate.

Teens in my hometown during the '60s used CBs in much the same way today's teens use chat rooms and texting to talk and share the latest news and gossip.

In the early days of CB, the atmosphere was much more reserved and polite, unlike the free-for-all attitude and cacophony found on today's band. Until the 1970s, operators used assigned callsigns, recognized frequency assignments, and pretty much acknowledged the rules set forth in FCC's Part 19 (now Part 95), <<http://bit.ly/w45OFz>>.

(WATCH: The trailer from "*Smokey and the Bandit*" <<http://bit.ly/wJEafr>>. **LISTEN:** To C.W. McCall's "*Convoy*," <<http://bit.ly/yubCXy>>. – KPC6PC.)

Early History

Citizens Band radio started out as a very simple concept — radio for everyone. Ideas for this service can be traced to 1938 when Herbert Brooks, W9SDG, of Port Wing, Wisconsin, wrote a letter to the editor of *QST* magazine describing a theoretical Citizens Radio Service.

"There is a need for low-power portable UHF rigs which is not filled by commercial, experimental or amateur licenses, especially in radio-auto-horns, radio model control, intercommunication between salesmen and truck drivers and the home

"Citizens Band radio started out as a very simple concept — radio for everyone."

office, and between small-town fire and police departments that cannot afford an operator plus many other uses."

Several years later in the closing months of World War II, Rear Admiral Stanford C. Hooper presented a draft of a project at the FCC frequency allocation hearings proposing a band of frequencies be set aside for veterans returning home. The thought was that many returning vets had the technical knowledge, ideas and skills to create a new industry based on personal communications.

In 1945, just after Hooper's plan was announced, FCC Commissioner E. K. "Jack" Jett outlined his ideas of personal two-way communications in an article on UHF personal radio communications, "Phone Me by Air," in the July 28, 1945 issue of *The Saturday Evening Post*. These events set the stage for the FCC allocating the 460- to 470-MHz band to the new Citizens Radio Service.

At that time there were two classes of the Citizens Radio Service: A and B.

- Class A radios were subject to some fairly strict technical standards and could operate with up to 50 watts input on select portions of the band.
- Class B radios had simpler technical requirements but were limited to a smaller range of frequencies and 10 watts input power.

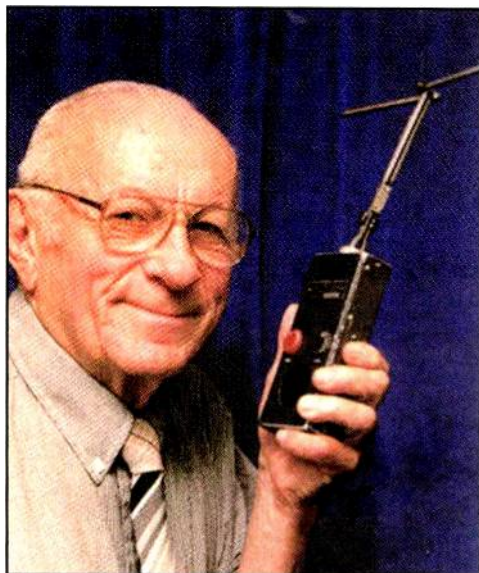


Photo A. Al Gross, CB pioneer and inventor of the hand-held walkie-talkie. (Courtesy of KB7UXE)

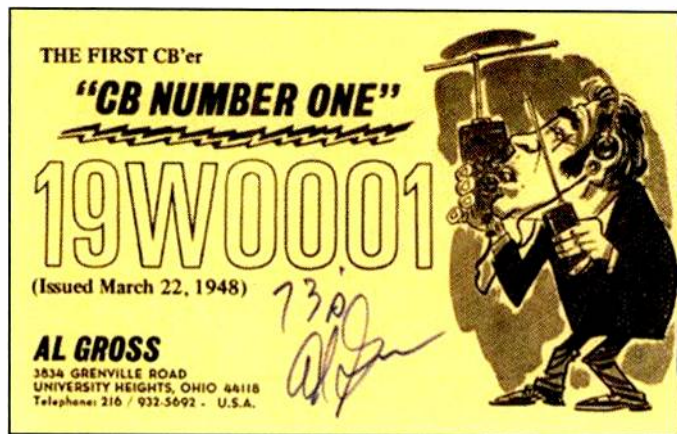


Photo B. The front side of the CB QSL card of Al Gross, 19W0001, shows him as "The First CBer, CB Number One," whose license was issued March 22, 1948. (Courtesy of KC8X, Hamgallery.com)

The first authorization to operate on this new band was assigned in 1947 to John M. Mulligan, a radio engineer. He built two radios in the 460-MHz range for testing, and reported the results to industry. Mulligan was able to maintain spotty communications on UHF channels for a distance of 5 miles. In 1948, Firestone Tire Company was granted experimental license W1ØXXD on 27.255 MHz using two 3-watt transmitters. The experiments Firestone conducted are lost among the company's corporate records, but these radios may have been the forerunners of modern CB gear.

Al Gross, Father of CB

Though Mulligan was the first to produce a prototype CB transceiver, Al Gross, W8PAL, **Photo A**, is considered by many the *Father of CB Radio*, because of his early experimentation in radio design, most notably with portable handheld transceivers.

Between 1938 and 1941 he invented and patented a mobile, lightweight, two-way communications system — the walkie-talkie — in the U.S. He was also granted the first official Citizens Band license, 19WØØØ1, in March 1948, **Photos B and C**.

During 1948, Gross formed Citizens Radio Corporation, a company to produce two-way radios for personal use. His Model 100-B became the world's first CB radio approved by the FCC for use in the new 460-MHz Citizens Band. Gross sold most of them to farmers and to the U.S. Coast Guard — and he licensed the technology to various electronics companies, as well.

Gross was somewhat ahead of his time. UHF technology was still in its infancy and was not advanced enough to be able to sell mass numbers of radios to the average consumer at affordable prices.

Though Class A and B CB didn't grow as Gross might have envisioned, he was responsible for its early development and the profitable industry that evolved from his work, from which many manufacturers and retailers later enjoyed some very handsome profits. It would be another decade before Citizens Band radio would really catch on with the general public.

Class D CB

In 1958, the FCC established the Class D Citizens Band at 27 MHz, which is the Citizens Band we know today. There were only 23 channels at the time: The first 22 were taken from what was formerly the radio amateur 11-meter band, while channel 23 was shared with radio-controlled devices.

Additionally, there were also two business band frequencies located between channel 22 and 23, which would later become channels 24 and 25.

The 27-MHz band was chosen because it would be cheaper to produce radio equipment on this relatively low-frequency band, as compared to similar UHF equipment. Parts were more common, and reliability was expected to be better.

Typical user range would also be improved while requiring less power and coverage would be less likely to be affected by buildings and local terrain. However, there was a downside to this band. The new 27-MHz CB band was shared by industrial, scientific and medical (ISM) devices, as well, which had the potential to create interference.

Nationwide, the new 27-MHz Citizens Band radio took off by leaps and bounds thanks to the working class. Whether it was a plumber, electrician or deliveryman, using these relatively inexpensive radios became part of people's daily routine. By

CB Licenses

W1ØXVX	250 MHz Experimental CB 1944-1945
W1ØXVY	250 MHz Experimental CB 1944-1945
W8XAF	460-470 MHz Experimental CB 1945
W8XAG	460-470 MHz Experimental CB 1945
W8XAH	460-470 MHz Experimental CB 1945
KQ2XAL	460-470 MHz Experimental CB 1948
19W0001	460-470 MHz First Official CB License March 22, 1948
19W0003	460-470 MHz First Official CB License March 22, 1948
KHI 1547	27 MHz CB 1958
KNN 0522	27 MHz CB 1969
KBU 1052	27 MHz CB 1972
KALM 8450	27 MHz CB 1977

AMATEUR STATION LICENSE

W8PAL Issued 1934

Holder of the First Type approvals for Citizens Band and Radio Paging Equipments by the Federal Communications Commission CR 401, CR 402, CR 404, CR 413, CR 414, CR 430.

Photo C. The flip side of Al Gross' CB QSL card shows his license lineage for both Citizens Band and amateur radio. (Courtesy of KC8X, Hamgallery.com)



Photo D. Here's the classic Johnson Messenger 2 CB. Take a video tour of the transceiver in action at: <<http://bit.ly/ApEO31>>. (Courtesy of RetroCom.com)



Photo E. The Heathkit CB-1 single-channel Citizens Band transceiver was part of the company's "Benton Harbor Lunchbox" series. Heathkit was based in Benton Harbor, Michigan and the shape of the radio's case certainly looked as though a sandwich, Twinkie® and thermos of milk might be inside. (Courtesy of Mark Haverstock)

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

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



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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 in NTSC or PAL. Five VFOs, 2000 alphanumeric memories that can be computer programmed as 40 banks of 50 channels, 40 search banks, a "select memory" bank of 100 frequencies and a priority channel. Also includes APCO-25 digital capability and can record up to 52 minutes of audio.

AR-One Communications Receiver

Enjoy total command of frequencies, modes and tuning steps with this versatile performer that allows you to control up to 95 units with a single FC. Covers 10 kHz to 3.3 GHz and delivers excellent sensitivity, ultra-stable reference frequency oscillator, high intercept, adjustable BFC and mult-IF signal output (10.7 MHz or 455kHz) plus 1000 memory channels and 10 VFOs.



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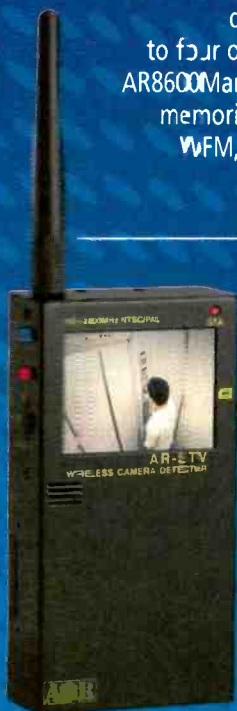


AR8200 Mark III World Class Portable Receiver

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

AR8600 Mark II Wide-Range Desktop Receiver

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



AR-STV Handheld Video Receiver

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

SR2000A Spectrum Display Monitor

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



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

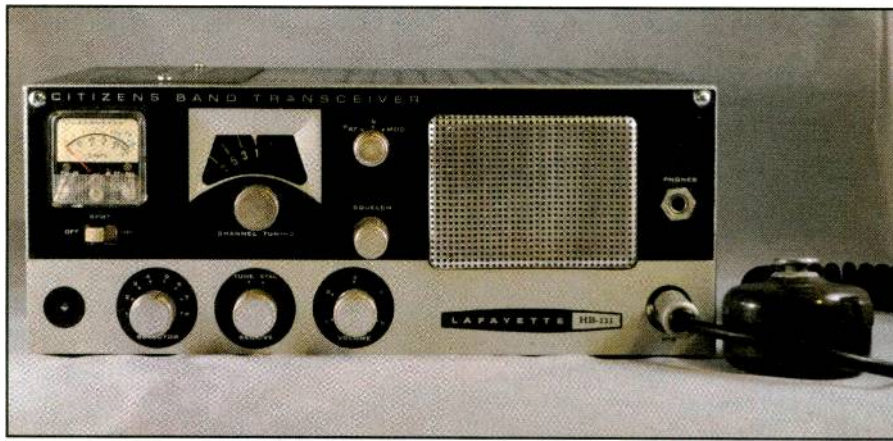


Photo F. This Lafayette HB111 was restored by Mark Haverstock. (Courtesy of Mark Haverstock)

1961, more than 200,000 licenses of all CB classes had been issued with several units authorized for each license.

Early Rules and Regs

In the beginning, the FCC intended for CB to be the “poor man’s business-band radio,” and CB regulations were similar to those regulating the Business Radio Service. Licenses were required, and could be obtained by anyone over the age of 18 by completing an application and paying a nominal fee. Within a few weeks, you got your official license with a callsign.

In the early days, callsigns were issued by one of the 24 district offices, or you could apply directly to the main office in Washington, DC. A call like 2ØQ5Ø6Ø began with the one or two digit number that indicated where the licensee lived — in this case, District 20 in Pennsylvania

— followed by the letter A, B, Q or W and four digits.

However, the FCC was later notified by the International Telecommunications Union that it was inadvertently using call-sign blocks that belonged to other countries. The FCC moved to more conventional callsigns consisting of three letter calls beginning with prefix K, followed by four digits, like KNP4914 — my family’s first callsign. Callsigns later went to four letters followed by four digits, such as KBNA7694, to accommodate the CB boom of the 1970s.

Until 1975, only channels 9-15 and 23 could be used for inter-station calls to other licensees. Channels 1-8 and 16-22 were reserved for intra-station communications — those under the same license. Channel 23 was also a shared channel between CB Class C, Class D and business band. Furthermore, while you could talk to another station under your license

for as long as necessary, communications between other licensee’s was restricted to no more than five minutes, with a mandatory five minute minimum quiet time afterward.

It was clear from the beginning that the FCC had designed the CB band to be used for necessary personal and business communication between units under the same station license, and not for chitchatting between other licensed stations.

Most of the early CB users in the ’60s initially operated their CB as the FCC intended. But as time went on, a growing number of hobbyists emerged. People who ran their businesses during the day, soon found themselves chatting with other users at night. It became a kind of gigantic national party line, a fun place to meet and make new friends and a quasi-ham station — one you didn’t have to take a test to operate.

It was also convenient to have communications capability from a car or from a hand-held portable. This utility, peace of mind, and the desire for a way to make and answer emergency calls led to making CB channel 9 the emergency calling channel and laid the groundwork for groups such as REACT (Radio Emergency Associated Communication Teams), state highway patrols, and the local police to monitor channel 9 on a regular basis.

CB Equipment

In the early ’60s, most Class D CB transceivers were AM only, tube type, hand wired, and somewhat bulky. Early radios typically had between a 1 and 12 channel transmit capacity, while some added tunable receivers that could pick up all the channels. Most people had no use for more channels. (SEE: Pictures supplied by Mark Haverstock featuring some classic Citizens Band radios in Photos D through J accompanying this article. — KPC6PC.)

But as the band began to fill up, manufacturers saw the need to offer full 23 channel units. This presented both a technical as well as an economic challenge. The first generation of CB radios used one crystal for transmit, and another for receive; which meant 46 crystals would have been required to cover all the channels — a significant expense. Crystal synthesis became the cost-effective solution. By mixing combinations of crystals, you could generate 23 channels — both transmit and receive — from as few as 12 crystals.

Manufacturers also began to introduce single-sideband (SSB) rigs that appealed



Photo G. The Lafayette HB-115 was writer Mark Haverstock’s first CB rig. It featured eight channels with a tunable receiver. (Courtesy of Mark Haverstock)

to the more serious CB operators. Without getting overly technical, SSB radios split a typical CB AM channel into two parts, upper and lower sideband. With this kind of radio, using only one of the sidebands actually produces more talk power. The result is more range and better use of a limited amount of CB channels.

When the FCC authorized 40 channels, SSB operation shifted to channels 36-40. Channel 36 became the unofficial SSB calling channel for stations seeking contacts, with conversations then moving to channels 37-40.

The maximum legal CB power output level in the U.S. is 4 watts for AM and 12 watts peak envelope power or (PEP) for SSB, as measured at the antenna connection on the back of the radio. This was typically enough to cover the local area of the licensee — typically 5 to 25 miles — and fell within the FCC's 150-mile limit.

Remote Control

In addition to the voice channels, there is a Class C service for radio-controlled devices. No voice transmissions are permitted. It has six channels in the 27-MHz band — five are unused 10-kHz assignments between channels 3/4, 7/8, 11/12, 15/16 and 19/20, and the sixth is shared with Channel 23. Radio control transmitters may use up to 4 watts on the first five channels and 25 watts on the last, 27.255 MHz.

The 27-MHz Class C channels are not officially numbered as with Class D. R/C enthusiasts usually designate them by color, and fly different-colored flags from the antenna to show who is on which channel.

On the other hand, some CB operators illegally use these channels for voice communications, and usually refer to them by the closest voice channel below them, such as 3A and 7A. Although these channels are still available, many of these devices have moved to the unlicensed 49-MHz band to avoid interference from nearby CB stations.

Most serious hobbyists operate radio-controlled models on other bands to avoid interference — something especially critical for model aircraft since it presents a safety issue.

The Class C service also has 50 channels just for model aircraft in the 72.0- to 73.0-MHz range, and 30 more channels for surface models such as cars and boats in the 75.4- to 76.0-MHz range. A power of 0.75 watts is allowed on these channels.

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Pushing the Envelope

When the 11-year sunspot cycle peaked in the late '60s, a new phenomenon on the CB band — skywave propagation — would fuel another passion. DXing or *shooting skip* became the Holy Grail, the final answer to the nagging question of how far CB rigs could be heard.

During periods of peak sunspot activity, even low-powered transmitters on 27 MHz can sometimes be heard for hundreds or even thousands of miles. In times of high sunspot activity the band can remain open to much of the world for long periods of time. In years of low sunspot activity it may not be possible to *shoot skip* at all.

The term skip actually comes from the fact that some radio signals literally skip over the space between the points of transmission and reception. The signal doesn't follow the curvature of the earth, but instead follows a relatively straight line to the charged ionospheric layers and then bounce back down. These signals bounce hundreds, or even thousands of miles. However, *shooting skip* is not always reliable and subject to the whims of Mother Nature. It was also definitely not legal, as the FCC stipulated a 150-mile limit for communications.

Some radio hobbyists operate illegitimately in the so-called *free band*, using either Citizen's Band equipment that has been modified for extended frequency range and higher power, or amateur radio equipment operated outside the assigned

amateur 10-meter band. Such operations are not part of the legally-authorized Citizen's Band.

Newer Services

In 1973, attempts were made to allocate frequencies near 220 MHz to a new Class E Citizen's Band service. The intent was to eliminate some of the interference and skip that existed on the shortwave frequencies. But this proposal was strongly opposed by amateur radio organizations and was never implemented.

Today, in addition to the current 40 channels of CB radio on 27 MHz, the FCC has created two new license-free radio services: The Family Radio Service (FRS), and the Multi-Use Radio Service (MURS) for personal use.

FRS, 14 channels on FM UHF at 0.5 watts, is used for short-range communications — less than two miles. People mainly use this service to keep track of family, for hunting, or coordinating events. MURS is 5 channels on FM VHF, with a 2-watt power limit — giving it a potential range of 5 miles or more. However, neither service is particularly well suited for hobby-type communicating like the current CB band — or ham radio.

What Next?

What does the future hold for personal communications services? As advancing technology slowly forces personal

communications over to more efficient digital modes, it's likely that analog CB radio as we know it will be slowly phased out in favor of more spectrum-efficient ways of communication.

If you look at the trends in amateur radio, sideband (SSB) has all but replaced AM for voice communication on HF bands, and D-Star digital is making inroads on the VHF and UHF bands.

It's also hard to predict where the FCC's thinking fits into the picture. As the demand for RF spectrum continues to increase, it could conceivably reassign the CB band to other frequencies and modes. Think about what recently happened to over-the-air television channels. But it's unlikely that any true die-hard users will leave 27 MHz voluntarily, and the FCC has historically not been particularly successful in policing illegal operation — as evidenced by the current state of the CB bands.

(Mark Haverstock is a Citizens Band enthusiast and historian living in Youngstown, Ohio. — KPC6PC.)

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"Breaker, Breaker," <<http://bit.ly/zwEA5s>>



Photo H. The Sonar FS-23 is a popular radio among Citizens Band collectors. (Courtesy of RetroCom.com)



Photo I. The Vocaline JRC-400 was an early Class B 460-MHz CB. (Courtesy of CBTricks.com)



Photo J. The Olson Sidebander, circa early 1960s, was one of the early tube-SSB sets. (Courtesy of RetroCom.com)

CBers: Did You Know . . . ?

Cartoon voice actor Mel Blanc was an active CB operator who often used "Bugs" or "Daffy" as his handle? He could be heard talking on the air in the Los Angeles area in one of his many voice characters. Blanc, **Photo K**, appeared in an interview — having fun talking to children on his home CB radio station — in an *NBC Knowledge* television episode about CB radio in 1978.

ALSO: World-renowned cartoonist **Chester Gould** once visited **Al Gross** and saw his wristwatch-radio prototype? After the visit, Gould contacted Gross and asked if he could use this concept for his *Dick Tracy* comic strip. Gross agreed, and in **January 1946**, the *Dick Tracy* cartoon was changed forever with the introduction of the iconic **two-way wrist radio**.



Photo K. The late cartoon voice actor Mel Blanc was a Citizens Band enthusiast with the CB handle "Bugs" and "Daffy." (Courtesy of Alan Light via Wikimedia Commons)

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In Review: The AR5001D Digital Receiver

This version of AOR's flagship radio is all about performance

By Ken Reiss, WPCØKR
<radioken@earthlink.net>

"The AR5001D covers from 40 kHz to 3.15 GHz — or from slightly above DC to slightly below daylight . . . You will not be disappointed with this outstanding receiver."

There are very few choices in the high-end communications receiver market, but AOR stands out as one of the best. It has released a digital version of AOR's flagship receiver and it's all about performance, as we'd expect from this company.

What makes digital receivers different is that sometime early in the process, the signal is converted from an analog, unprocessed signal into a digital one. In the case of the AR5001D, the signal enters through the antenna and is amplified with an RF amplifier, just like a normal receiver. Then in the final IF stage (45 MHz), or intermediate frequency, it is converted to digital, and processed by its own independent signal processor. This opens the door to all kinds of digital processing and enhancements that are just not possible with an external DSP unit, or at later stages of the conversion into an audio signal. The result is improved reception in many cases, and more fun things you can do with the receiver as a bonus.

For HF reception, a process known as *direct conversion* is used, which converts the received RF signal directly to digital without going through

any mixing stages normally found in an analog receiver. The result is excellent performance on HF with a minimum of noise and interference.

Examining the Basics

As a receiver, the AR5001D, **Photo A**, is an excellent example of a class of radio referred to as a *communications receiver*. It's not a good replacement for your average scanner in terms of day-to-day listening — for instance, it's not capable of *trunking*. (**IN DEPTH:** For an explanation of trunked radio systems, visit <<http://bit.ly/GVYehj>>. — WPCØKR.)

What it does do *very well* is perform across a wide range of frequencies. The coverage of the AR5001D is 40 kHz to 3.15 GHz — or from slightly above DC to slightly below daylight.

It can scan, but that's not its primary application. Of course, cellular frequencies are omitted on the U.S. version.

The AR5001D can resolve frequencies to 1 Hz across that wide range, so you can tune virtually any frequency in use. It has both a computer interface and an optional network interface — the ARL5001F or ARL-2300 — which can put the receiver under computer control locally, or across the Internet from a remote location.

(**BACKGROUND:** "In Review: The AOR ARL 2300 LAN Interface," April 2012 *Pop'Comm*, page 44, **Photo B**. **NOTE:** We'll spend some time on the control program in an upcoming issue of *Pop'Comm*. — WPCØKR.)

There's no shortage of receive modes either. USB, LSB, CW, AM, Synchronous AM (used for shortwave reception in weak signal conditions), ISB (Independent Side Band with stereo output), FM, Wide FM and even FM Stereo with external speakers or headphones! An optional accessory board will add APCO P-25 digital to the mix.

There are five VFOs available. (**NOTE:** For those new to the communications receiver world, a VFO is a variable frequency oscillator and works like a "working memory." It's not actually stored in memory, and can be tuned immediately to another frequency by turning the dial or digitally entering another frequency. — WPCØKR.)



Photo A. Ken Reiss, WPCØKR, notes that the AOR AR5001D professional grade communications receiver has "no shortage of receive modes: USB, LSB, CW, AM, Synchronous AM (used for shortwave reception in weak signal conditions), ISB (Independent Side Band with stereo output), FM, Wide FM and even FM Stereo with external speakers or headphones. An optional accessory board will add APCO P-25 digital to the mix." (Courtesy of AOR Communications)

Having five VFOs to work with is almost overkill, but they do have specific purposes in some operations.

The A and B VFOs are used to set up a manual search from A to B. The A VFO is the main working VFO, but any one of the five can be used that way as long as you're not trying to initiate one of the special procedures, such as a manual search.

VFO C is used for transferring a frequency from a memory channel back to the VFO. VFO D is used to transfer a frequency of interest from a search to the VFO for more experimentation, and VFO E is used to receive frequencies below 25 MHz while in the dual frequency receive mode.

In addition to these five VFO frequencies, there are 40 memory banks of 50 channels each, for a total of 2,000. Each of the 40 memory banks can be adjusted from 5 to 95 channels as desired. That should provide a lot of flexibility for both saving and scanning various services or collections of frequencies.

There are also 1,200 skip memories available — 30 per bank. These are used to bypass frequencies during a search operation. What's unique is that these can be individual frequencies (pager channels for instance) or a frequency range (the whole pager range).

(IN DEPTH: Read a 19-page overview of the AR-5001D from AOR at: <<http://bit.ly/GMxMIG>>Photo C. — WPCØKR.)

More Advanced Features

As if all that isn't enough, the AR5001D has a few more tricks up its sleeve. There is a very useful spectrum display that

appears on the main screen, **Photo D**. With a selectable span between 0.4 and 10 MHz, it's enough coverage to be useful for both HF and VHF/UHF users. *(NOTE: We're talking here about the width of the AR5001D spectrum scope. On HF it would be adjusted to a width about 0.4 or 0.5 — maybe as wide as 1 MHz. On VHF/UHF it would be adjusted to 5- or 10-MHz wide to see what's happening around you. — WPCØKR.)*

The spectrum display is very tightly integrated into the controls of the receiver. Pressing the *FUNC* key for two seconds will activate the display. Pressing the key again for two seconds will deactivate it.

You can use the main dial to change the received frequency, or press the *CLR* key and use a marker to explore the band. I was worried that the display wouldn't be deep enough to provide meaningful information, but it is more than adequate, and a lot of fun to play with.

The '5001D is capable of monitoring up to three frequencies at the same time: One on HF and two that must be within 5 MHz of each other on VHF/UHF.

It's a neat system if you have a need for it. The dual band receiver — one HF and one VHF/UHF — is a bit more common and works well.

Play (With) the SD Card

A slot on the front of the receiver below the AF gain and squelch controls will take a standard SD card. The card can be used for recording activity over the air, or for storing and retrieving as a set of memories.

Saving memories will give you a chance to name them, so that they can be recalled later. Usually you need a computer connection to do this, so having the function right on the receiver is a great bonus. At the price of SD cards, an unlimited set of memories could be built easily, if you have the time to fill up all 2,000 memories more than once. Recordings are automatically named, but can be renamed if desired.

Once data is entered into the memories, the user has the option to enter an alpha tag along with the frequency and channel information. These will display in the memory mode, making it much easier to keep track of what you're listening to. Of course, a com-

PRODUCT REVIEW

In Review: The AOR ARL 2300 LAN Interface

By Ken Reiss, WPCØKR

The ARL 2300 Ethernet Controller by AOR is a network interface that allows you to hook your AR5000, Photo A, or AR 5001D receiver directly to a computer network, and then if you desire, to the Internet. While the radio selection is a bit narrow, if you have one of these high-end receivers, you'll probably want this interface to go with it.

(IN DEPTH: See the AR 2300 receiver at <<http://bit.ly/AR5001D>> the AR 5001D at <<http://bit.ly/AR5001D>> ed.)

The interface provides over-the-network access and control to the basic functions of the receiver. All five VFOs are available, but no memory functions can be controlled. There is also a view of the spectrum display so you can find stations nearby.

Hardware Set Up Is a Snap

Hardw are set up of the ARL 2300 is very simple. **Photo B**. You plug a cable from the AUX jack on your receiver to the receiver port on the LAN interface, and an audio connection from either the line out or speaker out jack. If you choose the line out jack, you will not have volume control through the software, but must rely on your computer's audio settings to control volume. Finally, a LAN cable connects from the Ethernet port on the 2300 to an open port on your switch or router.

There is no option for wireless control, so you'll need a wired network with an empty port. One other item that you'll need to be aware of is that a DIP switch on the receiver needs to be flipped so that power will be provided to the unit. There is a power jack on the rear panel, but a quick read of the manual explains why there's no power supply included.

Bonjour . . .

Depending on the complexity of your local system, things may get interesting from there, or it may be very straightforward. In theory, the ARL 2300 will use the Bonjour protocol from Apple to make itself available on the network through a Web browser. **Figure 1**. This requires that you have the Bonjour software on your system. Macs, of course, will have it installed already. If you use Windows and the Safari browser, you'll have it also. If you're using something else — Internet Explorer or Firefox for instance — you may need to download and install an add-on before you can find the receiver.

One step that will make it much easier to find the unit is to use the Bonjour browser interface. I have used Safari since it first came out and never had a reason to use this, so I didn't know it was there. Once I found it, everything was a piece of cake.

Click the bookmarks in Safari and then Bonjour in the collections. Look for the <http://arlan-x> device and follow the directions for logging in as the administrator. X will be replaced with a number representing the number of the device on your local network.

Photo A. The AOR ARL2300 Ethernet Controller provides connections for either the AR 2300 (shown) or the AR 5001D receiver and interfaces it to the Internet via the Ethernet. (Courtesy of AOR)



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Photo B. In Review: The AOR ARL 2300 LAN Interface, appeared in April 2012's *Pop'Comm*. "We'll spend some time on the control program in an upcoming issue," WPCØKR said.

AOR

THE NEW AR5001D



PROFESSIONAL GRADE COMMUNICATIONS RECEIVER

Photo C. A 19-page tutorial on the AR5001D receiver by Authority On Radio (AOR) Communications can be found online in PDF form at: <<http://bit.ly/GMxMIG>>. (Courtesy of AOR)



Photo D. The AR5001D's main screen spectrum display has a selectable span between 0.4 and 10 MHz and is tightly integrated into the controls of the receiver. (Courtesy of AOR)



Photo E. To see and listen to the AOR AR5001D receiver in action, visit the YouTube video at: <<http://bit.ly/GPfd4L>>. (Internet screen grab)

puter interface makes entering the data a lot easier, but it can be done right from the front panel on the receiver.

Scanning and Searching

The AR5001D is fundamentally a communications receiver, *not a scanner*. That said, though, it is a very good conventional scanner. There are modes available to scan a particular bank, or to link a group of banks together in a *Bank Link* screen.

There is also the possibility to scan up to 100 select channels, no matter where they might be stored. The scan can resume when the signal drops, or after a preset delay, regardless of whether or not the signal has stopped.

In a very pleasant surprise for this class of receiver, there is also a scan delay function that allows you to set a time between 0.1 and 9.9 seconds to wait for a reply after the activity drops on a particular channel. *Nice!*

(**WATCH and LISTEN:** To the AR5001D communications receiver in action: <<http://bit.ly/GPfd4L>>, **Photo E.** – WPCØKR.)

Voice scan will only stop on channels that have voice activity. This can help prevent the receiver from getting locked on

channels with little or no activity, carriers or interference. This mode can also be applied to a search, which is probably more useful.

The receiver also features CTCSS and DCS, which is also unusual for a communications receiver — except others from AOR, *of course*. These tone squelch systems only work in the NFM mode, and only on frequencies above 25 MHz, which is the only place they're used.

They make a huge difference in interference rejection in busy urban areas. I did not encounter any issues with receiver overload or adjacent channel interference in testing.

This is truly an excellent receiver. With the tone squelch and scan delay, it is a most-capable conventional/APCO25 scanner. You simply will not be disappointed with this receiver.

Cyber Search

The cyber search function is one of the features that is only possible with the digital circuitry at the heart of this receiver. It allows a search of up to 100 channels per second looking for activity and pretty much searches them all at once. The results are displayed as it finds activity. Pressing the *MHz* key will transfer the active frequency to VFO C, which can then be transferred to a memory, or edited as you like.

There is also an *autostore* function that will store located frequencies into Bank 39. Of course, once the bank fills up, the *autostore* will stop.

Options: A Short List

While there aren't many, and most are not necessary, there are a few options for the receiver. We've mentioned the LAN interface and the P25 decoder if you want to decode APCO-25 transmissions. There's an antenna selector switch available which adds two more antenna inputs to the two that are already there. That's a total of four, controllable by automatic selection from software or the front panel.

Another option provides an *ultra-stable* and very accurate 0.01ppm reference standard by using the GPS system frequency standard.

And finally, the I/Q unit allows for 1 MHz of bandwidth to be dumped to a computer hard drive for later analysis and review. Clearly these two options are for very high-end professional systems, or intelligence gathering operations.

In Summary . . .

I didn't come across a kitchen sink anyplace in the AR5001D, but that is truly the only thing that's missing for a communications receiver. (**NOTE:** *In fairness, I should point out that I haven't found one in any competing receiver, either. – WPCØKR.*)

If it had a method of receiving trunked communications — which could be added through the software control interface — it would be the ultimate all-around general scanner.

There are no nits to pick, except for having to hold the power button for two seconds in order to turn the receiver off. But once you know that, it's just fine. Remembering to push and hold, it just takes a little getting used to.

At a list price of \$4,799, the AR5001D is clearly aimed at the professional and serious amateur market. If you get a chance to play with one, you should, but if it's within your price range, you will not be disappointed with this outstanding receiver. For more information, visit: <<http://www.aorusa.com/>>. – WPCØKR

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An Energized SWL Community Heats Up Winterfest 2012

By Dan Srebnick
KPC2DLS/K2DLS

“This year’s Winterfest attracted not only 125-or-so dedicated SWLs, but several international broadcasters.”

The shortwave listening community is alive and well, if the 25th Annual Winter SWL Festival is any indication — *and it is!*

Held in Plymouth Meeting, Pennsylvania March 1 through 3, this event is recognized as *the place* to get together with like-minded radio buffs to talk about the hobby, <<http://www.swlfest.com>>. There are activities *wall to wall*, **Photo A**.

Sponsored by the North American Shortwave Association, festmeisters Richard Cuff and John Figliozzi, **Photos B and C**, are the dedicated organizers who bring it all together each year — with help from many of the attendees.

This year’s Winterfest attracted not only 125-or-so dedicated members of the listening community, but several international broadcasters. For example, Keith Perron, of PCJ Media, came all the way from Taiwan to join the festivities, **Photo D**.

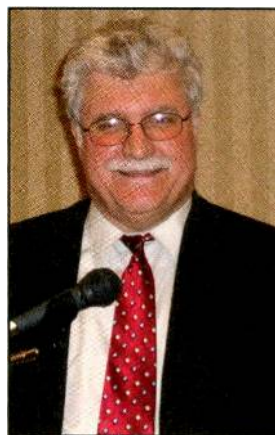
If you haven’t heard of PCJ Media, <<http://www.pcjmedia.com>>, it’s the online and radio organization that has resurrected SWL favorites such as the Happy Station and Media Network Plus. Media Network Plus is also carried via the World Radio Network <<http://www.wrn.org>>.



Photo A. With the help of engineer Greg Majewski, right, Tina Shields, a 2012 Winter SWL Fest participant, builds a flashlight that — incredibly — will run off depleted batteries. It was just one of the many activities taking place during the March event. (Photography courtesy of KPC2DLS)

American shortwave broadcasters such as Radio Free Asia and WWCR were represented, as well. AJ Janitschek, **Photo E**, was there to talk about how Radio Free Asia <<http://www.rfa.org>> is providing news and information to Asian countries such as China, Tibet, Vietnam and Cambodia. He also announced a new QSL design honoring the 25th Winterfest. RFA is a great verifier of reception reports and reports can be submitted online <<http://techweb.rfa.org/>>.

Dr. Jerry Plummer, **Photo F**, Frequency Manager of WWCR <<http://www.wwcr.com>>.



Photos B and C. Richard Cuff, left, and John Figliozzi, are the tireless organizers of Winter SWL Fest who bring it all together each year — with help from many of the attendees.

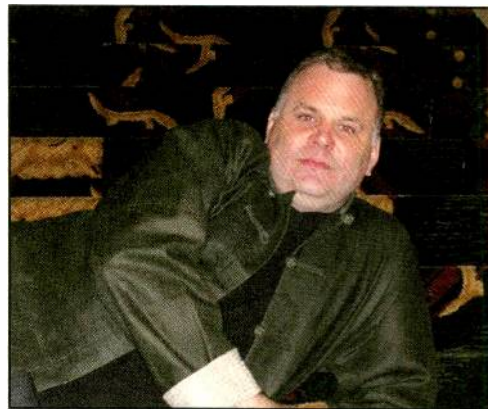


Photo D. Attending SWL Fest festivities all the way from Taiwan was Keith Perron of PCJ Media, <<http://www.pcjmedia.com>>.

was the guest speaker at the Saturday night banquet. Dr. Plummer is a professor of economics and is encouraged by the growth and increased profitability of private American shortwave broadcasters. He cited demographic studies that show the average SWL is well educated and even in these tough economic times is likely to be willing to spend up to \$500 on a new radio.

He also discussed a new DRM (Digital Radio Mondiale) chipset that at the right price — around \$15 — could finally make digital shortwave broadcasting a reality. (IN DEPTH: *What's Digital Radio*)



Photo E. AJ Janitschek spoke about Radio Free Asia's news and information programming to Asian countries such as China, Tibet, Vietnam and Cambodia. He also announced a new QSL design honoring the 25th Winter SWL Fest.



Photo F. Saturday night banquet speaker Dr. Jerry Plummer, told attendees he is "encouraged by the growth and increased profitability of private American shortwave broadcasters," KPC2DLS reports. "He cited demographic studies that show the average SWL is well educated and even in these tough economic times is likely to be willing to spend up to \$500 on a new radio."



Photo G. At the event to publicize Ears to Our World's efforts to provide low-cost receivers to impoverished regions was ETOW's Thomas Witherspoon, <<http://www.etow.org>>.



Photo H. Engineer Greg Majewski helped many attendees during the hands-on activities at the 25th Winter SWL Fest in March.



Photo I. Ana Marina represented The Prometheus Radio Project during the weekend event.

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Photo J. For more information on The Prometheus Radio Project, visit, <http://www.prometheusradio.org/>.

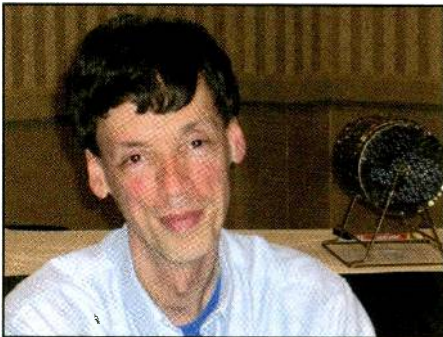


Photo K. Universal Radio's Fred Osterman is a longtime supporter of Winter SWL Fest and donated some of the prizes that were raffled.

Mondiale? See <http://www.drm.org/>. – KPC2DLS)

Thomas Witherspoon, **Photo G**, of Ears to Our World, <http://www.etow.org/>, was at the event to publicize ETOW's efforts to provide low-cost receivers to impoverished regions as an educational tool. With the help of engineer Greg Majewski, **Photo H**, they demonstrated an amazing flashlight

design that a child could be taught to build that would run on depleted AA batteries.

There were great forums run by SWLs on a large number of topics. A couple that I really enjoyed this year, were the forums on:

- Loop receiving antennas, conducted by Jef Eichner
- An overview of the challenges and dangers of being an RF systems engineer for a major television network, conducted by Paul Kaltenbach.

Meanwhile, I participated in a roundtable with Richard Cuff and others focused on Internet radio.

There were forums on Pirate Radio and on getting a low-power FM license as well. The Prometheus Radio Project's Ana Martina is shown with the organization's banner, **Photos I and J**.

(IN DEPTH: For more information on The Prometheus Radio Project, visit, <http://www.prometheusradio.org/>. – KPC2DLS.)

The group uses micro-broadcasting as a way of promoting social justice. It is

releasing a free tool called *RFree* that will lower the cost of the necessary engineering study required with an FM license application. This tool will take the place of expensive software costing many thousands of dollars.

Canadian and Finnish SWLs and DXers were out in full force, as were the legendary *Scanner Scum*.

On the list of activities, as well, was a swap meet, silent auction and an afternoon at the movies — with popcorn — where we were able to see the British cut of "The Boat That Rocked" — released in the United States as "Pirate Radio" and vaguely resembling the experiences of Radio Caroline and other British rock pirates.

The highlight of the weekend is the Saturday night raffle. Fred Osterman, of Universal Radio, **Photo K**, a longtime supporter of the SWL Fest, was there and donated a number of great prizes. Nice prizes were also donated by others including CCrane, CIDX/Radio HF, and PCJ Media.

If you've never attended a Winter SWL Fest, now is the time to start planning for next year. Assuming we make it past the end of the Mayan calendar, the 2013 SWL Fest will be held March 1 and 2 at the Doubletree Guest Suites in Plymouth Meeting, Pennsylvania.

Discounted rooms will be available at \$97 per night, including an excellent breakfast for one or two guests. Check the Winter SWL Fest website over the course of the coming months for information as it becomes available, <http://www.swlfest.com>, **Photo L**.

The Winter SWL Fest is sponsored by NASWA, the North American Shortwave Association <http://www.naswa.org>.

Photo L. For updated information about the 2013 Winter SWL Fest, slated for March 1 and 2, make frequent visits to the North American Shortwave Association website: <http://www.swlfest.com>. (*Internet screen grab*)

NASWA Winter SWL Fest

About the Fest

March 1-2, 2013, Doubletree Guest Suites, Plymouth Meeting, Pennsylvania

The Winter SWL Fest is a conference of radio hobbyists of all stripes, from DC to daylight. Every year scores of hobbyists descend on the Philadelphia, Pennsylvania suburbs for a weekend of camaraderie. The Fest is sponsored by NASWA, the North American Shortwave Association, but it covers much more than just shortwave; mediumwave (AM), scanning, satellite TV, and pirate broadcasting are among the other topics that the Fest covers. Whether you've been to every Fest (all 26, starting with the first year at the fabled Pink & Purple Room of the Fiesta Motor Inn) or this year's will be your first, you're sure to find a welcome from your fellow hobbyists.

For 2013, the Winter SWL Fest will have two days of sessions where you can learn about the latest developments in the radio listening hobbies, but there's so much more going on. There's a silent auction that takes place, where you're bound to find something of interest. There's the Hospitality Suite, where attendees partake of tuning oil and other treats and engage in spittered conversations. There is the closing Banquet, with after-dinner remarks by a luminary from the field, often one of the many broadcasters who attend the Fest, followed by the raffle, where you could win one or more of the prizes from stations up to top-notch communications gear. And of course, the informal

MONITOR OF THE MONTH

Listening, Around the World

Pop'Comm Monitor of the Month:

KPCØJPO:

New Town, North Dakota

By John Murphy,
KPCØJPO

John Murphy, who received his Pop'Comm Monitoring Station identification sign — KPCØJPO — during the first week of registration, jumped head first into shortwave listening at Christmastime, 1967. As you'll see, he's been at it ever since.

KPCØJPO holds amateur radio callsign KCØJPO. He is a General class licensee and is quite active at his New Town, North Dakota SWL and scanning listening post.

Please send us a photograph of your listening post and tell us about your monitoring experience. We'd be happy to feature you as a Pop'Comm Monitor of the Month. Write to Pop'Comm Monitor of the Month at: <PopCommMonitor@gmail.com>.

— Richard Fisher, KPC6PC

My parents gave me a National NC-88 receiver for Christmas in 1967, and when I first heard Radio Netherlands, *I was hooked* as a shortwave listener. **Photo A.**

Since then, I have expanded my radio horizons, having become interested in ham radio, CB radio during its heydays of the late '70s and early '80s, and getting into scanner monitoring — as well as other types of monitoring.



Photo A. The National NC-88 "World Master" general coverage receiver John Murphy, KPCØJPO, got for Christmas in 1967 is visible in the lower right of this picture of his New Town, North Dakota listening post. (Courtesy of KPCØJPO)

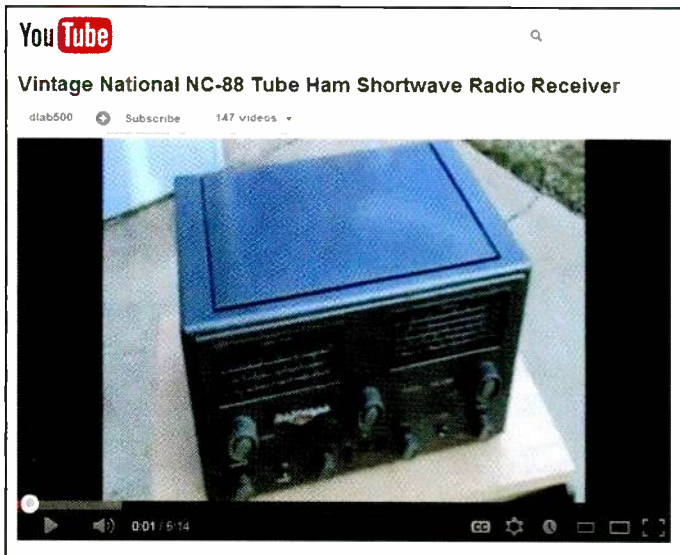


Photo B. Take a video tour and listen to the vintage National NC-88 in action in the YouTube video at: <http://bit.ly/GJoCq9>. (Internet screen grab)



Photo C. A General class amateur radio operator, John Murphy chose KPCØJPO as his *Pop'Comm Monitoring Station* ID sign to match his ham callsign, KCØJPO. (Courtesy of KPCØJPO via QRZ.com)

New Members: *Pop'Comm Monitoring Station Program*

Here are some of the listening posts recently issued a Pop'Comm Monitoring Station identification sign, authorized to obtain a Certificate of Registration and welcomed to this new monitoring community.

– Richard Fisher, KPC6PC

KPC and DX Prefixes

New monitors are listed by name, station identification sign, and monitoring station location.

Mark Danner, **KCP7MP**, Spokane, WA; Marcus Gist, **KPC5MSG**, Flower Mound, TX; Johnny Knight, **KPC4JLK**, Monroe, NC; David Buck, **ZLPC4TNT**, Upper Hutt, Wellington Region, New Zealand; Michael Day, **KPC1MED**, Riverside, OH; Michael Larner, **KPC6VU**, Mill Valley, CA; Steve Robeson, **KPC4YZ**, Winchester, TN; Eliot Ricciardelli, **KPCØER**, Minneapolis, MN; Kazell Nelson, Jr., **KPC1KNJ**, Cincinnati, OH; David Dustan, **KPC7PAZ**, Chandler, AZ; Walter Schivo, **KPC6AFN**, Novato, CA; Robbie Spain, **KPC7DX**, Rock Springs, WY; Richard Brendlinger, **KPC3RWB**, Jamestown, RI; Joseph Juhasz, **KP7CUB**, Mesa, AZ; Michael Lepore, **KPC1MJL**, Greenville, RI; Robert Bennett, **KPC5RPB**, Las Cruces, NM; Danny Whaley, **KPCISC**, East Wenatchee, WA; Jonathan Westerling, **KPC6RS**, Sausalito, CA; Joseph Warner, **KPCØJNW**, Parkville, MO; Paul Hadley, **KPC7QSL**, Tuscon, AZ; Gary Beaver, **KPC4GSB**, Luray, VA; Ronnie Stroup, **KPC6GE**, Antelope, CA; Endaf Buckley, **KPC6FIY**, Long Beach, CA; Gary Smith, **KPC7GRS**, West Valley City, UT; Jim Currie, **KPCØTLC**, Sac City, IA; Sergio Potes, **KPC4RN**, Miami, FL; Peter Miller, **KPC1DX**, Prospect, CT; Michael Kudelka, **KPCØMJK**, St. Louis, MO; Robert Fellows, **KPC2RGF**,



Baldwin, NY; Richard Ketterman, **KPC8RMK**, Ridgeley, WV; Jonah Heffler, **KPC2USA**, Brewster Village, NY; Gene Hinkle, **KPC5PA**, Austin, TX; Rick Blythe, **VEPC3CNU**, Burlington, Ontario, Canada; Ronald Marshall, **KPC7RM**, Redmond, OR; Larry Bailey, **KPC7LRB**, Tuscon, AZ; Steve Jansen, **KPCØEBL**, Granger, IA; Mark Beamish, **KPC7MB**, Snohomish, WA; Kevin Rogers, **KPC7PDX**, Portland, OR; Loren James, **KPC2LSJ**, Branchport, NY; Ira New, III, **KPC4BN**, Watkinsville, GA; Scott Dickson, **KPC6SRD**, Bakersfield, CA; Sean Welsh, **VEPC3OZ**, Orangeville, Ontario, Canada; Kenneth Nessler, **KPCØKEN**, Grand Junction, CO; Charlie Hoeksema, **KPC7PIC**, Pella, IA; Bart Stavisky, **KPC5EKG**, Mount Vernon, IL; James Dillon, **KPC5KWA**, Talisheek, LA; Jukka Vaisanen, **OHPC8GUK**, Oulu, Finland; Michael Lemish, **KPC4ML**, Great Falls, VA; Alokesh Gupta, **VUPC3BSE**, New Delhi, India; Douglas Short, **KPC6SAU**, San Anselmo, CA; John Boncek, **KPC4JJB**, Montgomery, AL; Daniel Riordan, **KPC7WRJ**, Sherwood, OR; Steven Rainey, **KPC6SAR**, Ridgecrest, CA; Jay Jensen, **VEPC3SWS**, Callander, Ontario, Canada;

(WATCH: A video demonstration of a National NC-88 receiver, **Photo B**, in action at: <<http://bit.ly/GJoCq9>>. READ: More about the receiver at: <<http://bit.ly/GRO8s4>>. – KPC6PC)

My Pop'Comm Monitoring Station identification sign matches my amateur radio callsign: KCØJPO.

I love tuning in the world. One of my favorite stations is the BBC. I also like to listen to public service frequencies on the scanners.

In addition to the National NC-88 four-band receiver I got 45 years ago, I have an Army Signal Corp receiver I found at a thrift store.

Among several handheld, mobile and base station scanners I use is an ICOM IC-R5. (WATCH: A video demonstration of an ICOM IC-R5 scanner: <<http://bit.ly/GSIFi9>>. READ: More about the ICOM IC-R5: <<http://bit.ly/GWAzWq>>. – KPC6PC)

I live in Mountrail County, North Dakota — a very rural county with an extremely low population, and have volunteered for the Amateur Radio Emergency Service® (ARES), and Radio Amateur Civil Emergency Service®, (RACES). **Photo C**.

I am also active with Air Force MARS. My call is AFA8JP.

Bernard Patrick, **VEPC3BWP**, Edmonton, Alberta, Canada; Donald Haffke, **KPC6DON**, Huntington Beach, CA; Steven Ruley, **KPC7WAL**, Walla Walla, WA; Viktor Yermolenka, **KPCØBYE**, Maryland Heights, MO; Judy Taylor, **KPC8JLT**, Huntington, WV.

WPC Prefixes

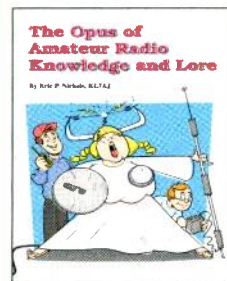
Bryan Daniels, **WPC4RMY**, Harrisonburg, VA; Stephen Daniels, **WPCØIF**, Tyler, TX; Kelly McCrary, **WPC4JDH**, Murfreesboro, TN; Wilma McKinney, **WPC5WFM**, Walnut Ridge, AR; Nelson Esteves, **WPC4NEE**, Miami, FL; William Shea, **WPC1BSA**, Middletown, CT; Paul Bongiovanni, **WPC1PEX**, Middletown, RI; Michael Sankewitsch, **WPC3TWG**, High Point, NC; Lucas Jordan, **WPC9MKE**, Milwaukee, WI; Jeffrey Lehmann, **WPC1JL**, Hanson, MA; Robert Hartje, **WPC2RCA**, Staten Island, NY; Jeff Beals, **WPC4AW**, Royal Palm Beach, FL; John Parmenter, III, **WPC4DXH**, Swannanoa, NC; Mike Everette, **WPC4DLF**, Raleigh, NC; Warner Johnson, **WPC4WBJ**, Brandon, FL; Dennis Vernacchia, **WPC6KI**, San Diego, CA; Dottie Wise, **WPC5DW**, Gilmer, TX; Barry Bee, **WPC4BRB**, Shelbyville, TN; Everett Bollin, **WPC3DHP**, Palmer Park, MD; Stephen Steward, **WPC2SS**, Interlaken, NY; Christopher Emery, **WPC1AUN**, Leverett, MA; Peter Russell, **WPC1SH**, Indian Harbour, FL; Edward Best, **WPC4EB**, Durham, NC; Larry Wise, **WPC9DGA**, Gilmer, TX; Jack Belew, **WPC4SWL**, Forence, AL; Dave Winkle, **WPC4KOQ**, Sevierville, TN; Stephen Ruggles, **WPC1SAR**, Lunenburg, MA; William Bee, **WPC4JFN**, Shelbyville, TN; Charles Player, Jr., **WPC4BML**, Macon, GA; John Foster, **WPC4FX**, Fairfax, VA; Robert Kulow, **WPC4UEH**, Cary, NC; Gerald Woodward, Jr., **WPC6NJ**, Cerritos, CA; Charles Cavey, **WPC4CEC**, Raleigh, NC; Gordon Beck, **WPCØGLB**, Security, CO; Dick Bruno, **WPC6ISY**, Fountain Valley, CA; Milton Garb, **WPC6QE**, Rowland Heights, CA; Southern California Amateur Radio Digital Club, **WPC6QP**, Rowland Heights, CA; Robert Hayes, **WPC5XL**, Canton, MS; John Sims, **WPC4BVA**, Bedford, VA;

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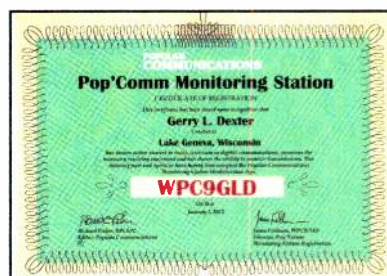
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For complete information on the Pop'Comm Monitoring Station Program see the January 2012 edition of *Popular Communications*. To join, visit Pop'Comm Monitors On the Web: <<http://popcommmonitors.blogspot.com/>>. Questions? Write: <PopCommMonitor@gmail.com> in care of WPC2COD.

– Jason Feldman, WPC2COD
Director, PCMS Registration
<PopCommMonitor@gmail.com>

If it's June, There's Magic in the Air(waves)

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

"Because of the seasonal nature of enhanced 6-meter propagation . . . June is the month for 6-meter fun."

Don't you just hate being late to the party? Or *not getting* something that everyone else seems to know instinctively? Or being in the right place, but at the wrong time?

My relationship with 6 meters seems to fit those analogies perfectly — unfortunately — and I'd like to help you get with the program and avoid my mistakes.

So, to be clear, in more ways than one, the time to enjoy 6 meters is *now*. In the big picture, there's never been more 6-meter activity, period. And gear has never been more available and more affordable. But more specifically, because of the seasonal nature of enhanced 6-meter propagation and two over-the-top operating events that synergistically combine forces, June is the month for 6-meter fun.

If you are like me, you've probably put off exploring the *Magic Band* in any significant way, perhaps relying on outdated information or the

ramblings of gentlemanly 160-meter ops. But for me, messing around on 6 meters for the past three summers has been unexpectedly awesome. If you're an *HF-only ham* like I was, let this month's column inspire you to take action!

The April 2012 *Ham Discoveries* focused on outdoor operation and hill topping — two tried and true ways to have fun at VHF and above — and mentioned the two operating events that have contributed to the success of present-day 6-meter operations: the ARRL-sponsored Field Day and June VHF QSO Party. As I mentioned, each of these events have seen outstanding levels of participation in recent years. With the proliferation of affordable rigs with 6-meter coverage, activity on the *Magic Band* has been spectacular during both.

For many VHF enthusiasts, the two outings have sort of merged into one extended event (with a two-week break for work and food between). College basketball fans have March Madness. Six-meter ops have the month of June.

It's QSO Party Time

The June VHF QSO Party occupies the *second full weekend* in June — June 9 and 10 in 2012 — with most activity on 6 and 2 meters. Especially 6, **Photo A**. This relaxed contest is newbie-friendly, and even the most grizzled and strident ops accommodate newcomers.

Like ARRL Field Day, many ops work the contest from the field, but home stations are just as good, so don't worry about not being able to work portable.

ARRL Field Day

Speaking of ARRL Field Day 2012, it's on June 23 and 24 — always the *fourth full weekend* of June — and is the most popular on-air event each year in the U.S. and Canada. More than 35,000 hams participate individually, with friends or with clubs and organizations.

Like the June VHF QSO Party, it's a contest of sorts, but it's not as rigid as more stringent competitions, which may explain its popularity.

Just Do It

For 6-meter fun — and HF for that matter — you don't have to operate from the field if your

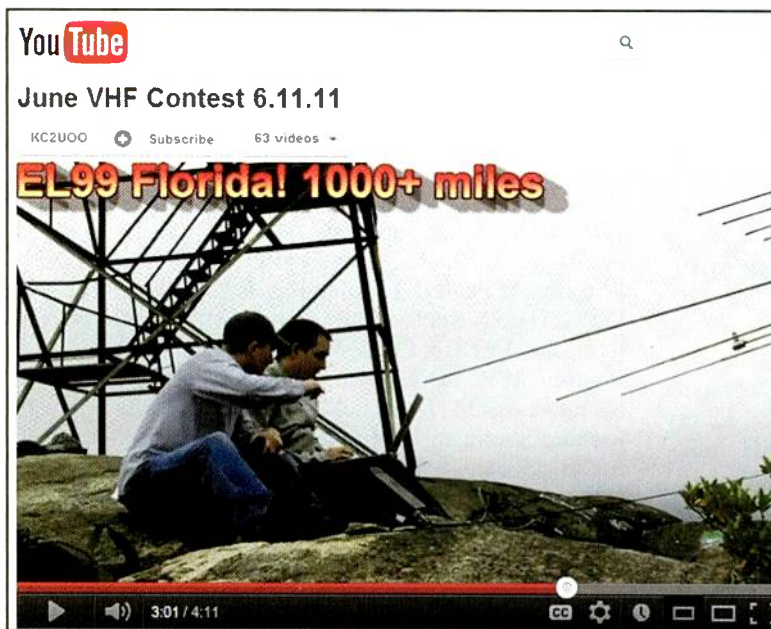
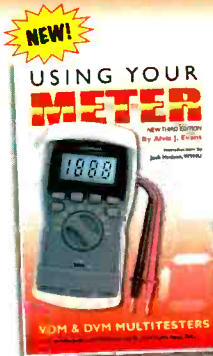


Photo A. Brothers Andrew, K2FR, and David, N2TEB, Mennerich operate mountaintop portable during the 2011 June VHF QSO Party from Mt. Beacon in Beacon, New York. They're at about 1,600 feet elevation in grid square FN31al. At this moment in the video, they've just made 6-meter contact with N4MFC in EL99 — 1,000+ miles away near Daytona Beach, Florida. On 50 MHz they used a three-element beam. (**WATCH:** N2TEB and K2FR in action, <<http://bit.ly/H6ycQm>>. — NTØZ) (YouTube screen grab)

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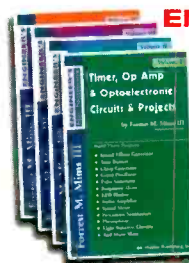
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Photo B. My trusty Alinco DX-70, shown at the lower left, made my first "summer of 6-meter fun" — circa 2000 — a practical reality. An early "HF + 6" transceiver, the DX-70 was available in versions that put out 10 or 100 watts on 6 meters. Although not in Alinco's lineup for years now, used DX-70s are available for approximately \$450 — which is more than they were selling for a couple of years ago! — NTØZ. (Courtesy of NTØZ)

interests or schedule won't allow it. Just fire up from your home station. It's all good.

Just get in the game! And don't forget that the rest of June — outside of the two contest periods — often brings the best 6-meter propagation of the year. The contests just make for convenient excuses to get on the air.

Let the Magic Show Begin

Six meters is aptly referred to as the *Magic Band* because propagation there is often unusual and mysterious. The *no man's land* between 50 and 54 MHz has a quirky mix of VHF and HF characteristics that are found nowhere else. The band might be stone dead for a week, then, in a single moment, may produce wall-to-wall signals from hundreds or thousands of miles away.

Most propagation modes on 6 meters don't require much in the way of sunspots, so its unpredictability ebbs and flows at its own pace, mostly independent from whatever's going on down below on the HF bands.

Six meters is also a beginner-friendly place to hang out. Veteran ops welcome

To Learn More About 6-Meter Operation

There is plenty of resource information about the 6-meter Magic Band on the Internet. Here are some useful websites:

- Six Meter International Radio Klub, **Photo C**
<<http://www.smirk.org>>
- AC6V 6-Meter Reference Page
<<http://bit.ly/H5YzG8>>
- 6-Meter Links
<<http://bit.ly/H4vkAN>>
- G3USF Worldwide Beacon List
<<http://bit.ly/qteM9i>>
- Worldwide TV-FM DX Association Propagation Page
<<http://bit.ly/HaPU4c>>
- Hepburn's Worldwide Tropo Ducting Forecasts, **Photo D**
<<http://bit.ly/GQ6079>>
- ICOM Grid Square Map of USA
<<http://bit.ly/GQK7jN>>
- F6FVY Grid Finder Using Google Maps
<<http://bit.ly/GQzFKb>>
- Six-Meter Reference Books, **Photo E**
<<http://bit.ly/GRoFL4>> and <<http://bit.ly/H67NCp>>

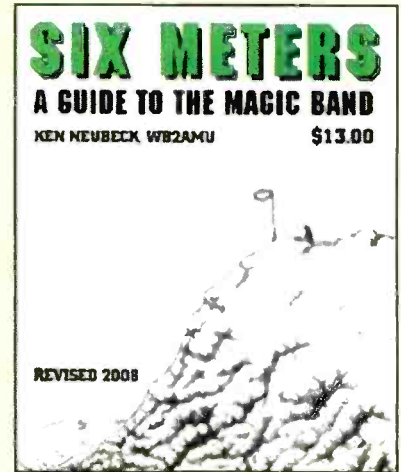


Photo E. My favorite book about 50 MHz is *Six Meters: A Guide to the Magic Band*, written by 6-meter enthusiast and cartoonist Ken Neubeck, WB2AMU. It is filled with solid information and provides plenty of tips and tricks for maximum 6-meter fun. The revised Fourth Edition, weighing in at 128 pages, was published in 2008. Visit: <<http://bit.ly/GRoFL4>>. The CQ Online Bookstore has several books with 6-meter references, as well: <<http://bit.ly/H67NCp>>. (Courtesy of NTØZ)



Photo C. SMIRK, the Six Meter International Radio Klub, “has members in 100 countries on all continents,” according to its website, underscoring it is, indeed, an *international* organization. “We are devoted to promoting six-meter activity throughout the world.” For information, visit: <<http://www.smirk.org>>. (Internet screen grab)

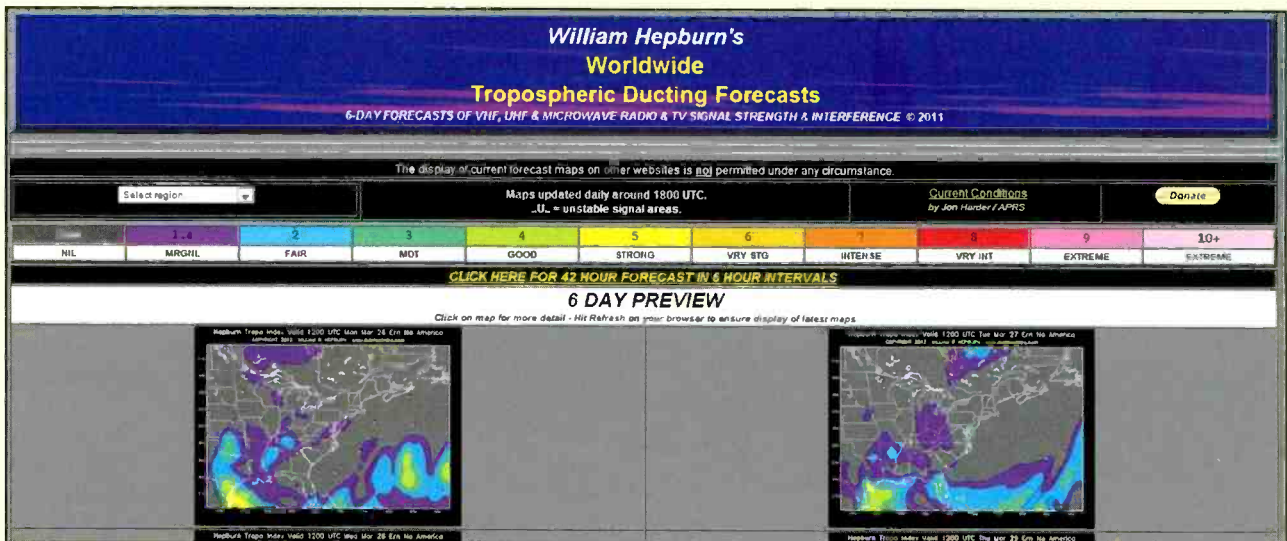


Photo D. William Hepburn's *WorldWide Tropospheric Ducting Forecasts* at <<http://bit.ly/GQ6079>> gives visitors “6-day forecasts of VHF, UHF, microwave radio, and TV signal strength and interference. It’s a great tool for the 50-MHz radio amateur in search of DX contact opportunities. (Internet screen grab)

newcomers, and there are few, if any, *elitist enclaves* to spoil the magic. Maybe that's because the band is so big? After all, at 4 MHz wide, 6 meters is eight times larger than the 80-meter ham band. And although there's plenty of room for everyone, most activity is clustered around a few key-calling frequencies! *More on that later.*

Late to the Party

As a teenage ham in an era before the Internet, HF was my lone desire. I worked mostly DX, with some contesting and a bit of rag-chewing. But no VHF. There were only four hams in my town, and no repeaters. My *de facto* Elmer had a tribander, a medium-size tower and a Swan 350C HF transceiver. He was a DXer through and through, and the wondrous contacts I experienced with the old Swan inspired me completely.

After 35 years of HFing, as luck would have it, I wound up mentoring a couple of budding VHF enthusiasts. That forced me to brush up on the subject and actually get back on 6 meters, which I had briefly done some 10 years ago, when my Alinco DX-70 transceiver, covering 160 through 6 meters, provided a summer of fun on 50 MHz. **Photo B.**

(WATCH: An Alinco DX-70 transceiver in action, <<http://bit.ly/GQN18b>>. – NTØZ)

With 10 watts and a three-element beam at 20 feet, I worked stations from coast to coast, almost all on SSB). But no DX, other than Canada. I was rarely in my shack during sporadic openings — and I certainly didn't work the June VHF QSO Party or Field Day — so I'm sure I would have done better if I had been able to operate more.

If I would have known then what I know now, I never would have left 6 meters, which supports reliable ground-wave communications up to 100 miles with low power (200 miles+ from mountaintops or skyscrapers), and long-distance propagation through a variety of mechanisms in the spring and summer months — even year round to a lesser extent).

Don't make my mistake. Don't be late to the party!

It's Not What You're Thinking

On HF, signals are typically propagated via groundwaves or skywaves. According to lore, groundwaves travel a short distance before fading away and skywaves, *if we're lucky*, reflect from the ionosphere to the ground and back, covering longer distances.

At 50 MHz, the transition zone between HF and VHF, a veritable circus of possible propagation modes exists. These include Sporadic-E (also known as E-skip), tropospheric ducting (tropo), field-aligned irregularities (FAI), backscatter, auroral propagation, meteor scatter, trans-equatorial propagation (TEP), moonbounce, and more.

Because it's summer, and because the sunspot cycle can't quite figure out what it wants to be when it grows up, the most important propagation mode for 6-meter ops is probably sporadic-E.

Global F2 propagation, used by HF operators to work the world, is very unlikely, but not impossible, until the sunspot cycle peaks appropriately in a year or two. That is, if it *ever* gets high enough during this cycle.

Sporadic-E skip, which occurs throughout the solar cycle and does not depend in any way on sunspots, follows a seasonal pattern. When ionized clouds form in the E layer of the ionosphere, they act as large *floating radio mirrors* that reflect

Pop'Comm June 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.

Will you be participating in the ARRL Field Day this month?

- Yes, as a licensed radio amateur1
 Yes, as an unlicensed operator/observer2
 No.....3

If you take part, for how many days?

- One day4
 Two days5

As an SWL or scanner monitor, does Field Day interest you? (Choose all that apply)

- Absolutely. SWLing on the ham bands is fascinating!6
 Absolutely. Scanner activity on the ham bands is fascinating!7
 Not until you mentioned it. Thanks!8
 As purely a listener, I have no interest in Field Day9
 How do I get to this *field* where we're spending the *day*?10

If the *Pop'Comm Monitoring Station* program sponsored a listening-only award involving logging and confirming reception of amateur radio stations, I'd be:

- Extremely interested11
 Mildly interested12
 Intrigued, but not committed13
 Pretty uninterested. Amateur radio does nothing for me14
 Tell me more!15

As a communications enthusiast, do you see overlap of SWL, scanner and amateur radio interests? If so, how? And how much? (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.popcommmagazine.blogspot.com/>> and click the link to the *Pop'Comm June 2012 Reader Survey*. It's quick and easy.

Tah-Dah! June's Winner Is . . .

For participating in the *Pop'Comm Reader Survey*, the winner of a free subscription or extension is **Gregory Mockoviak**, of **Edison, New Jersey**, who writes: "I do not currently subscribe to the digital edition of *Pop'Comm*, but will when I renew. Then I won't have to worry anymore about torn or mangled pages from the Post Office!"

Congratulations, Gregory! We're glad to have you as a reader — no matter what format of Pop'Comm you choose. Thanks! – KPC6PC

and refract 6-meter signals back to Earth. Because these ion clouds don't exactly form on schedule, we call this sporadic-E propagation.

Typical sporadic-E contacts can span several hundred to 1,000 miles or more. When two or more sporadic-E clouds are positioned correctly, *double-hop* contacts can take place at distances of 2,000 miles or more. This is how East Coast hams are occasionally able to work European or African hams on 6 meters when the sunspot cycle isn't maxed out.

Most sporadic-E action takes place between May and August, although winter openings in December and January are also possible. From 9 a.m. to noon local time seem to be best. The early evening, too.

Although sporadic-E contacts can last for hours, brief openings are the norm. Distant stations pop in and out of the noise, become quite strong, then disappear just as quickly. This is exciting, and a bit unnerving.

Most Rigs Now Include 6 Meters

Back in the day, 6-meter SSB/CW gear was chiefly nonexistent and expensive. Today, however, 6-meter hardware is readily available and much more affordable.

Most new HF transceivers cover 6 meters, and many include 144, 222 and even 432-MHz coverage in a single, tiny box, as well. Dedicated 6-meter multimode radios are also affordable, and may even cost less than used 6-meter hardware from the '70s through the '90s.

Antennas for 6 meters couldn't be much simpler. A half-wave dipole is only 112-inches long, and a half-wave vertical totals just 56 inches. Full-size beams are the size of TV arrays, and rotators, masts and antenna hardware all seem tiny by HF standards. Wire dipoles and full-wave loops work very well at 50 MHz and are easy to conceal, if necessary.

Feed lines are the only items that require improved quality. If you use bargain-basement coax at 50 MHz you'll likely waste precious RF energy heating your cable. Coax losses at 50 MHz are about double those experienced at 10 meters. So do yourself a favor and spend a few more dollars on high-quality coax that's rated for use at 50 MHz or higher. You'll be glad you did.

RG-6 satellite TV coax — or quad-shield RG-6 — is an excellent, low-loss cable for 6-meter antenna runs. It's rated for 1 GHz, inexpensive, and good-quality F connectors are affordable and easy to attach. As I've mentioned in previous columns, I use it for just about everything up to 100 watts.

Where to Hang Out and What to Do

Activity on 6 meters tends to be a bit episodic, so hams usually use calling frequencies to find each other. Once contact has been established, the operators can move up the band to a clear frequency.

- The FM calling frequency is 52.525 MHz
- On USB, listen to 50.125 and 50.2 MHz
- And on CW, try 50.090 MHz

A bunch of Morse code beacons can be found between 50 and 50.1 MHz, so if you can hear these low-power stations, you know the band is at least open between you and wherever the beacon is located.

Propagation prediction, monitoring and band-opening notification systems have sprung up all over the Internet. When the signals are flying in your geographic region, these websites and services can alert you via e-mail or text messages!

There is a lot of awards activity on 6 meters, but many conventional operating awards such as worked all states (WAS), worked all continents (WAC) and DXCC are mostly unattainable by *Magic Band* beginners. So, VHF ops have their own awards that can be pursued by just about anyone. Working *grid squares* is a primary pursuit.

In a nutshell, the planet has been arbitrarily divided into thousands of grid squares based on small increments of latitude and longitude. The U.S., for example, contains several hundred contiguous grid squares. Confirm contacts with hams in 100 of these little squares and you qualify for the ARRL's VHF/UHF Century Club award (VUCC).

The designators for each grid square have two letters and two numbers.

(*FIND: Your grid square using the K2DSL Maidenhead Grid Square Locator at: <<http://bit.ly/nrrXCq>>. Enter your amateur radio callsign, postal address or ZIP code and the program will determine in which grid square you're located. — NTØZ*).

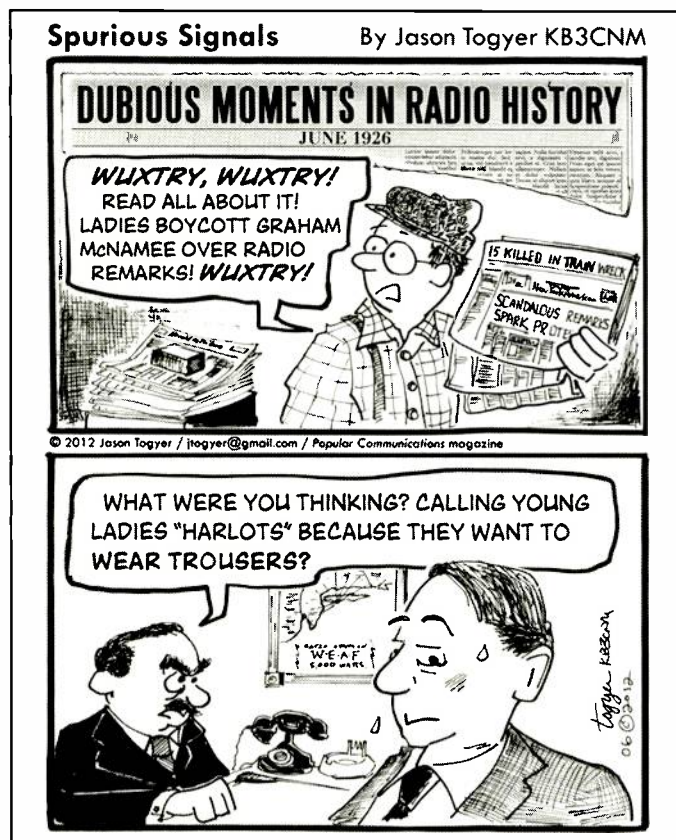
When I lived in Connecticut I was in grid square FN31. In central Minnesota it was EN25. Now, on the South end of Rochester, Minnesota, I'm in EN33 . . . *barely!*

When you hear 6-meter ops frantically exchanging grid squares during E-skip QSOs, you'll know why.

Power in Knowledge

There's a lot more to learn and explore when it comes to having fun on 6 meters, so I hope you'll check out the links in the accompanying box.

I'm not sure whether I'll be working the June contests this year from home or from the wilds, but if propagation is anything like it's been for the past two seasons, one way or another I'll see you on six! — NTØZ



WX or Not, Setting Up a Home Weather Station Has Its Challenges — and Rewards

By Dan Srebnick, KPC2DLS/K2DLS
<k2dls.rfbits at gmail.com>

“Everybody talks about the weather, but nobody ever does anything about it.”

Often attributed to writer Mark Twain, the quote possibly has origins elsewhere, <<http://bit.ly/wnMMXH>>.

And, according to former Minnesota Governor Jesse Ventura, among others, the U.S. military *has been doing things about the weather* for some time, **Photo A**, <<http://bit.ly/zirbOL>>.

I’ve been running a weather station in my yard for the past few years. It was the convergence of a couple of ideas, really. My wife Tina, KC2PVM, had an interest in having a home weather station. I had

set up an APRS beacon on 144.39 MHz and an iGate from RF to the Internet as part of my experimentation with APRS and packet radio.

I put the two together and have been sending out weather reports via APRS: <<http://bit.ly/wUPPa>>.

Our first weather station was consumer grade — a LaCrosse 2310. This is a fairly popular low-end solution that is partially wireless. It includes an indoor console and outdoor sensors. The outdoor rain sensor and anemometer (wind speed gauge) are hard wired via telephone cable to the temperature and humidity sensor. It

“I’m satisfied with the integration into the Davis weather cloud and have found a new use for Weather Display (WD) and its capabilities.”

is all back-hauled to the indoor console via a Part 15, 433-MHz telemetry signal.

The rain gauge failed and had to be replaced. Fortunately, spare parts for the 2310 are easy to come by on the Internet. Then the anemometer failed. It was mounted on the mast where my Comet CX-333 tribander is installed. My roof is very steep and difficult and I don’t climb it. Rather than finding a sympathetic volunteer or pay someone to replace another failed component, I decided I would eventually replace the station with something more reliable.

Time for An Upgrade

I looked at various options from Davis <<http://www.davisnet.com>>, Peet Bros. <<http://www.peetbros.com>>, and others. I was looking for something more professional and reliable than the station I had. It had to be wireless, and I did not want to spend \$1,000. After all, it’s *only a hobby*.

After much consideration, I was taking a liking to the Vantage Vue <<http://www.vantagevue.com>> from Davis. This is a self-contained, semi-professional sensor with an integrated solar panel, capacitor, and battery backup for remote power.

It sends reports wirelessly via UHF to an indoor console and has a range of



Photo A. Jessie Ventura flies over the High Frequency Active Auroral Research Program (HAARP) antenna arrays located in remote Alaska. See the full video at: <<http://bit.ly/yHqPJS>>. (*Internet screen grab*)

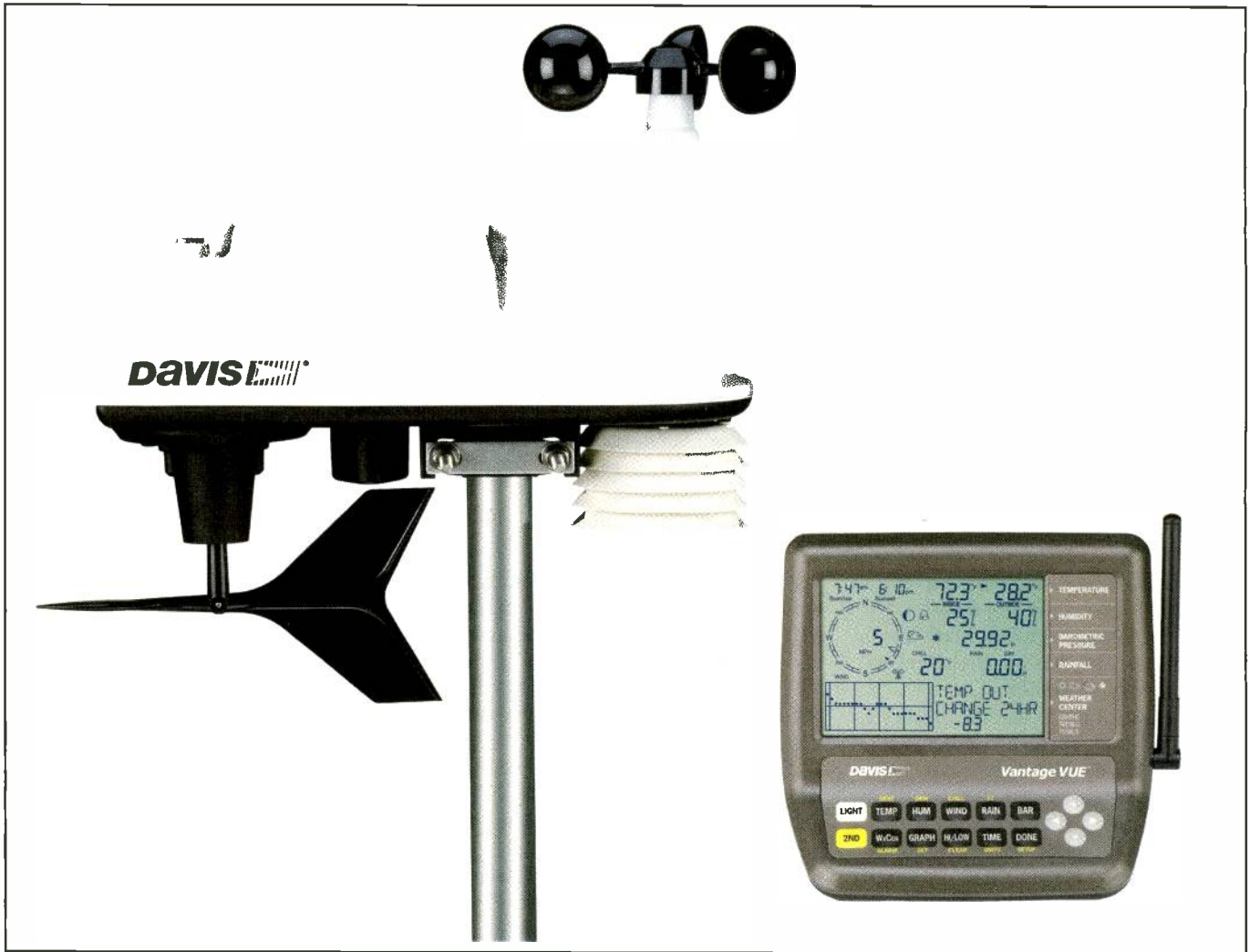


Photo B. The Davis Vantage Vue wireless weather station consists of an integrated sensor and a console. The console can be connected to an Ethernet network through use of the WeatherLink IP dongle. (Courtesy of K2DLS)

about 1,000 feet. The sensor could be mounted on my chimney mast and would work just fine.

Just before Christmas I received a *too-good-to-be-true* email offer of a big discount on Davis weather equipment. These were not being advertised on the vendor's website and only being offered to a select group — so they claimed. Anyway, the discounts were steep. I bit, and ordered myself a Vantage Vue, **Photo B**, with the WeatherLink IP module — and saved a bundle.

The WeatherLink IP module allows the console to be directly connected to Ethernet and in turn to send weather reports to the Internet. Once on your home network, the device is assigned an IP address via DHCP and can be configured via the WeatherLink software from a Windows PC.

The product includes a discovery protocol that allows it to be found by a broadcast packet before the IP

address is known. This made configuration quite easy.

It Helps to Have a Plan

However, there were some things I had not considered well enough. The first issue was siting the outdoor sensor. I had planned to put the integrated sensor up on the chimney mast, just below the Comet CX-333 tribander — 146/220/440 MHz. Tina quite correctly pointed out that while it may have been a good place for an anemometer, a temperature sensor does not belong anywhere near an active chimney for a wood burning fireplace. So a new site had to be found.

I also did not have enough advance information to determine exactly how I would integrate the new weather station into my APRS system. The LaCrosse integrated through a program called Weather Display <<http://www.weather-display.com>>. The LaCrosse console is in

my office, located in the bedroom next to the shack, where the APRS radio and the iGate are running.

It is connected to the computer via a serial port. The software polls the console and every 10 minutes writes out a file called WXNOW.TXT. This file is readable through a network share and made available to the laptop running the iGate in the next room.

The iGate runs through UI-View 32 <<http://www.ui-view.org>>, a very popular Windows APRS program. Every 10 minutes, it looks for the WXNOW.TXT file. If it has been updated, a weather report is sent out via APRS RF on 144.39 MHz and to APRS-IS <<http://www.aprs-is.net>> servers on the Internet.

The Answer is Blowing in the Wind

It seemed that I now had to modify the architecture of my weather feed because

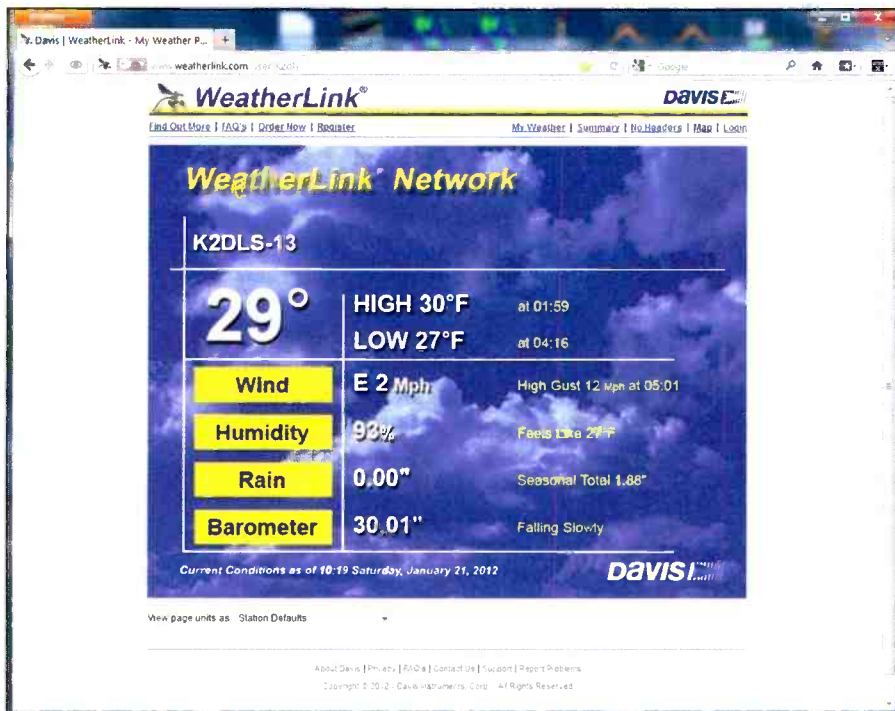


Figure 1. WeatherLink IP sends reports from K2DLS' weather station directly to the Davis WeatherLink Network website. Reports can be viewed at <<http://www.weatherlink.com/user/K2DLS>>. (Internet screen grab)

the new Davis station did not have a direct interface to my APRS station — although I later figured out how I could have kept the architecture somewhat the same. The Davis WeatherLink IP software updates the Davis website once per minute and provides the owner — and the world — an instant view of weather conditions, **Figure 1**.

The Davis website allows radio amateurs and Citizen Weather Observer Program (CWOP) <<http://www.wxqa.com/>> members — you need not be a ham to participate — to use its cloud to forward weather reports on to the APRS-IS network.

In my APRS software at home, I would normally select an APRS-IS server and port to forward reports to it, **Figure 2**. In the Davis cloud, reports from hams with a valid APRS authorization code are sent to *rotate.aprs.net* and CWOP reports from non-hams are sent to *cwop.aprs.net*.

My weather reports were now going directly to the APRS backbone without ever going through my APRS iGate. That's not exactly what I wanted. I also want the reports to be gated from the Internet back to RF so that local hams with APRS displays in their vehicles or in their shacks could benefit from the reports. I had to determine if the APRS

core servers were feeding my own reports back to my iGate.

Trust, But Verify

In order to verify, I made use of the UI-View 32 terminal mode, **Figure 3**. The raw text of the UI packets can easily be viewed. I watched for packets from K2DLS-13 (-13 is a recommended SSID for a weather station) and did not see them because of the volume of information streaming by. And I was noticing a problem. A number of local stations were acting as a beacon more than once per minute. Some were sending some very long text strings promoting hamfests and club meetings. This was creating unnecessary chatter and load on the APRS servers.

I contacted the operators of the involved stations and some conversation ensued over the coming days. There was a common thread. The three stations that were excessively acting as a beacon were all running Asterisk *app_rpt* <<http://ohnosec.org/drupal/>> as an Allstar gateway <<https://allstarlink.org/>>. Asterisk is an open-source telephony project that can also be used as a repeater controller. Allstar is an open-source ham radio linking project that is gaining in popularity.

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3CX1200I7	4CX10000A	845
3CX1200Z7	4CX15000A	6146B
3CX1500A7	4CX20000B	3-500ZG
3CX3000A7	4CX20000C	3-1000Z
3CX6000A7	4CX20000D	4-400A
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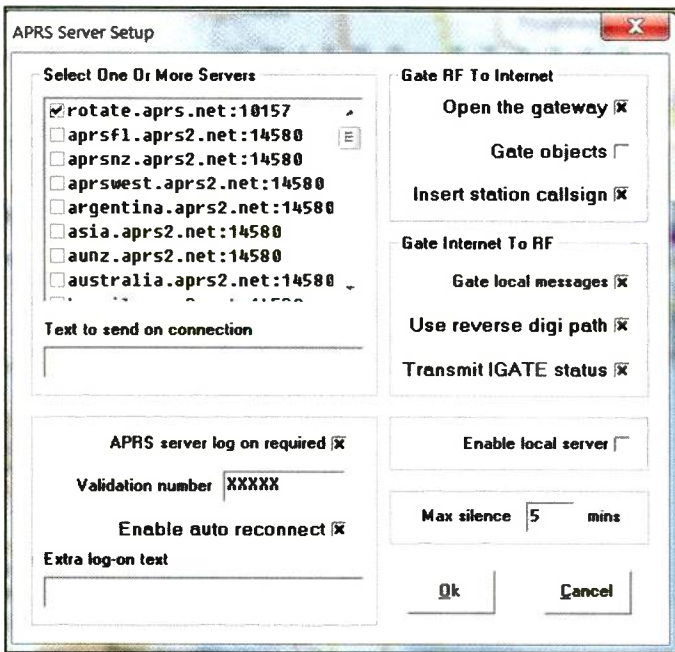


Figure 2. Here is APRS server setup for UI-View 32. All packets destined for APRS-IS will be sent to port 10157 on the core servers. Port 10157 filters incoming data feeds to 100 km from the reporting station. (Computer screen grab)

GPS Misbehavior

It turns out that *app_gps*, which is used for GPS position reporting, defaults to a 30-second reporting interval. This may be fine for a mobile station that requires tracking, but a fixed station should limit position reports to every 30 minutes.

Recent versions of *app_gps* have a parameter of { interval = seconds } in the *gps.conf* file. All three beaconing stations updated their *gps.conf* interval parameters to 3,600 and the problem vanished.

I don't see this issue documented on the online documentation for Asterisk. It ought to be addressed and the default value

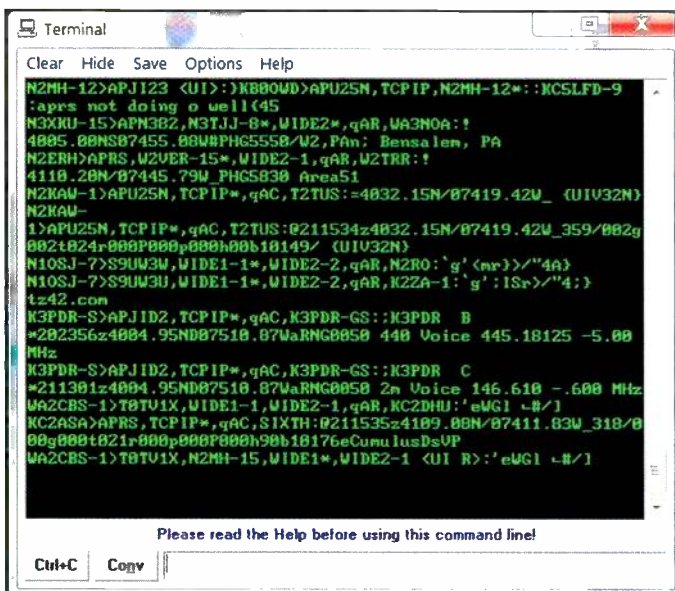


Figure 3. Here, we're debugging the APRS feed in the UI-View 32 terminal window. (Computer screen grab)

in software distributions ought to default to a reasonable value such as 1,800 seconds (30 minutes).

All of the core APRS resources are donated, so any traffic into the system should be limited to what is necessary to get the job done. Anyway, I was glad to see this resolved and I thank the involved parties for assisting.

Now, with less traffic seen in the terminal window, I could interactively see when my weather reports were being sent out by the core servers and verify that they were in fact being gated by my iGate to RF through my local transceiver set on 144.39 MHz. I was happy to see that it was working.

I could have planned better and saved time — but would not have learned as much! I later found out however, that the Weather Display program used with the LaCrosse is also compatible with the Davis station. I could have simply set up Weather Display to use *poll the Vantage Vue* and not changed the architecture at all!

Fair Weather Ahead

I'm satisfied with the integration into the Davis weather cloud and have found a new use for Weather Display (WD) and its capabilities. Using WD, I am now feeding weather reports to Weatherbug <<http://www.weatherbug.com>> and to Twitter <<http://www.twitter.com/k2dls>>.

Strangely, I learned *after* registering as a Weatherbug backyard station <<http://backyard.weatherbug.com>> that, somehow, Weatherbug was already getting my reports from either the APRS core or the Davis cloud. They don't seem to update all that frequently — perhaps hourly — but they are there.

My station shows up twice on the Weatherbug map for my ZIP code — 07747. It shows up as both K2DLS and K2DLS-13. The K2DLS-13 reports are frequent and coming directly from my Weather Display instance. The K2DLS reports seem to be gated in via another method. I will be investigating this mystery a little further.

Ham Radio Deluxe Update

The software program Ham Radio Deluxe version 5.1 was released to coincide with the February Hamcation in Orlando, Florida. As promised by the new owners, this version is a free bug fix and adds some radio support.

I was hoping for support for the Ten-Tec Eagle that I picked up at the last Hamcation, but according to Rick Ruhl, W4PC, he owns an Eagle and version 5.11 will support it.

Ham Radio Deluxe <<http://www.ham-radio-deluxe.com>> remains the proverbial "all but the kitchen sink" of amateur radio software programs, incorporating radio control, logging, and digital mode support into one program.

Rick and the development team also seem to be taking steps toward integrating HRD and Rick's Radio Operations Center sound card TNC package. If you have not tried HRD, you should. As a DXer at heart, I really like HRD.

That's a Wrap

Here's hoping for fair weather, many sunspots, and great DX this summer. Contact me via email <<mailto:k2dls.rfbits@gmail.com>> and if you need Central New Jersey weather reports several times a day, feel free to follow me on Twitter (@K2DLS).

73 de K2DLS/KPC2DLS

IN GEAR

Power Up

By Jason Feldman, WPC2COD

Uniden Shows Off New Handheld Scanner

Uniden has expanded its line of handheld scanners by adding the BC125AT, featuring a 500-channel memory and loads of enhancements that include PC programmability, full alpha tagging for all channels, Close Call® RF Capture, Temporary Lockout, CTCCC/DCS decoding, per channel dropout delay, and complete search features.

Its 10-channel storage banks can store 50 frequencies into each bank for a total of 500 frequencies. CTCSS and DCS Squelch Modes allow rapid search for CTSS/DCS tones/codes used during transmission, which can identify up to 50 CTCSS tones and 104 DCS codes.

Text tagging lets the user name each channel using up to 16 characters per name. Information can be downloaded into the scanner — or control it via computer. A key lock prevents accidental changes to the scanner's programming.

Close Call® RF Capture technology lets the user set the scanner so it detects and provides information about nearby radio transmissions. The Do Not Disturb feature checks for Close Call® activity in between channel reception so active channels are not interrupted. And with the Temporary Store, the BC125AT will store and scan the last 10 Close Call® hits in the system.

The BC125AT also features a lock out function that lets the scanner skip over specified channels or frequencies when scanning. Priority Scan with Do Not Disturb allows programming one channel in each bank and then have the scanner check each channel every two seconds while it scans the banks.

A bevy of search features will make finding that frequency a snap. Service Banks has frequencies preset in 10 separate police, fire/emergency, amateur radio, marine, railroad, Civil Air Patrol, military air, CB radio, FRS/GMRS/MURS, and auto racing banks to make it easy to locate specific types of calls and search any of the banks. Customizable search options include programming up to 10 specific search ranges and search any or all ranges; a quick search that allows you to enter a frequency and start searching up or down from that frequency; and a turbo search that increases the search speed from 100 to 300 steps per second automatically for bands with 5-kHz steps.

The BC125AT comes with a backlit display and a flexible antenna with BNC connector if you want to connect it to an external antenna. Power options include rechargeable AA batteries that can be recharged using a USB cable.

The Uniden BC-125AT is available at Scanner Master <<http://bit.ly/yc4xy4>> for \$139.95.

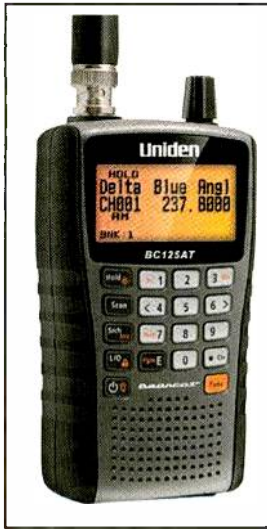


Photo A. The Uniden Bearcat BC125A. (Courtesy of Scanner Master)

ICOM Launches Two New Marine Radios

ICOM America has introduced two new marine radios: The IC-M424 fixed mount radio and the IC-M92D VHF handheld.

The IC-M424 is the first active noise canceling, fixed-mount VHF radio with Class D DSC and ICOM's new softkey user interface for simple operation and safety at sea, according to ICOM.

DSC allows users to send an emergency message at the push of a button. When used in conjunction with the new ICOM MA-500TR Class B AIS transponder, pleasure craft and fishing boats can track the location of nearby commercial vessels and fleet members and communicate with other boats in emergency situations without having to manually input the vessel's MMSI number.

Other features include 25 watts of power, an external 10-watt loudspeaker output, IPX7 waterproof rating, and AquaQuake™, which removes water from the speaker grill. The IC-M424 is compatible with ICOM's new COMMANDMICIV™ command and control unit.

For boaters looking for a more portable option, ICOM also introduced the IC-M92D VHF handheld radio, which also sports ICOM's new soft-key user interface. In addition, the M92D features 48-channel internal GPS, Class D DSC, built-in compass and navigation functions, dot matrix display, IPX7 waterproof rating, 5 watts of power and a BTL 700-mW speaker.

Advanced noise canceling reduces background noise by up to 90 percent on both outgoing and incoming calls, according to ICOM. The handheld's 1,500-mAh Li-Ion battery provides 8 to 10 hours of battery life, the company said.

ICOM said the MSRP of IC-M424 and the M92D is \$299. (IN DEPTH: For additional specifications on the M92D visit: <<http://bit.ly/xGcO9l>>. For more specifications on the M424 visit: <<http://bit.ly/yzeh5o>> – WPC2COD)

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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	11770	China Radio International	CC	0300	3240	Trans World Radio, Swaziland	Ndau
0000	11650	China Radio International		0300	3220	Radio Sonder Grense, South Africa	Afrikaans
0000	11790	China Radio International		0300	5860	Radio Farda, USA	Farsi
0000	9570	China Radio International, via Albania		0300	6090	Amhara State Radio, Ethiopia	Oromo
0000	9305	Radio Cairo, Egypt	AA	0300	6110	Radio Fana, Ethiopia	Amharic
0000	6270	Radio Cairo, Egypt	AA	0300	7320	Radio Rossi, Russia	ERR
0000	11735	Voice of Korea, North Korea	SS	0400	11690	Radio Okapi, DR Congo, via South Africa	FF
0000	5460	Radio Bolivar, Peru	SS	0400	4930	Voice of America Relay, Botswana	
0000	13745	Radio Thailand		0400	4885	Radio Clube do Para, Brazil	PP
0000	7250	Voice of Russia		0400	11925	Radio Bandeirantes, Brazil	PP
0000	7290	Voice of Russia, via Moldavia		0400	4950	Radio Nacional, Angola	PP
0000	7415	Radio Tirana, Albania		0400	4919	Radio Quito, Ecuador	SS
0100	7375	Voice of Croatia	Croatian	0400	3995	HCB, Germany	GG
0100	9665	La Voz Missionaria, Brazil	PP	0400	15720	Radio New Zealand International	
0100	12105	Voice of Greece	Greek	0400	4790	Radio Vision, Peru	SS
0100	5954	Radio Republica (to Cuba)	SS	0400	6185	Vatican Radio	Ukrainian
0100	17730	Radio Free Asia, via Mongolia	Tibetan	0400	9955	WRMI, Florida	SS
0100	9435	Voice of America, Sri Lanka Relay		0400	11860	BBC, Seychelles Relay	
0100	12759	Armed Forces Network, Diego Garcia		0400	3185	WWRB, Tennessee	
0100	6175	Voice of Vietnam, via Canada		0430	6090	Radio Nigeria	Hausa
0100	9765	Radio Exterior Espana, Spain, Costa Rica	SS	0500	5910	Radio Alcaravan, Colombia	SS
0100	15335	BBC, Singapore Relay		0500	6090	Caribbean Beacon, Anguilla	
0100	5910	Radio Romania International		0500	5875	BBC Relay, Cyprus	AA
0100	6145	Radio Romania International		0500	5790	BBC, England	AA
0100	9750	Voice of Russia, via Armenia	RR	0500	6110	Radio Japan, via Canada	JJ
0100	4985	Radio Brazil Central, Brazil		0500	4055	Radio Verdad, Guatemala	SS
0200	11710	Radio Argentina al Exterior	EE	0500	3290	Voice of Guyana	
0200	7365	Radio Marti, USA	SS	0500	6185	Radio Educacion, Mexico	SS
0200	3215	WWCR, Tennessee		0500	6875	Radio Taiwan International, via Florida	CC
0200	7385	BBC, Seychelles Relay		0500	3350	R. Exterior Espana, Costa Rica Relay	SS
0200	5025	Radio Rebelde, Cuba	SS	0500	5755	WTWW, Tennessee	
0200	5040	Radio Havana Cuba	SS	0500	6160	CKZU, Canada	
0300	4780	Radio Djibouti	AA	0500	7315	Radio Dabanga (to Sudan)	AA
0300	4877	Radiodifusora Roraima, Brazil	PP	0600	11765	Super Radio Deus e Amor, Brazil	PP
0300	7175	Voice of the Broad Masses, Eritrea	Tigrinya	0600	11815	Radio Brazil Central, Brazil	PP
0300	9705	Radio Ethiopia	Amharic	0600	6005	BBC, Asension Is.	
0300	5010	Radio Madagasikara, Madagascar	Malagasy	0600	13760	Islamic Republic of Iran Broadcasting	various
0300	7305	Vatican Radio		0600	5925	Radio France International	FF
0300	4990	Radio Apinte, Suriname	DD	0600	11725	Radio New Zealand International	
0300	4775	Trans World Radio, Swaziland	unid	0600	5955	Radio Nederland, via Germany	DD
0300	7200	Sudan Radio TV Corp.	AA	0600	5995	Radiodifusion Malienne, Mali	FF

UTC	Freq.	Station/Country	Notes	UTC	Freq.	Station/Country	Notes
0600	7274	RT Tunisienne, Tunisia	AA	1500	17595	Radio Exterior de Espana, Spain	SS
0600	4960	Voice of America, Sao Tome Relay		1500	17695	CVC, Zambia	
0600	6045	KBS World Radio South Korea, via Canada		1500	9410	BBC, Oman Relay	
0600	6155	Radio Austria International	GG	1500	9450	Sound of Hope (to China)	CC
0630	7275	Radio Nigeria		1530	7200	National Radio of Afghanistan	
0700	7245	Radio Mauritanie, Mauritania	AA	1600	9425	All India Radio	
0700	6030	Radio Marti, USA	SS	1700	11945	Radio Japan, via France	JJ
0700	3975	Vatican Radio	II/FF	1700	11710	Voice of Korea, North Korea	
0700	5990	Radio Senado, Brazil	PP	1700	11600	Radio TV Libye, Libya	FF
0800	9580	Radio Australia		1700	15540	Radio Kuwait	
0800	11840	Trans World Radio, Guam		1700	9905	Radio Free Asia, via Palau	CC
0800	5446	Armed Forces Network, Florida		1700	15435	Broadcasting Svc. of Kingdom, S. Arabia	AA
0800	9635	RT Malienne, Mali	FF	1800	9615	Radio New Zealand International	
0900	6070	CFRX, Canada		1800	15120	Voice of Nigeria	
0900	5990	Radio Senado, Brazil	PP	1800	13650	Radio Kuwait	
0900	3375	Radio Municipal, Brazil	PP	1800	17690	Family Radio/WYFR, via Germany	Turkish
0900	6135	Radio Santa Cruz, Bolivia	SS	1900	11670	All India Radio	Hindi
1000	6160	CKZN, Canada		1900	7550	All India Radio	
1000	4717	Radio Yura, Bolivia	SS	1900	11795	Deutsche Welle, Germany	PP
1000	12085	Voice of Mongolia		1900	11615	Radio Nederland, Rwanda Relay	
1000	4747	Radio Huanta 2000, Peru	SS	1900	13590	CVC-One Africa, Zambia	
1000	4700	Radio San Miguel, Bolivia	SS	1900	6050	Voice of Turkey	
1000	6010	Radio Mil, Mexico	SS	1900	15125	Radio Exrerior Espana, via Costa Rica	SS
1000	6050	HCJB, Ecuador	Quechua	1900	4775	Radio Tarma, Peru	SS
1100	1485	ABC Northern Territory Service		2000	11760	Radio Havana Cuba	
1100	3250	Radio Luz y Vida, Honduras	SS	2000	9410	BBC, Ascension Island Relay	
1100	4825	La Voz de la Selva, Peru	SS	2000	9655	Deutsche Welle, Germany, Rwanda Relay	
1100	5020	Solomon Islands Broadcasting Corp.		2000	11615	Radio Nederland, Madagascar Relay	
1100	15430	Radio Romania International		2000	11755	Adventist World Radio, via South Africa	FF
1100	3205	Ntl. Broadcasting Comm, P. New Guinea		2000	15225	Vouce of America, via Bonaire	Voice
1100	3385	Radio E. New Britain, P. New Guinea	Tok Pisin			of America, via Bonaire	FF
1100	4815	Radio el Buen Pastor, Ecuador	SS	2000	11885	Voice of America, SaoTome Relay	Hausa
1100	7235	Radio Thailand	Lao	2000	7320	Magadan Radio	RR
1200	15400	HCJB, Australia		2000	7350	Radio Makedonias, Greece	Greek
1200	9615	KNLS, Alaska		2000	7420	Voice of Greece	Greek
1200	12105	Adventist World Radio, Guam	Mandarin	2030	6055	Radio Rwanda	vernacular
1200	11854	Voice of Korea, North Korea	JJ	2030	7290	Radio PMR, Moldova	
1200	7110	Thazin Broadcasting Station, Myanmar	Burmese	2100	17765	Radio Canada International	PP
1200	7280	Sound of Hope (to China)	CC	2100	17680	CVC-La Voz, Chile	SS
1200	11605	Radio Free Asia, Northern Marianas Relay	Tibetan	2100	6155	Radio Belarus	
1200	12040	Voice of America, Philippine Relay	CC	2100	15515	Radio Australia	
1200	12000	Voice of Vietnam	VV	2100	7480	Open Radio for North Korea	KK
1200	9745	Voice of Russia	RR	2100	6100	International Radio of Serbia	GG
1300	11720	Islamic Republic of Iran Broadcasting	Urdu	2100	9705	La Voix du Sahel, Niger	FF
1300	9335	Voice of Korea, North Korea		2200	6165	Radio Nationale Tchadienne, Chad	FF
1300	9655	Radio New Zealand International		2200	9580	Africa Number One, Gabon	FF
1300	6130	Lao National Radio, Laos	Lao	2200	7330	Polish Radio, via England	Polish
1300	9950	Nippon no Kaze (to North Korea)	KK	2200	7490	WBCQ, Maine	
1300	7510	Trans World Radio, via Uzbekistan	Dogri-Kangri	2200	7635	Galei Zahal, Israel	HH
1300	7525	Voice of America, Philippine Relay	CC	2230	6135	Cyprus Broadcasting Corp.	Greek
1300	5050	Beibu Bay Radio, China	CC	2300	9415	China Radio International	VV
1400	9595	Radio Nikkei, Japan	JJ	2300	15230	Radio Havana Cuba	SS
1400	11620	All India Radio		2300	11780	Radio Nacional Amazonia, Brazil	PP
1400	9525	Voice of Indonesia	CC/EE	2300	15190	Radio Inconfidencia, Brazil	PP
1400	9690	Voice of Nigeria		2300	17605	Radio Japan, via Bonaire	JJ
1400	15350	RTV Marocaine, Morocco	AA	2300	11885	Radio Taiwan International, via Florida	CC
1400	11530	Denge Mesopotamia (to Iran)	Kurdish	2300	9840	Voice of Vietnam	
1400	9345	Far East Broadcasting Co., Philippines	Mandarin	2300	9535	Radio Exterior Espana, Spain	SS
1400	9930	T8WH, Palau					

Space WX and Radio Signal Propagation: Some Basic Terms, Part II — Sunspots

by Tomas Hood, NW7US,
WPC7USA
<nw7us@arrl.net>

“This month, we’re continuing by exploring one of the most prominent features on the Sun.”

Last month we began this series on space weather and radio propagation terminology — or more specifically, your crash-course in the fascinating science of the Sun-Earth connection and the transmission a radio signal from one location to a far-off receiver by way of the ionosphere. (“*Space WX and Radio Signal Propagation: Some Basic Terms, Part I,*” *Pop’Comm, May 2012, page 35.* — WPC7USA.)

This month, we’re continuing by exploring one of the most prominent features on the Sun: *Sunspots.*

Understanding Sunspots

Sunspots are magnetic regions on the Sun with magnetic field strengths thousands of times stronger than the Earth’s magnetic field. Plasma flows in these magnetic field lines of the Sun. Sunspots appear as dark spots on the surface of the Sun. Temperatures in the dark centers of sunspots — the *umbra* — drop to about 3,700 Kelvin, compared to 5,700 K for the surrounding photosphere. (*IN DEPTH: For information on temperature measurement in Kelvin, visit: <<http://bit.ly/GOgXqA>>.* — WPC7USA.)

This difference in temperatures makes the

spots appear darker than elsewhere. Sunspots typically last for several days, although very large ones may live for several weeks. They are seen to rotate around the Sun since they are on the surface. The Sun rotates fully every 27.5 days.

Sunspots usually form in groups containing two sets, **Figure 1**. One set will have a positive, or north, magnetic field. The other set will have a negative, or south, magnetic field. The magnetic field is strongest in the darker parts of the sunspot. The field is weaker and more horizontal in the lighter part — the *penumbra*.

Since the time of Galilei Galileo, **Photo A**, who made the first European observations of sunspots in 1610, observers and scientists have discovered a great deal about the Sun and its influence on the Earth and our atmosphere.

The Chinese and many other early civilizations were the first to discover sunspots. Daily sunspot observations were started at the Zurich Observatory in 1749. By 1849, continuous sunspot observations were recorded.

Over time, cycles in solar activity were revealed, **Chart 1**. The Sun’s sunspot activity has a cycle that lasts for an approximate 11-year period. The cycle starts with very quiet solar activity with very few sunspots, then peaking about 3 to 5 years later with a very high number of daily sunspots, and then decreasing in sunspot activity until the end of the solar cycle, **Figure 2**.

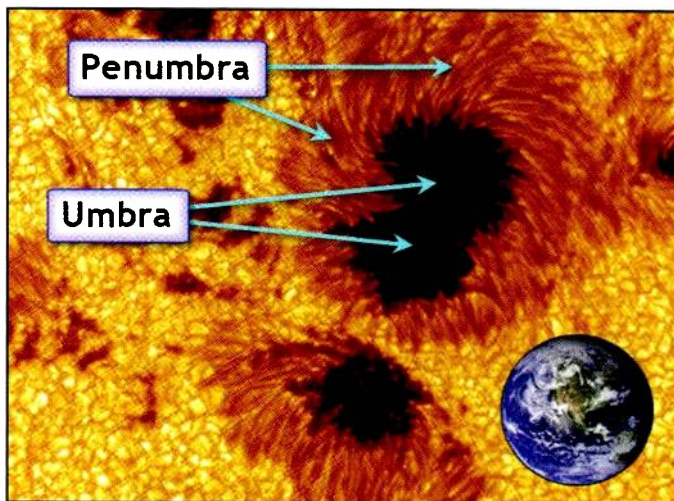
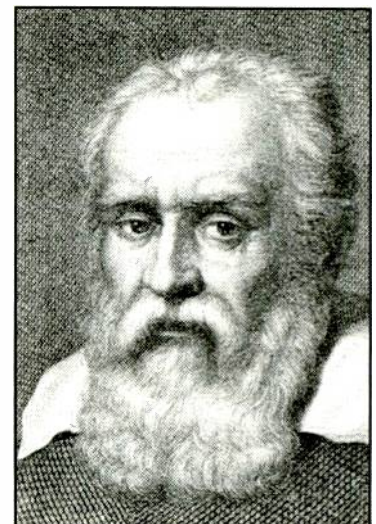


Figure 1. A sunspot, showing the darker, cooler center — the *umbra* — and the outer *penumbra*. Notice the size of these sunspots in comparison to the size of the Earth. **NOTE:** The Earth is artificially superimposed on this image. (Courtesy of NASA)

Photo A. Galilei Galilei made the first European observations of sunspots in 1610. (Courtesy of Wikimedia Commons)



In 1848, the Swiss astronomer Johann Rudolf Wolf, **Photo B**, introduced a daily measurement of sunspot number. His method, which is still used today, counts the total number of spots visible on the face of the Sun and the number of groups into which they cluster, because neither quantity alone satisfactorily measures sunspot activity.

The sunspot number is calculated by first counting the number of sunspot groups and then the number of individual sunspots. The *sunspot number* is then given by the sum of the number of individual sunspots and 10 times the number of groups. Since most sunspot groups have, on average, about 10 spots, this formula for counting sunspots gives reliable numbers even when the observing conditions are less-than ideal and small spots are hard to see.

Because one observer may have difficulty in accurately counting the day's sunspot number — *it might be a cloudy day, after all* — observations are made at various locations around the world. In addition, spacecraft far above our atmosphere take images to aid the sunspot count.

To compensate for the many limitations of observing the Sun at various places, each daily international number is computed as a weighted average of measurements made from a network of cooperating observatories.

Smoothed Sunspot Number

The daily sunspot number has little, if any, relationship to ionospheric variability. However, the most widely used

Solar Cycle	Began	Ended
1	March 1755	June 1766
2	June 1766	June 1775
3	June 1775	September 1784
4	September 1784	May 1798
5	May 1798	December 1810
6	December 1810	May 1823
7	May 1823	November 1833
8	November 1833	July 1843
9	July 1843	December 1855
10	December 1855	March 1867
11	March 1867	December 1878
12	December 1878	March 1890
13	March 1890	February 1902
14	February 1902	August 1913
15	August 1913	August 1923
16	August 1923	September 1933
17	September 1933	February 1944
18	February 1944	April 1954
19	April 1954	October 1964
20	October 1964	June 1976
21	June 1976	September 1986
22	September 1986	May 1996
23	May 1996	December 2008
24	December 2008	Circa 2019

Chart 1. Solar cycles, lasting on average about 11 years each, have been officially recorded since the 1700s. There have been 23 complete cycles since then. Solar Cycle 24 is well underway, and we are now in the beginning, rising phase of this cycle.

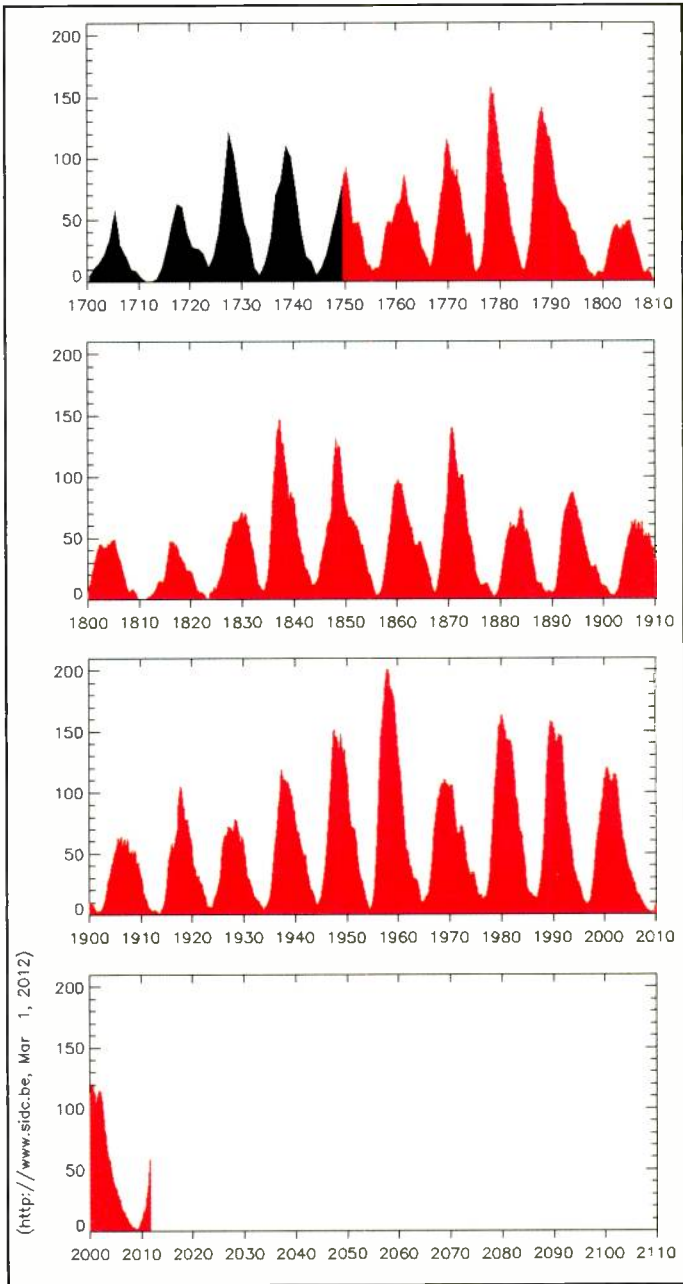


Figure 2. This is a sunspot index plot — The yearly (black, up to 1750) and monthly (red, from 1750 up to now) sunspot numbers. (Courtesy of The Solar Influences Data Analysis Center (SIDC), Belgium, <<http://www.sidc.be>>.)

Optimum Working Frequencies (MHz) - For June 2012 - Flux = 134, Created by NW7US

UTC	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
TO/FROM US WEST COAST																								
CARIBBEAN	26	26	26	26	24	22	20	18	17	16	15	14	15	17	19	21	22	23	24	25	25	26	26	26
NORTHERN SOUTH AMERICA	35	35	34	32	29	26	24	22	21	19	18	17	17	21	24	26	28	30	31	32	33	34	35	35
CENTRAL SOUTH AMERICA	32	29	27	25	23	21	20	19	18	17	16	20	20	22	25	28	29	31	32	34	35	35	36	35
SOUTHERN SOUTH AMERICA	27	19	18	17	17	16	16	15	15	15	14	14	14	19	22	25	27	29	31	32	33	34	33	31
WESTERN EUROPE	16	15	14	13	12	12	17	16	15	14	13	15	18	20	22	23	24	25	25	24	23	22	21	19
EASTERN EUROPE	11	11	11	10	15	19	17	15	14	13	13	12	16	19	21	22	23	23	22	21	20	17	13	12
EASTERN NORTH AMERICA	31	31	31	30	29	28	26	24	22	20	19	19	20	22	24	25	27	28	29	30	30	31	31	31
CENTRAL NORTH AMERICA	17	17	17	17	17	16	16	14	13	12	11	11	11	12	13	14	15	15	16	16	17	17	17	17
WESTERN NORTH AMERICA	9	9	9	9	9	9	8	8	7	7	6	6	6	6	6	7	7	8	8	8	9	9	9	9
SOUTHERN NORTH AMERICA	28	28	28	27	27	26	25	22	20	19	17	16	16	17	19	21	22	24	25	26	26	27	27	28
HAWAII	23	23	23	23	23	23	23	23	21	19	17	16	15	14	13	13	14	16	18	19	20	21	22	22
NORTHERN AFRICA	21	19	17	16	16	16	17	16	15	14	13	16	19	21	22	23	24	25	25	25	25	25	24	23
CENTRAL AFRICA	22	20	18	17	17	18	17	16	15	14	13	15	18	21	22	23	24	25	25	25	26	26	26	24
SOUTH AFRICA	18	17	16	16	15	15	17	23	21	21	21	21	22	24	25	26	27	28	29	25	23	21	20	19
MIDDLE EAST	18	17	17	17	19	19	17	15	14	13	12	17	20	21	23	24	24	24	25	24	23	23	21	19
JAPAN	24	24	25	25	25	25	24	23	22	21	19	18	16	16	16	18	17	16	16	18	19	21	22	23
CENTRAL ASIA	24	26	26	25	25	25	24	23	22	21	19	17	16	15	16	18	20	20	19	17	17	18	21	23
INDIA	22	22	23	23	22	21	19	16	15	14	13	12	12	11	11	11	10	10	14	17	17	19	20	21
THAILAND	21	23	24	25	25	24	23	22	21	19	17	16	15	14	15	18	20	22	20	18	17	16	16	18
AUSTRALIA	36	36	36	37	36	36	36	34	31	27	25	23	21	20	19	18	17	16	16	15	20	27	31	34
CHINA	22	23	24	24	24	24	23	22	20	18	17	15	14	13	16	19	20	18	18	18	18	19	20	21
SOUTH PACIFIC	35	36	36	35	33	31	28	19	18	17	17	16	16	15	15	14	14	14	25	30	32	34	34	
TO/FROM US MIDWEST																								
CARIBBEAN	30	30	30	29	27	24	22	20	19	18	17	16	18	20	22	24	25	27	28	28	29	30	30	30
NORTHERN SOUTH AMERICA	32	32	31	29	26	24	22	20	19	18	17	16	17	20	23	25	26	28	29	30	31	31	32	32
CENTRAL SOUTH AMERICA	33	30	27	25	23	21	20	19	18	17	16	19	21	24	26	28	30	32	33	34	35	35	36	35
SOUTHERN SOUTH AMERICA	26	19	18	17	17	16	16	15	15	15	14	14	16	22	24	27	29	30	32	33	34	34	33	31
WESTERN EUROPE	19	17	15	14	13	13	15	16	15	14	17	19	21	22	23	24	24	25	25	24	24	23	22	21
EASTERN EUROPE	12	12	11	11	11	17	16	15	14	13	15	18	20	22	23	24	24	24	23	22	21	20	17	13
EASTERN NORTH AMERICA	22	22	22	21	21	19	18	16	15	14	13	13	14	16	17	18	19	20	21	21	22	22	22	22
CENTRAL NORTH AMERICA	10	10	10	10	10	9	9	8	7	7	6	6	6	7	8	8	9	9	10	10	10	10	10	10
WESTERN NORTH AMERICA	17	17	17	17	17	16	16	15	13	12	11	11	11	11	13	14	14	15	16	16	17	17	17	17
SOUTHERN NORTH AMERICA	20	20	19	19	19	18	16	15	14	12	12	11	11	12	14	15	16	17	18	18	19	19	19	19
HAWAII	27	27	28	28	28	27	27	25	23	21	19	18	16	16	15	15	17	19	21	22	24	25	26	26
NORTHERN AFRICA	24	23	22	20	18	18	19	18	18	18	18	20	21	22	23	23	24	24	25	25	25	25	25	25
CENTRAL AFRICA	22	20	19	17	16	16	19	17	17	17	18	20	21	22	23	24	24	25	25	25	25	25	25	25
SOUTH AFRICA	17	17	16	16	15	15	15	24	22	21	21	23	25	28	30	31	33	33	30	24	22	21	19	18
MIDDLE EAST	18	17	16	16	17	19	17	16	15	14	17	19	21	22	23	24	25	25	25	25	24	23	22	20
JAPAN	24	24	25	25	24	23	22	21	19	18	16	15	15	18	20	19	17	17	17	18	20	21	22	23
CENTRAL ASIA	25	25	25	24	24	23	22	20	18	17	15	14	15	18	20	21	23	21	19	18	17	18	21	23
INDIA	15	18	19	21	21	18	17	15	14	13	13	15	19	21	20	19	18	15	12	11	11	11	10	10
THAILAND	20	22	24	24	23	22	20	18	17	15	14	13	16	19	21	22	23	22	21	19	18	17	16	18
AUSTRALIA	36	36	37	36	36	35	35	32	29	25	23	22	20	19	18	17	16	16	15	15	21	28	32	34
CHINA	23	23	24	24	23	22	20	18	16	15	14	13	16	19	21	21	19	18	16	16	16	18	20	21
SOUTH PACIFIC	35	35	35	34	32	30	26	19	18	17	16	16	15	15	15	14	14	14	26	30	32	34	35	
TO/FROM US EAST COAST																								
CARIBBEAN	24	24	24	22	20	18	17	16	14	14	13	13	15	17	19	20	21	22	23	23	24	24	24	24
NORTHERN SOUTH AMERICA	28	28	27	24	22	20	19	17	16	15	14	14	16	19	21	23	24	25	26	27	28	28	28	28
CENTRAL SOUTH AMERICA	32	29	27	24	23	21	20	18	18	17	16	20	23	25	27	29	31	32	33	34	34	35	35	34
SOUTHERN SOUTH AMERICA	24	19	18	17	17	16	16	15	15	15	14	14	21	24	27	29	30	32	33	34	34	34	32	30
WESTERN EUROPE	20	19	17	16	15	14	15	16	16	17	18	20	21	21	22	23	23	24	24	23	23	22	21	16
EASTERN EUROPE	15	14	13	12	12	16	17	16	16	18	19	21	22	23	23	24	24	24	24	23	22	21	19	16
EASTERN NORTH AMERICA	11	10	10	10	9	8	8	7	6	6	6	6	7	8	8	9	9	10	10	10	10	11	11	11
CENTRAL NORTH AMERICA	23	23	23	23	22	20	18	17	15	14	14	14	15	17	18	20	21	21	22	23	23	23	23	24
WESTERN NORTH AMERICA	31	31	31	30	30	29	26	24	22	20	19	19	19	22	24	25	27	28	29	30	30	31	31	31
SOUTHERN NORTH AMERICA	24	24	24	23	22	20	18	17	16	14	13	13	14	16	18	19	20	21	22	23	23	24	24	24
HAWAII	29	30	30	30	30	28	26	23	22	20	18	18	18	17	16	16	19	21	23	24	26	27	28	29
NORTHERN AFRICA	25	23	21	20	18	17	17	18	18	19	22	24	25	27	28	29	30	30	31	31	30	30	30	28
CENTRAL AFRICA	22	20	19	17	16	16	18	19	18	19	21	24	25	27	28	29	30	30	30	30	30	29	26	24
SOUTH AFRICA	17	17	16	15	15	15	21	20	19	21	24	26	28	30	31	33	33	30	24	22	20	19	18	
MIDDLE EAST	22	21	19	18	18	18	17	16	16	17	19	20	22	23	23	24	25	25	25	25	25	25	25	24
JAPAN	24	24	24	23	22	21	20	18	17	16	16	18	20	21	20	19	18	18	18	18	20	21	22	23
CENTRAL ASIA	25	24	24	23	22	20	18	17	16	15	16	19	20	22	23	24	24	22	20	18	18	18	21	23
INDIA	11	11	10	10	17	18	17	15	15	16	18	20	22	23	23	23	23	22	21	20	18	13	12	11
THAILAND	20	22	23	22	20	18	17	16	15	15	18	20	21	23	24	24	25	23	21	20	18	17	16	17
AUSTRALIA	36	36	36	36	35	33	30	27	25	23	21	20	19	18	17	16	16	15	15	15	22	29	32	35
CHINA	22	23	23	22	21	19	17	16	15	15	17	19	21	22	22	21	19	18	16	15	15			

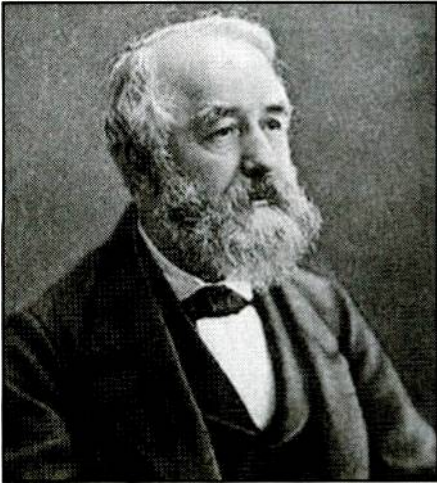


Photo B. Swiss astronomer Johann Rudolf Wolf in 1848 introduced a daily measurement of sunspot number. (Courtesy of Wikimedia Commons)

For example, to calculate the R12 index for July 2005 add half of the January 2005 value plus the sum of the February through December 2005 values plus half of the January 2006 value and divide the sum by 12.

In general terms, the smoothed sunspot numbers give us a way to measure the sun's overall activity. The more active the Sun, the higher the sunspot count, **Photo C.** Scientists have discovered a direct correlation between the Sun's sunspot activity and our ionosphere activity. The more observed sunspots, the greater the ultraviolet energy bombarding the Earth. Since the ionosphere is formed by the ultraviolet energy from the Sun, the more sunspots on the Sun, the more energized the ionosphere becomes.

You can hear the day's observed sunspot number by listening to the hourly space weather and geophysical reports broadcast by the National Oceanic and Atmospheric Administration (NOAA).

(NOTE: In an up-coming edition, I will look more closely at the various parts of this report and what it all means to you, the radio communicator: – WPC7USA.)

NOAA uses the radio stations WWV and WWVH to issue geophysical alert messages that provide information about solar terrestrial conditions. Geophysical alerts are broadcast from WWV at 18 minutes after the hour and from WWVH at 45 minutes after the hour. (IN DEPTH: For more information about WWV and WWVH, visit, <<http://1.usa.gov/H16gdZ>>, **Figure 3.** – WPC7USA.)

Ionospheric Index, R12, is derived from the daily sunspot numbers. The R12 index is a 12-month smoothed relative sunspot number (SSN) and is determined by using the calculation based on the Lincoln-McNish smoothing function:

$$[(n1 / 2) + (n2 + n3 + \dots n11 + n12) + (n13 / 2)] / 12$$

Where:

- n1 = 1st Month / YYYY in series;
- n7 = 7th Month / YYYY in series, and;
- n13 = 13th Month / YYYY in series

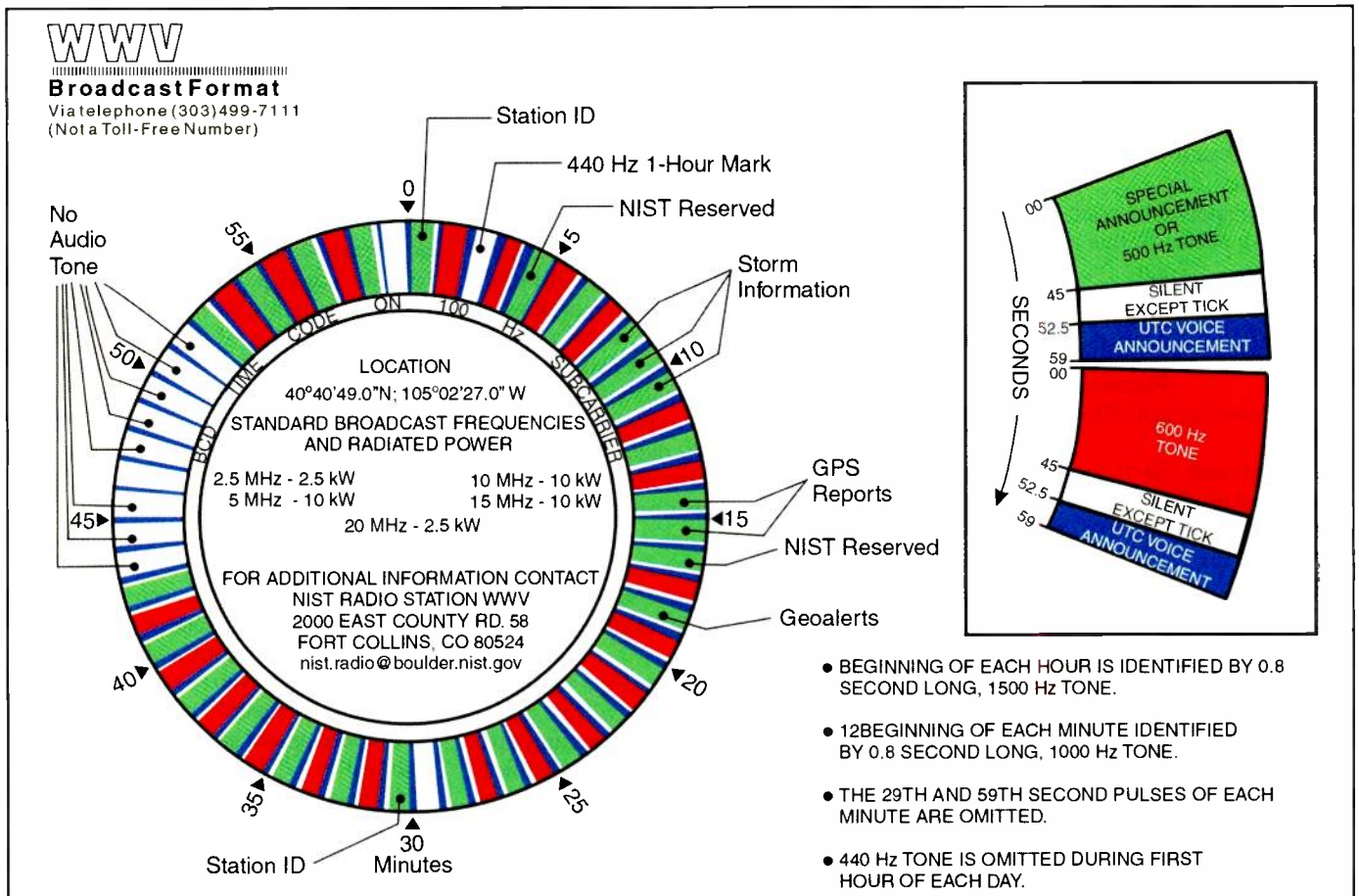


Figure 3. Here is a breakdown of the minute-by-minute broadcast that is transmitted each hour by one of the NIST stations, such as WWV. Notice the 19-minute segment: This is when the solar and geomagnetic indices are reported, as well as other related information (see text). (Courtesy of NIST)

The messages are less than 45 seconds in length and are updated every three hours — typically at 0000, 0300, 0600, 0900, 1200, 1500, 1800 and 2100 UTC. More frequent updates are made when necessary.

WWV radiates 10,000 watts on 5, 10 and 15 MHz; and 2,500 watts on 2.5 and 20 MHz, **Photo D**. WWVH radiates 10,000 watts on 5, 10 and 15 MHz; and 5,000 watts on 2.5 MHz, **Photo E**.

Each frequency is broadcast from a separate transmitter. Although each frequency carries the same information, multiple frequencies are used because the quality of HF reception depends on many factors such as location, time of year, time of day, the frequency being used, and atmospheric and ionospheric propagation conditions.

The various frequencies make it likely that at least one frequency will be usable at all times.

Further Study

For additional information:

- **Read** about WWV and WWVH, <<http://g.nw7us.us/GMhPw2>>
- **Access** alerts on the Internet, <<http://g.nw7us.us/GMhRUs>>
- **Listen** to the current geophysical alert message by telephone. (303) 497-3235.
- **Find** historical records of the SSN via links at, <<http://sunspotwatch.com>>.
- **See** a subset of this information on the Solar Weather tab on the *Pop'Comm* Facebook page <<http://g.nw7us.us/GNJ21M>> and the *HFRadio.org Space Weather* Facebook page <<http://g.nw7us.us/GNjBcE>>.

Next month, we'll look at a related measurement of solar activity that more closely correlates with the energy level of the ionosphere. This measurement is the 10.7-cm flux reading.

High Frequency Propagation

June is a month of typical summertime radio propagation on the shortwave (HF, high-frequency) bands. Solar absorption is expected to be at seasonally high levels, resulting in generally weaker signals during the hours of daylight when compared to reception during the winter and spring months.

Add to this the seasonal thunderstorm activity with the higher band-noise, and

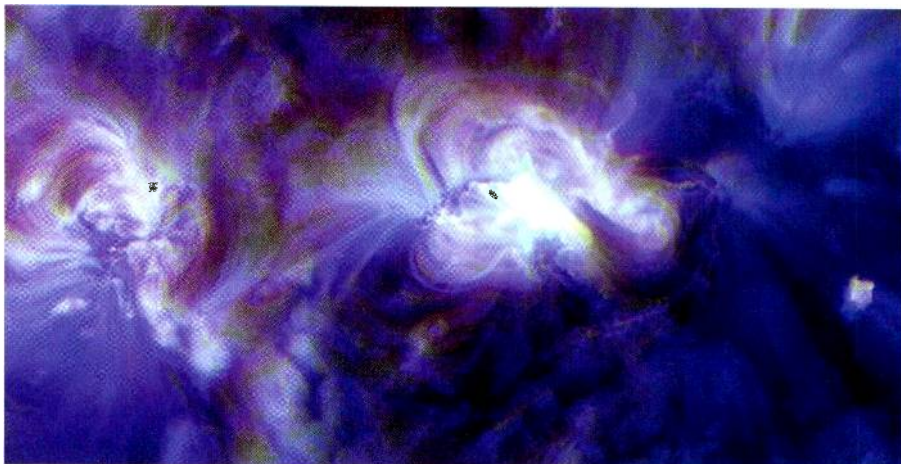


Photo C. A close-up view of an M1-class X-ray flare from March 15, 2012 (0759 UTC) as seen by SDO at the combined wavelengths of 171, 193, and 211 Angstroms. (Courtesy of SDO)

we have a more challenging time catching the weaker DX signals. While the daytime usable frequencies are generally lower than those during winter, the nighttime usable frequencies to most parts of the world are higher than at any other time of the year. The short nights provide possible opportunities to catch the distant DX.

At the highest end of the HF spectrum, propagation from DX locations east and west is rare. North/south paths may be strong, especially around sunrise and sunset.

Nineteen and 16 meters will be the most reliable daytime DX band, while 19 and 22 may offer some nighttime openings on periods with higher flux levels.

Twenty-five and 31 meters will be fairly good in the evenings and mornings. At night, those paths that remain open will be marginal. The most reliable band for both daytime and nighttime should be a toss-up between these two bands.

Forty-one and 49 meters should offer good DX conditions during the night despite higher static. Look for Europe and Africa as early as sunset. After midnight, start looking south and west for Pacific, South America, and Asia. Short-skip should be possible out to about 750 miles during the daytime.

Expect some openings on 75 and 90, similar to how 40 meters will be acting. Fairly frequent short-skip openings up to 1,000 miles are possible during darkness, but expect very few daytime openings with all the static and absorption. Medium-wave and 120-meter propagation is rough in the summer due to the high static and higher overall absorption caused by the short nights and higher D-region ionization.

Watch for major solar flare activity as well as coronal mass ejections (CMEs), as we are moving into a very active part of Solar Cycle 24. Solar flare events will generally shut down shortwave propagation, starting first with the lower bands (120 to 19 meters), during the less-intense flares, but completely shutting down HF during the most intense flares.

These shutdowns, known as *radio blackouts* in common vernacular or *Sudden Ionospheric Disturbances* (SIDs), primarily occur on the sunlit side of the earth during the flare event.

CMEs, on the other hand, can cause geomagnetic storminess several days after a solar flare, and degrade propagation worldwide. CMEs degrade higher latitude signal paths more than middle and low latitude paths, but can affect the entire ionosphere during the strongest geomagnetic storm. We'll go into more detail about these events in up-coming editions of this column.

VHF Conditions

The summertime Sporadic-E (E_s) season for the Northern Hemisphere begins in force in May. Within the normal E-layer region of the ionosphere, regions of abnormally intense ionization are formed.

Through June, you can expect to see 20 to 24 days with some E_s activity. Usually these openings are single-hop events with paths up to 1,000 miles, but June's E_s is often double-hop, and sometimes three to four hops have been recorded.

Look for HF openings on the highest shortwave frequencies, as well as on low-VHF, throughout the day but especially in the afternoon.

With Solar Cycle 24 still rising in

activity, there is a chance of occasional Aurora activity, this month. This occurs during strong geomagnetic storms when a coronal mass ejection impacts the Earth. You can check on this at <<http://aurora.sunspotwatch.com>>.

Current Solar Cycle 24 Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 106.7 for February 2012, down a bit from January's 133.1 and December's 141.2. The 12-month smoothed 10.7-cm flux centered on August 2011 is 117.9, slightly up from

July's 115.4 and March's 110.9. The predicted smoothed 10.7-cm solar flux for June 2012 is 134, give or take about 9 points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for February 2012 is 33.1, a significant drop from January's 58.3 and December's 73.0. This continues a three-month sharp decline from the steadily rising activity over the previous three months. Don't fret, however, because as of the time we go to print, our local star is bursting with new activity.

As mentioned before, it is typical of the fluctuation expected during the rise of any solar cycle. The lowest daily sunspot value of 9 was recorded for February 8.



Photo D. WWV, in Fort Collins, Colorado, radiates 10,000 watts on 5, 10 and 15 MHz; and 2,500 watts on 2.5 and 20 MHz. This is the 15-MHz antenna. (Courtesy of Wikimedia Commons)



Photo E. WWVH, in Kauai, Hawaii, radiates 10,000 watts on 5, 10 and 15 MHz; and 5,000 watts on 2.5 MHz. (Courtesy of Wikimedia Commons)



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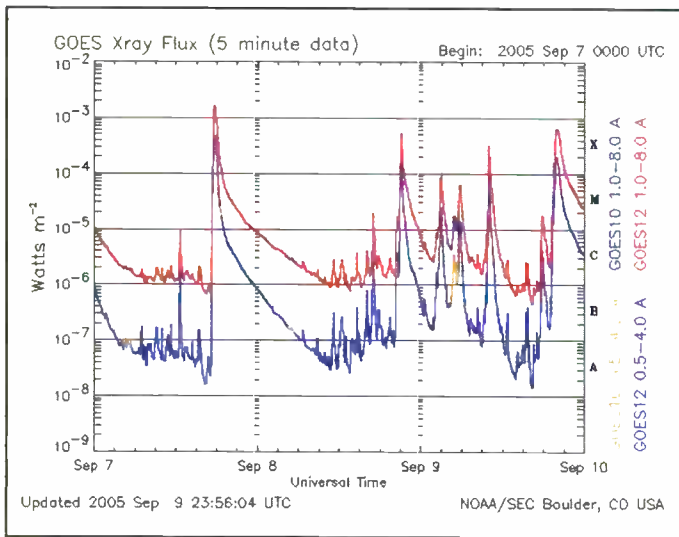


Figure 4. During the last solar cycle — Cycle 23 — it was quite common to see day-after-day many x-ray flare events, back-to-back. This plot of x-ray energy is a snapshot of a few days in 2005, after the peak of Cycle 23, but well before the end of the cycle in December 2008. It is not unusual to see back-to-back solar flares during the sunspot cycle peak years. This example of a few days in 2005 illustrates that there were X- and M-class flares, one after another with very little time between. This is quite typical. So far, in this cycle (Cycle 24), we've not see this level of activity on a daily basis. We are not yet in the cycle's peak years. There will come days with much more activity than what we are currently seeing. That activity level will be typical (normal), and while the media and bloggers will try to convince you that something odd and unusual is happening, it is nothing of the sort. Solar activity comes in cycles, and we're yet to see the level of intensity that is typical for peak solar cycle years. (Courtesy of NOAA/SWPC)

The highest daily sunspot count was 61 on February 1.

The 12-month running smoothed sunspot number centered on August 2011 is 59.0, up from July's 57.3 (we reported 57.2, last month; the keepers of the records sometimes make minor adjustments after a careful review).

A smoothed sunspot count of 73, give or take about 9 points is expected for June 2012. Remember, these predicted monthly figures are based on a mathematical model that is influenced by the overall trend; it cannot possibly take into consideration the dynamic nature of our Sun. This cycle has proven to defy all predictions. It is this author's opinion that we're still in the rise of the cycle, and we'll see higher numbers again.

The observed monthly mean planetary A-Index (A_p) for February 2012 is 7, a slight increase over January's 6. The 12-month smoothed A_p index centered on August 2011 is 7.4, while July's was adjusted to 7.3.

Expect the overall geomagnetic activity to be varying greatly between quiet to stormy during June, much like May; refer to the Last Minute Forecast published in *CQ Amateur Radio* or on this columnist's website <<http://SunSpotWatch.com>> for the outlook on what days that this might occur.

At the Homebrew Bench in Nebraska

I have gotten together with Joe Eisenberg, KØNEB, Kit-building columnist for *CQ* magazine since I am now living in the Omaha, Nebraska area.

Joe has been helping me get started in kit-building, and Rich Arland, K7SZ, provided me with a Small Wonder Labs SW40+ 40-meter QRP CW transceiver kit that I am building and putting on the air. (SEE: *The SW+ transceiver series*, <<http://bit.ly/GM7eN4>>. — WPC7USA.)

I will be surfing the ionosphere with QRP signals from a nearby park, so look

for me on the amateur radio bands — using primarily CW and digital modes.

I'd Like to Hear From You

I welcome your thoughts, questions and experiences regarding this fascinating science of propagation. You may e-mail 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 automated hourly update on space weather conditions and other radio propagation-related updates, follow <@hfradiospacewx>.)

I invite you to visit my online propagation resource at <<http://sunspot-watch.com>>, where you can get the latest space data, forecasts, and more, all in an organized manner.

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Speaking of Facebook: Check out the *Popular Communications* fan page 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, Omaha, Nebraska

Email: <nw7us@NW7US.us>

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Part II: The Modern AM Broadcast Band DXer — Defined

Software Defined Radio Receivers: Not Your Grandpa’s AM Radio

by Bruce A. Conti,
WPC1CAT
<contiba@gmail.com>

“The functionality of an SDR is nearly limitless in the digital domain.”

AM radio might seem like old-fashioned technology to some, but today’s AM broadcast DXer is decidedly high-tech.

Last month the modern AM broadcast DXer was defined by terminated broadband loop antenna technology providing near Beverage-like performance for low-noise reception of signals over long distances. After all, a receiver is only as good as its antenna.

This month, the modern DXer connects the antenna to the latest in receiver technology.

The SDR Revolution

The software defined radio (SDR) receiver has revolutionized DXing (long distance radio listening). An SDR is essentially a black box receiver consisting of an analog-to-digital converter connected to an antenna and computer.

The RF spectrum from the antenna is converted to a digital data stream that can be manipulated by computer software to perform the same functions as a conventional analog receiver. However, unlike an old-fashioned radio, which is limited by its hardware, the functionality of an SDR is nearly limitless in the digital domain.

For example, to change or add a filter to an analog radio would require some sort of physical hardware modification. In the digital domain of the SDR, an infinite number of filter options are available through computer software control without any hardware modifications. In fact, modern radio electronics experimenters are building custom SDR systems using digital hardware and open-source software like the High Performance Software Defined Radio (HPSDR) <<http://openhpsdr.org/>>, and the GNU Radio software development toolkit, <<http://bit.ly/GQqvRO>>.

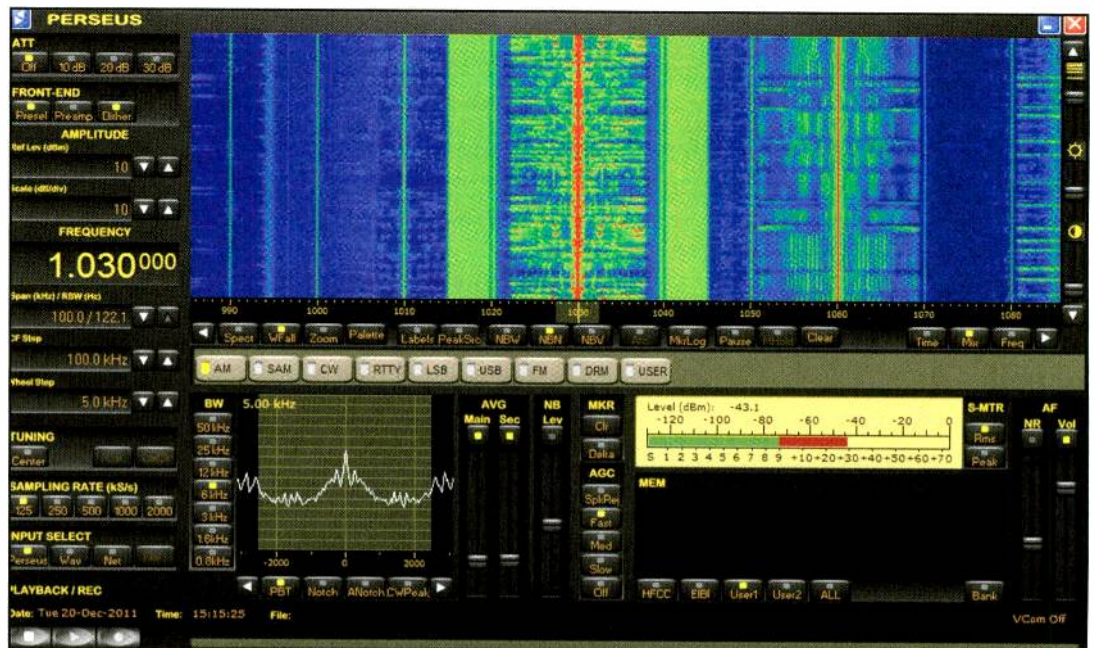


Photo A. A screenshot of the Perseus SDR user interface shows the main display in waterfall mode while tuned to 1030 kHz. (Courtesy of N1CP)

Furthermore, once RF spectrum is converted to digital data, it can be saved in a computer file to be manipulated by software at any time. In other words, the entire AM broadcast band can be *captured* in digital form and played back at a later time using the software to tune and demodulate signals within the range of the captured RF spectrum. *This is huge!*

The SDR DXer is no longer limited by one-signal-at-a-time monitoring. Capture 530 to 1710 kHz through the top of the hour with an SDR, and you'll have a recording of every station identification received on the hour in the AM broadcast band.

Wait a minute. Digital hardware, open source software, analog to digital conversion, software development: This goes way beyond experimenting with crystal radios, adding capacitor and resistor building blocks, or upgrading ceramic filters. Fortunately SDR technology has evolved to complete packages that are just as easy to install as a printer or any other peripheral device. Insert the installation CD, connect the SDR black box receiver to the computer with a USB cable, and you'll be up and running in no time.

SDR Basics

The Microtelecom Perseus, **Photo A**, and the WinRADiO Excalibur, **Photo B**, are two SDR receivers that have gained the most attention of AM broadcast DXers. Both operate similar to professional RF spectrum analyzers by sampling an input and graphically displaying the strength and frequency of signals received over a preset bandwidth.

Information is provided through waterfall and fast-Fourier transform (FFT) visual display representations of reception over the preset bandwidth. An FFT mathematical algorithm separates a series of elements into individual components — in this case breaking down a wide-RF bandwidth into its individual signals that appear as spikes or peaks in a graphical display of signal level over a frequency range.

An FFT display will show current reception, like a visual representation of real-time listening. A waterfall displays a scrolling spectrogram of frequency-versus-time with signal level represented by color or intensity, thus providing a record of changing reception conditions over time.

The primary advantage to monitoring a spectrum analyzer

display is the ability to see what's happening elsewhere on the dial while listening to a specific radio station. For example, you can be listening to 760 kHz, WJR in Detroit, when a strengthening signal appears on 693 kHz. Seeing the signal on the spectrum analyzer display, you tune to 693 kHz and find NHK Japan before it fades away.

The same signal would easily be missed without the visual display. The FFT and waterfall displays do take some time to get used to watching, but once you become familiar with what to look for, you'll wonder how DXing was ever done without it.

In general, SDR specifications meet or exceed the standards set by high-end analog communications receivers. Filter performance is better than brick-wall Collins and Murata ceramic upgrades. The infinitely-adjustable bandwidth of receive and notch filters can be customized to handle almost any interference situations.

Perseus SDR

The Microtelecom <<http://microtelecom.it>> Perseus from Italy has become an extremely popular SDR among AM broadcast DXers. While the Perseus *as is* rivals the performance of any high-end analog communications receiver, it's uniquely positioned to satisfy experimenters as well.

An available Microtelecom SDR Development Kit (SDRDK) provides a C-language application programming interface (API), dynamic link library (dll) controls, FPGA config files, and tools needed to develop custom software for manipulating the Perseus digital data stream. This led to the development of an extensive selection of third party software.

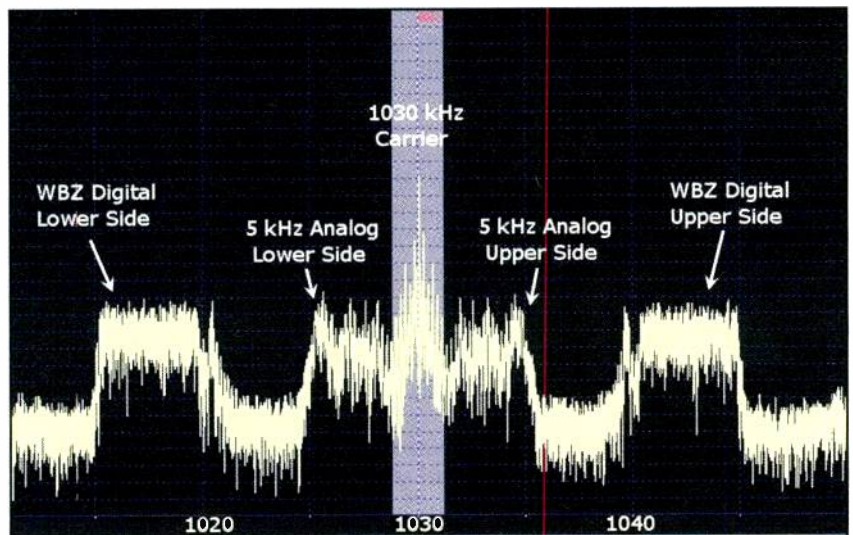
A Perseus third-party software guide outlines available control software and add-ons that provide additional computer displays, access to databases, precise frequency measurement, unattended recording, Morse code and digital mode decoding, propagation analysis, and more software solutions for just about anything one might dream up: <<http://bit.ly/GKGTDZ>>.

HSDR control software, <<http://www.hdsdr.de>>, **Photo C**, formerly WinradHD, is an example of third party software that has improved upon the basic out-of-the-box Perseus software. HSDR increases RF spectrum recording capability from 1.6

Understanding Hybrid/Analog Digital AM Signals

This FFT display of the hybrid analog/digital signal from WBZ, Boston, 1030 kHz AM, can be broken into three distinct components. The center peak signal is the 1030 kHz carrier. The signals extending to +/- 5 kHz from the carrier represent the upper and lower sidebands of the analog audio modulation. The square signals between 1015-1020 and 1040-1045 kHz are the peak elements of the WBZ HD digital signal. In a hybrid analog/digital AM signal, the analog audio is typically limited to 5 kHz to prevent interference with the digital portion. An analog-only signal may have audio sidebands as much as +/- 10 kHz from the center frequency for high fidelity sound.

— Bruce A. Conti, WPCICAT



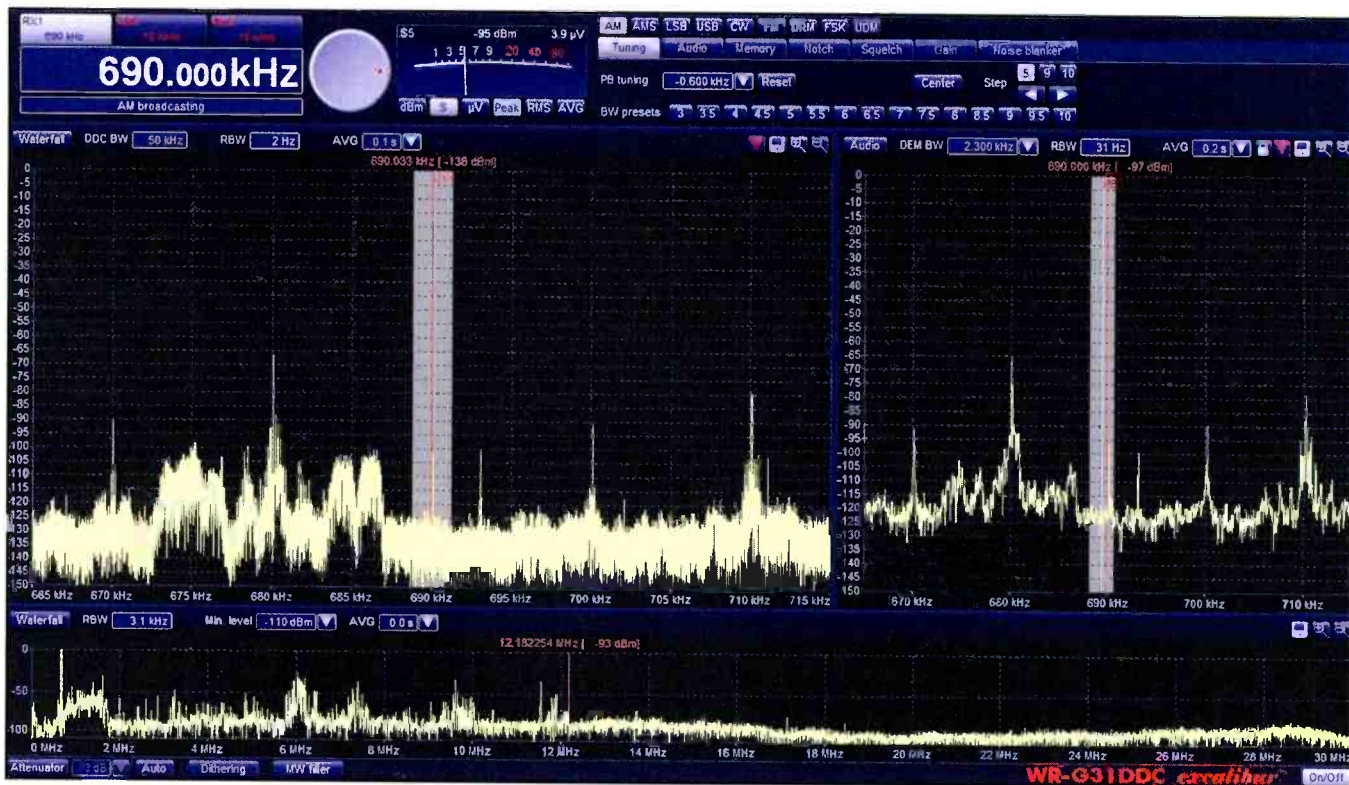


Photo B. On screen, the Excalibur SDR shows FFT displays of RF spectrum (upper left), demodulator (upper right), and 0 to 30 MHz panoramic view (bottom) while tuned to a 690 kHz center frequency. (Courtesy of WPC1CAT)

MHz to 2 MHz, supports secondary display features, and provides 10 separate notch filters. In addition to Perseus control, HSDR software is compatible with a number of different SDR units including HPSDR development modules and the RFSpace SDR-IQ receiver.

A Perseus deficiency is its external 5 VDC power requirement — a nuisance for operation at AC powerless remote locations where only 12 VDC battery power is available. This can be overcome with a simple 12 to 5 VDC regulator circuit.

Microtelecom offers an FM broadcast band downconverter, as well, for reception of 87.5 to 108 MHz on the Perseus, **Photo D.** It is a separate black box that connects to the Perseus. It receives FM stereo and RDS information.

Unlike the Perseus, the FM downconverter is powered by an external 12 VDC. Although the downconverter represents a significant advancement into FM for SDR technology, performance is reported to be less than desirable for DX purposes.

Excalibur SDR

The WiNRADiO Communications Excalibur from Australia is a close second among SDR broadcast monitoring gear, <<http://www.winradio.com>>. Although WiNRADiO provides support for third party software development such as an API, due in part to a slightly different format than most universal SDR data streams there hasn't been much made available other than virtual sound card (VSC) digital bridge software for use with various digital decoding applications.

WiNRADiO offers its own VSC software at <<http://bit.ly/GKpRDI>>. Be that as it may, out of the box, the Excalibur offers more features than a stock Perseus, such as the ability to tune three separate receivers (like having an A/B/C switch on an analog receiver), 2-MHz RF spectrum recording, simulta-

neous display of RF and demodulated spectrum along with 30 to 50 MHz wide panoramic spectrum display, a high-accuracy internal crystal reference, resizable display windows, readily assignable keyboard commands for custom single keystroke control, and an integrated DRM decoder.

The computer screen user interface of the Excalibur is well designed and comfortable to operate.

The Excalibur also has its deficiencies, most notably the lack of unattended RF spectrum recording capability, and the inability to set the receiver clock to UTC or a time zone different from the computer clock.

Don't the WiNRADiO designers realize that DXers like to use 24-hour format UTC? Of course, a simple fix would be to set the computer clock time zone for 24-hour UTC, though an inconvenience when others may use the same home computer for non-DX purposes.

The Excalibur is only capable of 15-kHz bandwidth unattended recording. In other words, only one signal at a time, which is great for recording an entire radio program or monitoring a specific frequency over a long period, but not for hardcore DXers who would like to capture top of the hour IDs across the entire AM band while sound asleep.

To take advantage of the full 2 MHz of spectrum recording capability unattended, the work-around has been to use task scheduler software to send keystroke and mouseclick instructions. The Splinterware system scheduler at <<http://www.splinterware.com>> has proven to be up to the task of unattended Excalibur operation.

Excalibur Pro

While Perseus has benefited from third party software development, WiNRADiO Communications seems to operate more

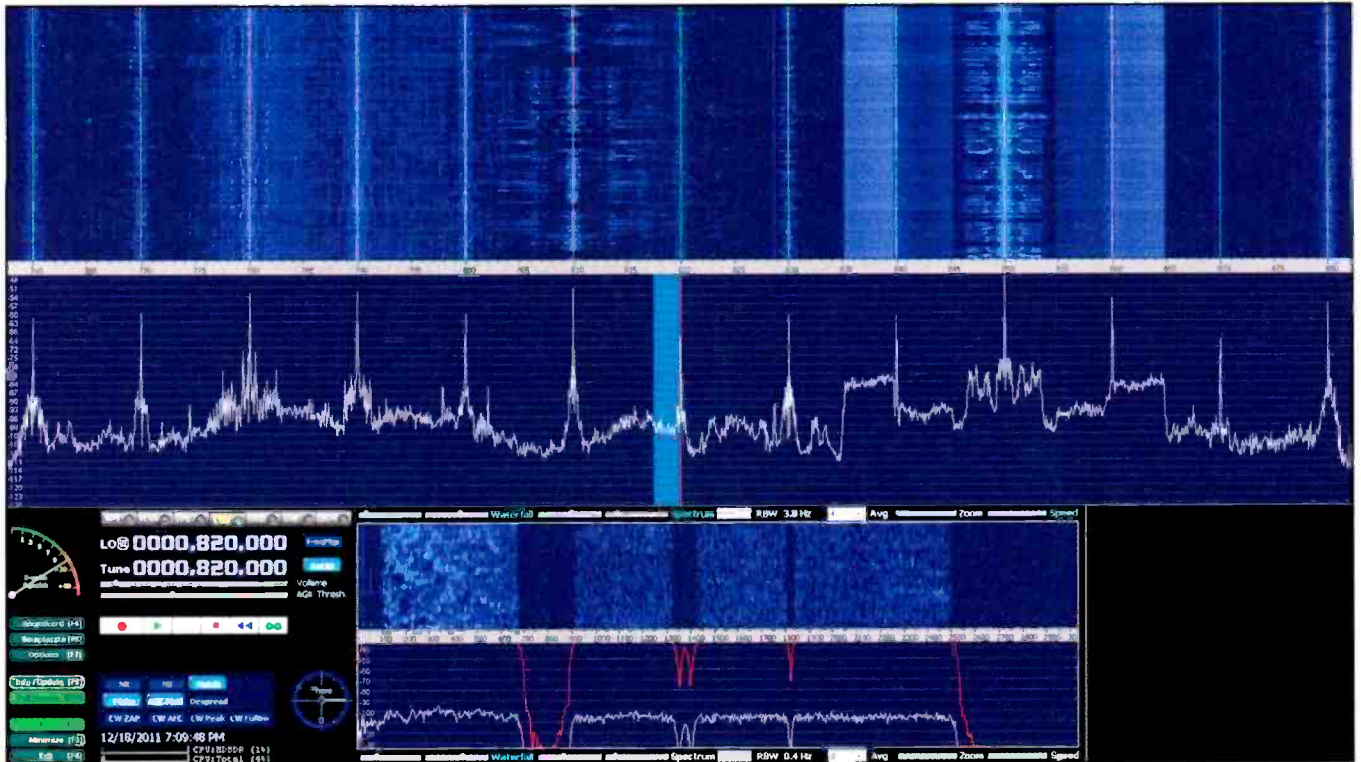


Photo C. A screenshot of the HDSDR user interface shows the waterfall (top) and FFT displays while tuned to 820 kHz. (Courtesy of N7NZH)

like a conventional radio manufacturer by continuously releasing new products and upgrades.

WiNRADiO has addressed the unattended RF spectrum recording issue and made a number of improvements in the “Pro” version of the Excalibur SDR. Enhancements include double the RF spectrum capture bandwidth from 2 to 4 MHz, a pause function that lets you pause the audio or entire RF spectrum capture, and what’s described as laboratory-grade spectrum analyzer functions not available in the original Excalibur.

The 2012 *WRTH* gives the Excalibur Pro its highest rating, “The best SDR we have used — in some ways it is the best receiver we have used regardless of the underlying architecture.”

Organizational Challenges

One consequence of SDR DXing is the challenge of file management. A single 4-minute, 1-MHz RF spectrum capture will consume more than 1 GB of computer storage space. After just a few nights of DXing, it’s nothing to have accumulated more than 100 GB of files. Sooner than later the modern AM broadcast DXer will be forced to contemplate how to manage SDR data files before the computer hard drive is full.

The first question to be answered is whether or not to save every RF spectrum capture file. With the potential for as many as 118 domestic and 130 transoceanic frequencies to check between 530 and 1710 kHz, it can easily take a couple of hours to go through a single top-of-the-hour capture. Documenting what’s on a single capture for future reference alone can become burdensome, so just imagine the work involved in sorting through a growing pile of capture files.

At some point you might have to stop DXing just to catch up. Some DXers have been known to take years to complete listening to captures from a DXpedition. *What to do?*

One strategy is to simply store files on an external drive. Computer memory is relatively cheap these days. A 500 GB external drive could store a year or more of accumulated RF spectrum capture files. If you dream of spending retirement listening to RF spectrum captures, then go for it. Perhaps AM radio will become extinct with RF captures the only remaining active artifacts — in which case, saving all those files could be good decision.

OK, perhaps I’m being a bit facetious, but I’ve developed a more targeted strategy. One or two RF spectrum captures a year will be saved as samples of what radio was like at my home location. One daytime and one nighttime capture would make a nice annual snapshot for the radio scrapbook.

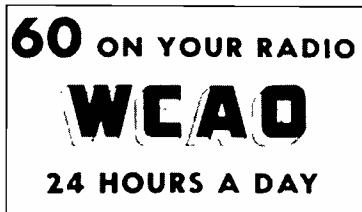


Photo D. The Microtelecom FM Downconverter sits on top of the Perseus SDR receiver. (Courtesy of <radiodxinfo.blogspot.com>)

This Month in Broadcast History

75 Years Ago (1937): Second pulses were added to standard frequency station WWV broadcasts on the accurate reference frequencies of 5, 10 and 15 MHz. (*IN DEPTH: Learn about WWV, <<http://1.usa.gov/rmDqL0>>. – Ed.*)

50 Years Ago (1962): The final episode of the original *Alfred Hitchcock Presents* television series was broadcast on NBC. “I Can’t Stop Loving You” by Ray Charles topped the Radio Baltimore WCAO music survey. WCAO was part of the Plough radio group which included Radio Atlanta WPLO, Radio Boston WCOP, Radio Chicago WJJD, and Radio Memphis WMPS. (*WATCH and LISTEN: To a live performance of Ray Charles’ “I Can’t Stop Loving You,” <<http://bit.ly/GDAMjl>>. – Ed.*)



25 Years Ago (1987): Garrison Keillor aired the last *A Prairie Home Companion* on NPR, but after a brief departure came back to the airwaves from New York City with the *American Radio Company of the Air* program, before finally returning to Minnesota in 1992 to revive *A Prairie Home Companion*. (*IN DEPTH: Visit the PHC website, <<http://prairiehome.publicradio.org/>>. – Ed.*)

– Bruce A. Conti, WPC1CAT

Favorite captures from DXpeditions will be saved to later relive the experience or share with future generations of DXers. I have a number of spectrum captures from a Prince Edward Island DXpedition that may become useful in presentations as well.

Audio clips of exceptional or exotic reception of a station in an otherwise routine capture will be saved as mp3 files, then the capture will be deleted.

Audio clips of 864-kHz Armenia signing on, and a top-of-the-hour ID from 940 kHz WCPC, Mississippi, taken from RF spectrum captures have supplemented my online logbooks.

Last, I try to review a top-of-the-hour capture within the hour, before initiating the next hourly capture. If DX conditions were outstanding and I can’t possibly get through it all within the hour, then the capture will be saved for later. Otherwise I’ll delete the file and move on. That way I don’t become overwhelmed with a pile of files to review.

As a result of this strategy I’ve become a top-of-the-hour DXer. If while reviewing an hourly capture something unique but unidentifiable is found in the capture, then I’ll immediately go to live DXing, adjust the antenna to improve reception, and attempt to make an identification.

I might be missing some interesting DX during the hour while reviewing an RF spectrum capture, but I do know that this overall strategy works. I received more signals from South Carolina in the past winter than in some 40 years of AM broadcast DXing.

South Carolina is typically one of the most difficult of the lower 48 states to hear over a long distance. And more Cuban

stations than ever have been logged from midnight Havana time RF captures when the national anthem is broadcast by all stations except the Radio Reloj network.

Whatever strategy works for you is best. With experience, the modern AM broadcast DXer will develop his or her own strategy for managing SDR files, and that strategy will continue to evolve over time.

Emerging SDR Receivers

The Excalibur and Perseus might be the top picks of the modern AM broadcast DXer, but they certainly aren’t the only tickets to SDR technology. The RFSpace SDR-IQ <<http://www.rfspace.com>> is a good entry-level SDR that offers the same spectrum analyzer technology but with RF spectrum capture limited to 196-kHz bandwidth.

The SDR-IQ is self-contained, powered solely through its USB connection, making it an excellent choice for portable laptop computer operation. Add an antenna and you’re good to go. And it’s made in the United States.

The Quicksilver QS1R by Software Radio Laboratory <<http://www.srl-llc.com>>, is made in the U.S., as well, and it’s a favorite of experimenters. The base QS1R allows plenty of room for expansion and upgrades with an oversized FPGA. Like the Perseus, plenty of third party upgrades are available. Additionally the QS1R will run on Windows, Mac OSX and Linux.

FlexRadio Systems, <<http://www.flex-radio.com>> has become a leader in the development of SDR technology for amateur radio applications. FlexRadio PowerSDR control software features infinitely-adjustable RF tracking notch filters with up to 18 notches active within the receiver passband.

A number of hybrid receivers have been recently introduced. Instead of an SDR black box, the hybrids have knobs, push-buttons, and displays like a conventional tabletop radio, plus the option of digital data stream manipulation with USB connection to a computer.

Warning: Do Not Try This at Home If . . .

Some words of advice for anyone considering an SDR receiver:

- This technology may not be a good choice if you don’t have access to an outdoor antenna with a properly matched lead-in. Computers radiate RF noise pollution, as we all know. An indoor antenna or poor lead-in is going to pick up more noise than anything else. An outdoor noise-reduced terminated broadband loop antenna such as discussed in last month’s *Broadcast Technology* will perform well with an SDR. No matter what antenna is used with an SDR, close proximity to the computer is a no-no.

- Pay close attention to the SDR manufacturer specs for minimum computer system requirements. In general, a dual-core, 2-GHz CPU and 1 GB of RAM are required. The Excalibur in particular requires lots of CPU horsepower to run smoothly.

If SDR technology isn’t for you, then look next month for Part III of *The Modern AM Broadcast Band DXer — Defined* and we will tune in to *ultra-light* radio.

For now, 73 and good DX! – WPC1CAT.

Cyclone Knocks Out Radio Nederland Madagascar Relay

by Gerry L. Dexter,
WPC9GLD
<gdex@wi.rr.com>

“The rain storm forced the station facility to close down. Four antennas and two satellite dishes were destroyed, as well.”

Radio Nederland’s huge Madagascar relay station was blown off the air when it was struck by a cyclone. The Category 4 storm took the roof off of two small buildings, including one in the high-voltage area.

The accompanying rainstorm forced the station to close down. Four antennas and two satellite dishes were destroyed, as well. Damage was also done to the office in Antananarivo and the wireless link from the office to the transmitter was lost.

Fortunately the transmitter building did not suffer any damage. The (U.S.) International Broadcast Bureau (VOA, and so on), Vatican Radio and the other stations the RN facility services are now on their own and are left for an indefinite period without this important African site.

More Bad News for Radio Nederland

Also from Radio Nederland comes more definitive word about its future. By 2013, officials say,

the station will focus on offering news specifically aimed at those countries that are closed to outside news and opinion. That implies a huge cut-back in the number of broadcasts, or hours, or languages.

You can play with the options whatever way you want for now. But the upshot may be that the *Worldradio* implication in the broadcaster’s official name will end up representing a whole lot less than it once did. (**VISIT:** <<http://www.rnw.nl/english>>. – WPC9GLD.)

... And Others

There is news that the **Almaty transmitter in Kazakhstan** — used to relay WYFR and Bible Voice Network programming — has closed down, effective on March 1. *So where do we go from here?*

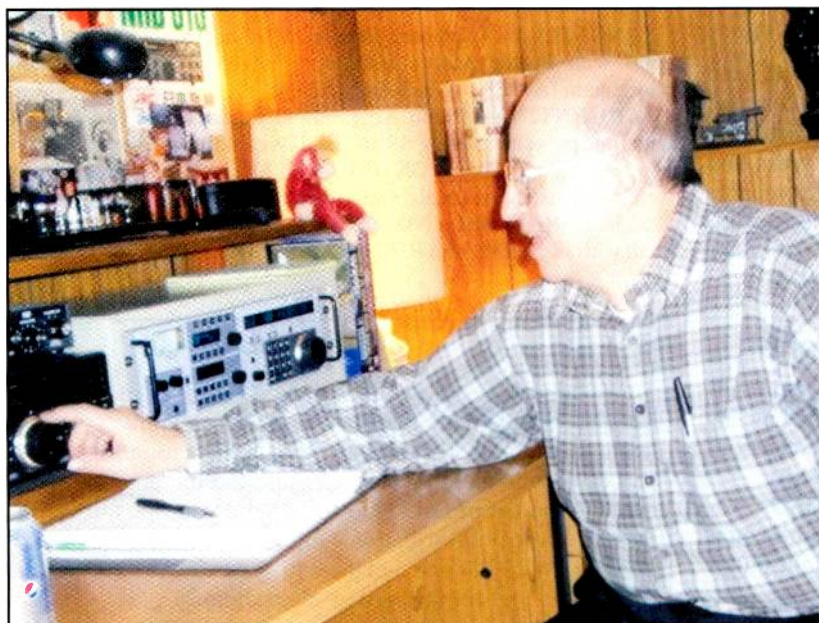
Radio France International has announced an approaching reduction in shortwave use, <<http://www.english.rfi.fr>>. The General Inspectorate of Finance is advocating the abandonment of shortwave — even medium wave — international broadcasting by the end of 2013. As it is, EE and SS programming seem to have been deleted from RFI’s current shortwave broadcast schedule.

Aarrrrgh: Pirate News

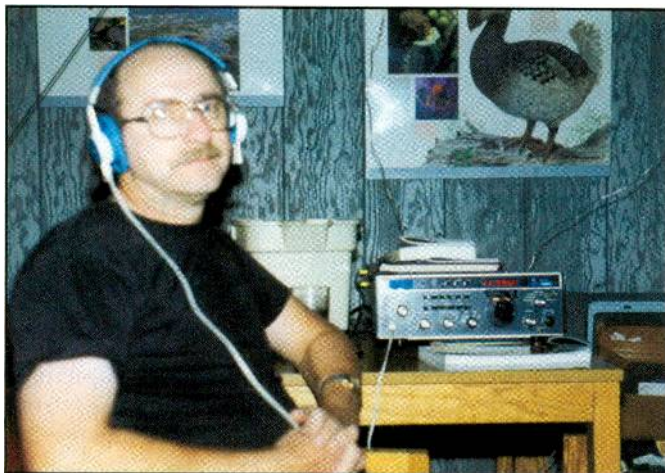
Here’s an advisory to current or potential pirate broadcasters: the FCC is seeking \$3.6 million to purchase new radio direction finding equipment and the cost of replacement trucks to house and transport them. The enforcement bureau closed 118 pirates last year and laid down fines on 15 pirate operators (most or all of them on FM). The total fiscal 2013 budget requested by the FCC is nearly \$347 million. (**VISIT:** <<http://www.fcc.gov>>. – WPC9GLD.)

Shortwave Updates

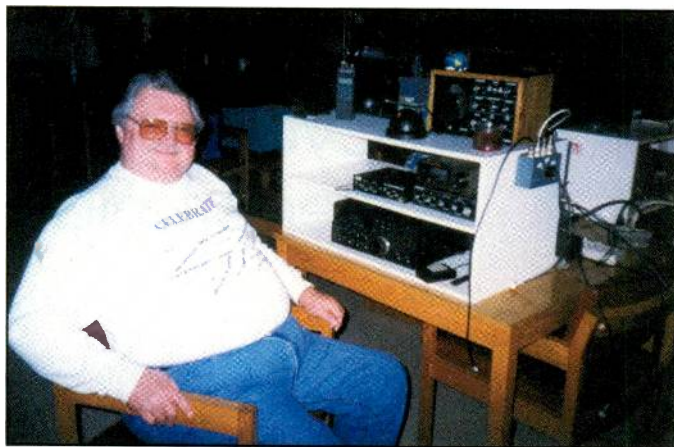
Radio Tanzania Zanzibar hasn’t been reported in quite awhile. Most recently it was active on 6015, and that one was only rarely heard. Both frequencies (including 11735), it turns out, have been out of service for more than two years. The problem was that the undersea cable that provided electric power to the station broke down about



Here’s Bill Dvorak (Madison, WI) in a February visit to G.I.G. headquarters. Bill is a long time NRC and NASWA member and former editor of the NRC’s DX Down the Dial — Eastern section.



NASWA member Jerry Lineback, tunes a Drake R7 on a DXpedition a few years back.



The late Loy Lee takes a DX break at the Maywoods DXpedition site, part of Eastern Kentucky University. Loy was also a NASWA member — and a great friend.

two years ago. So, apparently RT Zanzibar has now been reactivated with 50 kilowatts on both frequencies.

Right in the middle of the terrible things going on there, **Radio Damascus, Syria**, is being noted again: Showing up at 9330 in our afternoons around 2100, although it suffers heavy QRM from U.S. domestic WBCQ. The broadcast is in English and does talk about the situation there. (*VISIT*: <<http://www.radio-damascus.net>>. – WPC9GLD.)

That new Myanmar station on 7110 is actually the **Thazin Broadcasting Station**, believed to be operating from studios at Maymo, which is about 400 miles from Yangon — although the actual transmitter site is still in question.

How times can change! I spent 15 years — from the early '50s through the mid-'60s — trying to get a QSL from the then **Burma Broadcasting Service**. Now, some SWBC DXers are getting email confirmations from the Thazin Broadcasting Station. *Never give up on that QSL quest!*

An Old Friend Disappears

The **R. L. Drake Co.**, makers of all those great R4, R7 and R8 lines of receivers — is no more. Drake has been taken over by **Blander Tongue Laboratories**, announced in a February news release. Drake was in business for more than 65 years, and — since R8B production ended — has been focusing on cable TV, digital TV reception and video signal distribution equipment. (*INDEPTH*: *More about the R.L. Drake Co., and Blander Tongue*, visit, <<http://bit.ly/GHKWQR>>. – WPC9GLD.)

BBC Partners With Babcock International

Babcock International recently agreed to continue providing transmission services to the **BBC** through 2022. That means we can continue to count on those six BBC relays; **Ascension, Cyprus, Oman, Seychelles, Singapore and Sri Lanka**.

(*VISIT*: <<http://www.babcock.co.uk/>>. – WPC9GLD.)

The fact of the matter, though, is these days you can't count on sites or stations. You never know when they might pull a turnabout and toss us an unhappy surprise!

Let's Hear from You

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between

the items, list each logging *according to its home/source 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 facilities or personnel photos, and anything else you think would be of interest. And where is *that photo of you* at your listening post? It's way past time that you graced these pages! – WPC9GLD.

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

ALASKA—KNLS, Anchor Point, 9615 just after sign on at 1201 with pgm line-up, ID, business news, 1209 with *Postcard from Alaska*. (Sellers, BC)

ANGOLA—Radio Nacional Angola, 4950 at 0410 with M/W talking in PP. Good level but the audio was almost non-existent. (Parker, PA)

ANGUILLA—Caribbean Beacon, 6090 at 0205. (Klauber, NY) 0510 with Pastor Scott. (Maxant, WV) 0515 with W sermon. (Goodman, IA) 2330. (MacKenzie, CA)

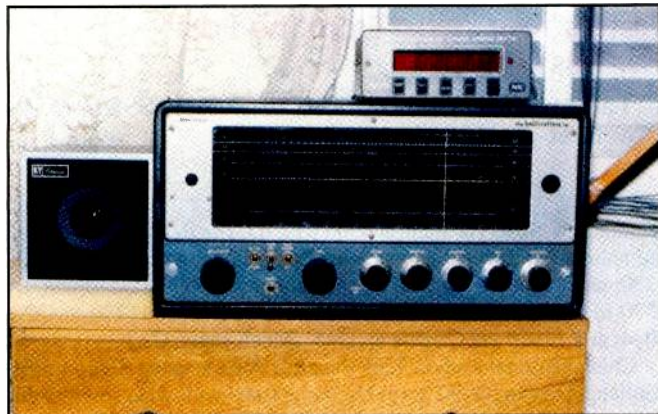
ARGENTINA—Radio Argentina al Exterior, 11710.6 at 0200 with time pips and rotating SS and EE IDs over music, then M/W with pgm highlights. (Coady, ON) 0202 with M and ID, opening EE and welcoming listeners, vocals, various features and IDs. (D'Angelo, PA)

ASCENSION ISLAND—BBC South Atlantic Relay, 6005 at 0650 with ID, QRM from RHC on 6010. (Goodman, IA) 6135 in with

Help Wanted

We believe the Global Information Guide — month after month — offers more logs than any other monthly SW publication! (Some 430 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 unidentifieds, duplicate items (same broadcaster, same frequency, same site) and questionable logs.*



I've lusted after a Hallicrafters SX-62 for decades. Any offers?

talks in Hausa at 0535 and 12015 at 0610 on the possibility of a female president for Taiwan. (Parker, PA) 7385 with *Network Africa* at 0330. (Coady, ON) 9410 with EE news at 2035. (Fraser, ME) 15105 with talks in FF at 1817. (Brossell, WI)

AUSTRALIA—Radio Australia, 5990-Brandon with U.S. pops at 1156. (Brossell, WI) 6020 at 1145 on Kuala bears. Also, 9580 at 0902 on a balloon crash in New Zealand. (Maxant, WV) 0835 with ID and discussion of aboriginal astronomy. //9475, 9590 and 9710. (Goodman, IA) 15515 at 0405 with domestic news and mention of "ABC News Radio" at 0408. (Coady, ON) 2100 to 2300 to the Central Pacific. (Rippel, VA) 15560 at 2312 condemning government budget cuts. (MacKenzie, CA)

Northern Territory SW Service, 2310-Alice Springs, VL8A at 1300, 2325-Tennant Creek, VL8T at 1300 and 2485-Katherine, VL8K showing at just a trace level. (Barton, AZ) 2485-Katherine, at 1100-1120. (Wilkner, FL)

Radio Symban, 2368.5 in Greek at 1134 plus with musical variety pgm. (Rippel, VA)

HCJB-Australia, 15400-Kununurra with a pgm on various styles of worship at 1232. (Brossell, WI)

BELARUS—Radio Belarus, 6155 at 2120 with ID "You are listening to Radio Belarus." (Brossell, WI) 7360 in RR at 2340. (MacKenzie, CA)

BOLIVIA—Radio Eco, Reyes, 4410 at 2330 to 0200 in SS. (Wilkner, FL)

Radio Santa Ana, Santa Ana del Yacuma, 4451.2 at 0100. Usually gone by 0030. (Wilkner, FL)

Radio San Miguel, Riberalta, 4699.6 at 0945 in SS with domestic songs, ads and anmts. M/W acnrs. (Sellers, BC) 1000 with strong SWL-quality signal in SS. (Wilkner, FL)

VERIFICATION CARD	
<p>Burma Broadcasting Service</p>	QSL.....
	Location... <u>U.S.A.</u>
	Wavelength... <u>7.986. kHz</u>
	Date... <u>26.12.86</u>
	Time... <u>18:30</u> (GMT).
Your reception report has been examined and found correct/incorrect.	
<p>Director (Broadcasting) Information and Broadcasting Department, Rangoon, Burma.</p>	

One upon a time Burma was devilishly hard to QSL. Now DXers are exchanging emails with them!

Radio Yura, Yura, 4716.7 with LA music, M SS ancr at 0115 with tentative IDs. (Sellers, BC) Also noted daily at 1020 as well as 0100. (Wilkner, FL)

Radio Logos, Santa Cruz, 4865 at 0420-0430* in SS with slow, tribal-like music and W in SS now and then. (Parker, PA)

Radio San Jose, San Jose de Chiquitos, 5580.2 in SS from 2335 to 0020. (Wilkner, FL)

Radio Pio XI, Siglo Viente, 5952.4 at 1035 in SS with M in SS, frequent mentions of Bolivia. Quite readable in the mornings lately. (Perry, IL) (p) 2312-0005 with SS vocals and W taking listener phone calls. (D'Angelo, PA)

BOTSWANA—VOA Botswana Relay, Mopeng Hill, 4930 at 0416 with *Daybreak Africa*. (Parker, PA)

BRAZIL—(all in PP - gld)

Radio Municipal, Sao Gabriel da Cachoeira, 3375.1 at 1000 with music. (Wilkner, FL)

Radio Congohas, Congohas, 4775 at 2354-0000* with religious talks. (D'Angelo, PA)

Radio Difusora, Londrina, 4815 at 0004 with M ancr, ads and fast interactive talking. (D'Angelo, PA)

Radio Clube do Para, Belem, 4855 at 0419 with easy listening music at 0419. (Parker, PA)

Radio Roraima, Boa Vista, 4877v with music at 0010. (Wilkner, FL) 0345-0404* with Brazil-pops, anmts off with anthem at 0400. (Alexander, PA) 0351-0400* with Brazil pops, off with choral anthem. (D'Angelo, PA) (p) At 0850, with two-man show at 0900, possibly news. (Perry, IL) 1009 noted in passing with morning music pgm. (D'Angelo, PA)

Radio Educacao Rural, Tefe, 4925.2 with soft music at 0055, M ancr in possible devotional or sermon. Off by 0100. Usual sign off is 0200. (Sellers, BC)

Radio Capixaba, Vitoria, 4935 at 0610 with M and impassioned speech. (Parker, PA)

Radio Itatiaia, Belo Horizonte, 5970 at 2320 with fast talking M ancr. Fair after REE left the freq. at 0000. (D'Angelo, PA)

Radio Senado, Brasilia, 5990 at 0948 with ranchera music, full ID at 1000. (Perry, IL)

La Voz Missionaria, Camboriu, 9665 at 0106 with M/W ancrs at 0111. (D'Angelo, PA)

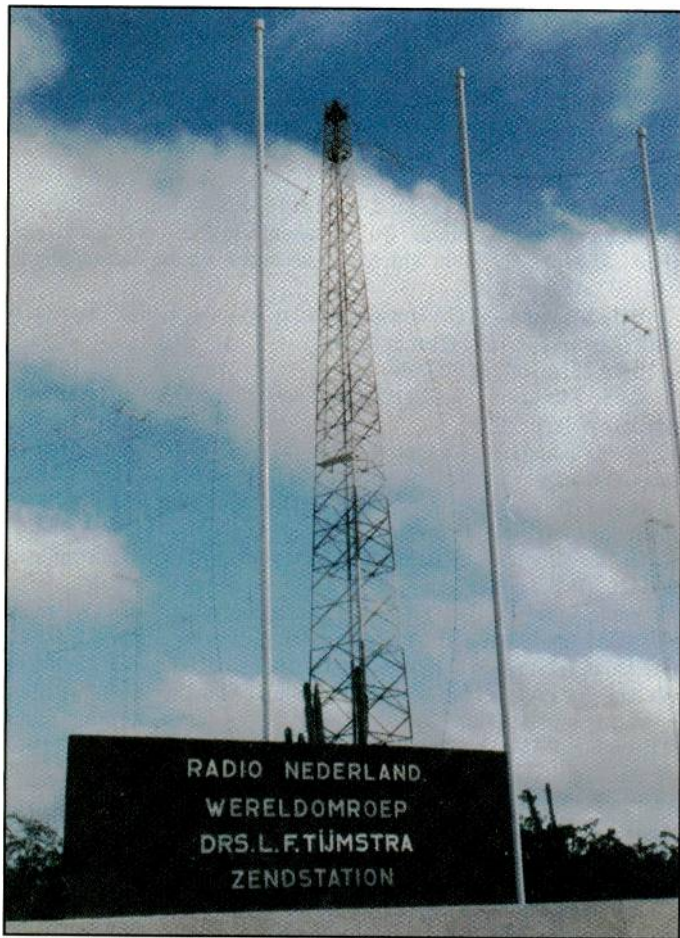
Radio Cancao Nova, Cachoeira Paulista, 9675 at 2134 with back and forth talk between M/W, and ads and anmts. (Strawman, IA)

Radio 9 de Julho, Sao Paulo, (t) 9820 at 0028 with W in EE briefly

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!

New reporter **Joel Goodman in Stanwood, Iowa**, wins this month's prize — a 2012 edition of the *World Radio TV Handbook*, the ultimate guide to international and domestic broadcasting stations, schedules, frequencies, personnel, websites, email and postal addresses plus a lot more. I can't imagine not having a current edition on the radio desk or within easy reach. Is your radio library up to date? The WRTH is available from just about every radio hobby dealer, big box or neighborhood bookstore or online supplier. Get tuned in to WRTH now!



Cloudy days lie ahead for Radio Nederland.

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

La Voz de Santa Cruz, Santa Cruz, Peru, in SS at 0155 on November 17, 1995, closing at 0340.

celebrations; 9690 via Spain at 0300 with ID, *The Beijing Hour* including national and world news; 9710-Kashi in SS with local music at 0230; and 11790-Xi'an with news headlines at 0000. (Goodman, IA) 9580 in CC at 0235. (Klauber, NY) 11650 at 0016; 11770 in CC at 0034; and 11970 via Canada at 2345. (MacKenzie, CA)

China National Radio/China People's Broadcasting Station: PBS-Xinjiang, Urumqi, 3990 in (p) Uighur at 0109 with what sounded like news by M/W, poor and nearly useless; 4500 in (l) Mongolian at 0120; //6190, PBS Xinang, Lhasa; 7450 in Mandarin at 0054 with M//W talk over music. (Sellers, BC) 6175-Beijing in CC at 1312; 11670 in CC at 0020; //11605; and 11720. Also, 11845 in CC at 0030. //s 11740, 11835, 11915, 11960. (MacKenzie, CA)

Firedrake music jammer, 11500 at 1220, apparently covering Sound of Hope. (Brossell, WI)

COLOMBIA—Alcaravan Radio, Puerto Lleras, 5910 at 0450, M ancr is SS with ID, LA vocals, with 2+1 time pips in mid-song at 0500. (D'Angelo, PA) 0555 with a mix of ballads and highlife. ID. (Parker, PA)

Radio Macarena/Autentica, Villavicencio, 5975 at 0530 in SS with talks and short bridges of flute music. (Parker, PA)

CONGO (DR)—Radio Okapi, 11690 via South Africa at 0425 in FF with 2-M talks. (Coady, ON) 0432 with several IDs and FF sports pgm. (D'Angelo, PA) 0432 with IDs and a sports pgm in FF, then more features and IDs. (D'Angelo, PA)

CROATIA—Croatian Radio, 3985, Deanovic, at 0533 in Croatian with talks and classical music. (Parker, PA) 7375 at 0153 with music pgm in Croatian. (Klauber, NY)

CUBA—Radio Havana Cuba, 6000 in EE at 0241. (Klauber, NY) 11690 in SS at 0046; 11760 in SS at 0043; 15230 in SS at 2304; and 15370 in SS at 2308. (MacKenzie, CA) 11760 in EE at 2020. (Fraser, ME)

CYPRUS—Cyprus Broadcasting Corp., 6135 with discussion in Greek. Off at 2244. //7220 and 9760. (D'Angelo, PA)

DJIBOUTI—RTV Djibouti, 4780 at *0300 with orchestral NA, M opening in AA, recitation and local music. (D'Angelo, PA) 0302 with Koran and into AA talks. (Rippel, VA) *0323 with late and abrupt sign on with AA talk, HOA style pops, local children's chorus and indigenous tribal music. (Alexander, PA)

ECUADOR—HCJB, 3995 via Bremen at 0455 in GG with trumpet fanfare IS, M with ID and into talk. (Parker, PA)

Radio Quito, Quito, 4919 at 0432 with nice pgm of SS pops and man with SS talk, several familiar IDs as "Radio Quito, la voz de la capital." The audio was somewhat watery. (D'Angelo, PA)

HD2IOA, Guayaquil, 3810 with time signals at 1024 with anmts every ten seconds. (Perry, IL)

EGYPT—Radio Cairo, 6270-Zaabal in AA at 0050 with domestic music. (Goodman, IA) 9305 in AA at 0003. (Brossell, WI)

ENGLAND—BBC, 5790-Wooferton in AA at 0545 and 5875 Cyprus Relay in AA at 0548. (Parker, PA)

ERITREA—Voice of the Broad Masses of Eritrea, 7195 at 0255 sign on of Program One service. IS and vernacular talk at 0300, then HOA music. (Alexander, PA)

ETHIOPIA—Radio Ethiopia, 9705 at *0258 sign on with IS, open anmts, NA at 0259, chimes at 0300, Amharic talk and HOA music. (Alexander, PA) 2025 with HOA music and a few FF anmts, slight het from Niger. (Strawman, IA)

GABON—Africa Number One, 9580 with pgm of blues in FF at 2132. (Coady, ON) 2253-2315* with FF talk and some music hosted by M ancr. Off quietly at 2315. (D'Angelo, PA)

GERMANY—DW, 9655 Rwanda Relay with news on Africa at 2015. (Goodman, IA) 11795 Rwanda Relay in PP at 1950, 12070

f/by M in PP with what might have been news. Needs more work. (Sellers, BC)

Super Radio Deus e Amor, Curitiba, 9565 at 0625 with M preacher. (Parker, PA)

Radio Nacional da Amazonia, Brasilia, 11780 with p-b-p sports at 0016. (Goodman, IA) 2354 with talks. (Brossell, WI)

Radio Brazil Central, Goiania, 11815 at 0615 with pops and canned anmts. (Parker, PA)

Radio Bandeirantes, Sao Paulo, 11925 at 0434 with a phone call and laughter. (Parker, PA)

Radio Inconfidencia, Belo Horizonte, 15190 at 2345 with talks and U.S. pops, Brazilian ballads. (Alexander, PA)

CANADA—Radio Canada International, 17765 in PP at 2105 with talks and music. ID at 2116, off at 2129. (Goodman, IA)

CFRX, Toronto, 6070 at 0505 with a comedy pgm. (Goodman, IA) 0910 on proper foods. (Maxant, WV)

CKZN, St. John's (Newfoundland), 6160 at 1016 with an economics and business discussion. (Sellers, BC) 2205 with domestic news. (Brossell, WI)

CHU, Ottawa, 7850 at 1450, 14670 at 1510. (Maxant, WV)

CHAD—Radio National Tchadienne, N'Djamena, 6165 at 0458 with M in FF hosting a listener call-in pgm. (D'Angelo, PA) 2215 with FF talk and Afropops. (Alexander, PA)

CHILE—CVC-La Voz, Santiago, 17680 at 2135 with SS talk, Christian pops. (Goodman, IA) 2320. (MacKenzie, CA)

CHINA—China Radio International, 5965 via Cuba with news of China at 0510. (Maxant, WV) 6145 via France in CC at 2152 to 2156 close. (D'Angelo, PA) 7285 via Albania at 2023 on a robotic laboratory; 7440-Nanning with talks in CC at 1215; 11660-Shijiazhuang in (l) Mandarin at 1809; and 13700 in CC at 1834. (Brossell, WI) 9415 in (p) VV at 2353, off at 2357; 9570 via Albania at 0045 with CC NY



Not smiling for much longer. Radio France International considers dropping international shortwave by next year.

Rwanda on earthquake detection at 2136 and 15620 Rwanda in (I) Hausa at 1823. (Brossell, WI)

GREECE—Voice of Greece, 12105 in Greek at 0133, M with comments. (MacKenzie, CA)

GUAM—Adventist World Radio, 12105 at 1228 with talks in (I) Mandarin. (Brossell, WI)

TWR, 11840 at 0842 with *Through the Bible*, f/by *Heartbeat*. They went into their sign off routine at 0909 and then off shortly after 0910. (Sellers, BC)

(See also under *United States - GLD*)

GUATEMALA—Radio Verdad, Chiquimula, 4055 at 0109 with gospel songs and hymns in SS. (Sellers, BC) 0535 with religious pgm. (Goodman, IA)

GUYANA—Voice of Guyana, 3290 at 0515 in EE, apparently carrying BBC programming. (Parker, PA) 0600 carrying BBC World Service. (Alexander, PA) Very nice signal at 0750 to past 0835 carrying BBC. Time check and ID at 0800, nice choral anthem to begin their local broadcast day. Signal improved further by 0835 when a delightful Hindi musical pgm in progress. (Perry, IL) 0920 "Good morning to you from Guyana." (Wilkner, FL)

HONDURAS—Radio Luz y Vida, San Luis, 3250 fading up at 1130 with what may have been opening anmts. Into religious music at 1133 and M with inspirational talk in SS. Pattern was SS talk by M, music faded up, then down, then more talk, then the sequence repeated. (Perry, IL)

INDIA—All India Radio, Chennai (p), 4920 at 0125-0145 with long W talks, into sub-continental music, more W talk. (Rippel, VA) Srinagar, 4950 at 0203 with local music, M/W Hindi talk and short anmts by M/W. Poor and fading. Off at 0216, which matches their 0215 close time. Also, 15175-Panaji (Goa), at 1519 in (I) Gujarati with Indian music, 1520 with possible news. Very poor to poor. (Sellers, BC) 7550 at 1925 with Indian vocals and ID for GOS. (Maxant, WV) 11620 at 1420 with (p) EE service. A mix of M/W talk and local music. (Strawman, IA) 11670-Bengaluru with IS and EE ID at 1744. (Brossell, WI) 1955 in Hindi with Indian classical music. (Fraser, ME)

Athmeeya Yatra Radio, 15285 via Nauen (E. Germany), in (I) Punjabi with apparent religious talk at 1250. Weak but audible. (Coady, ON)

INDONESIA—Voice of Indonesia, 9526 at 1443 in Indonesian. Cut at 1456. CRI carrier came on at 1457. VOI did not return, during several checks. (Sellers, BC)

IRAN—Islamic Republic of Iran Broadcasting, 9460 in AA at 1954. (Brossell, WI) 11710 in EE at 0203 blocking RAE. W on nuclear armaments of U.S. and Russia, 0209 with another political talk. (Sellers, BC) 11720 in (I) Urdu at 1332. (Brossell, WI) 13760-Sirjan in Bosnian at 0605 with slow, dark classical music interspersed with M talk. (Parker, PA)

JAPAN—NHK World Radio Japan, 6110 via Canada at 0505 on the Euro vs. the Yen. (Maxant, WV) 6110 via Canada with JJ language lesson at 0520, 6145 in JJ at 0720 with boisterous talk, ID at 0759, 9825 in JJ at 0855 with talk, time pips and off at 0900. (Goodman, IA) 11945 via France in JJ at 1751 and 15445 via Germany in JJ at 1840. (Brossell, WI) 17605 via Bonaire in JJ at 2317. (MacKenzie, CA)

Radio Nikkei, 6055 in JJ at 1354 with long W talk, piano jazz at 1358, ID at TOH and continued with jazz style instls and W talk, 9595 at 1420 with pop ballads. (Strawman, IA)

KUWAIT—Radio Kuwait, 13650 at 1835 in AA with W/M talking. (Maxant, WV) 15540 at 1755 in (I) Urdu with M/W talk, M taking phone calls. NA at 1759, then into EE with time pips, ID, TC and NA. (Coady, ON)

LAOS—Lao National Radio, 6130 at 1255 with EZL Lao vocals and other selections. Then into pounding disco-type electronic beat, f/by M with possible news in Lao. (Perry, IL)

LIBYA—Radio Television Libye, 11600 at 1712-1732 with FF talk, short instl breaks. Abrupt sign off. Not heard earlier at 1600. Seems to have a very erratic schedule lately. (Alexander, PA) 1742-1807* with vocals and FF talks. Dead air from 1732-1800 when W began talking, alternating with soft instls. Nice ID at 1806 and brief close-down anmt. Carrier still on for over ten minutes before I turned away. (D'Angelo, PA)

MADAGASCAR—Radio Madagasikara, 5010 at 0218 with carrier + ISB with local Afropops, 25 second IS at 0226, f/by choral NA, opening anmts, Malagasy talk and more local Afropops. (Alexander, PA)

MALI—Radiodiffusion Malienne, 5995 with tribal music and FF at 0628. (Parker, PA)

MARUITANIA—Radio Mauritanie, 7245 in AA at 0241. (Klauber, NY) 0713 with M and news in AA, short instl segment, another anc and more instl music. Good at tune in but rapidly deteriorating as sunrise moved in. (D'Angelo, PA)

MEXICO—Radio Educacion, Mexico City, 6185 at 0530 with M/W and SS talk. (Maxant, WV) 0810 with classical music and SS talk. (Goodman, IA)

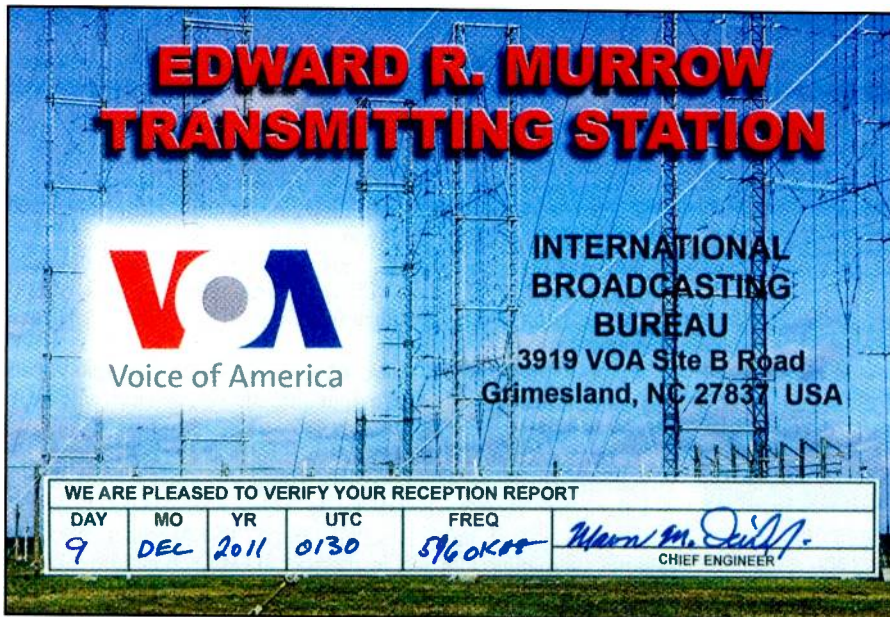
MONGOLIA—Voice of Mongolia, 12085 with W and EE news underway at 1033, and a bit of Mongolian music. Very poor, at best. (Sellers, BC)

MOROCCO—RTV Marocaine, 15349.1 with AA music at 1415. W anc at 1418. (Rippel, VA)

MYANMAR—Thazin Broadcasting Station, 7110 at 1215 in unid language with domestic pop. (Alexander, PA) 1300 with EZL local hits. (Perry, IL) 1249 with a fair signal holding up at 1330. (Brossell, WI) 1350 with soft pops and occ. W in vernacular, instls at 1430 end-



A pair of classics here: A Zenith Transoceanic on top of a Hammarland SP600 in Rick Barton's Arizona shack.



The VOA's Greenville, NC transmitter site QSL'd for Rich D'Angelo.

ing just before carrier off at 1421. (Sellers, BC) 1415 weak but improving with pop style stuff. (Strawman, IA)

NETHERLANDS—Radio Nederland, 5955 via Nauen in DD at 0610. (Goodman, IA) 0620 in DD. (Parker, PA) 11615 via Madagascar at 2045 with interview on young Indian professionals. (Fraser, ME) 1545 via Germany on daily life in Zimbabwe at 1842. (Brossell, WI) 1950 via Rwanda with news about Africa. (Brossell, WI)

NEW ZEALAND—Radio New Zealand Intl, 9615 at 1855 talking about Christchurch tremors; 9655 at 1320 on Eniwetok Atoll; 11725 at 0515 on climate change in the Solomon Islands; 15720 on increasing oil prices at 0420. (Maxant, WV) 11725 at 0627 with operatic songs. (Parker, PA) 0400 with time pips, news magazine highlights. (Coady, ON) 2315 with conversation. (MacKenzie, CA)

NIGERIA—Voice of Nigeria, 9690 with Nigerian vocals at 1440. (Maxant, WV) 15120 at 1834 on elections there. (Brossell, WI)

NORTH KOREA—Voice of Korea, 9315 in EE at 0259 but with difficult copy. (Klauber, NY) 9335 at 1318 with news and into choral anthem. Co-channel QRM from WBCQ. (Coady, ON) 11710 at 1504 with W introducing patriotic choruses and M talking about Kim Jung Un. Not scheduled at this hour. (D'Angelo, PA) 11710 at 1730 with extended talk by M/W. (Strawman, IA) 11735 at 0044 in SS. (MacKenzie, CA) 11865 at 1216 with talks in JJ. (Brossell, WI)

OPPOSITION—Sound of Hope (to China), 7280 via Taiwan in CC at 1210. (Brossell, WI)

Radio Republica (to Cuba), 5954.2 in SS, M/W with features and ID at 0118. (D'Angelo, PA)

Voice of Peace and Democracy of Eritrea,

7235 at 0407 with talks in (I) Tigrinya and M with some local music. (D'Angelo, PA)

Denge Mesopotamia (to Iran), 11530 at 1329 with talks in (I) Kurdish. (D'Angelo, PA) 1410 with Mideast vocals. (Strawman, IA)

Nippon no Kaze (to N. Korea), 9950 via Taiwan in KK at 1325. (Brossell, WI)

Sudan Radio Service, 1500 to 1659* with vernacular talk. Into EE pgm at 1630, South Sudan news headlines at 1652. (Alexander, PA)

PERU—Ondas del Huallaga, Huanuco, 3330 fading in abut 1030 with OA music, M in SS over music. (Wilkner, FL)

Radio Huanta 2000, Huanta, 4747 in SS at 1046 with M/W, Andean music, anmts. (Sellers, BC)

Radio Vision, Chiclayo, 4790 at 0449 with M preaching in SS. (Parker, PA)

La Voz de la Selva, Iquitos, 4824.5 with SS sign on at 1040. (Wilkner, FL)

Radio Sicuani, Cusco, 4826.3 at 1000 with nondescript music. Off at 2350 to 0100. (Wilkner, FL)

Radio Cultural Amauta, Huanta, 4955 at 1035 with rustic huaynos, guitar and W vocal. Lots of folklorica. (Perry, IL)

Ondas del Suroriente, Quillabamba, 5119.9 with M/W in radio play or drama at 2337. (Wilkner, FL)

Radio Bolivar, Ciudad Bolivar, 5460.1 in SS at 2350-0025. (Wilkner, FL)

Radio Bethel, Arequipa, 5921.2 in SS at 2326-0007. (Wilkner, FL)

Aroma Café, 6060 at 1100v open being heard well this past week. (Wilkner, FL)

*1100a already in progress at 1108 with rustic huaynos, W doing comls, time check for "las cinco de la mañana y 23 minutos" then more huaynos. Often need to tune through a big "buzz saw" type open carrier. (Perry, IL)

Radio Universo, Cusco, 6090 at 1045 with

M in SS and partial ID, often including Andean flutes. (Wilkner, FL)

Radio Tawantinsuyo, Cusco, 6173.9 at 1000 with all SS talk. (Wilkner, FL)

PIRATES—Captain Morgan Shortwave, 6924.7 at 0000 requesting emails to <captainmorganshortwave@gmail.com>, pgm of booze-themed rhythm and blues. Off suddenly at 0013. (Hassig, IL) 0057 with various rock numbers. (Alexander, PA) 0104-0127* with M hosting rock. Off at 0127. (D'Angelo, PA)

Radio Gaga, 6925u at 0255 sign on with rap. (Hassig, IL) 0350 with pops. (Alexander, PA) 2205 with classic rock. Said they were broadcasting live. (Zeller, OH)

Wolverine Radio, 6925u at 0130 with back-to-back songs, ID at 0130 and into an SSTV bit at 0151. (Rippel, VA) 0134 with old time blues. (Alexander, PA) 0144 with oldies and numerous IDs. Off at 0238 with ID and FAX sounds. (D'Angelo, PA) 0200 with rhythm and blues, disco, dance and heavy metal. (Hassig, IL)

Radio Twenty-Twelve Intl, 6924.8 at 0038 with pgm of techno-dance with many IDs. No email address heard. (D'Angelo, PA)

Radio Free Euphoria, 6925.1 at 0322 hosted by Captain Guanga. (Rippel, VA)

Radio Ronin Shortwave, 6925 at 2308 with rock. (Alexander, PA)

WMPR, 6925 at 2126 with non-stop techno things, M with ID W giving frequency. "This is W-M-P-R, 6-9-2-5." (D'Angelo, PA)

WEAK Radio, 6925 at *0047-0123 sign with Chopin's Funeral March, then into rock and pop, IDs and fade comls. (Alexander, PA) 0120 saying "We're in the Yellow Pages." Ending with the Funeral March. (D'Angelo, PA)

Big Boobs Radio, 6950.6 at 0043 with IDs and pops. (Alexander, PA) 6951. (D'Angelo, PA)

MAC, 6925.5 at 1822. Usual host Paul Starr was not there, replaced by a Dr. Who pgm of rock oldies and later a young boy ancr (Ultra Man) showed up. (Zeller, OH)

Radio Jamba Intl, (t) 6925.1 at 0555-0610 with rock and DJ chatter. (Alexander, PA)

Radio Border, 6925u at 0105 mostly about the history of Wolfman Jack. ID was hard to pull out, but I think this was Radio Border Intl. (Zeller, OH)

XERF, 6924.9 at 0105 rebroadcasting XERF pgm with Wolfman Jack as ancr and talk about history of XERF. (Alexander, PA)

Rave On Radio, 6925u at 2320 with Neil Young selections. (Alexander, PA)

WAZU, 6289.9 at 2145-2025 with rock, fake ads, IDs. Said they were doing a transmitter test. (Alexander, PA)

Radio Bogusman (Euro), 6285 2355 weak with pops and talk. (Alexander, PA)

Radio Tropiq (Euro), 6307.5 at 2330-0110 weak with pops and country. (Alexander, PA)

POLAND—Radio Polonia, 7330 via Wooferton at 2232 with news features in Polish, //15260 was very poor. (D'Angelo, PA)

ROMANIA—Radio Romania International, 5910 at 0105 in Romanian with talk,

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So did the Voice of Mongolia for a reception on 12085.

pops, classical music, radio drama and ID at 0201. Also, with 6145 at 0135 on a Romanian writer of comic dramas. (Goodman, IA) 15430 at 1140 with Romanian music. (Maxant, WV) 1150 with pan flute selections. (Brossell, WI)

RUSSIA—Voice of Russia, 7295-Chita (Asiatic Russia), at 1006 with *Russian Business Report*, //7260-Vladivostok. Also, 9750 via Armenia in RR at 0102, at 0159 with Moscow bells IS and into SS at 0200. (Sellers, BC) 7250-Krasnodar interviewing a UK W at

0035. (Goodman, IA) 9745-Chita at 1250 in RR at 1250. (Brossell, WI)

Magadan Radio, 7320 in RR at 2027. (Brossell, WI)

RWANDA—Radio Rwanda, 6055 at 2045 with continuous vernacular talk. Off with choral anthem at 2100. (Alexander, PA)

SAO TOME—Voice of America, Pinheira, 4940 at 2030 to 2100*. (Rippel, VA) 4960 at 0613 in FF at 0613. (Parker, PA) 11885 in (I) Hausa at 2039. (Brossell, WI)

SAUDI ARABIA—Broadcasting Service of the Kingdom, 15435-Riyadh in AA at 1705. (Goodman, IA)

SEYCHELLES—BBC Indian Ocean Relay, 7385 at 0250 with *Over to You* listener feedback pgm. (Coady, ON) 0440 on rebel groups in Darfur and into *Network Africa* pgm. (Parker, PA)

SINGAPORE—BBC Far East Relay, 15335 at 0111 with *World Briefing* pgm. (Coady, ON)

SOUTH AFRICA—Radio Sonder Grense, 3220 at 0330 with anmts in Afrikaans, (p) ID by W and into lite music. (Rippel, VA)

SOUTH KOREA—KBS World Radio, 6045 via Canada at 0600 with sign on in SS to close at 0659. (Goodman, IA) 9580 in KK at 0246. (Klauber, NY) 1150 on children's TV shows there. (Maxant, WV) 1230 with a pops countdown pgm. (Barton, AZ)

Ministry of National Defense Radio (MND), 6230 in KK at 1230 to close at 1240, per schedule. (Brossell, WI)

SPAIN—Radio Exterior Espana, 3350 Costa Rica Relay in SS at 0524 and 5965 Costa Rica in SS at 0624. (Parker, PA) 9535 in SS at 2348 and 9765 Costa Rica in SS at 0125. (MacKenzie, CA) 15125 in SS at 1919 and 17595 at 1540. (Goodman, IA)

SUDAN—Sudan Radio TV Corp., 7200 at *0255 sign on and into AA at 0300. (Rippel, VA)

SURINAME—Radio Apinte, 4990 with slow pops at 0323. (Parker, PA)

SWAZILAND—TWR, 3240 with M in

(l) Ndu language to 0339 and off at 0340, 4775 (p) at 0350 in an unid language but was soon lost in the noise. (D'Angelo, PA)

TAIWAN—Radio Taiwan Intl, 6850v via Florida in CC at 0535. (Maxant, WV) 9680 via Florida at 0227. (Klauber, NY) 11885 via Florida in CC at 2347. (MacKenzie, CA)

THAILAND—Radio Thailand, 13745 at 0012 with news, commercials for Bangkok Air, a dinner buffet on the 7th floor of the Western Grand Hotel in Bangkok, plus a brief report on the future of broadcasting in Thailand. (Strawman, IA)

TURKEY—Voice of Turkey, 6050-Emirler with 1930 sign on and into news. (Fraser, ME)

TUNISIA—Radio Television Tunisienne, 7275 at 0624 with M in AA. Supposed close down at 0629. (D'Angelo, PA)

UNITED STATES—Voice of America, 5945 Biblis Relay at 0615 in Albanian. (Parker, PA) 7525 Philippine Relay in CC at 1325; 12040 Philippines, in CC at 1225; 15115 Northern Marianas Relay in CC at 1230; and 15225 via Bonaire in FF at 2025. (Brossell, WI) 9435 Sri Lanka Relay with *American Café* at 0105. (Goodman, IA)

Radio Free Asia, 9605 via Palau in CC heard at 1737; 11605 Northern Marianas Relay in Tibetan at 1227. (Brossell, WI) 17730 via Mongolia in Tibetan at 0105. (Seller, BC)

Radio Marti, 6030 in SS at 0700 and 7365 in SS at 0240. (Goodman, IA)

Armed Forces Network/AFRTS, 12759u at 0124 with pop songs. (Sellers, BC)

Family Radio/WYFR, 6115 with sign on at 0158. (Klauber, NY) 9280 via Taiwan in CC at 1219 //11535; 11570 via Taiwan in (l) Burmese at 1225; and 17690 via Germany in Turkish at 1827. (Brossell, WI) 11885 in CC mixing with China at 0027. (MacKenzie, CA) 21480 with a Bible study pgm at 1550. (Fraser, ME)

WWCR, Tennessee, 3215 at 0235. (Goodman, IA)

WBCQ, Maine, 7490 at 2245. (Fraser, ME)

WRMI, Florida, 9955 with a DX pgm and 0430 in SS. (Maxant, WV)

WEWN, Alabama, 11520 at 0525. (Maxant, WV)

Adventist World Radio, 11755 via South Africa in FF at 2020 with ID as "La Voix du Hope" at 2021. (Brossell, WI)

TWR, 7510 via Uzbekistan in (l) Dogri-Kangri at 1322. (Brossell, WI)

KOA, Denver, Studio-transmitter link, 25950 at 1500 with Fox News and local weather. (Alexander, PA)

VATICAN—Vatican Radio, 6075 at 2112 on a war museum in Germany. (Brossell, WI) 6185 at *0058 with IS, W opening Ukrainian pgm. (D'Angelo, PA) 7305 at 0310 reporting on Lebanon's Radio Voice of Charity, ID and IS at 0319, into SS at 0320. (Goodman, IA) 9660 at 0430. (Maxant, WV)

VIETNAM—Voice of Vietnam, 9840 at 2335 with news in EE, into 2340. (Strawman, IA) 12000 in (l) VV at 1224. (Brossell, WI)

ZAMBIA—CVC One Africa, 4965 at 0035 with *Focus on the Family*. (Sellers, BC) 0327 with slow pops. (Parker, PA) 4965 at 2110. (Rippel, VA) 6175 at 0525. (Maxant, WV) 13590 at 1940. (Brossell, WI) 17695 at 1550. (Fraser, ME)

And that's it for this time, except to extend sincere thanks and high fives to the following who checked in with their logs this month, namely: Rich D'Angelo, Wyomissing, PA; Alex Klauber, Oneida, NY (welcome!); Joel Goodman, Stanwood, IA; Jerry Strawman, Des Moines, IA; William Hassig, Mt. Pleasant, IL; Mark Coady, Peterborough, ON; Brian Alexander, Mechanicsburg, PA; Robert Wilkner, Pampano Beach, FL; Ralph Perry, Wheaton, IL; Rich Parker, Pennsburg, PA; Stewart MacKenzie, Huntington Beach, CA; Chuck Rippel, Chesapeake, VA; Rick Barton, El Mirage, AZ; Charles Maxant, Hinton, WV; Robert Brossell, Pewaukee, WI; Harold Sellers, Vernon, BC; George Zeller, Cleveland, OH; and Robert Fraser, Belfast, ME. Thanks to each of you! And, until next month, good listening!

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The Mystery at the TV B&B

Who Could Have *PREDICTA'D* What Happened There?

by Shannon Huniwell,
WPC2HUN
<melodyfm@yahoo.com>

*"It is now the
witching hour and
a wonderful time
for a mur-der! Ha!
Ha! Ha! . . ."*

D"Did I ever tell you about that kooky bed-and-breakfast hotel that piped old movies into vintage television sets precariously positioned prominently in every room?" my father wondered. Anytime Dad poses a question containing tons of terribly tongue twisting alliteration, there's no stopping him from uncorking the tale and celebrating its memory. This floodgate often proves especially prolific when my mother's testimony of the same event differs considerably.

Such is the case with a tale that they've agreed to identify as *The Mystery TV B&B*. Neither, though, was willing to come to consensus on where this strange venue existed.

My father is pretty sure it was someplace that began with a "G" and just inside North Carolina. Meanwhile, Mom thinks it might have been north of the North Carolina/Virginia border, but admits being quite happy that she's been able to forget much of the incredibly odd locale.

Still extant from the circa 1980 road trip to Myrtle Beach is one of those little painted concrete *donkey cart* flower pots that my mother won from Dad as a reward for "being a good sport" and not holding a grudge for his impulsive insistence that they give the quirky looking B&B "a try — just for fun."

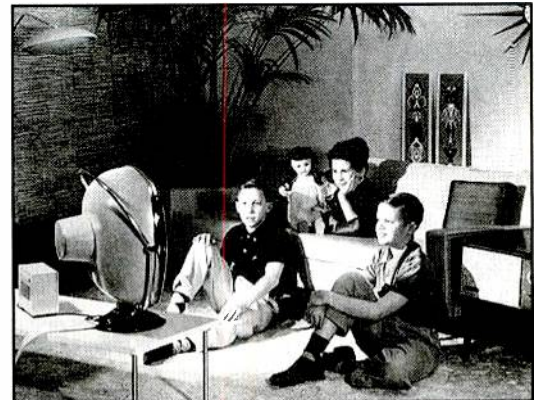
Then a fifth-grader, I now only vaguely remember him taking it out of the car upon their return from what was to be a romantic anniversary getaway, and handling it as gently as a colorful 1930s Catalan-cased radio.

"Your mother saw it in a gas station in Rocky Mount, North Carolina, and had to have it," I guess he said. Actually, Dad might not have told me where the pottery came from, but did hand over a postcard showing the campy thing's point-of-sale, and suggested it was fair game for the cork board above my desk.

Apparently, the weather was pretty wet and



When I showed Dad this Philco publicity still, he said, "You've got to use that in your column and explain the uncannily remarkable resemblance of the early-American furniture and Predicta TV to the decor in our B&B room." Colonial vs. Cape Canaveral . . . What a stark contrast! He also noted that the model posing with the television looked a bit like Mom, except, my father winked, "your mother is easily at least a notch or two prettier."



The picture tube component of Philco's *Penthouse* version of Predicta was connected to the receiver-tuner section via a 25-foot cord. The company hinted that — if one positioned the "box" near his or her seating position — this was a way to maintain remote control of the channel selection and volume without having to walk across the room. If one of those kids *accidentally* dropped or knocked over the video assembly, however, no doubt a parent would be motivated to run around the whole house in order to catch the careless culprit!

daylight fading fast when my father spotted a sign that caught his broadcast enthusiast's eye: *The T-V Bed & Breakfast, 21 miles, turn left, up hill.*

Appearing a bit wobbly on cedar posts, this hand-painted advertising was con-

veyed on a former 4-foot x 8-foot sheet of plywood shaped like a video screen. A couple of pipes — perhaps refugees from some local muffler shop — served as makeshift rabbit ears antennae.

Rust running from the bolts that

secured them, had dripped vertical stains in the promotional message, misconstruing *2 miles as 21.*

"See there," my father smiled at Mom as he got a better look at the homebrew billboard, "it's not far from here at all! What say we be adventurous and give it a try?" My mother didn't say anything . . . until they pulled into the establishment's weedy, seedy driveway. That's when she indicated that the place reminded her of *The Munsters* sitcom house. "Well, maybe that's why they call it the TV B&B," Dad smiled. (*WATCH: "The Munsters" comedy series' opening and closing segments,* <<http://bit.ly/GFijmP>>. — SH.)

The grin exhibited by the place's proprietor struck my folks as rather odd, especially the way his teeth were exposed as he welcomed them into the foyer, turned hotel lobby. "I'm quite relieved that you finally made it," he wheezed in a poor man's Vincent Price accent. "Must have been challenging trying to find us in all this rain. The others arrived about two hours ago and have gone into town for a bite of supper."

"Uh, what others?" my father asked at Mom's silent urging.

"Oh . . . Oh yes, that's right," the guy said and then tagged it with a palsied chuckle that sounded like an old car engine that stays running for a few seconds after the key is switched off. "Yes of course, we're supposed to keep the others as a secret for now. You both must be tuckered out, so we'll dispense with the bookkeeping until all of the club members are together tomorrow."

A Room Full Of Surprises

My parents looked at each other quizzically, but having driven since early morning, were more interested in getting settled than worrying about their Southern host's cryptic speech. They received a room key and followed the fellow's directions up three flights of well-varnished stairs. At the B&B's apex, was an oak door sporting a rose-colored cloisonné plaque announcing *The Honeymoon Suite*. Dad turned the brass key in its lock and was happy to see how pleased Mom became when she walked into the cozy room. "Look Sid. A canopied featherbed!" my mother beamed.

Though the trip was the initial leg of their anniversary excursion to Myrtle Beach, something Dad noticed in the corner of that love nest overshadowed any

Here's a 1958 newspaper advertisement for Philco's Predicta. "It's 1965 TV you can own and enjoy now [in 1958]!" claims the ad. The set on the left, a Holiday model, wore a manufacturer's suggested retail price of \$279.95, but is being offered at just \$238.88. An even deeper discount was available on the original, more expensive and far-out pedestal version (at right). Predicta's Holiday edition sold well at the start, though inventory began piling up as soon as the "early adopter" crowd got their fix on these truly unique industrial design items. This was especially true with the Pedestal and its *pre-Jetson-era* sisters. Think you might want one in the 21st century? Several hobbyists have made a web business of finding, restoring and selling the originals. And, here's a "modern" Predicta site with all of the current Chinese-built models shown: <<http://bit.ly/GFTuMr>>. These colorful "repro" TVs are a result of an outfit called Telstar that has resurrected the line. Be sure to check out the *Meteor* version . . . 'Looks like it could fall in love with R2D2 of *Star Wars* fame! And, imagine you've been time-transported to newly-opened 1959 *Holiday Inn* . . . Now picture yourself clicking the on switch to the Predicta Chalet and watching the latest episode of *Bonanza* — albeit in black and white. During its original Philco life cycle, Predicta wasn't offered in a color version. Want another hue-filled view of Predicta history? Click to this website for a neat trip down Philco memory lane, compliments of the MZTV virtual museum: <<http://bit.ly/GFUlro>>.

This was the type of Sears-branded video cassette recorder gear that powered the closed circuit entertainment in the TV B&B. With \$29.99 DVD players commonplace at discount stores today, it's hard to believe that their VCR ancestors once brought four hundred bucks or more. Note the remote control on the bottom VHS unit . . . it's wired to the VCR. The one on top operates in SONY's old BETA format that was reportedly better in picture quality than competing VHS devices. But it never gained the universal popularity of the less expensive VHS machines — nor were there as many movie titles produced in BETA. Maybe that's why Sears cut its BETA offering by \$110 between 1982 and 1983.

immediate thoughts of romance. "Wow, Kate!" he exclaimed. "A *Philco Predicta television!*"

Mom glanced at the set's space-age pedestal and swivel-mount picture tube and knew she'd temporarily lost her husband to an electronic competitor. As my mother retreated to the suite's pyramid ceiling bathroom and selected a secret weapon from her arsenal of silky "unmentionables," my father caressed the shapely Philco's curves and announced Predicta's historical details.

"Kate, honey," he transmitted toward the powder room door, "this television is a real nice example of what is now considered to be the most iconic representation of Sputnik-era consumer electronics.

"From 1958 to 1960, Philco built the Predicta in several then ultra-modern

styles from short to tall, each with a separate picture tube assembly attached to the TV cabinetry like a swivel mirror is mounted on a stand. The company figured its unique design would become an industry standard. While attracting lots of attention, the robot-esque TVs were too far out for most American tastes.

"Philco lost a ton of money on the Predicta project. This is the first one I've ever seen, other than in a movie or in an old ad." (**WATCH:** *After warm up, a Philco Predicta TV comes to life with a '50s-vintage program featuring singer Dinah Washington, <<http://bit.ly/GGBdKE>>. – SH.*)

Mom offered a rather neutral "That's interesting, Sid," made sure that his vintage video infatuation was starting to get snowy, counted to 10, and moved grace-

fully in front of the Philco. Reportedly, this shifted my father's focus more dramatically than might a 12-tower AM directional array switching from two to a dozen sticks at 4:30 p.m. in December.

Details of their story from that point until approximately midnight are "classified," but my folks will divulge that their smooching was shockingly short-circuited by the Philco coming alive on its own.

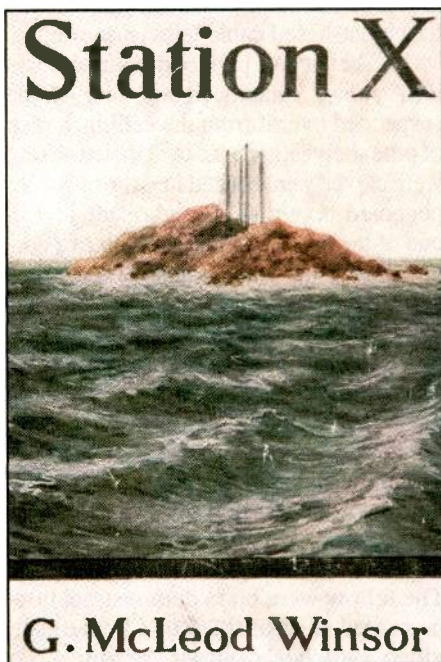
From a previously placid corner of the Honeymoon Suite, the rogue TV lit up and stated with a loud voice: "It is now the witching hour and a wonderful time for a murder! Ha! Ha! Ha!" the voice wheezed nasally, and then demanded, "If you value your life, you'll pay close attention to the clues in the following motion picture starring the inimitable Bela Lugosi! Ha! Ha! Ha! And remember, your chance of surviving your chance to get a full breakfast tomorrow depends on knowing who killed the hero in our moo-vee. Ha! Ha! Ha!" the speaker concluded maniacally.

My frightened mother clutched Dad as the big bloodshot eye that filled the Predicta's screen flickered and faded to black. Moments later, an old movie began . . . *Murder by Television* the title read, written in a font composed of supposedly scary sparks. (**WATCH:** *The full-length "Murder By Television," at <<http://bit.ly/GGPPTJ>>. – SH.*)

The brief interval provided my father with sufficient time to figure that the crudely drawn eye, familiar inflections, and home copyright warning prefacing the opening credits were all strong signs that the owner of this TV B&B also dabbled in amateur video. "It's OK, Kate," Dad assured his bride, "Who knows why, but this is just some prank that our host is pulling in his secret cable television laboratory. "Maybe he thinks it's cute to petrify lovebirds in a featherbed.

"At breakfast," my protective father noted as he walked determinedly toward the light pulsating Philco, "I'll express my displeasure with his weird brand of hospitality." With that, Dad gripped the classic set's AC cord and yanked it from the wall plug. "There!" he confessed while snuggling back against Mom. "It is I who just killed the audio and video . . . A double murder solved!"

Six hours later, bright sunlight effortlessly pushed through the dormer windows' chiffon curtains, gently waking the featherbed occupants. Following a few leisurely yawns and some speculation regarding what the Predicta incident had been all about, Mom retreated to the pow-



KDKA's "mass appeal" broadcasting was still a year away when British author G. McLeod Windsor penned this 1919 "wireless" book. Consequently, it's easy to understand why the sci-fi writer's plot had little concern for reaching his radio waves towards chaps in London, or even folks from Pittsburgh. Instead, from a tiny Pacific isle, Station X transmitted and received messages from Venus and Mars. It has been over 30 years since my father saw the vintage book on a Colonial style shelf in the TV B&B. Not that he has since had deep regrets for not having been at the bed and breakfast long enough to read it, but Dad says he's glad to know that the work can be found online in its entirety. "Maybe someday . . . if your mother is away and I'm incredibly bored," he laughed.

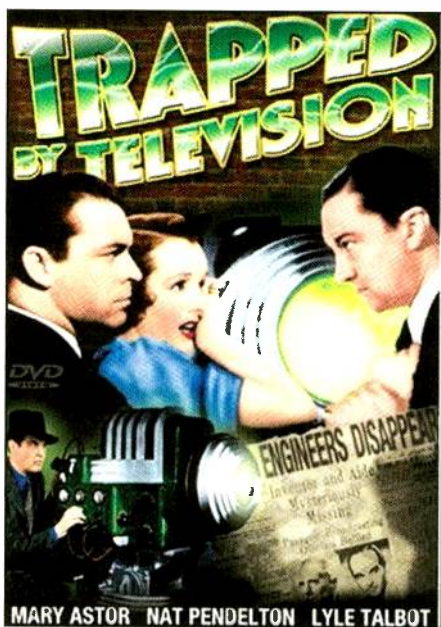


This is a lobby poster from the low-budget motion picture to which my folks were involuntarily exposed in their otherwise romantically blissful B&B suite. Had my Dad not played the hero to Mom by pulling the plug on the intrusive presentation, they'd have seen the bumping-off of an inventor who got his lights snuffed out in the middle of an experimental TV broadcast. Reportedly, the bargain basement Hollywood producers were able to achieve their 1935 film's \$35,000 expenditure limit by borrowing television gear (then valued at over seventy grand) from some real-life video researchers who were working on ways to improve their primitive TV system in a nearby Los Angeles lab.

der room to put on her face. Dad didn't complain about the 25-minute feminine process because the interval seemed to take only an instant.

He'd noticed that every book on a shelf near the offending TV wore a title and cover art relating to broadcasting. It was mother who was soon urging Dad to leave this little library and get into the shower before breakfast time elapsed.

My parents were on the final half-flight of stairs when they came into the other guests' view. Those three couples had been engaged in consuming eggs benedict and industriously exchanging "who dun it?" clues as the B&B proprietor topped off their coffee cups. Their instant silence and the quizzical looks they gave him signaled the strong possibility that my Mom and Dad were not part of the murder mystery group who'd



Because of its then cutting-edge TV theme offered to Depression-era audiences in a radio world, the 1936 film, *Trapped by Television*, can be considered as a science fiction movie. When the B&B owner summarized the flick for Dad, however, he said, in addition to a good guy but worldly-naive inventor, the cast included a pushy bill collector, a crooked techie wanting to steal the protagonist's newly devised video camera and monitor, and a bunch of bumbling evil doers connected with organized crime plotting to rob the TV experimenter of his glorious inventions. "Sounds more like a comedy than *sci-fi* to me," my father observed. At that, his host admitted, "Yeah, I guess it's so cheesy of a B movie that it's practically funny." Still, it is worthy of any true vintage TV buff's time.

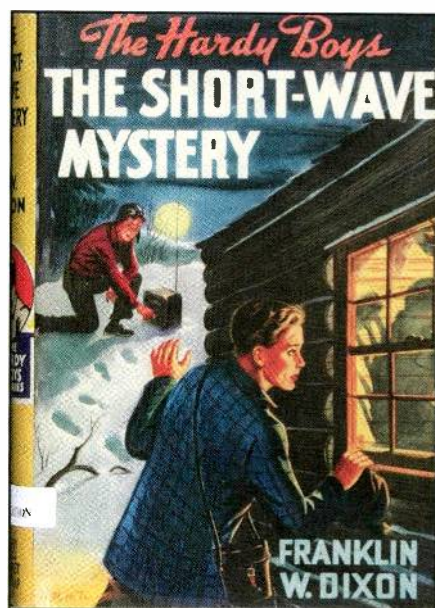
booked the place for a couple nights of crime solving play.

Father picked up on the mixup. "I bet you're all just as confused as my wife, Kate, and I are at this moment," he smiled. The B&B man consulted some papers on his desktop and asked with an air of resignation, "I take it you're *not* the Warners from Maryland?"

"Actually," Dad indicated in his best salesman-style tone, "We are the Huniwells from the great Nutmeg State, better known as Connecticut. I hope we haven't displaced the Warners in any way."

"Nah," one of the breakfasters waved with his mouth half full, "Marge and Jim probably forgot that our reservations were for this weekend. It sure wouldn't be the first time they goofed up. I vote that we teach them a lesson by using their share of the *Maryland Mystery Mavens'* kitty to cover the Huniwells' stay."

The other couples' "Here, Here," approvals were interrupted by the B&B owners' mea culpa. "That won't be nec-



As far as juvenile-targeted books go, *The Hardy Boys* series was the real thing. And, only authentic radio devotees might like this 1945 entry in Franklin Dixon's teen sleuthing lineup. While it does include prosaic revelations decoded from ham radio signals, *The Short-Wave Mystery* primarily focuses on industrial espionage crooks who've clipped a bunch of stuffed animals that were supposed to be offered to honest bargain hunters perusing an estate sale. If that sounds like a subject miles away from megahertz, there was the matter of a busted "ham radio" antenna inadvertently forgotten by the fleeing bad guys.

essary," he said. I'm afraid I must have scared the daylight out of these poor folks by including them in our midnight madness movie showing. I thought they were part of your club. Anyway, I'm terribly sorry to have inconvenienced you," he gestured apologetically toward Mom and Dad, "especially if you really wanted the Honeymoon Suite without interruption."

"Kate and I did get a bit of a start," Father acknowledged with a chuckle, "but our kids will sure get a kick out of the resulting story."

"And I must say," my mother added, "Sid was quite fascinated with your 1958 Philco TV and collection of radio novels." Surprised and delighted to learn that Dad was a fellow broadcast history enthusiast, the B&B proprietor included, along with the *gratis* night's stay and delicious breakfast, a complimentary tour of his basement-based cable television studio.

Its shellacked plywood control desk, RCA Junior Velocity ribbon microphone suspended over it from the ceiling, a rack of pine shelves, and oak-tag labeled wiring were cleverly ensconced in an 8- by 8-foot pegboard booth. A Plexiglas window in one of the panels looked through to a corner of the cellar where a small TV camera, under a row of spotlights with tinfoil directional shades, aimed at an easel propping up the bloodshot eye poster that had prefaced the old movie.

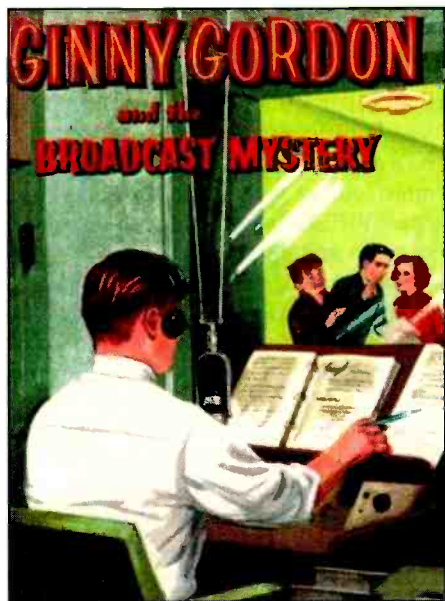
"I outfitted this setup mostly with video equipment Sears® had on sale," he beamed. And I've collected four different Philco Predicta sets — one for each guest room and a deluxe Meteor Pedestal model for my den, upstairs." The fellow went on to demonstrate how he cabled each of them to a homemade video switcher's output. Below a big round clock with a sweeping red second hand, a row of standard AC on/off light switches in the plywood desktop were marked with room names and wired to an outlet in the corresponding venues. "That's how I fired up the one in your Honeymoon Suite at exactly 12 a.m.," he mentioned contritely. "Sorry about that. I guess I can say that was a man-made technical difficulty."

A Tiny DuMont Connection

The fellow continued to make up for my folks' midnight mishap by offering Dad an easy chair on the interview set in another corner of the diminutive studio. Seating himself in a nearby wingback, he explained to my father the *hows and whys* the TV B&B got its name . . .

"I graduated high school in 1947," the proprietor began. "A neighbor who owned a small radio repair shop infected me, so to speak, with the electronics bug when I was about 10. He taught me some of the basics: Diagnosing bad capacitors, resistor color codes, how to solder, and things like that. We often discussed the latest industry developments and he really fired up my imagination with a television set he built from parts. It wasn't fancy, had no cabinet, and was a mass of wires running here and there.

"I helped him put up a dipole antenna on the shop's chimney. One afternoon in my senior year of high school when I worked for the shop a few hours weekly, we pulled in snippets of WTTG-TV, a fledgling station operated by the DuMont Network in Washington, DC. For some reason, WTTG caught my imagination and DuMont seemed like it'd be the best outfit in the world for a young man wanting a career in electronics.



Any Eisenhower-era kid who got interested in radio broadcasting after reading *Ginny Gordon and the Broadcast Mystery* was likely very prone to suggestion, as radio played only a tangential role in the 1956 book's plot. Writer, Julie Campbell created Ginny Gordon and her "secret club" compatriots (known as the *Hustlers*) to interest young teens in consuming a series of adventure novels such as this one. While it's doubtful that a plot surrounding a 14-year-old's attempts to start a book review show on her town's local AM station would grab the attention of today's media savvy kids, the volume is a quaint representative of good clean fun and respect for one's elders.

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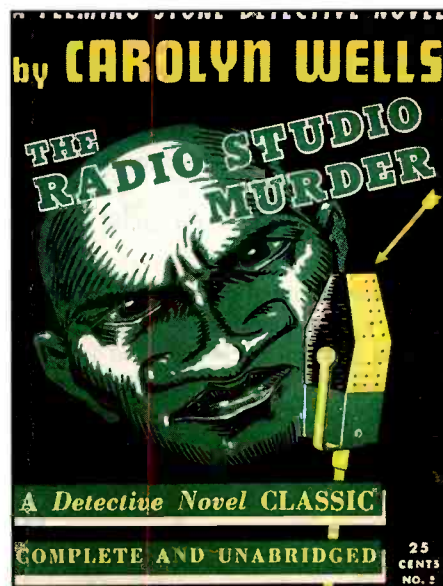
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"The shop owner had an old Army buddy who worked with WTTG, so [he] pulled a couple of strings and helped me land a job there not long after the ink on my diploma dried. Needless to say, I served more as a 'go-fer' than a full-fledged video engineer, but was in *seventh heaven* and loved every minute of that job — albeit a very low paying position. Then again, much of the DuMont organization was seat-of-the-pants low budget. But that atmosphere caused a lot of creativity and camaraderie.

"I married a lovely girl whom I met at a dance in suburban Virginia. She was initially impressed that I was *in television*. A year later, in late 1949, our daughter arrived. Anyway, my father-in-law talked me into quitting the TV business and taking a better-paying and more-secure accounting job in his government office. Financially, it was a wise move, but I seldom enjoyed my almost 30 years there.

"Patricia and I always thought it'd be fun to run a country B&B when I retired. About four years ago, senior accountants in my department were offered a decent deal to go early, so I jumped at it and we bought this old house. We had been open



Dad speculates that the microphone on the cover of this 1937 fiction is probably the only thing of interest to radio buffs. An explorer who is speaking into the microphone during a travelogue show gets bumped off by a poisoned dart. This brings a typical film noir detective into the mix and quickly fades down the audio/radio frequency emphasis of the book.

— with what we originally called the Primrose Bed & Breakfast — for 15 months when Pat got killed by some drugged-up driver on Route 95. I was a wreck without her . . . closed the B&B and went into depression.

“But, a couple from our church took me under their wing. They did a lot of praying and helped pull me out of my blue seclusion. She got me to take cooking lessons so I could handle the breakfast chef duties that had been Patricia’s bailiwick. And with good intentions, he badgered me until I reached deep within and identified what I’d really, really like to do for a fun hobby. Once I felt he was truly a concerned listener, I divulged my long-ago love of the radio and television industry, and sheepishly, at first, expressed a wish to recapture a role in the broadcast world.

This friend was happy as a clam at the revelation and helped me formulate how vintage TV might connect up with a bed-and-breakfast establishment. We built this studio-control room and then shopped like crazy to equip it. The name TV B&B is a nod to my specialty here of hosting old movie weekends, classic TV show marathons, and murder mystery nights for groups of guests who like that kind of campy entertainment.

“With the possible exception of you and your beautiful wife,” the man smiled through his now more endearing nasally Southern accent, “I guess I’ve been pretty lucky that enough folks like my TV theme getaways to keep this old place going . . . and to let me play television station owner and program director.”

A 4-Leaf Clover Amidst Weeds

Dad’s account of this unusual and presumably now long-gone bed and breakfast got sparked by some good fortune emerging from a pile of papers that were approximately the height of a leprechaun. In the midst of that stack of old radio and TV station literature were a couple of station history pages Jan Lowry sent to my father a few years back.

The paperwork chronicled WEED, a Rocky Mount, North Carolina AM that Dad *almost* got to see during the TV B&B adventure. For visual details, check out the caption related to the Brown’s Amoco image in this article.

Meantime, here are a few garden variety facts about WEED:

In June 17, 1933, it was initially authorized to be built as a 100-watt daytime radio station on 1420 kilocycles at



Seen just about a pinky’s length under the lawn ornaments sign; amidst pink flamingos and cast cement bird baths, there’s a pottery donkey cart like the one my Dad had to buy for Mom in order to make up for subjecting her to the TV B&B. The flip side of this postcard for Brown’s Amoco indicates it hailed from Rocky Mount, North Carolina, and prompted my father to recall *almost* asking my mother if she’d mind if he tried to find WEED, a local Rocky Mount AM he’d tuned on the car radio. Needless to say, discretion became a better part of valor, leaving Brown’s Amoco as the only *station* Dad had the nerve to tour on that portion of the trip!

Greenville, North Carolina. The W-E-E-D calls were selected in those *pre-marijuana days* in order to signify North Carolina’s most famous crop: Tobacco. Licensee, William Avera Wynne’s WEED hit the air from Greenville by July.

Less than a year later, WEED got the FCC OK to relocate to Rocky Mount, North Carolina and was reclassified from days-only to shared time on certain nights when co-channel WEHC (eventually WCHV) in Charlottesville, Virginia, was silent. Jan reports that “WEED moved to a new studio-transmitter site at Englewood, just outside the Rocky Mount city limits, around January 1936 [and utilized] a new Hoke-brand 198-foot vertical radiating tower at that locale on Nashville Highway.”

Also new was a 250-watt daylight (100-watts night share time) authorization with a typical operating schedule of 6:45 a.m. until 8 p.m. Sometime in 1939, the Commission allowed WEED (and the Charlottesville AM) to go 250 watts full time. Both shifted to 1450 kilocycles during the 1941 NARBA Treaty frequency revamps.

WEED entered frequency modulation broadcasting around Thanksgiving 1948 with the addition of “local” or Class “A” WEED-FM at 92.1 megacycles. Two years down the road, it was the AM’s turn for an upgrade when WEED slid down the dial to 1390 kilocycles so that it could run a kilowatt day and night from a dual directional antenna system.

Its day power jumped to 5,000 watts in 1954. In 1960, FCC regulators told WEED officials the station only had to run a directional pattern after sunset. The improvement went into effect in 1961 when WEED typically broadcast from 6 a.m. to midnight.

Twenty two years — and several programming focuses — went by before the next significant engineering change occurred at WEED. That was the 1983 night power hike from 1 to 2.5 kilowatts.

The station’s original family ownership parted with WEED and its sister FM in 1985 and these properties were again sold in 1989. Several formats were featured between the time of this acquisition and today, as WEED — still with its original smoky callsign — offers a classic rhythm and blues format dubbed *Old School 1390*.

There was also a 2001 studio move to downtown Rocky Mount. What I almost forgot to tell you about WEED’s engineering story, however, is an interesting request that its owners made to the FCC in 2003. The Commission was asked if it’d be alright to drop WEED’s respectable 2,500-watt after sunset output to a modest 30-watts. Essentially, the FCC responded, “Yeah, whatever,” and then crews dismantled the “directional” tower, as the seemingly kooky flea power approval didn’t require directional operation.

And so ends another bountiful basket of bed & breakfast broadcast memories at Pop’ Comm...

Communications Trivia and Other Pursuits

By R.B. Sturtevant,
KPC7RBS/AD7IL

This month's Q&A takes us from space to the Atlantic. So, let's get to it.

From the Earth to the Moon — And Back

Q: What person or agency was first to bounce a radio signal off the Moon?

A: Our friends at Wikipedia tell us that W.J. Bray, of the British General Post Office, first proposed the idea of using the Moon as a “passive communications satellite” in 1940.

After World War II, the U.S. military worked



Photo A. Having come a long way since the early days of moonbounce radio communications, many radio amateurs around the world today use EME to communicate regularly. This 6-meter diameter parabolic reflector was built and used by Salvatore Gerloni, I2FZX, of Milano, Italy. (Courtesy of Spamhog via Wikimedia Commons)

on developing Earth-Moon-Earth (EME) “moon-bounce” communications techniques, “with the first successful reception of echoes off the Moon being carried out at Fort Monmouth, New Jersey on January 10, 1946 by John H. DeWitt as part of Project Diana <<http://bit.ly/GMIC8t>>,” the Internet site reported.

The first detection of signals bounced from the Moon by radio amateurs was in 1953. Their EME techniques have since been highly refined to allow regular contacts from around the world, **Photo A.**

Intrigue: Code Talk in the Atlantic

Q: We hear a lot about the code breakers at Bletchley Park cracking the German Enigma Code to catch U-boats in World War II. Did the Germans have any success breaking Allied codes in the Battle of the Atlantic?

A: Yes they did. Called B-Dient, an abbreviation for Beobachtungsdienst, the program was designed to break British Navy as well as Merchant Marine codes used by the convoys. It was the Germans’ major source of intelligence on convoy operations. The service was started in about 1919 and aimed at British and American codes.

Unfortunately we have little evidence of their successes because their records were destroyed by Allied bombing. We know that some British codes were read throughout the Battle of the Atlantic, **Photo B.**

Naval and Merchant Marine code information was then fed to the U-boats. The B-Dient was probably the most effective Nazi intelligence gathering service — but its effectiveness decreased as the war progressed due to better Allied codes.

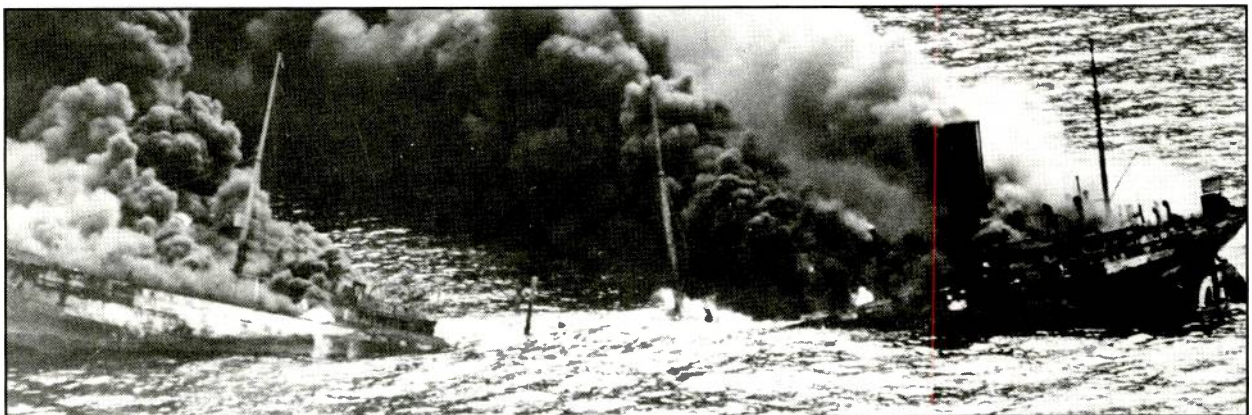


Photo B. An Allied tanker crumbles under heat of fire before settling to the bottom of the sea after being torpedoed during World War II's Battle of the Atlantic in 1942. (Courtesy of the National Archives)

Putting a Bow on the Mohican GC-1A . . . And Revisiting a 1932 Mystery!

By Peter Bertini, K1ZJH

“Eighty years later, a Yank’s version of the Proton Mystery Crystal Set is again honored in Australia.”

It’s time to wrap-up the Heathkit Mohican GC-1A restoration. My Mohican — the Guinea pig for this series — has been chugging away as my daily player for weeks. I’ve developed a fondness for this radio!

Lining Things Up

I want to cover some alignment notes. First: Follow the alignment procedures in the manual! *Seriously.* Many of us are creatures of habit. We develop shortcuts and our way of doing things, based on experience after repetitively performing the same tasks and over.

We become complacent, and it can get the best of us in trouble! I’ve read about quite a few incidents where folks have jumped the gun, and simply peaked the IF stages in their Mohican receivers by tuning for maximum AGC voltage and using the tuning meter as an indicator. This

works fine 99 percent of the time in other radios, but the GC-1A IF circuit design is a bit unusual. Take a look at the circuit for last IF transformer, T2 — shown in **Figure 1**. The designers used two diodes, one for the AGC detector, and a second diode for audio recovery.

Critical IF Alignment

The top slug in IF output transformer (T2) resonates the primary winding. Note that the alignment procedure has the builder adjust the upper slug for maximum signal strength on the tuning meter. But, the builder is instructed to tune the bottom slug of T2 for maximum recovered AC voltage on the speaker terminals.

Here’s what happens: The primary tuned circuit of the IFT is *peaked* (tuned to resonance) for maximum recovered AGC voltage. This is a DC voltage that is proportional to the signal strength

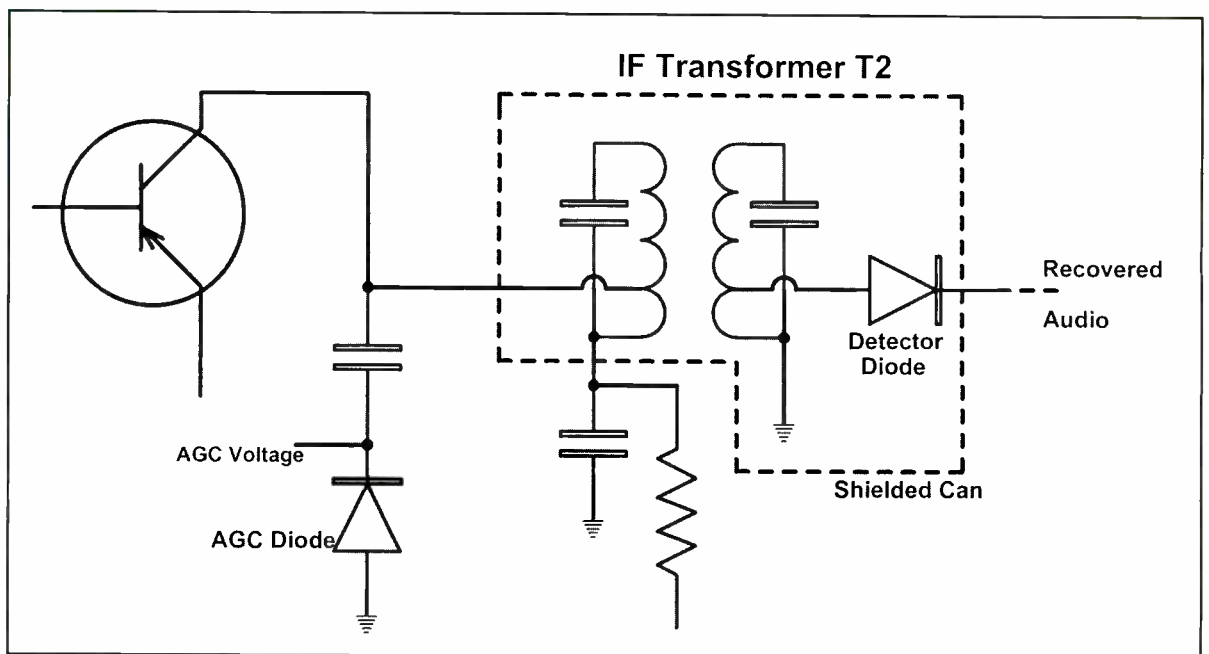


Figure 1. This partial schematic of the Mohican’s last IF stage shows how two diodes are used to produce the AGC and to detect the received signal. The secondary winding of T2 only affects the recovered audio, and cannot be peaked using the tuning meter or AGC bus as an indicator. The secondary is tuned using a sensitive AC voltmeter across the speaker terminals.

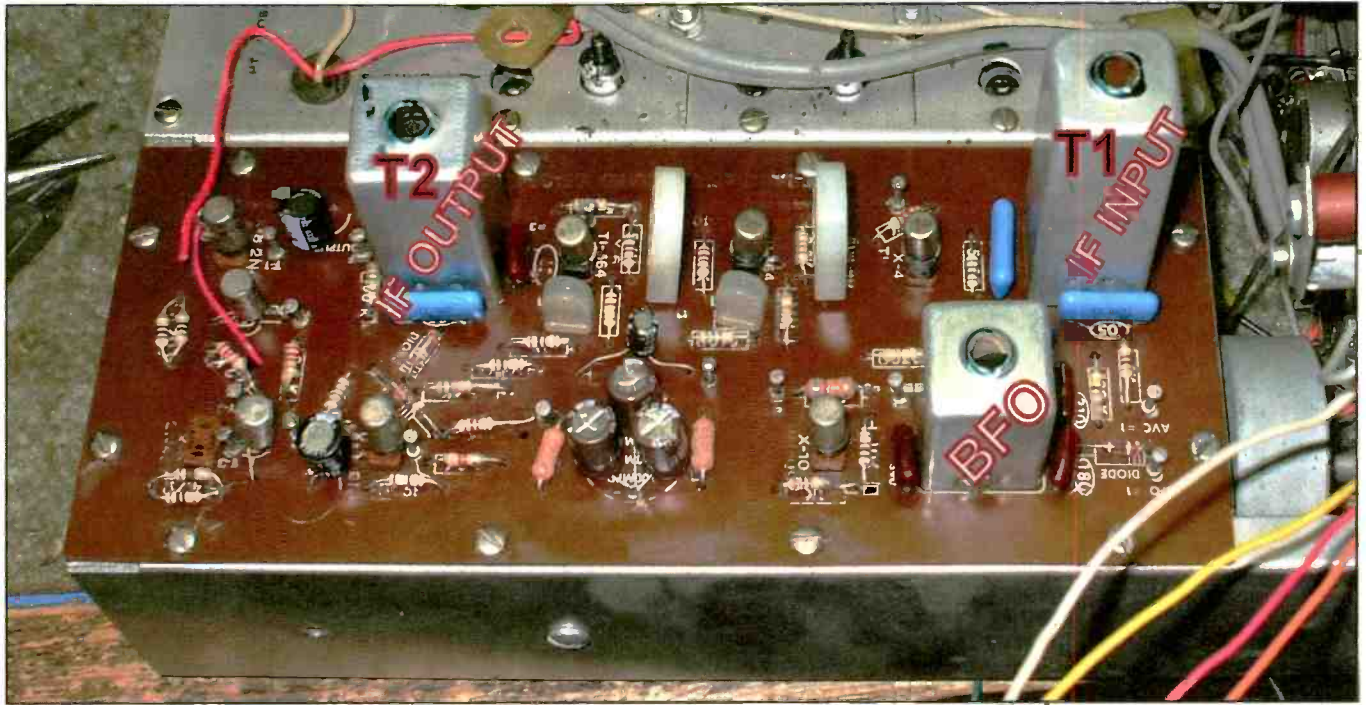


Photo A. IF transformers T1 and T2 are labeled in this annotated photo of the Mohican's IF amplifier. The alignment steps for the IF output transformer must be carefully followed. (Photography courtesy of K1ZJH)

of the received signal as indicated by the tuning meter.

The secondary winding of T2 is tuned for maximum audio recovery, by measuring the AC voltage on the speaker terminals. HINT: when this winding is tuned

properly, an observant technician may notice that the AGC voltage actually makes a slight *dip*, and not a *peak*, when the secondary is peaked correctly, while the audio level at the speaker terminals does show the desired *peak* response at

resonance. You can't peak the secondary winding on transformer T2 based on AGC voltage — if you do so, the radio will perform very poorly.

Photo A shows where transformers T1 and T2 are located on the IF printed circuit board. By the way, the detector diode is hidden inside of the T2 IF transformer's metal shell.

You'll need a signal generator to perform the 455-kHz IF stage alignment. The generator, set to produce an AM modulated signal on 455 kHz, is coupled into the IF input terminal on the IF printed circuit board using a DC blocking capacitor.

You'll need a special hex alignment tool to align IF transformers T1 and T2. Both upper and lower slugs are accessed through the top hole in the IF can shells, the shaft must be long enough to pass through the upper slugs and reach fully into the bodies of the lower slugs. The proper alignment tools were provided with the kits.

Avoid Band E Problems!

The next critical steps are for aligning each of the five bands. This is covered in the steps contained in the *Front End Alignment* section in the manual. The most commonly made mistake is misaligning the local oscillator tracking when doing the Band-E setup.

What most folks miss is this very important note right at the beginning:



Photo B. Although far from necessary, heavy-duty test gear can save time and eliminate guesswork. In this photo, the author's HP-8640B signal generator, along with a HP-141T spectrum analyzer and companion HP-8443A tracking generator are being used to visually verify that the Mohican local oscillator is correctly tracking on Band E.

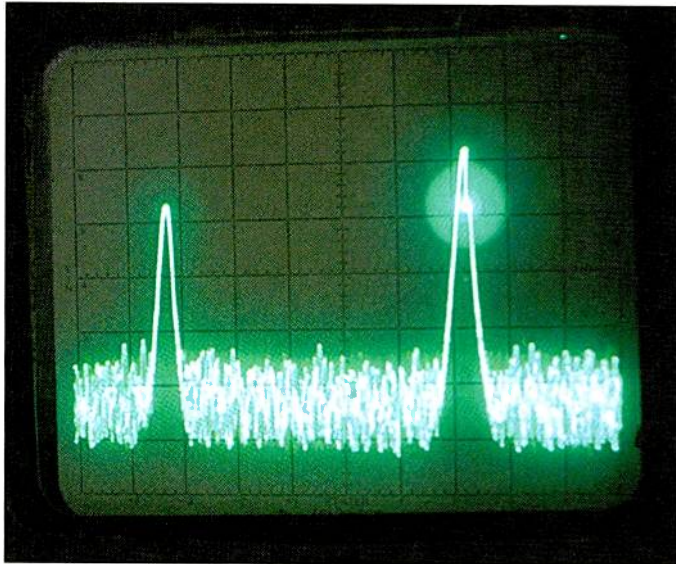


Photo C. In this closer view of the HP-141T display screen, the first signal seen is the signal generator at 31.000 MHz. The second signal shows the Mohican oscillator is at 30.545 MHz, proving it is correctly set for low-side injection. The *blip* (bright dot) is a marker signal generated by the tracking generator. The frequency display shows the scan frequency where the marker is placed — 30.545 MHz.

BAND-E ALIGNMENT — Local OSC is on the low side.

The first four bands — A, B, C and D — each use *high side* injection.

It is possible to misalign Band E for *high side* injection as well, and the radio will work . . . to some degree. I'll confess that I messed up the Band-E alignment the first time around. Band E worked, but the sensitivity wasn't what I had hoped for. I misaligned the Band-E local oscillator to *high-side* injection by mistake.

Low Side, High Side? What They Mean

What *Low Side* oscillator injection means is that the local oscillator will always be 455-kHz below the frequency the radio

is tuned to. For example, when aligning Band A at 1500 kHz, the desired frequency for the local oscillator is 455 kHz higher, or at 1955 kHz.

The easiest way to check is to tune a communications receiver around the frequency where the local oscillator is expected to be. Most local oscillators will radiate a signal that is strong enough to be heard locally on a nearby communications receiver.

Use a short piece of coax, with several inches of the inner insulation exposed, as a *probe antenna* to listen for the local oscillator signal.

Using this method you can quickly verify that the local oscillator is where it should be. For example, when aligning the receiver at 31 MHz, the proper local oscillator frequency for low-side injection is 455 kHz lower — or 30.545 MHz. Not at 31.455 MHz.

Test Equipment Junkie?

I'll confess: I'm a test equipment junkie, and I enjoy restoring vintage test equipment as much as I do working older radios. I'm not rich, but it is easy to amass an array of test equipment that sold for hundreds of thousands of dollars back in the late 1960s or later for what is essentially pocket change.

My shortcut for doing local oscillator alignment is shown in **Photo B**. A HP-8640B signal generator is set to the frequency the receiver is tuned to, while an HP-141T spectrum analyzer and companion HP-8443 tracking generator are being used together to show both the local oscillator signal and the signal generator frequency, **Photo C**.

The tracking generator's internal marker generator produces the bright spot on the screen. The dot can be moved to indicate the exact frequency (shown on the tracking generator's digital frequency counter) at any point on the display. The two signals can be seen on the spectrum analyzer display, where the horizontal axis represents frequency and the vertical axis shows signal levels.

This is a lot of *horsepower* to do a rather mundane task, but is it quick and convenient. The test equipment looks impressive, but don't forget, they are also *very obsolete, bulky and dated*.

Reprise: Proton's 1932 Mystery Crystal Set

By Peter J. Bertini, K1ZJH

Long-time readers might recall our special feature about *Proton's Mystery Crystal Set* that ran back in *Wireless Connection* in November 2000's *Pop'Comm*.

Information about the radio was first published in July 3, 1932 edition of *The Sunday Mail*, a Brisbane, Australia newspaper.

Radio broadcasting was still in its infancy, and the public was fascinated by the magic of radio. Many newspapers ran features on the *new technology*, including simple construction projects.

A crystal set will have a hard time coping with today's crowded AM bands, but back in the 1920s and early 1930s they were

a practical entry-level portal, opening a new frontier for early radio experimenters and pioneers.

Bob Ryan Returns With a New Project!

I've mentioned Bob Ryan in past columns — a faithful reader and regular correspondent for many years. Occasionally, a box posted with his familiar Hemet, California return address appears on my porch.

Since Bob lives in a retirement apartment, most of his hand-crafted creations are produced with minimal tools. His wood-working tools consist of a small miter box and crosscut saw.



Photo D. Bob Ryan's eclectic version of the Australian *Mystery Crystal Set*. (Photography courtesy of Bob Ryan)



Photo E. Here's a different view of the crystal radio. Bob supplied a spare coil, with slightly different coverage, in the protective tin shown at the right.

The contents of the latest surprise package contained Bob's latest creation: an eclectic and personalized variation of Proton's original design!

Two other examples of this little crystal set were sent to Norm Leal, a mutual friend. More on this later . . .

Demystifying the Radio's Success

Highlights of Bobs' *Mystery Set* can be seen in **Photos D, E** and **F**. The heart of the original *Mystery Crystal Set* was the unique dual-winding (bifilar, co-lateral wound) antenna coil. See the schematic in **Figure 2**, and the pictorial layout for more details.

Bob opted to use plug-in coils. This permitted his experimenting with different coil designs, and may open the door to shortwave coverage as well. The two coils that accompanied the receiver are shown in **Photo G**. Bob's coil forms are large pill bottles, obtained at his local pharmacy. He mates the empty bottles to salvaged four-pin tube bases using a rolled up square of stiff cardboard to couple the two slightly different diameters together.

The mating joints were locked — hopefully forever — with a bead of *SuperGlue*. Bob noted that the enamel wire came from his local RadioShack® and that he found that the turns ratio between the primary and secondary windings were critical to obtaining best performance.

Bob's final step is to dip a finished coil into a container of clear, marine-grade spar varnish. The coil is removed and allowed to drip dry.



Photo F. More detail can be seen in this side-view photo.

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The underside of Bob's crystal set is shown in **Photo H**. Bob uses mostly reclaimed surplus components — note the numerous low-loss ceramic insulators and the silver-plated tuning capacitor.

He also likes to clearly label his handiwork, as seen in **Photo I**. Bob doesn't own a computer, so all of the graphics are

done using his manual typewriter or by other manual means.

Learning More...

While we're not providing complete construction details, interested readers can order a back issue of the November

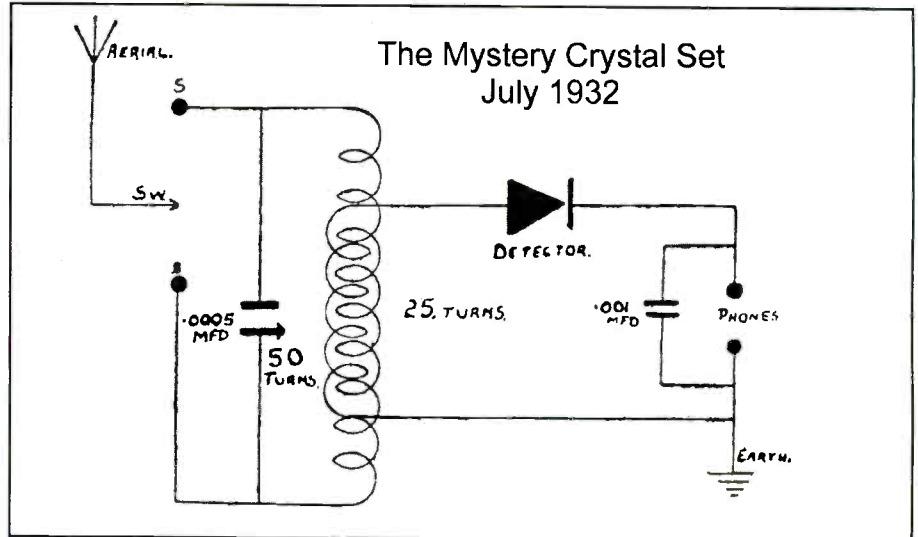
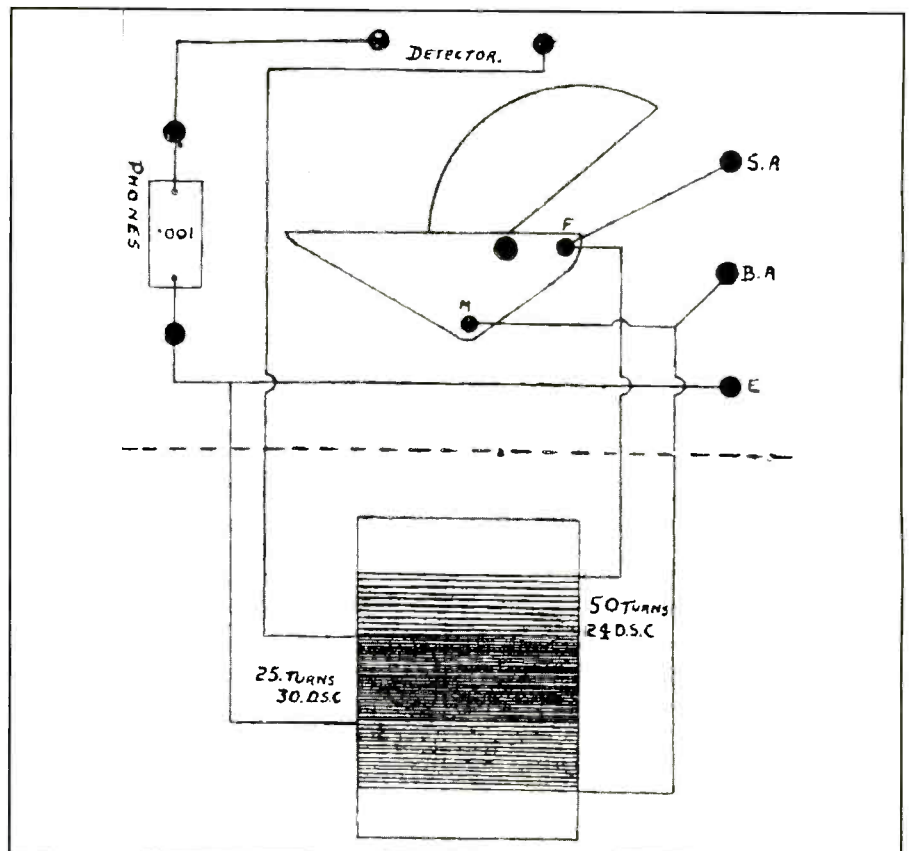


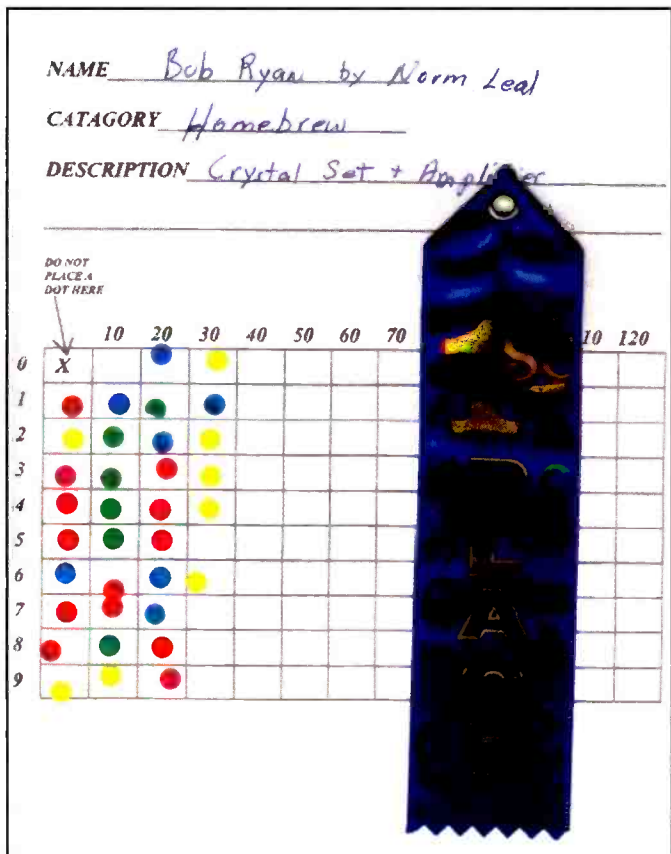
Figure 2. This is the original 1932 schematic for *Proton's Mystery Crystal Set*. Note that the tuning capacitor is shown as being 0.0005 mFd. That is the same as a 500 pF tuning capacitor. (Courtesy of HRSA)



Pictorial: This pictorial is the original line drawing for the component layout in the original *Mystery Crystal Set* as it appeared in 1932. (Courtesy of HRSA)



Photo G. Bob opted to use plug-in coils to increase the versatility of his *Mystery Crystal Set*. These are two fine examples of Bob's handiwork! While the original *Mystery Set* used cotton-covered wire, Bob used enamel magnet wire from the local RadioShack®.



AWARD: Norman Leal provided this scan of Bob's First Place award from SCARS. The voting card is also shown.

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2000 *Pop'Comm* (Reference 1) or find complete construction details and historical information for Proton's *Mystery Crystal Set* on the web: <<http://bit.ly/GHycKy>>.

If enough readers are interested in an updated *Mystery Crystal Set* construction project, we'd be happy to do so, including some performance-enhancing modifications.

A Yank In Australia

I mentioned earlier that two of Bob's crystal sets also were sent off to Norm Leal, in California. Norm entered one of the radios in the SCARS (Reference 2) homebrew radio competition, where Bob was awarded first place and a ribbon! See **AWARD**.

Norm forwarded the second radio to Don Black, for entry in the HSRA (Reference 3) competition in Australia. The HSRA is a large club, with more than 1,000 members.

Bob's radio again won first place in the HSRA crystal set competition! And

therein lies the irony. Eighty years have passed since Proton penned the original *Mystery Crystal Set* construction plans in a 1932 edition of an Australian newspaper. Eighty years later, a *Yank's* version of

the same radio is again honored in Australia. *Way to go, Bob!*

We'll be returning in two months; until then, keep those soldering irons warm, and old tubes glowing . . .

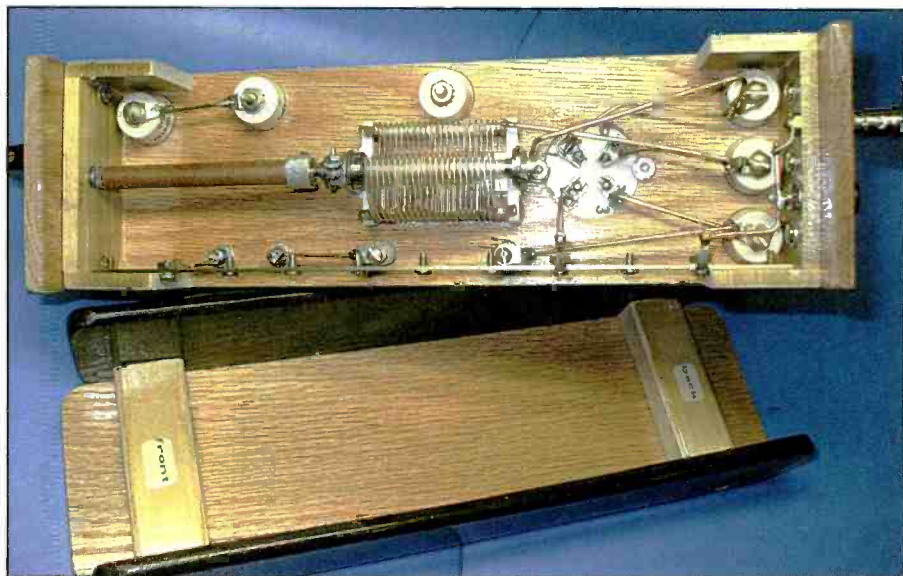


Photo H. More attention to detail is shown in the under-chassis view. Using ceramic insulators and sockets, along with a military surplus silver-plated tuning capacitor, reduce circuit losses and improve signal strength.

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Photo I. Extensive labeling leaves little to the imagination when it comes time to put the radio to work.

References

Reference 1: *Popular Communications Magazine, The Radio Connection, The Australian Challenge — Proton's 1932 Mystery Crystal Set*. Pps. 16 – 21. November 2000. Back issues may be ordered directly from the publisher: CQ Communications, Inc, 25 Newbridge Road, Hicksville, NY 11801-2953. Tel: (516) 681-2922.

Reference 2: SCARS (Southern California Antique Radio Society), <<http://www.antiqueradios.org/>>

Reference 3: HSRA (Historical Radio Society of Australia) <<http://www.hsra.asn.au/>>

This Month's Feedback from Pop'Comm Readers

Thoughts on Amateur Radio Logging, Poor AM Reception 'Down East' in Maine, and Vulgarities on the 20-Meter Band

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, K16SN

A Fan of Logging By Hand and NTØZ's 'Ham Discoveries'

Editor, *Pop'Comm*,

I just wanted to comment on Kirk Kleinschmidt, NTØZ's, Ham Discoveries column in the March 2012 *Pop'Comm* – "A Curmudgeonly Luddite Looks @ Logbooks and Low Tech," page 30. **Photo A**.

I have always logged by hand and have not gotten into computer logging. I find there is just something cold about computer logging and it really doesn't mean much to me. I am sure it is a great tool if you work a lot of DX, and all that, but I am more of a ragchewer and work DX when it is there. I have not put a lot in my log in recent years. I have gotten kind of lazy.

I got my ticket in '77 and put everything in the log for several years. *Am sure glad I did!* As NTØZ says, it is fun looking back — and I can remember almost everything. *It really does* come back you to.

(Thumbing through my old log) sure brings back a lot of great memories of meeting some very nice people on the air. Also as you do, I use my log as kind of a diary. I would jot down important things at the time, make notes of something that might have happened that day or something interesting about the person I was talking to.

I also used the back empty pages of the log to make notes of antenna settings and new equipment additions to the shack — such as, *started using new antenna Drake*

antenna tuner, and so on. A log can also serve as a kind of personal diary.

I was on a trip to Alaska with my parents in 1979 and had a HF (high-frequency) radio along in their motor home. I worked some HF along the way, but also, I have notes of meeting a few new girlfriends at some different campgrounds along the way. I put their names in my log pages with some other information — and it is sure fun to look back on now. Thanks to the log, I remember everything just like it was a week ago!

Kirk's information about the M-Disc is very interesting, too. I have started looking into that now. It sure looks like the way to go. There does not seem to be much information out there yet — other than the company's website . . . I haven't talked to anyone using them yet or that knows much about them. You'd think they would really catch on soon if they do what they say.

If Kirk runs across new information about the M-Disc, I hope he will update us. I am *very interested*.

NTØZ's *Ham Discoveries* is great. I read it every month and it is always informative. Great work on your articles. I read them every month and they are always very informative!

– *Larry Shaunce, WDØAKX, Photo B, Albert Lea, Minnesota*

We're so happy to hear you're a fan of Kirk. We are, too, Larry! You're so right: Amateur radio logs are like a

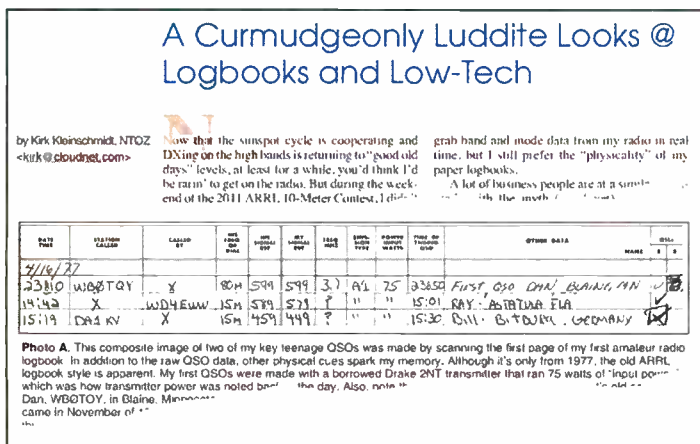


Photo A. In reference to Kirk Kleinschmidt, NTØZ's, March 2012 *Ham Discoveries*, Larry Shaunce, WDØAKX, writes he "used the back empty pages of the log to make notes of antenna settings and new equipment additions to the shack — such as, *started using new antenna Drake antenna tuner*, and so on. A log can also serve as a kind of personal diary."

Photo B. From his amateur radio station in Albert Lea, Minnesota, WDØAKX writes: "I got my ticket in '77 and put everything in the log for several years. Am sure glad I did! As NTØZ says, it is fun looking back — and I can remember almost everything. *It really does* come back you to." (Courtesy of WDØAKX via QRZ.com)

time machine. I enjoy looking at mine dating to 1965 when I was struggling for contacts as WN1DWL. My father, W6CLF (SK) was a meticulous logger, and his are particularly interesting to page through. In his case, they give a window on amateur radio's change and development from the early 1930s through the new millennium. Thanks so much for writing. We appreciate your insight and feedback. — KI6SN/KPC6PC

Stop the Madness on the 20-Meter Amateur Band

Editor, *Pop'Comm*,

I have been a shortwave listening enthusiast for a number of years. Several years ago, I tuned in on what has become a horrible bunch of vulgarity, jamming and general nonsense in the 20-meter amateur band. This nonsense is still going on today. I cannot understand why it continues with nothing being done about it.

A horrible battle exists between a few radio amateurs who use the vilest language when transmitting.

I'm wondering when this will be stopped. I have tried to turn youngsters onto the shortwave listening hobby, but it is always so horrible to have a youngster sitting there by my side and hear cursing, insults and foul names.

For several years now, these radio amateurs have been trading insults back and forth and I'm sick and tired of this garbage pollut-

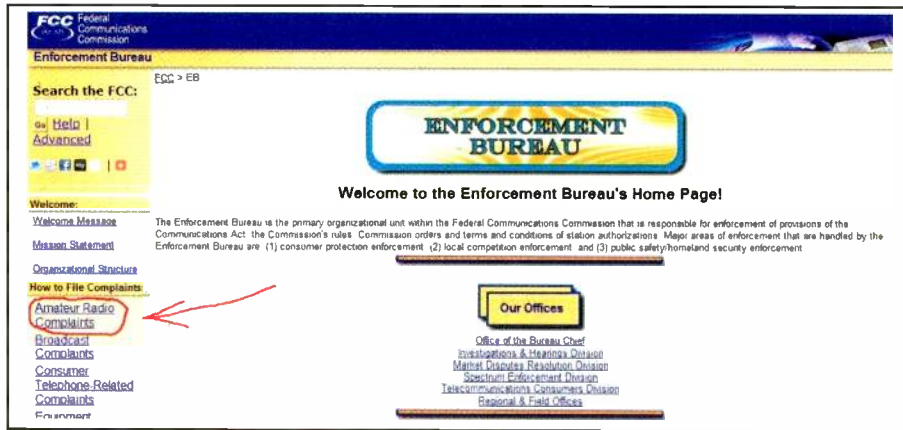


Photo C. When filing a complaint with the FCC regarding amateur radio, a good place to start is on the Commission's Enforcement Bureau Web page, <<http://bit.ly/H0b47c>>. There is a link on the left, highlighted here in red, which will take you to the FCC page containing details of the kinds of information it will need to take action. (*Internet screen grab*)

ing the 20-meter band. Lots of other radio-listening enthusiasts are tired of it, too.

Is there any way something can be done about people who cause this kind of trouble on the airwaves? Might it ever stop?

— D. Busbey,
Wichita Falls, TX

It's so sad when amateur radio operators misbehave like this, D. Unfortunately, it's not only happening on 20 meters, but on 75-meter 'phone, VHF FM repeaters and other places. About the only thing we can do is to stay clear

*of the fray and report the activity. The most responsible course of action is to notify the FCC's enforcement bureau, <<http://bit.ly/H0b47c>>. As you can see in the accompanying Internet screen grab, The Enforcement homepage has a link to a page specifically for complaints concerning amateur radio, **Photo C**. Here, it's highlighted in red. Simply click there and you'll find instructions on how to file a complaint and what specific information the Commission needs to take action. It's certainly worth a try. Radio amateurs and SWLers, alike, will thank you for it. — KI6SN/KPC6PC*

NEWSWORTHY

Unwired

Streaming Sci-Fi: Supernatural, Supernormal, Supercool

OK, you stopped sitting down to dinner together years ago. Tonight, grab your laptop or tablet, gather the family and turn the lights off. *It's time for . . .* (Turn up the reverb!) *Radio Tales of the Strange and Fantastic*.

If you're into listening to vintage-radio sci-fi drama, the RTSF site, **Photo C**, is for you, <<http://bit.ly/Ha2Euj>>. From "X Minus One" to "Suspense!" RTSF has it all — deeming itself "the otherworldly omnibus of speculative radio drama . . . We bring you stories of the supernatural and the supernormal, dramatizing the fantasies and the mysteries of the unknown."

With titles such as 2462, A Dream of Armageddon, The Dance of the Devil Dolls, and The Last Objective, how can you go wrong?

RTSF responsibly warns, "if you wish to avoid the excitement and tension of these imaginative plays, we urge you calmly, but sincerely, to close your media player now."

This Month's Classic Firing Flashback: 2004

Rodney Ho, who writes *Radio & TV Talk* for accessAtlanta, recalls the radio personalities known as The Regular Guys getting into all sorts of trouble in 2004 — to the degree that they made Ho's *Top 12 Strangest Atlanta Radio Stories of the Past Decade*, <<http://bit.ly/HaYjrL>>.



Photo C. Listen to streaming classic sci-fi radio drama at *Radio Tales of the Strange and Fantastic*, <<http://bit.ly/Ha2Euj>>. *Whooh, whooh, whooh, ha, ha, ha . . .* (*Internet screen grab*)

Shortly after the Janet Jackson Super Bowl brouhaha, The Regular Guys decided to "mock the FCC crackdown on indecency by taping porn star Devin Lane talking dirty — and airing it backwards. While they taped her, a microphone was left on so you could hear her explicit commentary over a Honda ad."

In the words of the late Paul Harvey, you can imagine *the rest of the story*.

Of course, they're still on Atlanta radio — at Rock 100.5. Check out The Regular Guys' website: <<http://bit.ly/GUqTvh>>.

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AntennaMan Rides Again (and Again)!

by Bill Price, N3AVY
<chrodoc@gmail.com>

“AntennaMan, with his companion Bradley, leads the fight for Ohm’s Law and natural order in the grand scheme of things.”

N3AVY remains stranded in the outer reaches of Cowfield County, unable to get the Internet access needed to file his column. He has run out of wood for smoke signals, but this time snagged a carrier pigeon to send us word. So, we bring you another of The Loose Connection’s Greatest Hits — this one from 10 years ago this month. — KPC6PC

“An ungainly manatee with the speed of gear-oil. A cloud of aluminum-filings, and a hearty *Look out below!*

—“*AntennaMan*, with his faithful companion Bradley, the masked climber of roofs, leads the fight for Ohm’s Law and natural order in the grand scheme of things.

“Return with us now to those thrilling days of . . . sometime last month. *AntennaMan* rides again! *Hi-yo, aluminum! Away!*”

Now, Our Story: From the Days Before DTV

There are bad guys out there trying to fool the public, and when that happens, *AntennaMan* leaps into action for truth, justice and accurate measurement of gain with figures referenced to a dipole or isotropic source.

You got a bad TV antenna, and you know it. See the snow. Feel the agony of defeat. You could go to the guy who sold it to you and say, *Listen, Bucko, I put it up properly, and my reception is lousy!*

Not so with a transmitting antenna. You have to take everyone’s word for its performance. With all the variables of RF propagation alone, there is never a definitive answer to: *Howzit getting out?*

So some antenna manufacturers publish “gain” figures, which, when qualified with the inclusion of a pattern drawing, a reference antenna (dipole or isotrope) can actually give some comparative information about the performance of an antenna.

But, back to TV antennas: You know what? Some people *lie!* Can you imagine that? *I’m not talking about your reputable antenna manufacturers, though.* It’s more about the late-night-commercial-style advertiser: “This amazing *frabistan* turns your entire house, roof included, into a giant TV antenna!” Well, yes, it does.

Unfortunately most houses turn into very bad

TV antennas, with gain somewhere equal to — or less than — an isotrope (a theoretical *point-source* antenna which can exist only in the mind of man).

The directivity and bandwidth of most houses is also not ideally suited to the job of receiving television signals. So, does the *frabistan* “turn your whole house into a giant TV antenna?” Yes, so long as your definition of TV antenna is as loosely-construed as humanly possible.

OK, so not many of you have fallen victim to *The Whole-House Antenna Scam*. Good for y’all! *Pop’Comm* readers are a cut above.

AntennaMan Goes Cellular

So, where was I? Oh, yes: The deception of the common man. Good topic.

Now, how about a show of hands: Who has a cell phone? *Hmmm.* That’s more than 100 percent.

I see that the Federal Trade Commission is investigating those cute little printed-circuit devices with adhesive backs that increase your cell phone’s performance by a zillion percent. Expressed in decibels, that’s a lot.

Yes, this *Amazing Sticky Dot* renders all radio waves aimed at your head harmless!

And, if you act now, you also get a set of the famous Dead-Sea Scrolls, Ginsu Steak Knives (as seen on Saturday Night Live) and the *Amazing Sticky Dot!*

SCENE A: Women with cell phones. Woman No. 1, whose phone has the *Amazing Sticky Dot*, smiles as her bazillion-dBi antenna gain sends her cell-phone signal to other planets. Meanwhile, the *Amazing Sticky Dot* keeps the bazillion watts of effective radiated power from frying her brain! *Isn’t that amazing?*

SCENE B: Note the frown on the face of Woman 2. She does not have the *Amazing Sticky Dot!* Such a shame. It *really, really* works.

Remember, it’s just \$19.95, plus shipping and handling. Sorry, no C.O.D.s. Void where prohibited. Residents of Washington and Oregon need not supply postage. Your mileage may vary.

(*NOTE: Bill has been taken away and may not have access to sharp instruments where he is going — such as pens and pencils. Just in case, though, we’re holding a place open for him. His “room” is nowhere near a Home Depot or RadioShack®.*)

AR5001D Wide Coverage Professional Grade Communications Receiver

The Legend Lives On!



The AR5001D delivers amazing performance in terms of accuracy, sensitivity and speed.

Available in both professional and consumer versions, the AR5001D features wide frequency coverage from 40 KHz to 3.15 GHz*, with no interruptions.

Developed to meet the monitoring needs of security professionals and government agencies, the AR5001D can be controlled through a PC running Windows XP or higher. Up to three channels can be monitored simultaneously. Fast Fourier Transform algorithms provide a very fast and high level of signal processing, allowing the receiver to scan through large frequency segments quickly and accurately. AR5001D standard features include storage of up to 2000 frequencies, 45 MHz IF digital signal processing, direct digital sampling, a high performance analog RF front-end, a DDS local oscillator and advanced signal detection capabilities which can detect hidden transmitters. With its popular analog signal meter and large easy-to-read digital spectrum display, the AR5001D is destined to become the choice of federal, state and local law enforcement agencies, the military, emergency managers, diplomatic service, news-gathering operations, and home monitoring enthusiasts.

Discover the next generation in AOR's legendary line of professional grade desktop communications receivers.

- Multimode receives AM, wide and narrow FM, upper and lower sideband and CW
- Up to 2000 alphanumeric memories (50 channels X 40 banks) can be stored
- Analog S-meter
- Fast Fourier Transform algorithms
- Operated by a Windows XP or higher computer through a USB interface using a provided software package that controls all of the receiver's functions
- An SD memory card port can be used to store recorded audio
- Analog composite video output connector
- CTCSS and DCS squelch operation
- Two selectable Type N antenna input ports
- Adjustable analog 45 MHz IF output with 15 MHz bandwidth
- Triple-conversion receiver exhibits excellent sensitivity
- Powered by 12 volts DC (AC Adapter included), it can be operated as a base or mobile unit
- Professional (government) version is equipped with a standard voice-inversion monitoring feature

Add to the capabilities of the AR5001D with options:

- Optional APCO-25 decoder
- Optional LAN interface unit enables control via the internet
- Optional I/Q output port allows capture of up to 1 MHz onto a computer hard drive or external storage device
- Optional AR-I/Q Windows software facilitates the easy storage and playback of transmissions captured within the selected spectrum in conventional modes, or signals can be subjected to further analysis
- Optional GPS board can be used for an accurate time base and for time stamping digital I/Q data

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*Cellular blocked for US consumer version. Unblocked version available to qualified purchasers with documentation. Specifications subject to change without notice or obligation.

AIRWAVE SUPERIORITY

Never before has a compact HT offered as many features, and such high powered performance as the TH-F6A. Arm yourself with one today and gain your own airwave superiority.

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- Receives 2 frequencies simultaneously even on the same band
- 0.1-1300MHz high-frequency range RX (B band)¹
- FM/FM-W/FM-N/AM plus SSB/CW receive
- Bar antenna for receiving AM broadcasts
- Special weather channel RX mode
- 435 memory channels, multiple scan functions
- 7.4V 2000mAh lithium-ion battery (std.) for high output² and extended operation
- 16-key pad plus multi-scroll key for easy operation
- Built-in charging circuitry for battery recharge while the unit operates from a DC supply
- Tough construction: meets MIL-STD 810 C/D/E standards for resistance to vibration, shock, humidity and light rain
- Large frequency display for single-band use
- Automatic simplex checker
- Wireless remote control function
- Battery indicator • Internal VOX • MCP software

¹Note that certain frequencies are unavailable. ²5W output



TH-F6A

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