Scanning Our Heritage

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"A shock to the system."

The new WiNRADiO G303i receives rave reviews. And shortwave radios will never be the same.

* Short Wave Magazine, February 2003

The exciting WiNRADiO G303i Software-Defined Shortwave Receiver is now available.

Why is it Software-Defined? Because the entire last intermediate frequency stage and all-mode demodulator are implemented entirely in signal-processing software running on a personal computer. This brings about significant advantages: performance, flexibility, configurability, reliability and convenience. There is also reduced risk of obsolescence, as new demodulators for new types of modulation are as easy to add as inserting a CD ROM into a PC drive.

The receiver comes on a PCI card and installs in minutes. Just plug the card in, connect its output to your PC sound card, install the supplied software, and let the world's most innovative shortwave receiver surprise you with its performance and amazing new features.

The G303i control panel includes many features such as real-time spectrum analyzer, numerous tuning and scanning options, highly accurate S-meter showing signal strength in various units, sweeping spectrum scope and powerful memory facilities.

The optional Professional Demodulator expands the receiver capabilities yet further by introducing numerous innovative features, world-first for this type of radio, such as variable filter bandwidth adjustment and interactive block diagrams.

The G303i receiver was reviewed by the Short Wave Magazine (Feb. 2003), Monitoring Times (March 2003) and Radio & Communications (Feb. 2003), with impressive conclusions. Here are just a few highlights of the reviews:

**On Spurious Signal Rejection** "As far as I can remember I have never found any receiver, analogue or digital, which had such cleanliness, and the WR-G303i has set a new standard for others to emulate." [SWM]

**On Sensitivity** "...higher than necessary in a receiver of its type..." [SWM] "Much of this sensitivity is contributed by the low phase noise of the oscillator, typically -148dBHz@100 kHz. Clearly this radio meets or exceeds the competition head on..." [MT] "With a sharp filter selection using the Professional Demodulator, CW signals as weak as 30mV (0.03 uV) are detected." [MT] "In short, the performance is superb. The sensitivity and selectivity surpassed my expectation, and there was no sign of intermod even in the presence of strong stations at night time." [R&C]

**On Variable IF Bandwidth** "...a very useful feature and allows you to exactly match the filter bandwidth to the incoming signal...once experienced never to be forgotten." [SWM] "...an astounding feature to hear when invoked!" [MT] "The experience of being able to finetune selectivity to suit a particular signal you are listening to is truly incredible, especially if you have been used to having just a few fixed bandwidths on your old radio." [R&C]

**The Verdict** "If I had to choose between a Collins 95S-1 and the WR-G303i (ignoring the obvious fact that the 95S-1 tunes to 2 GHz), I would take the WR-G303i." [SWM] "This receiver is a gadget-owner's dream! But it isn't fancy. For the first time in consumer technology, the shortwave listener can alter his receiver to his own requirements independent of factory-set parameters." [MT] "The WiNRADiO WR-G303 receiver, in addition to being an excellent receiver on its own right, has a certain exciting feeling about it. Perhaps this is because of the promise of a change of an entire paradigm which makes a difference between just another run-of-the-mill product and a truly Innovative cut product, sparking an entirely new excitement." [R&C]

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Colonial Scanning
By Gayle Van Horn

Once again, M7's intrepid monitoring couple takes to the road in search of personal and historical roots. It just so happens, their search also leads them to our rational origins - the historic triangle of Jamestown, Williamsburg, and Yorktown, Virginia. Millions of visitors travel each year to this peninsula on the coast of Virginia where the past is so convincingly reflected.

And where there are people, there are communications and good scanning to be had! Gayle brings the past alive in recounting the events that made these sites significant, followed by the local frequencies that can tune visitors in to the present. Story starts on p. 10.

On our cover: The fife and drum corps leads the march from the Capitol at Williamsburg. (Photo by Larry Van Horn.)
Reviews:

Marc Ellis’s feature article on boat anchors gives a new idea of how these old radios compared with each other, but has anyone really pitted an old tube radio against a modern set? Alan Johnson takes on the challenge and compares two eras of radios: the National NC-183D of the 1950s, against the Icom R-71A of the 1980s (p.84).

Bob Pannass compares the new Icom IC-R5 with its other palm-sized competitors and uncover where it’s strong and where it’s vulnerable (p.78).

Radio control using a Palm Pilot? Not only is it feasible, it’s never been cheaper!

John Catalano reviews five programs that are free for the download (p.80).

Radio direction-finding is both a sport and a practical skill. Thanks to Ramsey Electronics’ RDFing kits, you can get in on the fun without spending a fortune. Bob Grove explains how RDFing works, and the two different approaches represented by the “Foxhound” kit and the Doppler system (p.82).

Jock Elliott reviews Cobra’s excellent FRS/GMRS radio pair— the PR 350-2WX. You get a lot for your money...and not very much money at that (p.86)!

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Monitoring and the Law

The Garden State’s Garden of Eden Scanner Law

This month we move across the Hudson River for a look at the Garden State’s scanner laws. Revised in 1992 after almost 80 years on the books, New Jersey has perhaps one of the best and most reasonable scanner laws of any state. This is thanks in part to the efforts of the American Radio Relay League’s (ARRL) volunteer attorneys Frank Terranella and John Norton who worked diligently to get the new law passed.

Instead of struggling with prohibitions on the types of equipment and frequencies which can and can’t be monitored, New Jersey’s scanner laws simply make it illegal to intercept communications to help you commit a crime or interfere with public safety officials performing their duties. It is also a crime in New Jersey to possess a radio which can tune into police, fire and emergency medical communications while committing a crime or fleeing from it.

Specifically, Title 2C of the New Jersey Code of Criminal Justice section 33-21, titled Interception or use of official communications provides that, “Any person who intercepts any message or transmission made on or over any police, fire or emergency medical communications system, or any person who is the recipient of information so intercepted, and who uses the information obtained thereby to facilitate the commission of or the attempt to commit a crime or a violation of any law of this State, or uses the same in a manner which interferes with the discharge of police or firefighting operations or provision of medical services by first aid, rescue or ambulance squad personnel, shall be guilty of a crime of the fourth degree.”

The section immediately following that statute, 33-22, titled Possession of emergency communications receiver, prohibits, “Any person who, while in the course of committing or attempting to commit a crime, including the immediate flight therefrom, possesses or controls a radio capable of receiving any message or transmission made on or over any police, fire or emergency medical communications system, shall be guilty of a crime of the fourth degree.”

Without getting bogged down with what is a portable versus mobile or home radio scanner and which groups of persons are or are not exempt from the law, New Jersey merely prohibits what should be prohibited – using a radio scanner to help you break the law.

In addition to these two scanner laws, New Jersey also prohibits students from possessing pagers on elementary and secondary school property and all persons from possessing them during the commission of certain crimes. It is also against most schools’ rules for enrolled students to possess a cell phone on school property or during school.

Lastly, New Jersey in statute 2C:33-23 specifically exempts “radar devices used to monitor vehicular speed” from their definition of what is a “police, fire or emergency medical communications system.”

**My Two Cents plus 35**

Some readers have written asking how they can find out if their city or county has a local ordinance concerning scanners or amateur radios that will tune police, fire and other government frequencies. One way is to look online.

Many communities now have their local ordinances available free of charge through the Internet. The trouble here is that not all places will use the same words to regulate scanners. Readers should be creative as they search for such local laws since one community may ban “radio capable of receiving frequencies” while another bans “devices which can intercept communications.”

Another way is merely to ask. While the speed of a telephone call may seem preferred, here I would suggest an investment of thirty-seven cents to send your question by regular mail. Such a method is more assured of reaching a person with the correct information and allows him time to reply.

In addition to asking your local Chief of Police or Sheriff, don’t overlook the power of your local councilman or councilwoman – your local elected representative – as a source of this information. If your community has an ordinance you didn’t know about, this could be the best thirty-seven cents you spend on monitoring this year. If you find your community does regulate scanning radios, please drop me a note so we can share your find with other MT readers.

**Upcoming Issues of Concern – Scanner Audio Online**

Do you operate an Internet Web site that makes available your community’s police or fire communications over the Internet? *MT’s Monitoring and the Law* is working on a future article of the legal issues surrounding this marriage of technologies. We are interested in hearing from you, especially if you obtained permission from the persons responsible for the communications before starting your webcast or if you’ve received letters or warnings asking you to remove such rebroadcasts.

**South Carolina May Regulate**

In April a South Carolina newspaper reported criminals (especially drug dealers) using scanners and two-way radios to avoid arrest. In an article by Jason Foster, *The Herald* reported that children and teenagers in Rock Hill, SC, have been seen on bicycles acting as look-outs while listening to “police chatter on walkie-talkies” or using them to report police presence. A citizen also reported increased presence of cars with CB antennas.

Foster reported that Police Captain Mark Bollinger said “there is no doubt that [criminals are listening to our radios to avoid getting caught]; We just haven’t caught anybody at it.”

The article went on to claim that Rock Hill Police use “secure radio channels” for dispatching calls for such things as burglaries or drug deals, but didn’t explain how children were seen listening to police or “walkie-talkies.”

Noting that South Carolina has no scanner regulation, the article closed with a mention of some states that do regulate, and the comments by Dave Fortson, Rock Hill chief of police, who considers the issue “a critical public-safety” concern and thinks the state legislators may need to be persuaded to pass some sort of scanner regulation.

Disclaimer: The information in this column is not legal advice. Persons wishing specific legal advice should consult an attorney licensed to practice law in their area.
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MT Marks a Milestone

It's hard to believe that my colleague here at MT, Larry Van Horn, who serves as assistant editor, technical editor, and columnist, has been writing for us for two decades. Time passes so fast, and we've watched many changes in the field of radio.

Larry sits in an office down the hall from me, and an entire day can go by without my seeing him. But I know that he's busy keeping up with his electronic files of frequency lists, possibly the most exhaustive — and arguably the most accurate — in the hobby.

Readers have come to trust his judgment in identifying frequencies accurately. We are fortunate to have a reliable stable of monitoring contributors who do off-the-air identification of signals, many of which are heard from their local agencies. It then becomes a matter of some sleuthing, comparing recent contributions to archival information in our databases.

Larry and I were both writing for the former Radio Communications Monitoring Association (RCMA) bulletin when we first met in print; Larry was the Signals from Space columnist, and I was doing the Federal and Military column.

Over time it became apparent that Larry's enthusiasm was irrepressible, and his sources were inexhaustible. What a nice combination for a columnist!

After inviting him to come aboard the MT team, we introduced him at one of our popular Grove/MT Expos in Atlanta; Larry, his wife Gayle (also a long-time MT columnist), and their son Loyd moved to Brasstown in 1993. Larry's primary assignment was (and still is) to provide accurate information on his favorite subject, utilities — the two-way users of the radio spectrum. Federal, military, and satellite comms have always been his favorite monitoring targets.

Larry has never disappointed us with his prodigious writing. Continuing his specialty of satellite monitoring, we published three successive volumes of Larry's popular frequency directory, Communications Satellites, two extensively-revised editions of the Grove Shortwave Directory, and followed with the Grove Military Frequency Directory and the Grove Federal Frequency Directory.

Looking for more to do in his copious spare time (!), Larry took the helm as Managing Editor of our four-year sister magazine, Satellite Times, the industry's first comprehensive magazine with such depth.

During a typical work week here at Grove Enterprises and Monitoring Times, the telephone stays quite busy; Larry often takes time from his writing to assist our clients with problems they are experiencing with their monitoring installations, answering questions and offering seasoned advice.

It is through this dedication to professionalism that Larry has played a major role in maintaining MT's worldwide reputation for being the leading monitoring publication over the past two decades. And as the field of radio continues to evolve technically, Larry will continue his journalistic leadership, informing our tens of thousands of readers of the latest news in the monitoring field.

Bob Grove
Publisher

When Larry first began writing for Monitoring Times, I was doing the layout on the magazine; I also typed and assembled the manuscript for his first book. I quickly appreciated his methodical, consistent organization of data. This meticulous record-keeping is one of the secrets to his phenomenal success in recognizing patterns (or aberrations thereof) and sleuthing out new communications systems.

If you think this sounds like a pretty dull and boring existence, you haven't seen Larry bursting with excitement at identifying a new signal, receiving a key bit of information from an MT contributor, or getting a coveted QSL in the mail. The rest of us shake our heads in wonder; I recently asked him how, after all these years, he avoids burn-out? Here's the answer he wrote to me:

"The key is I don't just listen to one or two services/bands. I listen to all sorts of radio communications. Today, if I'm in the mood to chase ham DX, I will, because I can: I've equipped my shack to perform that task. If I'm on 10-meters and see the skip distance getting shorter during an e-skip opening, I know that the 30-50 MHz band is open for the long haul business. I know I should also be watch-

Frequent MT contributor Norman Hill is pictured on the left with fellow Federal City REACT members. Norm uses a specialized UHF TV antenna in the attic of his Arlington, VA, home. Check out the Federal City REACT repeater on 462.6000, 462.6750, and 462.7000 MHz.
ing for a VHF TV channel 2-6 opening, or maybe even an FM broadcast DX opening. But this all starts with turning the radio on and listening. Also, the more capability I have added to my shack has meant being able to monitor more on the bands, and that keeps my interest sharp and the burn-out bug away."

It’s this full-spectrum, hands-on knowledge, plus Larry’s own journalistic experience, that I rely upon in every issue of MT. I am, of course, extremely appreciative of Larry’s wholehearted support of the magazine, but you, the readers of Monitoring Times, are the main beneficiaries of his dedication. Larry, we all hope you continue having fun and sharing the results with us for a long time to come!

Rachel Baughn
Editor

Re: Shortwave and Going Digital

"In recent years many shortwave broadcasting stations have gone off the air or cut back programming, citing audience shifts to satellite, internet, or local FM services. Some speculate that international HF broadcasting will cease altogether. But two recent developments may change this picture. One, dis-

The other development is the hacking of Al Jazeera’s inaugural English-language website. Many have come to rely on the Internet as a source of international news and opinion. But when we see how effectively the Al Jazeera website was shut off — whether by malicious private hackers or covert government action — it becomes apparent that the Internet may not always be such a free and dependable source of information. Digital HF may be a more effective way for dissenting opinions to get through. There is a long history of jamming of broadcasts (such as Radio Baghdad just before the first Gulf War); it will be interesting to see how resistant digital HF is to jamming."

— Chuck Porter, Troy, NY

That DRM article was very interesting. This mode looks like it will be a Quantum leap for all kinds of comm’s. My earlier tongue in cheek predictions for a dream receiver that prints out QSLs may just become a reality! The author states that only the station name/id need be known for broadcast tuning (I doubt if that will be the case for hams and other utility users.)."

"I would assume that the new Grundig 900 will be DRM compatible? I guess many comm companies have been revising designs for this new mode."

"That EH antenna article was also very interesting. Our ARISS (Amateur Radio on International Space Station) contact with the ISS a couple of weeks ago was a ‘no go’ as Commander Bowersox had a higher priority mission pop up. Unfortunately this resulted in quite a few disappointed school kids in the Tallahassee, Florida, school we telebridged to. We had a good overhead visual for most of the pass, too.

— 73 and Aloha, Paul Perretta KH6/G3SEA

"I really enjoyed the articles on DRM in the April Issue. In Lee Reynolds’ article he says ‘Decoding software for DRM has been available for a number of weeks now and comes in commercial (…) and freeware (compile it yourself).’ I would really like to know where the ‘freeware (compile it yourself)’ software is available."

Jack Botner

"Here’s a spot for him to get started - http://www.tu-darmstadt.de/de/et/uet/lguet/motorbei/1/DRM/DRM.html"

Lee Reynolds

We welcome your ideas, opinions, corrections, and additions in this column. Please mail to Letters to the Editor, 7540 Highway 64 West, Brasstown, NC 28902, or email editor@monitoringtimes.com. Letters may be edited for length and clarity.

Happy monitoring!
—Rachel Baughn, KE4OPD, editor
**Hams Win One, Lose One**

The FCC has rejected a request to grant amateurs a sliver-band allocation at 136 kHz “at this time.” However, in a compromise with government users, the Commission decided to give amateurs five discrete 2.8-kHz-wide channels in the vicinity of 5 MHz instead. The FCC also agreed in the Report and Order released May 14 to elevate the Amateur Service (but not the Amateur-Satellite Service) to primary status at 2400 to 2402 MHz.

“We are disappointed that the FCC could not see its way clear to providing even a narrow LF allocation to the amateur service, given earlier encouraging signs and the general trend in other countries,” ARRL Chief Executive Officer David Sumner, K1ZZ, said of the FCC’s decision.

The FCC was persuaded by arguments from electrical utilities and others that amateur operation at 136 kHz might interfere with power line communications (PLC) used by electrical utilities to control the power grid.

The five frequencies granted were: 5332, 5348, 5368, 5373, and 5405 kHz, to be used on USB only, with a maximum effective radiated power limit of 50 W. The channels — each with a maximum permissible bandwidth of 2.8 kHz — will be available to General and higher class licensees.

Sumner said the ARRL was pleased to see 2400-2402 MHz upgraded to primary, where amateurs already have been experimenting with high-speed multimedia operation in the band using IEEE 802.11 b protocols.


**Broadband over Power Lines**


You may hear the technology referred to by various names and acronyms: Power Line Communications (PLC), Power Line Telecommunications (PLT), Power Line Broadband (PLB) and Broadband Over Power Line (BPL).

All are “carrier-current” systems, a term used to describe systems that intentionally conduct signals over electrical wiring or power lines. Systems which operate in-building or the utilities’ own control system, which operates below 500 kHz, pose no threat to shortwave (HF) signals.

However, the proposed broadband system will operate by injecting a broadband signal on power lines in the frequency ranges of 2-30 MHz. These are broad-spectrum signals that will effectively make the wiring in a person’s home and community a noise generator throughout the HF broadcast spectrum.

Similar systems are being implemented in Europe, with disastrous results. (See [http://www.powerline-plc.info/video](http://www.powerline-plc.info/video) Japan last year totally rejected BPL as a method of Internet distribution because of its disastrous effects on the HF bands.

Jeff White, President, National Association of Shortwave Broadcasters, and Nickolaus E. Leggett, N3NL, both wrote to encourage SWLs and hams to research the sites mentioned at [http://www.arrl.org/tis/info/HTML/ptcl/](http://www.arrl.org/tis/info/HTML/ptcl/) and to write to the FCC in response to this NOI. The FCC aware that there are shortwave enthusiasts in the United States that are opposed to any system that would further degrade the quality of their hobby of shortwave listening.

When writing a response, an original and four copies should be sent to:

Commissioner’s Secretary
Office of the Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

**What? We have to File?!**

Have you heard about the Nevada Highway Patrol system that has been operating illegally for the past three years? After 10 years of planning and construction and expenditures of more than $1.5 million, the project’s new manager came to an awful realization: no one ever filed with the Federal Communications Commission to reserve the necessary radio frequencies to operate the system.

“Never in my wildest dreams did I think to ask, ‘Are we legal’?” said NHP Col. Dave Hosmer. “We are licensed for no frequencies at this time.”

The highway patrol’s new Motorola system was intended to enable its officers to communicate with each other, the dispatch centers and some other law enforcement agencies, especially rural systems operating on 150 MHz. Though the system began operation in 2000, the highway patrol did not apply to the FCC for the frequencies until mid-2002, when it sought a temporary permit. When that permit expired, the patrol never moved for permanent approval.

The FCC ordered the state to abandon the project's new manager came to an awful realization: no one ever filed with the Federal Communications Commission to reserve the necessary radio frequencies to operate the system.

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grade the systems and alleviate those concerns.

The patrol said its study on the mistakes will be sent to the state attorney general’s office to determine whether criminal charges should be filed. Meanwhile, all are hoping the FCC will not levy the billion dollars in fines that could potentially be owed for the illegal operation.

Stay tuned. As Col. Hosmer reportedly said, “It’s buffoonery at its finest.”

Hoka in Hot Water

A Dutch electronics firm provided Iraq with technology and training that were used to spy on NATO. documents unearthed in Baghdad have revealed. Horst Diesperger, the company’s director, confirmed that he had traveled to Bulgaria to carry out training, but said the clients had told him they came from Jordan and Syria. He said Hoka “supplied the equipment not directly to the end user.”

Knowingly providing Iraq with such equipment would constitute a violation of United Nations sanctions, which prohibited the sale to Baghdad of items with potential military uses. According to Hoka, the company’s main business is “development and distribution of software-based decoders” such as CODE30, CODE300 and CODE3-GOLD. An Iraqi who helped to broker the Hoka deal said Saddam Hussein’s ousted regime had acquired all three.

Diesperger said Hoka would have had “no problem” supplying Iraq in spite of UN sanctions because no applications were rejected. “If we have a customer in whatever country and he wants a disk, we send it to him,” he said. He said it never occurred to him that his products might violate sanctions: “It’s software and we sell it worldwide.”

Michigan Doubles Fine

The Michigan Legislature effective March 2003, updated MCL750.508 (Michigan’s Mobile scanning law). The old fine has been doubled from $500.00 for traveling with a scanner in your car to $1000.00.

Free Mobile Scanning Permits are still available from the Michigan State Police and non Michigan residents can still apply. (Mark Bajek)

Communications is compiled by editor Rachel Baughn, KE4OPK, from news and clippings supplied by our readers. Many thanks to this month’s reporters: Anonymous, Ballston Spa, NY; Sterling Marcher, La Mirada, CA; Doug Robertson, Oxnard, CA; Brian Rogers, Melvindale, MI; Richard Sklar, Seattle, WA; and by email: Mark Bajek, Maryanne Kehoe, Nick Leggett, John Mayson, Tom McKee, Jerry None, Lee Reynolds, Larry Van Horn, Dan Veeneman, Jeff White, Robert Wyman, Daniel Wyrick, Ed Yeary.
Scholars say that history is more than dates, figures and facts. They say that history gives us a sense of who we are and where we've been as individuals and as a nation. Our heritage provides us with insights that we can use in our daily lives from the experiences of the past.

My passions are well known by those that know me personally—history and radio. Some of our MT readers may recall that last year I retraced my great grandfather's battlefield service in the Civil War in an article I wrote for Monitoring Times (Hallowed Ground, July 2002 MT). That trip gave me an opportunity to observe that bit of my heritage firsthand, as well as to monitor radio communications from a variety of national parks and local/state services.

Recently, history and radio came together again when my husband Larry and I visited our colonial heritage during a vacation to the historic triangle of Jamestown, Williamsburg, and Yorktown, Virginia. Armed with our digital camera, notepads and a Uniden BC-250D scanner with APCO-25 board, once again we followed our family histories while also monitoring federal, state and local communication systems during our travels. The result was a better understanding of our personal and national origins, while getting a chance to monitor some fascinating radio communications associated with each of the sites.

JAMESTOWN—AMERICA'S BIRTHPLACE

Let's go back in time to almost 400 years ago. It requires a leap of historical imagination, but picture a scene along the James River. It is May 13, 1607. Three vessels (Discovery, Godspeed and Susan Constant) carrying 144 men and boys, anchor alongside a dense forest surrounded by swamp lands. The promise of gold has drawn the English on this four-and-half month voyage to unknown shores. However, the results are far different from what they expected. Thirty-nine of those who sailed are dead, and the future looks bleak and uncertain.

These first Jamestown settlers used crude tents or huts for shelter. They had little meat and some fish, but lived mostly on herbs, berries and roots. Eventually, they did build a fort and establish the colony of Virginia—with Jamestown as the capital—under a charter granted by King James I to the Virginia Company of London. A stockade and church are built and the men and boys begin their adventure.

By the summer of 1607, colonists are dying from drinking brackish water, and from disease, starvation, civil unrest and wars with the Powhatan Indian tribes. Fortunately, under the leadership of Captain John Smith, the colony does eventually persevere.

As more settlers arrive, the population continues to be ravaged by sickness, malnutrition, an unhealthy environment and a devastating drought, the worst in 800 years. By 1619, all but 1,000 of those who have come to Virginia with a promise of prosperity have died. That year, the elected burgesses who represent the town met in the church at Jamestown to begin the first representative government in the western hemisphere. During the next year, 90 unmarried women arrive, and family life begins to take root.

During its brief life, Jamestown wore many faces: a tiny fort at the edge of the wilderness; a small community growing to meet the needs of the land; the center of religious, economic and political life in an eventually prosperous colony.

Visiting the Past

The Jamestown of today is only a memory of those early times: Old Jamestown exists only in ruins and in the pages of history. Of the original buildings constructed during the 17th century, the only original structure that remains is the brick tower of the church. Over those original church foundations, the present Jamestown Island Church was reconstructed in 1907. Outside in a church yard cemetery, several graves of the settlers remain, including one of my ancestors—just one of several family links I have found to the colony at Jamestown.

Since 1934, research and archeological excavations have exposed ruins and original foundations with brick walls, and have led to an approximate diagram of the original settlement. In September 1997, digging paid off when archaeologists from the Preservation of the Virginia Antiquities (APVA) announced to the world that they had found the original James Fort—long thought to be lost to the James River. So far, about 15 percent of the 1607 fort has been excavated, but it will take at least another 30 years to uncover and analyze the rest of the fort and surrounding New Towne sites.

If you visit Jamestown, the Visitor Center and Museum should be your first stop. A 15-
The sounds of the fife and drum corps echo through the old streets to the tune of *York March*. The crowd follows as they pass the Capitol building, the Courthouse, Magazine and Market Square, to an imposing finale on parade grounds of the elegant Governor's Palace. This is Colonial Williamsburg, and this portion of the trip allowed me to travel back in time to an era of our founding fathers in the 18th-century.

In 1699, after nearly a hundred years of battling pestilence, famine, fire and Indians, the leaders of the Virginia colony abandoned Jamestown for a new capital and named it Williamsburg for the reigning King William III. Also known as Middle Plantation, the new model city was a perfectly planned community, a lively mercantile center with elegant public buildings. From 1699 to 1780, Williamsburg was the political, social and cultural capital of Britain's largest, wealthiest and most populous colony.

Every year, over four million tourists come to Williamsburg. When you visit the old city, it still looks and feels like 1775 in Colonial Williamsburg, part of the British Empire. The area known as Colonial Williamsburg Park is a mile long and nearly a half-mile wide. Through extensive research, it has been meticulously restored or reconstructed as nearly as possible to the original 18th-century appearance. The modern city of Williamsburg surrounds the outer borders of the park.

### The Past Comes to Life

In the early years of the 20th century, the Reverend W.A.R. Goodwin, rector of Bruton Parish, dreamed of restoring Virginia's colonial capital to its former glory. His vision was to introduce future generation to colonial history as a reminder of our nation's principles, events and the people that fostered the birth of a new country. Goodwin's initial efforts met with little success or support. In 1926, he persuaded John D. Rockefeller Jr., heir to the Standard Oil fortune, to tour Williamsburg. Rockefeller agreed to support and fund the project on one condition—that it would encompass the entire town, not just parts of it. His fervent commitment continued for thirty years.

Like Jamestown, archaeological excavations have revealed much about the lifestyles of the colonists. Exploratory cross-trenching unearthed foundation walls, cellars and doorways. The most important find, however, was discovered in the Bodleian Library at Oxford University in England. It has the only known 18th-century architectural drawing of colonial Williamsburg's principal buildings, and this became the foundation of reconstruction. Today, many of the edifices stand on the original foundations or have been rebuilt and refurbished inside and out to original specifications or scrupulously researched estimates.

Along these streets, George Washington and other patriots laid the groundwork that would lead to the birth of a new nation. Patrick Henry thundered his defiance of King George III's Stamp Act, and it was here that young Thomas Jefferson studied law and later served as Governor of the Commonwealth of Virginia. And, according to colonial legend, it was here that Betsy Ross was asked to sew the nation's first flag by George Washington and members of a secret committee from the Continental Congress.

Today, Thomas Jefferson still walks the streets of Williamsburg in his colonial-style frock coat, knee breeches, tri-cornered hat, and buckled leather shoes. This Jefferson, in his measured Virginia accent, is still worried about public education and tells the tourist he hopes England and the colonists "proceed peaceably" in resolving their disagreements.

During our spring visit, shopkeepers in period-dress and 18th-century conversational speech set up their open-air market selling cider near the six-sided magazine that served as the arsenal for the Virginia colony. We could hear gossip among the shopkeepers, as well as talk of an impending war with England. When I asked if I might take their photo, they were perplexed at our "magic box." Other tradesmen, including a wheelwright, demonstrated his profession to Larry, whose fifth-generation great-grandfather had once performed the wheelwright trade. In a horse-drawn carriage, the driver nods "good day" to us as we walked down the stately Duke of Gloucester Street.
Colonial Williamsburg is now the world's oldest and largest living history museum. The thriving Historic Area, with its costumed interpreters, offers an opportunity to experience a slice of 18th-century life. Many of the restored buildings are residences for Colonial Williamsburg employees. Other buildings are hotel facilities, taverns, public buildings and shops.

Williamsburg is also home to William and Mary University, founded by Royal Charter in 1693, and second in age only to Harvard University in Cambridge, Massachusetts. Known as the "alma mater of a nation," William and Mary has educated four U.S. Presidents.

My favorite exhibit was the ornate splendor of the Governor's Palace and surrounding gardens. It served as the executive mansion for the commonwealth's seven royal governors as well as Patrick Henry and Thomas Jefferson, until the capital was moved to Richmond, Virginia in 1780. This imposing residence was meant to impress visitors with the prestige and power of the king's representative in Virginia.

Larry's favorite spot was the Capitol. It was from this building in the House of Burgesses that Patrick Henry railed against British taxation. One of Larry's ancestors had also served in that very same House of Burgesses.

Customize Your Tour
A good place to orient yourself after your arrival is the Visitor Center. Streets in the Historic Area are closed to motor vehicles, so you are required to park in the Visitor Center parking lot. Shuttle buses leave every few minutes, or you may walk the short distance to the Historic Area along a wooded path that goes from the Visitor Center to the Gateway Building in the Historic Area.

While at the Visitor Center, you may plan your visit with one of the orientation specialists. Don't forget to view the Williamsburg: The Story of a Patriot. This is a 37-minute dramatization of events in Williamsburg on the eve of the American Revolution and plays throughout the day at the Visitor Center and in most motel and hotel rooms.

There are various admission ticket plans available. Once inside the Historic Area, if you're a first time visitor, I'd highly recommend you take the 30-minute Orientation Walking Tour that begins at the Gateway Building. The tour is part of your admission ticket and usually leaves at 10 to 20 minute intervals, depending on time of day. This will give you an excellent introduction to Colonial Williamsburg on topics not routinely covered during building tours.

As you walk the streets of the Historic Area, look for the British flags at the curb. These indicate which buildings and sites are open to the public. If you're really on a tight budget, admission to the Historic Area is free; however, you will not be permitted to enter any of the buildings, shops, taverns, theater, museums or carriage rides flying the Union Jack.

Time really does stand still in Colonial Williamsburg if you immerse yourself in the surroundings of the park. For me, it was easy to imagine a city in the forefront of many events that would lead to independence and the establishment of a new American society. But now that we were brought to the verge of revolution, it was time to move on and visit historic Yorktown, Virginia.

Table 2: Williamsburg Frequencies

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Description</th>
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<tbody>
<tr>
<td>154.145</td>
<td>Dispatch</td>
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<tr>
<td>154.445</td>
<td>Alternate</td>
</tr>
<tr>
<td>153.885</td>
<td>Tacticol</td>
</tr>
<tr>
<td>155.260</td>
<td>Fireground</td>
</tr>
</tbody>
</table>

Entrance to the NPS visitors center at Jamestown.

Fire Department 154.145 (Dispatch)
154.445 (Alternate)
153.885 (Tacticol)
155.260 (Fireground)

Colonial National Historical Park (KIH 348)
Uses same freqs as Fire Dept

Local Government 453.425

Police Department 460.050 (F1)
460.175 (F2)

Colonial Williamsburg Park (WPRZ944)

Johnson LTR Regular

Frequencies: 451.825 452.225
452.725 461.275 461.7625 462.275
462.725 461.7625 461.7625 462.275
463.4375

YORKTOWN – INVENTING A NATION

To complete your understanding of the story of our nation's birth, a visit to Yorktown is a must. Americans won their independence here during the last major battle of the American Revolution. On October 19, 1781, British troops led by General Cornwallis surrendered to General George Washington and his French allies. Each year on the anniversary of the British surrender, Yorktown is the scene of patriotic festivals and reenactments.

Yorktown is a tiny village along the York River, at the eastern end of the Colonial Parkway. Although smaller today than during colonial times, the town continues to function as an active community and it retains many of the restored colonial dwellings.

The National Park Service maintains the restored home of Thomas Nelson Jr., a signer of the Declaration of Independence. His home still bears the scars of artillery bombardment during the siege of 1781. All of the colonial structures give the town much of the character of a long-vanished era. In the summer months, the Fife and Drums of York Town perform free concerts on Tuesdays and Sundays, while walking tours are offered daily year round.

Among Nelson House, the Customhouse and other colonial structures, stands Grace Episcopal Church, on the eastern end of the

One of the many archeological digs on the Jamestown Island complex
Colonial Parkway, built in 1697, it was used by the British during the battle as a magazine. It was partially burned in 1814 but was later rebuilt. Among the graves in the churchyard is that of Thomas Nelson Jr., and "the father of Yorktown," Nicholas Martiau, 12th great-grandfather of Larry Van Horn.

The Yorktown Victory Monument, erected by the United States to commemorate the victory over Cornwallis, stands at the east end of Main Street. The cornerstone of this monument was set in 1881 at the centennial celebration of the surrender. Inscribed on the monument are the names of Americans known to have lost their lives in the Yorktown campaign. Nearby, in the area where America's French allies were encamped under the leadership of General Rochambeau, is a monument bearing the names of French soldiers who died at Yorktown.

The Yorktown Victory Center, located at the intersection of Route 1020 and the Colonial Parkway, is a "must-see" on any tour of Yorktown. At the center, America's revolution is chronicled through exhibits and an outdoor living history that emphasizes the experiences of ordinary people.

A visit to the Yorktown Battlefield is also a necessity, and you should begin with the Visitor Center. The battlefield is also part of the Colonial National Historical Park. For small park entrance fee, payable at the center, you will learn about the events of the siege and the story of the town through a theater program and multimedia exhibits. A 16-minute film, Siege at Yorktown, depicts the battle and its significance. Two separate auto tours will give you the complete story of events at Yorktown. Before you leave the center, I'd recommend you visit The Siege Line. Overlook on the roof of the Visitor Center. From here you'll see a panoramic view of strategic points on the battlefield.

Tours of the battlefield are conducted from the Visitor Center by Park Rangers, or maps are available for the self guided driving tours. As you wind through the battlefield you will see fortifications and markers depicting chronological events of the siege.

The original allied earthworks were leveled on Washington's orders immediately after the siege. Through careful examination of 18th-century military maps and archaeological excavations, the National Park Service has reconstructed a nearly complete picture of General Washington's siege. Earthworks and siege lines mark the pattern of British and American troops during the battle. The earthworks are priceless treasures, and should not be overlooked on your tour. Cannons used during the battle are also mounted in several of the reconstructed redoubts and batteries.

Table 3: York County Frequencies

| County Fire Department (WNUR469) | 154.400/154.010 (Dispatch) |
| Smaller County Government | 154.175 and 154.325 (Fireground) |
| Sheriff Department (WPHT363) | 453.150 (Dispatch) |
| | 453.200 (Poquoson Police) |
| | [Licensed but not heard: 453.6375 453.7375 460.1125] |
| | Unidentified Public Safety (WPFP665) 460.225 |
| | 460.275 460.375 |
| | Utilities Department (WPQG831) 453.6375 453.7375 460.1125 |
| | Wolftrap Park 466.1125 |

Table 4: Miscellaneous Area Frequencies

| Anheuser-Busch Brewery (WPHN688) | 855.0375 855.3125 855.3375 855.5375 855.5875 855.7875 857.8875 858.8875 859.8125 859.8625 859.8875 860.8125 860.8875 860.9125 |
| Williamsburg | Motorola Type II Frequencies: 835.3125 835.5375 835.5875 855.7875 857.8875 858.8875 859.8125 859.8625 859.8875 860.8125 860.8875 860.9125 |
| College of William and Mary (WNTN912) | 858.8125 858.8125 858.8125 860.8125 |
| Colonial Historic Park (National Parks - Jamestown, Yorktown and Colonial Parkway) 168.425/169.125 Park Repeater System (Cheatham Annex) | KID 700 Yorktown Visitors Center KID 701 Jamestown Maintenance Area KID 757 Williamsburg Ranger Residence |
| | Jamestown/Yorktown Foundation (WPQC868) 457.600 |

FINAL THOUGHTS

So what really is the point of history, you ask? The point of history is to remember those brave men and women who fought for their beliefs, and gave their lives so we could be free. Each has their own story to tell, and each possesses an eminent place in American history.

If we as a nation do not understand where we began and how we have gotten to where we are today, chances are we will never understand our present world. History gives us a sense of who we are, where we've been. It also gives us a sense of where we are going in the future.

Our weekend touring Jamestown, Williamsburg, and Yorktown was one that touched us both in special ways. This was an opportunity to honor our personal and our national heritage. In addition, the region was as rich a monitoring environment as we two scanner hobbyists could hope for. What more could one possibly ask of a vacation?
Parade of the Boat Anchors

Part 1 — "Starter" Receivers

By Marc Ellis

Even though I regularly comb the flea markets and classified ads for old radios, I'm not a radio collector in the truest sense. Mostly I'm on the lookout for receivers and test instruments that will make interesting projects for the monthly restoration column I've been writing for over sixteen years. The bulk of my projects have involved vintage broadcast receivers, but about seven years ago, when I took over the editorship of the Antique Wireless Association quarterly bulletin (The OTB), my interests began to change.

Through my attendance at AWA meets and contacts with AWA members, I began to be more aware of the charm and lure of the old tube-type communications receivers used by radio amateurs and the military. Once I began writing for Monitoring Times, I obviously had even more reason to focus on such radios. You'll be seeing more and more of them in my "Radio Restorations" column as time goes on.

Like all heavy old tube gear, these radios are generically known as "boat anchors." The term implies that the best use for the weighty old instruments is to prevent a boat from floating away. It's used both affectionately by those who love the sets and sarcastically by those who have little use for them.

Back when I first began to spend time at radio meets, the old communications gear often went begging for customers. There just wasn't a lot of interest. Today, collecting and restoring these sets has become much more popular. How many people's minds with 1930s ham radio are likely to have similar flaws.

I've tried to arrange the radios on these pages roughly in chronological order of their original release dates. For each one there is a brief summary of general and technical information. Not every radio you see will be exactly in mint condition. Some are obviously awaiting restoration and may look a little rough. However, all the sets are in good enough shape so you'll be able to identify the same models when you see them at the meets. In fact, many of the sets you'll find are likely to have similar flaws.

You'll notice that the Hallicrafters Companion series seems to be disproportionately represented among the models shown here in Part 1. But that is simply a reflection of the dominant position the company held in this arena. You'll find that Hallicrafters radios will be generally more common among the "starter sets" and originally medium-priced models offered at radio meets and flea markets.

HALLICRAFTERS S-19R "SKY BUDDY"

General: Introduced in 1939, the S-19R looks identical to the S-19 of 1938 except for the addition of a fourth bandswitch position allowing coverage of the newly-popular 10-meter band. Bandspread was now electrical instead of mechanical. The "German silver" tuning dial was typical of earlier Hallicrafters radios. This set and its predecessor are strongly associated in many people's minds with 1930s ham radio.

Tuning range: 545 kHz - 44 MHz in four bands. Dimensions: 17-1/2"w X 8-1/2"h X 8-1/2"d. Black crackle finish. Original price: $29.50.

Circuitry: Transformer-powered superhet. No r.f. stage; one i.f. stage; bandspread; built-in speaker; BFO. Tube complement: 6K8 oscillator/mixer; 6SK7 or 6K7 i.f. amplifier; 6SQ7 or 6Q7 second detector, AVC and first audio; 41 audio output; 76 BFO; 80 rectifier.

HALLICRAFTERS S-20R "SKY CHAMPION"

General: Released along with the S-19R in 1939, this set was an upgrade of the 1938 S-20 version - which had a "German-Silver" tuning dial and other styling like that of the S-19. Its new look included a backlit tuning window, more dressy appearance, including stylish chrome trim on the end panels. Added were a noise limiter circuit and an extra tube to allow a second i.f. stage.

Tuning Range: 545 kHz - 44 MHz in four bands.

Circuitry: Transformer-powered superhet. One r.f. stage; two i.f. stages; bandspread; built-in speaker; BFO; noise-limiter; drift-compensated HF oscillator. Tube complement: 6SK7 r.f. amplifier; 6K8 oscillator/mixer; 6SK7 first i.f. amplifier; 6SK7 second i.f. amplifier; 6SQ7 second detector, AVC and first audio; 6H6 noise limiter; 6J5 BFO; 6H6 audio output; 80 rectifier.

Note: Second, fourth and fifth knobs from left are not original.

ECHOPHONE EC-1

General: The Echophone Company was a casualty of the Depression. In 1936, its manufacturing plant and RCA licenses were purchased by Hallicrafters. The brand name remained until 1941, when Hallicrafters wished to introduce a line of radios that would be easier to manufacture given the scarcities of materials brought about by gathering war clouds in Europe. Because of the cut corners, Hallicrafters preferred not to use its own brand name—hence the resurrection of Echophone. In spite of the manufacturing compromises, the EC-1 in my collection is a very hot little receiver and a lot of fun to operate. Tuning Range: 550 kHz - 30.5 MHz in three bands. Dimensions: 10-3/4"w X 8"h X 7-3/4" d. Grey crackle finish. Original Price: $20.00.

Circuitry: a.c.-d.c. superhet (no power transformer). One r.f. stage; one i.f. stage; bandspread; built-in speaker; BFO. Tube complement: 12K8 oscillator/mixer; 12SK7 i.f. amplifier; 12SQ7 detector, AVC, first audio amplifier; 12J5 BFO; 35L6 audio output; 3SZ5 rectifier.

ECHOPHONE EC-2

General: Introduced in 1941. See the EC-1 writeup for other general comments. Tuning range: 50 kHz - 30 MHz in three bands. Grey crackle finish. Original Price: $29.95.

Circuitry: a.c.-d.c. superhet (no power transformer). One r.f. stage; one i.f. stage; bandspread; built-in speaker; BFO; noise-limiter. Tube complement: 6SG7 r.f. amplifier; 6K8 oscillator/mixer; 6SK7 i.f. amplifier; 6SQ7 detector, first audio; 6CS BFO; 6H6 noise limiter; 6K6 audio output; 80 rectifier.

Note: The set is pictured with a crank knob utilized for local tuning. Normally these radios were tuned via flexible cable by controls located elsewhere in the plane.

HALICRAFTERS S-41W "SKYRIDER JUNIOR"

General: Hallicrafters released the S-41 in 1945. It was electrically identical to the Echophone EC-1A (itself an update of the EC-1) and seems to have been the first bare-bones communications receiver marketed under the Hallicrafters name. The firm was very much into making their products attractive not just to hams and SWLs, but to the postwar buying public in general. The set was available in a choice of colors: the S-41G in a tricky gray and black paint job or the S-41W (pictured) in white. Tuning Range: 550 kHz - 30 MHz in three bands. Dimensions: 11-3/4"w X 8"h X 7-5/8" d. Painted finish. Original Price: $34.00.

Circuitry: Dynamotor-powered superhet operated from the plane’s 24-volt electrical system. One r.f. stage; two i.f. stages; BFO; headphone output only. Tube complement: 12SK7 r.f. amplifier; 12K8 oscillator/mixer; 12SK7 first i.f. amplifier; 12SF7 second i.f. amplifier/AVC; 12SR7 detector/BFO; 12A6 audio amplifier.

Note: The set is pictured with a crank knob utilized for local tuning. Normally these radios were tuned via flexible cable by controls located elsewhere in the plane.

How To Get Into The Radio Market

July 2003

MONITORING TIMES
**HALICRAFTERS S-38C**

**General:** The S-41 had been on the market for only a matter of months, when it received yet another facelift by the famous designer Raymond Loewy, who had been retained to give the Hallicrafters line an exciting new postwar look. The result was the S-38, the first of a continuously evolving series, introduced between 1946 and 1956, that included the S-38A, B, C, D, and E. Primarily suitable for SWL rather than ham use, the S-38 and its updates probably comprise the best known and most-listened to communications receivers of all time. The S-38C discussed here, released in 1952, had an attractive gray steel cabinet and black tuning dials with white lettering. Tuning Range: 540 kHz - 32 MHz in four bands. Dimensions: 12-7/8"w X 7"h X 7-3/4 d. Painted finish. Original Price: $50.00

**Circuitry:** a.c.-d.c. superhet (no power transformer). No r.f. stage; one i.f. stage; bandspread; built-in speaker, BFO. Tube complement: 12SA7 oscillator/mixer; 12SK7 i.f. amplifier/BFO; 12SQ7 detector, AVC, first audio amplifier; 35L6 audio output; 35Z5 rectifier.

**HALICRAFTERS S-40B**

**General:** Appearing along with the S-38 in 1946, the S-40 was Raymond Loewy's cosmetic update of the S-20R "Sky Champion" pictured earlier in this article. This radio was a truly practical, though very basic, ham receiver. It, too, went through a few revisions: The S-40A of 1947 and (discussed here) the S-40B of 1950. Tuning Range: 540 kHz - 43 MHz in four bands. Dimensions: 18-1/2"w X 9"h X 11"D. Black Painted finish. Original Price: $89.00

**Circuitry:** Transformer-powered superhet. One r.f. stage; two i.f. stages; bandspread; built-in speaker; BFO; noise-limiter. Tube complement: 6SG7 r.f. amplifier; 6SA7 oscillator/mixer; 6SK7 first i.f. amplifier; 6SK7 second i.f. amplifier; 6L7BFO/second detector; 6H6 noise limiter/AVC; 6F6 audio output; 5Y3 rectifier.

**NATIONAL SW-54**

**General:** The National Company was not generally known for producing "starter" radios, preferring to use its superb design and construction expertise on more sophisticated models. But in 1950, the company took a flyer and introduced one of the most charming inexpensive communications receivers ever made. Positioned to sell against the Hallicrafters S-38, the radio was more compact because it made use of miniature tubes in all stages except the rectifier (Hallicrafters was still using exclusively octal-base tubes during this era). With its slide-rule dial, snappy grey and red color scheme, and offset tuning knob with thumbwheel "vernier," the appearance of the SW-54 didn't have to take a back seat to Loewy's Hallicrafters designs. However, the "vernier" thumbwheel, which simply allowed the tuning knob to be turned farther out on its radius, was no match for the S-38's electrical bandspread. Tuning Range: 540 kHz - 30 MHz in four bands. Dimensions: 11"w X 7"h X 7"d. Grey-painted cabinets. Original Price: $50.00

**Circuitry:** a.c.-d.c. regenerative (no power transformer). No r.f. stage; one i.f. stage; thumbwheel tuning aid, but no bandspread; built-in speaker; BFO. Tube complement: 12BE6 oscillator/mixer; 12BA6 i.f. amplifier/BFO; 12AV6 detector, AVC, first audio amplifier; 50C5 audio output; 35Z5 rectifier.

**HALLICRAFTERS S-38D**

**General:** Perhaps prompted by the National SW-54's slide-rule tuning dial, Hallicrafters revolutionized the appearance of the S-38 with the "D" model, introduced in 1954. Gone were the familiar semicircular main tuning and bandspread dial windows, replaced by generously large slide-rule scales spread out over most of the front panel. However, there was no attempt to emulate the SW-54's use of miniature tubes. Tuning Range: 550 kHz - 30 MHz in four bands. Dimensions: 13"w X 7-1/2"h X 8-7/8"d. Gray-painted cabinet. Original Price: $50.00

**Circuitry:** a.c.-d.c. superhet (no power transformer). No r.f. stage; one i.f. stage; thumbwheel tuning aid, but no bandspread; built-in speaker; BFO. Tube complement: 12SA7 oscillator/mixer; 12SG7 i.f. amplifier/BFO; 12SQ7 detector, first audio amplifier; 50L6 audio output; 35Z5 rectifier.

**KNIGHT OCEAN HOPPER**

**General:** Knight Kits were marketed by Allied Radio, and the line included a variety of low- and medium-priced short-wave sets targeted for young hobbyists. The firm had a knack for giving the sets romantic names - which included the "Space Spanner" and "Span Master" as well as the subject of this entry. The set was introduced in 1953 at $11.00 with a coil for 530 - 1900 kHz. An updated version appeared in 1963 with the same tube complement, front panel design and coil, but including a wood cabinet, for $17.00. Four short-wave coils and a long wave coil were offered at nominal cost. The set pictured here may be the earlier version because it has no cabinet. Dimensions (Of set in cabinet): 10-1/2"w X 6-3/4"h X 5-1/2" deep.

**Circuitry:** a.c.-d.c. superhet (no power transformer). Headphone output (though use of speaker possible with strong stations); electrical bandspread. Tube complement: 12A6 regenerative detector; 50C5 audio output; 35W4 rectifier.

**HALICRAFTERS S-120**

**General:** By 1960, the S-120 had replaced the final S-38 model (S-38E) as Hallicrafters' low-end communications receiver. The extended slide-rule scales were a handsome silver-on-black with controls attractively laid out below on a silver panel. Most of the annoying little slide switches were gone, replaced by rotary units. The set had a built-in ferrite loop antenna for broadcast and 45° telescoping whip antenna. The company had finally switched to miniature tubes with the S-38E and this usage was continued in the S-120. Dimensions: 13-1/2"w X 5-7/8"h X 8-3/4"d. Gray-painted cabinet. Original Price: $60.00

**Circuitry:** a.c.-d.c. superhet (no power transformer). No r.f. stage; one i.f. stage; bandspread; built-in speaker; BFO. Tube complement: 12SA7 oscillator/mixer; 12SG7 i.f. amplifier/BFO; 12SQ7 detector, first audio amplifier; 50L6 audio output; 35Z5 rectifier.
Circuitry: a.c.-d.c. superhet (no power transformer). No r.f. stage; one i.f. stage; bandspread; built-in speaker; BFO. Tube complement: 12BE6 oscillator/mixer; 12BA6 i.f. amplifier/BFO; 12AV6 detector, first audio amplifier, AVC; 50C5 audio output; selenium rectifier.

HEATHKIT GR-64

General: Introduced in 1963, this kit was sold at a rock-bottom price yet included some features not normally found in entry-level sets, such as an “S” meter, noise limiter, an r.f. gain control and transformer power. Front-panel design was reminiscent of the Hallicrafters S-120. Built-in ferrite loop for broadcast listening. Dimensions: 13-1/2"w X 6"h X 9"d. Original price: $38.00

Circuitry: Transformer-powered superhet. No r.f. stage; one i.f. stage; bandspread; built-in speaker; BFO; noise limiter. Tube complement: 12BE6 oscillator/mixer; 12BA6 i.f. amplifier/BFO; 12AV6 detector, first audio amplifier; 12AQ5 audio output; semiconductor diodes.

KNIGHT STAR ROAMER

General: Another of Allied Radio’s romantically-named Knight kits. However this one, while still inexpensive, is a much more serious radio. Layout of handsome front-panel design is similar to that of the GR-64 and S-120. Features and price are quite similar to those of the GR-64. Dimensions: Front panel 12-1/4"w X 5-1/2"h X 8"d. Charcoal gray cabinet. Original price: $39.95.

Circuitry: Transformer-powered superhet. No r.f. stage; one i.f. stage; bandspread; built-in speaker; BFO; noise limiter. Tube complement: 6BE6 oscillator/mixer; 6HR6 i.f. amplifier; 12AX7 detector, first audio amplifier; 6AK6 or 6AR5 audio output; semiconductor diodes.

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All of our previously-owned equipment is tested and guaranteed against defects for 90 days. This list is updated frequently, visit often to catch outstanding bargains!
On March 29th, 1921, the New Jersey State Senate signed into the law the “State Police Bill” forming the New Jersey State Police. On July 1st, 1921, Herbert N. Schwarzkopf was sworn in as the first Superintendent of the New Jersey State Police and began his career of designing New Jersey’s top law enforcement agency. You probably are more familiar with his son, General Norman Schwarzkopf, known for his role as Commander of the Desert Storm War in Iraq.

Back then, the State Police operated like most other agencies, using horses and motorcycles for patrol and landline phones for communications. But a lot has changed since then. The State Police first operated a radio system on low band, then migrated to VHF conventional (now being used for some “operational” roadside assistance patrols), and currently operates on 800 MHz.

When the 800 MHz system was first put into place, it was a Type I trunked system (with exception of the standard ITAC3 channels). The current system is a Type II system which is in the stages of upgrading again to a total Type II system. Each station has its own talkgroup/subfleet on that troop's system. Though there are three totally separate systems, certain divisions such as the Statewide Medical Program and the JEMSTAR program (medevacs) have linked talkgroups. For example, Northstar on the northern border of NJ can access the Troop B system and talk to Southstar who can be on the southern border of NJ and accessing the Troop A system.

Division of State Police, which is the main headquarters in Trenton, NJ, for all NJSP Troops. Each Troop (total of three: A, B, and C) covers seven counties each. Troop A covers the Southern section of NJ, Troop B covers the Northern, and Troop C covers the central. Each Troop Headquarters supervises stations (what were formerly called barracks, from the days when troopers used to live at the station during patrol weeks).

Each Troop’s system has its own set of control channels and talkgroups for its respective area. Each station has its own talkgroup/subfleet on that trooper’s team. Though there are three totally separate systems, certain divisions such as the Statewide Medical Program and the JEMSTAR program (medevacs) have linked talkgroups. For example, Northstar on the northern border of NJ can access the Troop B system and talk to Southstar who can be on the southern border of NJ and accessing the Troop A system. Division headquarters has the capability of coming up onto any system and talkgroup it wants. (The luxury of being the boss, apparently.)

Listening to the NJSP

If you program your scanner/radio for the NJSP system, you will find several things. First, there are major coverage problems. Ever since the World Trade Center collapsed, Troop B lost their main transmitter site. Since the system is still in replacement and upgrading stages, some troopers are now forced to use old conventional VHF channels and even cell phones in bad coverage areas.

Other concerns are ... you guessed it, Nextel. Where certain signals are weak, a strong Nextel tower can cause a shadow in
come back over to his system when back in a better area. He would be on his own talkgroups, so the other system wouldn’t even hear him. This is a great idea if you have spotty coverage areas.

In the same process, the State Police is trying to convert their talkgroups to digital. However, this will be some time in the future, due to money concerns and equipment availability. They simulate the talkgroups so that trooper cars on the old system can still talk to the cars that are already reprogrammed.

The radios used by the NJSP are as follows: Cars - Astro Spectras; Portables - currently MTS2000s with full keypads but upgrading to XTS3000s. Aviation has Astro Spectras, as well as other aviation radios which allow them onto any frequency and PL they want. Special stations for toll roads (such as the NJ Turnpike and Garden State Parkway), have a radio on VHF in the trooper car as well (these are MCS2000s).

Each Troop has one main communication center. Example: Troop A is run out of Division Headquarters, Troop B is out of Totowa, and Troop C is out of Princeton. There are two exceptions to the Troop Headquarters: The NJ Turnpike and Garden State Parkway have their communications center located at Cranbury Station. This station is responsible for communications for all stations on the entire length of those highways. In addition, each communication center can log into each other’s CAD system (computer aided dispatch) system. This is useful when units are on assignments outside their primary coverage area.

I should also mention that NJ has what is called a State Police Emergency Network also known as SPEN. These are VHF conventional channels used for all agencies in NJ to interact with each other. SPEN 1 (154.680), SPEN 2 (155.475), SPEN 3 (154.725), and SPEN 4 (153.785) all use a common PL of 131.8. Each is simplex and has designated uses. SPEN 1 is for inter-police-agency emergency communications, 2 and 3 are for back-up channels for interagency communications, and 4 is for Fire and EMS coordination.

The following is the basic layout you’ll need to know to hear the NJSP systems. I say basic, because I’m including the primary patrol radio layouts, but this does not include all the outside NJ agencies that utilize the system. Other agencies, for example, would be Division of Agriculture, Department of Corrections, Division of Elections, and so forth.
### TROOP B

<table>
<thead>
<tr>
<th>Control Channels:</th>
<th>8 6 0, 9 6 2 5, 859.9625, 858.9625, &amp; 857.9625</th>
</tr>
</thead>
<tbody>
<tr>
<td>System ID:</td>
<td>B11D; Size code - O or S13; Fleet ID - 000</td>
</tr>
<tr>
<td>Talkgroup</td>
<td>Display Coverage</td>
</tr>
<tr>
<td>1 B2-01 CALL</td>
<td>Division Call to other stations</td>
</tr>
<tr>
<td>2 B2-02 TRP HQ</td>
<td>2-Comm, Sussex County Town coverage</td>
</tr>
<tr>
<td>3 B2-03 NORTH</td>
<td>3-Comm, Hope &amp; Washington Stations</td>
</tr>
<tr>
<td>4 B2-04 CENT</td>
<td>4-Comm, Totowa, Totowa Sub, Netcong Stations</td>
</tr>
<tr>
<td>5 B2-05 SOUTH</td>
<td>5-Comm, Perryville &amp; Somerville Stations</td>
</tr>
<tr>
<td>6 B2-06 MARINE</td>
<td>Point Pleasant Area Marine Coverage</td>
</tr>
<tr>
<td>7 B2-07 OPS</td>
<td>Car to Car for 2, 3, 4 &amp; 5 comm units</td>
</tr>
<tr>
<td>8 B2-08 COM PST</td>
<td>Command Post for large incidents</td>
</tr>
<tr>
<td>9 B2-09 INTOPS</td>
<td>Interops, usually simulcast with SPEN 1</td>
</tr>
<tr>
<td>10 B2-10 MARINE</td>
<td>Newark Area Marine Coverage</td>
</tr>
<tr>
<td>11 B2-11 EPB</td>
<td>Executive Protection Bureau (Governor Detail)</td>
</tr>
<tr>
<td>12 B2-12 ACE</td>
<td>Meadowlands Sports Complex</td>
</tr>
<tr>
<td>13 B2-13 CAR</td>
<td>Turnpike Car to Car</td>
</tr>
<tr>
<td>14 B2-14 TPKE</td>
<td>Turnpike Dispatch</td>
</tr>
<tr>
<td>15 B2-15 PKWY</td>
<td>Parkway Dispatch</td>
</tr>
<tr>
<td>16 B2-15 FLTWD</td>
<td>Fleetwide Coverage</td>
</tr>
</tbody>
</table>

### TROOP C

<table>
<thead>
<tr>
<th>Control Channels:</th>
<th>8 6 0, 7 1 2 5, 859.7125, 858.7125, &amp; 857.7125</th>
</tr>
</thead>
<tbody>
<tr>
<td>System ID:</td>
<td>B11E; Size code - O or S13; Fleet ID - 000</td>
</tr>
<tr>
<td>Talkgroup</td>
<td>Display Coverage</td>
</tr>
<tr>
<td>1 C3-01 CALL</td>
<td>Division Call to other stations</td>
</tr>
<tr>
<td>2 C3-02 TRP HQ</td>
<td>2-Comm, Specialized Units</td>
</tr>
<tr>
<td>3 C3-03 SOUTH</td>
<td>3-Comm, Fort Dix &amp; Red Lion Stations</td>
</tr>
<tr>
<td>4 C3-04 WEST</td>
<td>4-Comm, Bordentown &amp; Wilburtha Stations</td>
</tr>
<tr>
<td>5 C3-05 EAST</td>
<td>5-Comm, Allwood, Hightstown &amp; Flemington</td>
</tr>
<tr>
<td>6 C3-06 MARINE</td>
<td>Point Pleasant Area Marine Coverage</td>
</tr>
<tr>
<td>7 C3-07 OPS</td>
<td>Car to Car for 2, 3, 4 &amp; 5 comm units</td>
</tr>
<tr>
<td>8 C3-08 COM PST</td>
<td>Command Post for large incidents</td>
</tr>
<tr>
<td>9 C3-09 INTOPS</td>
<td>Interops, usually simulcast with SPEN 1</td>
</tr>
<tr>
<td>10 C3-10 MARINE</td>
<td>Burlington County Area Marine Coverage</td>
</tr>
<tr>
<td>11 C3-11 EPB</td>
<td>Executive Protection Bureau (Governor Detail)</td>
</tr>
<tr>
<td>12 C3-12 STHSE</td>
<td>NJ Statehouse (Trenton)</td>
</tr>
<tr>
<td>13 C3-13 CAR</td>
<td>Turnpike Car to Car</td>
</tr>
<tr>
<td>14 C3-14 TPKE</td>
<td>Turnpike Dispatch</td>
</tr>
<tr>
<td>15 C3-15 PKWY</td>
<td>Parkway Dispatch</td>
</tr>
<tr>
<td>16 C3-15 FLTWD</td>
<td>Fleetwide Coverage</td>
</tr>
</tbody>
</table>

### TYPE II TALKGROUPS

The following are Type II talkgroups heard on all systems that are active:

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Decimal ID</th>
<th>Hex ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northstar Medevac</td>
<td>26832</td>
<td>6BD</td>
</tr>
<tr>
<td>Southstar Medevac</td>
<td>26800</td>
<td>6BB</td>
</tr>
<tr>
<td>Aviation</td>
<td>26864</td>
<td>6BF</td>
</tr>
<tr>
<td>OEM</td>
<td>27376</td>
<td>6AF</td>
</tr>
<tr>
<td>Statewide MICU</td>
<td>27408</td>
<td>6B1</td>
</tr>
<tr>
<td>Statewide Trauma</td>
<td>27600</td>
<td>6BD</td>
</tr>
<tr>
<td>USAR (Urban Search and Rescue)</td>
<td>58288</td>
<td>E3B</td>
</tr>
</tbody>
</table>

### CONVENTIONAL SYSTEM

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Display</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>866.3125</td>
<td>09-TA CONV</td>
<td>192.8</td>
</tr>
<tr>
<td>866.3125 R</td>
<td>10-RP CONV</td>
<td>192.8</td>
</tr>
<tr>
<td>851.3375</td>
<td>11-TA STHSE</td>
<td>192.8</td>
</tr>
<tr>
<td>851.3375 R</td>
<td>12-RP STHSE</td>
<td>192.8</td>
</tr>
<tr>
<td>866.0125</td>
<td>13-TA CALL</td>
<td>156.7</td>
</tr>
<tr>
<td>866.0125 R</td>
<td>14-RP CALL</td>
<td>156.7</td>
</tr>
<tr>
<td>866.5125</td>
<td>15-TA TAC 1</td>
<td>156.7</td>
</tr>
<tr>
<td>866.5125 R</td>
<td>16-RP TAC 1</td>
<td>156.7</td>
</tr>
<tr>
<td>867.0125</td>
<td>17-TA TAC 2</td>
<td>156.7</td>
</tr>
<tr>
<td>867.0125 R</td>
<td>18-RP TAC 2</td>
<td>156.7</td>
</tr>
<tr>
<td>867.5125 R</td>
<td>19-TA TAC 3</td>
<td>156.7</td>
</tr>
<tr>
<td>867.5125 R</td>
<td>20-RP TAC 3</td>
<td>156.7</td>
</tr>
<tr>
<td>868.0125</td>
<td>21-TA TAC 4</td>
<td>156.7</td>
</tr>
<tr>
<td>868.0125 R</td>
<td>22-RP TAC 4</td>
<td>156.7</td>
</tr>
</tbody>
</table>

**Notes:**

1. TA = Talk Around and RP = Repeater. This is transitioned from old Type I Motorola STX portable radios which only had a limited display ID.
2. Channels 9, 11, 13 are commonly used when several troopers are working a detail and need to communicate off the trunked system. Example: DWI details, Governor detail, or multi-unit events.
3. ITAC channels (conventional system above) are nationwide interagency tactical channels, intended to provide nationwide interoperability and mutual aid. The system was designed to work the same as the SPEN system mentioned earlier.
4. For more information on talkgroups listed on the NJSP system, log onto http://www.trunkedradio.net or http://www.n2nov.net. Both of these have comprehensive layouts of the NJSP systems.

Visit Monitoring Times Website at: www.monitoringtimes.com
For the latest communications information!
It was back in the late 1930s that my favorite uncle came and stayed with us in our home in a small country town in South Australia. He was in between employment assignments, moving from his old job on a large sheep station (ranch) up towards the center of Australia to new work on a farm near the southern coast.

While he stayed with us, he introduced me to “listening on the radio.” He used to build his own radio receivers and he showed me how to make a simple receiver, using the old (new, in those days!) Cossor valve (tube) from England. The workings of the radio were built onto a “breadboard” and the controls were installed behind the front panel. We would wind our own tuning coils by breaking off the glass from a burned out valve and drilling the base to take the windings. The set was totally un-calibrated and he was not permitted to join the armed forces and serve overseas. He had a commercially made shortwave receiver and a bery of antennas installed at his country home, just a three mile bicycle ride from my home. Ern later became the first script writer for DXers Calling, the DX program launched from Radio Australia soon after the cessation of hostilities at the end of the Pacific War.

In those days, there were only two mediumwave stations on the air late at night. One was 2UW in Sydney, a 1 kW commercial station on 1110 kHz which became Australia’s first 24 hour station. The other was 3AK which was licensed to broadcast only at night, with 200 watts on 1500 kHz. After about 10 pm, the mediumwave band was then open for listening to radio stations from distant lands.

Some of the stations of note in our areas that were logged and verified in those days were, for example:

9PA in Port Moresby New Guinea with 250 watts on 1250 kHz

9AF mobile station with 200 watts testing in Melbourne before going up to the islands

VKC Melbourne police with 500 watts on 1630 kHz

VKNB Melbourne Fire Brigade with 400 watts on 1665 kHz

VL5CR Troubridge Lighthouse with 50 watts on 1600 kHz

VIM Melbourne maritime station with 150 watts on 2100 kHz

2YA in Wellington New Zealand with 60 kW on 570 kHz

12M Auckland was taken over as an American AFRS station during the year 1944

ZLT7 Wellington New Zealand with 7.5 kW on 6715 kHz

It should be noted that station 2YA in Wellington New Zealand could be heard quite readily on a car radio in the center of the Australian continent. Station 9PA in Port Moresby was operated by both the Australian and American armies as an entertainment station for forces in New Guinea; and station VIM was verified during a conversation with the British passenger liner, RMS Orion. The New Zealand shortwave station, ZLT7, was in reality a communication transmitter that was on the air for just 15 minutes a day with a bulletin of news for New Zealand forces “up north.”

Further afield, some of the trophies were:

BMA British Military Administration in Singapore with 7.5 kW on 11860 kHz

XGOY in a cave at Chungking, American RCA transmitter with 50 kW on 11913 kHz

VUW Lucknow India with 5 kW on 1022 kHz

DZPI Manila Philippines with 10 kW on 800 kHz

KZFM Manila Philippines with 50 kW on 710 kHz
KOMA Oklahoma City, OK 50 kW 1520 kHz

CR7BV Mozambique with 600 watts on 4900 kHz.

VUY Dacca India with 5 kW on 1167 kHz.

It should be noted that the Manila stations were heard both before and after the changeover from the American "K" prefix to the Philippine "D" prefix. Station VUY in Dacca was later redesignated as APD when this Bengali area became East Pakistan.

**Tuning the Americans on Mediumwave**

Among the highlights of late night listening in South Australia back in that era was the possibility of hearing many of the stations in Hawaii, such as the well known KGU, KULA, and KPOA. It was possible for those in Australia and New Zealand who possessed a good receiver and a good antenna system to log and verify every mediumwave station in Hawaii.

We also used to listen to mediumwave stations located on the American mainland. At certain times of the year, usually autumn and spring, we would tune in to these stations around sunset for programming content. In those days, the mediumwave band in Australia ended at 1500 kHz and this gave 10 clear channels for American stations, up to 1600 kHz. There were many occasions when an American station below 1500 kHz would overpower an Australian station on the same channel.

Among the American mediumwave stations I logged and verified on the modest family radio were the following:

**United States America**

**VOA**

**Dale**

During the Pacific War, a series of networks were established by AFRS, the American Forces Radio Network. In Australia, we could hear almost all of these stations after the Australian stations signed off for the night. Some of these stations did issue verification letters and sometimes they signed prepared QSL cards.

**US Expands Its Global Reach**

Soon after the horrific events at Pearl Harbor, the United States government entered the arena of international shortwave broadcasting, under the Office of War Information, OWI. The stations that were quickly taken into the twin networks of AFRS and VOA programming were located mainly on the East Coast; the only active shortwave station on the air in California at the time was the famous KGEI. This was a comparatively new station that was erected in 1939 on Treasure Island, San Francisco, under the callsign W6XBE, as a showcase for General Electric.

Quite quickly, additional shortwave stations in California began to appear on the shortwave dial. It was quite a fascinating experience to follow—week by week, it seemed to be the changes and developments in the American shortwave scene. At first, these OWI-VOA stations on the air in California ignored all reception reports. Soon afterwards, though, when the noted Arthur Cushen in New Zealand made representation on behalf of listeners down under, they began to issue QSL letters and then cards. These new QSL cards all had the same appearance of red, white, and blue, the only difference being the callsign itself. We used to look upon these cards as quite monotonous, though today they are now considered to be quite exotic collector's items.

Station KGEI in San Francisco installed an additional 100 kW transmitter under the call sign KGEX. Station KWN did not only transmit during the war; it was another 100 kW unit; its sister transmitter was 50 kW unit KWX. Station KROJ in San Francisco was rated at 30 kW and soon afterwards a sister unit KROU was installed. Among the already available utility communication transmitters that were pressed into OWI-VOA broadcast service were KJW, KWV and KXY, all of which were verified from San Francisco with the same style card.

One of these utility locations, RCA at Dixon, installed another transmitter, probably rated at 50 kW, under the call sign KAC. Two other utility transmitters in California that carried VOA Programming and for which QSL cards were issued were KES and KES. These now valuable and historic QSL cards were all issued from the OWI office at their famous office location, 111 Sutter Street in San Francisco.

Several floors in two hotels in San Francisco were taken over for use as OWI-VOA studios and offices. Station KGEI and its network of stations were on the air from the Fairmount Hotel right on the coast at Nob Hill and station KWN and its network of relay stations were on the air from the Mark Hopkins Hotel also at Nob Hill. However, there were many occasions when both networks took the same programming.

When the VOA station at Dixon was in-
augurated in 1945, OWI cards were issued for these transmitters with calls in the series beginning with KNBA. Soon afterwards, however, the supply of printed QSL cards was exhausted and blank cards in the red white and blue style were hastily prepared and the callsign was then inserted with a typewriter.

East Coast stations, and also the WLW shortwave transmitter complex near Cincinnati in Ohio, were also heard quite frequently in Australia. The QSL cards for the NBC-RCA stations were issued from New York verifying callsigns such as WNBI, WRCA and WNRI. These cards, at first in blue and later in red, showed the RCA Building in New York City. Interestingly, QSL cards in the RCA style were issued from New York for some of the California "K" stations.

Towards the end of the Pacific War - on Christmas Day 1944, actually - a new 100 kW station was inaugurated in Hawaii. This new facility was located at Maili, on the coast northwest from Honolulu. QSL cards from this new KRHO were issued from both California and and Honolulu. On one occasion, I heard the brief sign-off routine from KRHO and I sent reception reports to both locations. In response, I received the regular red, white and blue card from California and the new map card from Honolulu.

It should be remembered that the first shortwave transmitter for Radio Australia was also an American unit. Transmitter VLC at Shepparton in Victoria was a lendlease 50 kW RCA transmitter from the United States, inaugurated on May 1, 1944. Australia was granted the use of this transmitter in exchange for a daily relay from the Voice of America lasting one and a half hours. Many listeners in the South Pacific and in North America received QSL cards from Australia Calling that verified the American broadcast from the American transmitter located in Australia, though in those days this was not indicated on the card.

Thanks for the Memories – and the QSLs

Ah, those were the days! And the only way to prove to you that we really did hear all of those exotic American stations on mediumwave and shortwave way back more than half a century ago is to check the QSL cards displayed in my several large QSL albums. You’ll have to see them in person, though; I think each album outweighs a car battery!

GLENN HAUSER'S WORLD OF RADIO
http://www.worldofradio.com

For the latest DX and programming news, amateur nets, DX program schedules, audio archives and much more!
Getting Started in Ham Radio DX

Not long ago while listening to a local 2 meter repeater I heard a recently upgraded General Class licensee talking about his first DX* contact on the HF bands. He said he was disappointed. "I had been calling the station for about 10 minutes and when he finally acknowledged my call sign he said ‘59 QRZ?’ and I didn’t even get a chance to give him my name or location.”

Amateur radio license study guides do a great job preparing prospective hams for the license exam but they don’t do much in the way of preparing the newly licensed ham for day to day operating practices on the HF bands. With that in mind here’s a brief tutorial of what you can expect when you first hit the HF bands in search of DX.

**Working DX Part 1: Pile-Ups**

Tune across the 20, 15 or 10 meter bands and you’ll run across a frequency on which it seems that every ham in the world is shouting his or her call sign. It’s called a DX pile-up and it indicates that somewhere in the din a ham with a DX call sign is trying to work the rest of the world. See if you can figure out which is the DX station.

The first thing any ham will do when that precious General Class ticket is issued is to start working DX stations. And it’s very tempting. With their typically booming signals and exotic call signs, we just can’t wait to jump into the pile-up when we hear one calling CQ. But, the first thing you should do is listen. There are many ways in which a DX station may operate so you need to hang around the frequency and find out which method this particular DX station is using.

Some DX operators simply set up on a frequency and start calling CQ on a first come, first answered basis. Others will ask only stations from “stateside,” “the Far East,” or “South America” to call. After a number of stations are worked they’ll ask for another region. Others may ask for stations by number, e.g. “Only stations with the number 1 in the call come now.” Despite stating the conditions under which they’re operating you’ll be surprised at how many people are not paying attention.

But the greatest opportunity for total chaos and confusion happens when the DX station decides to operate split. This means that the DX operator will be transmitting on one frequency and listening on another. Typically the DX station will say “calling CQ and listen up.” If he’s transmitting on 21.240 MHz he will be listening on 21.245 MHz. Theoretically this is to make it possible for everyone else to hear the DX station better. All modern HF transceivers are capable of working split, and you’ll have to read your owner’s manual to find out exactly how to set your transceiver up to do this.

To add to the hilarity, some DX ops will specify a sub-band in which they’ll be listening, i.e., calling on 21.240 and listening from 21.245-55. Again, this is an effort to make it so that the DX station can be heard clearly and it spreads out the stations calling in so the DX operator can identify them better.

The problem with working split is that invariably many stations aren’t paying attention and they’ll start calling the DX station on his transmit frequency. Of course, he’s not listening there so they call and call and never get a response. But, before long here come the frequency police. These are the hams, usually state-side operators, who take it upon themselves to direct DX traffic. “He’s listening 5 up, you idiot!” they usually say. Which of course requires an equally caustic response, and before you know it both hams are QRMed (causing interference) on the frequency, making it hard for those trying to work the DX station to hear it, thus defeating the whole purpose for working split to begin with!

Working split is particularly hard on the very small WARC bands, notably 17 and 12 meters, where space is already at a premium or down 5 kHz. This is the kind of courtesy DX stations are trying to work them and to add them to their DXCC list. Typically, they are using a computer logging program which allows them to work stations about as fast as they can enter call signs into the computer. These stations are usually fairly rare DX and are not interested in engaging in conversation. Often their knowledge of English is for DX purposes only and they will simply not understand additional comments or questions.

Conversational DX is where the DX operator is working at a much slower pace and is happy to exchange information about weather, station equipment and usually concludes with extended best wishes to everyone in each other’s families. Typically these exchanges will last two or three “overs” before the DX station wants to move on. Don’t abuse the conversational mode by extending it to inquiries about rental properties at the DX location or about old friends you used to know who once had a friend who lived near the DX station’s country. Be happy you got more than a “59 QRZ” from the DX station and hope that you’ll actually get a QSL card!

Personally, I think Casual DX is the most fun in ham radio. It’s where band conditions
permit a long extended conversation on a wide range of topics which results in an actual on-air friendship developing in which you look forward to talking with this person again. If you stick around ham radio long enough you’ll have many such QSOs.

Remember, too, that everyone is someone else’s DX. If you have trouble breaking through the DX pile-ups, try being the DX yourself. It’s not that hard. If you hang around a frequency where a DX station is operating you’ll hear dozens of DX call signs with very nice signal strength. You can work those stations simply by camping out 10 kHz away and calling CQ DX. After they’ve worked the DX station they’ll often respond to other stations calling CQ nearby. The key is that it takes a lot of patience. Depending on band conditions you may have to call CQ DX for ten minutes in between contacts.

Several times I’ve tuned around an apparently dead band, called CQ and had a dozen great DX contacts all saying I was the only signal on the band. This with 100 watts and a wire antenna. Sometimes it’s just a case where everyone else is listening.

QSLing Those DX Contacts

When you make a DX contact and wish to QSL, pay attention to the QSL route the DX station prefers. Some will say, “QSL via QRZ.COM” which means that if you look up their call on http://www.qrz.com there will be information posted at their call sign about QSLing. Often the DX station will request that a self-addressed envelopes with one or two International Reply Coupons (IRCs) be enclosed. Others request one or two “Green Stamps” (U.S. $1 bills). If there is no information it means they want to QSL direct to the address listed. Some will say “QSL via my manager (another call sign)” This means that they have designated the named ham to handle their QSL correspondence. One way this is done is that the manager collects all the QSL cards sent in and forwards them periodically to the DX station for verification. The manager’s address is also found on QRZ.COM.

All of us like to receive DX QSL cards, but, if you’ve looked at the cost of postage lately (70 cents international postcard rate and 80 cents for a first class international envelope), you’ll want to consider alternatives. And, if you thought QSL costs were steep for you, consider the DX station whose annual income may be a tenth your own and whose 1,000 DX contacts a year would be considered a heavy financial burden by most.

While some send QSLs via e-mail there’s still no substitute for the real thing. That’s where the ARRL outgoing QSL bureau comes in. The up-shot is that you can send up to 10 QSL cards for just $1.00 through the bureau. For incoming DX cards you pay only for the cost of a 6 x 9” SASE envelope. You do not need to be an ARRL member to use the service. There are many rules for using the service (10 pages of information on the bureau can be found on the ARRL website, see chart #2) and you’ll benefit from reading them all.

Finally, remember that whether using the bureau, a QSL manager or going direct, everything takes time. It may take six months to receive a QSL card via any of the above methods, depending on the speed of the local postal services and the promptness of the individual ham.

◆ “DX” is ham shorthand for distant transmissions and usually refers to hams transmitting from a country other than your own.
More On Audio Impedance Matching

In our February column, we addressed Richard Dailer’s question about using low impedance speakers on high impedance audio outputs, and vice versa. Bioacoustical engineer Doug Robertson wrote to remind us of two additional considerations with impedance mismatch.

Substantial impedance mismatch not only changes the audio characteristics by acting like a filter, but the inefficient power transfer also reduces the volume.

Q. I have a simple up-converter that allows me to listen to the 0-500 kHz VLF band on my 3.5-4.0 MHz receiver. Is there any way I can tune closer to 3.5 MHz (0 kHz) without hearing the huge 3.5 MHz oscillator signal? (Ron Blocker, K9JON, Glenwood, IL)

A. In a word, no. Even if you tune downward from 3.5 to 3 MHz to hear the reverse image, 0 kHz still corresponds to 3.5 MHz.

The problem is the selectivity of your (and anyone’s) receiver; it needs to have an enormous rejection of the 3.5000 MHz feed-through, while passing everything above, say, 3.5001 MHz (100 Hz and higher). Conventional superheterodyne circuitry and its attendant RF filtering simply can’t do that.

The implementation of quadrature phase-canceling, double-balanced mixers, and digital signal processing (DSP) would help, but we’re talking about attenuation of the oscillator feed-through on the order of 100 dB or more. Any remaining residual carrier will block weak sferics signals.

Such steep filters don’t exist in the affordable world; that’s why VLF experimenters and hobby manufacturers alike use simple, high-gain, audio amplifiers with audio filtering; after all, you’re looking for signals in the human hearing range.

Q. Is it safe to use a car battery indoors as an emergency power source?

A. Generally speaking, yes, but there is always the hazard of explosive hydrogen gas being generated during the charging period, especially if the battery is low and the charge rate is high. With good ventilation, this is rarely a problem, but an electric spark next to the vent holes in a refillable battery can create a dangerous situation.

After experiencing the long power outage caused by last December’s ice storm, Deron Lundy, K8OSU, a member of the Amateur Radio Emergency Service (ARES) in Carrboro, NC, recommends sealed lead-acid batteries, available in a variety of shapes, sizes, and ampere-hour capacities up to 100 AH or so. His team reported excellent success with these batteries.

Commonly available from many electronics outlets as well as hamfests, and typically used for computer battery backups (uninterruptible power supplies), these batteries are natural for such applications — without the danger.

Q. I have several laptop computers in my radio shack, and some of their power supplies cause electrical interference on my radios. What can be done to reduce this? (J. Konen, email)

A. The RFI is probably coming from switching power supplies; they are known for this. One way to eliminate it is, of course, to replace the power supplies with standard transformer types. You might also try using ferrite RFI chokes available from Radio Shack (old stock probably; I believe these were discontinued). You simply wrap the cord several times around one of these, or some models simply snap on the cord. You might also try an old ferrite antenna rod out of a junk radio, focusing the signal into the AM portable radio; simply wrap the cord spirally along the entire length of the rod and tape in place.

Whichever ferrite device you try, mount it on the cord as close to the power supply as you can.

Q. How far can a bat use its radar to detect things, and at what frequency? Can they be tuned in on a radio? Are there other life forms that transmit electrical or electromagnetic signals? (Donald Michael Choleva, Euclid, OH)

A. Bats transmit high-pitched sound (20-100 kHz), not radio signals, so they cannot be heard on a radio. They can be monitored by using parabolic dish reflectors with ultrasonic microphones connected to circuitry which converts this high pitch down to audible frequencies to be heard by humans.

The bats’ echolocation ability allows them to detect moving or stationary objects up to 30 feet away. They send out swept-frequency bursts so that tiny, close objects (insects for food) can be detected by the higher frequency, shorter wavelengths, but more distant, large obstacles (trees, buildings) can be detected by the lower frequency, longer wavelengths.

Some fish transmit weak electrical signals in the 100-10,000 Hz range for communications, while the electric eel can discharge a paralyzing electrical burst of 600 VDC which it uses for navigation and defense.

Q. How can I improve AM (medium wave) broadcast reception on my GE Superadio? (Mike, email)

A. There are several ways to improve AM reception on your Superadio:

1. Attach a random-length wire about 50 feet or so in length to the antenna screw, running it out a window and as high and far from the house as practical;
2. Use the Grove ANT-2 Skywire with a length of coaxial cable to your radio’s antenna and ground terminals;
3. Suspend a 50-75 foot wire antenna as high as distant as practical, away from power lines, and connect a coax cable to it to run to your radio;
4. Connect the H800 Sky Match to active antenna to the terminals;
5. Use the Select-A-Tenna next to the radio, focusing the signal into the radio’s internal rod antenna;
6. Physically connect the Select-A-Tenna to the radio’s AM antenna and ground terminals.

Any of these will improve AM reception, but the advantage to a high outdoor antenna with coax lead-in is that it reduces electrical interference from residential appliances.

Questions or tips sent to Ask Bob, c/o MT are printed in this column as space permits. If you desire a prompt, personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of MT, or e-mail to bobgrove@monitoringtimes.com. (Please include your name and address.) The current Ask Bob is now online at our website: http://www.monitoringtimes.com
Getting Started

No July column would be complete without the usual reminder about the 4th. I hate to state the obvious, but the July 4th weekend is a great time for monitoring the local public safety frequencies. The combination of water sports, camping, fireworks, illegal campfires, and alcohol consumption translate into a very busy time for first responders. Fire departments, and park rangers in particular are very busy. The action carries on into the wee hours on both the 3rd and 4th. Start looking up those ranger frequencies!

You gotta get one of these! The latest marriage of technologies is a single hand held device that does two-way radio for FRS/GMRS and GPS. You can use it like a regular FRS/GMRS radio or as a GPS unit to locate a landmark. You can present location, elevation, or have the device select a trip route for you.

Are you ready for this? This unit can send its exact location to other similar radios. You can keep in contact with your family, friends etc., via radio, or just look at their present position on your electronic GPS map display.

This is essentially the Automatic Position Reporting System (APRS) used by ham radio operators, only this is for the masses and requires no special license, skills, or other equipment. Applications include Search and Rescue (SAR), parades, keeping track of the family members, fellow campers, or hikers. Nobody can get lost with this system. Call in the coordinates for a Medevac helicopter, etc.

Here in Spokane, the sheriff is modifying some of the department’s mobile radios so dispatch and the watch commander can see exactly where all the officers are. I wonder if those signals can be... well never mind.

The Garmin™ Rino 120 carries a street price of around $250. Its smaller brother, the Rhino110 model, is about $150. In addition to the usual features, it also has a voice scrambler and vibration alert mode. Note that the early production model muffled speech problem has been corrected. Make certain you get a “new” version manufactured after May 1st.

The Rino 120 unit has a built in database of roads, and highway maps, plus 8 megabytes of additional memory to download additional database information. Visit http://www.garmin.com. As always, use the web to compare features, price etc., but always go with a dealer that has a proven track record. Local dealers are very competitive on this item.

Geocaching is a hot new hobby for those using GPS devices. People create a small “cache” and hide it. Then they list its location on the internet for others to find. Sort of a hide and seek, or Easter egg hunt. The “designated radio channel” for these activities is FRS CH 2 and CH 12 as an alternate. Check it out http://www.geocaching.com/. Be sure to read the Frequently Asked Questions.

When monitoring the police, I often hear them using code numbers for their state’s criminal and vehicle codes. After living in California most of my life, I had the basics of the California Penal Code and Vehicle Code pretty well memorized for the most commonly used sections. (Note that Hollywood movies always use the California codes no matter where the movie is set.)

Well, since I now live in the State of Washington, I decided I needed its codes. I found a copy at the local police supply store. You might also find the Pocket Reference Guide for Police Officers by searching the internet for your state. Interestingly enough, the Internet also showed many pocket references, including one for “Peaceful Public Protestors.” The Police Call book also lists some of these code numbers for many major metro agencies.

A couple of new products are on the shelves at Radio Shack. A new tiny cube plugs directly into an AC outlet, and has a 12 volt output with female receptacle. (RS#22-505) Output is 12 volts at 1000mA. It will run just about anything with a male 12volt plug.

The next product is essentially the reverse of the first. It’s a power converter that plugs into a female cigarette lighter style outlet, and will produce up to 60 watts of AC. Actually 75 watts for five minutes, then 60 watts continuously. I suppose you could plug in a power strip to power several low wattage electronic devices. Yes, they even have little green LEDs.

The third new product is a very small AC wall plug that can be purchased in 12, 9, or 6 volt configurations with a power cord terminating in an adaptaplug. Unlike your typical wall wart, these are very light and small, not much bigger than my thumb. These are especially good for the “grab and go bag,” or other traveling situations. (RS#273-1772)

I own over 30 amateur transceivers and receivers, both handheld and mobiles. I signed up for a free email service that delivers updates to the modifications and tips for such radios. After such an alert, I decided to go to http://www.mods.dk and see if there was any new information on any of my many models. Boy, was I surprised. There were many updates, with discoveries of “hidden menus” and other user-discovered features. It makes for the ideal surfing project.

I read MT and all my other magazines very carefully. When I find a really interesting article or useful information, I want to save that gem. You can always make a photocopy. If you keep your back issues, you can write on the front cover the page number of that special information. If I know I am going to discard the magazine, I can tear the page out. Even better, I can pass the magazine on to a deserving hobby friend.

A couple of years back, I reviewed a couple of photographer’s vests for use in the monitoring hobby. They offered many pockets and useful features. Well, I just stumbled upon two new ones. They are available from HQ at 1-800-888-3006 or http://www.sportsmanguide.com. There are two available models, the first is a basic military jungle vest. Available only in drab green for $10. The tactical duty vest is the better one at only $20 in khaki, olive green or black.

Get one!

If you are an ARRL member and buy their books, look in the back of the book for coupons good for 10% off your next purchase. Some newer books do not have this feature, but I went through my old books, and found about $30 worth of coupons good toward future purchases. Hey, it’s thirty bucks!

For those hot sunny summer days, nothing beats retreating to a cool dark room listening to the radio. See you next month.
Confirmed Frequencies for Arizona Monitors

On-Scene Commander

Eagles Concert

An anonymous contributor and Eagles Concert fan sent this list from the Office Depot Center in Sunrise, Florida (Fort Lauderdale area). His primary tool was the often-mentioned OptoElectronics Scout, and he included the number of Scout “hits” recorded as he attended the event. Frequencies listed are exact Scout readouts; actual FCC-allocated frequencies are generally at the nearest 12.5 kHz increment.

Business band channels can be attributed to event management staff, facility housekeeping, vendors, security and related functions. The 400 MHz channel is curious and worthy of further research. It’s in the Federal Government band. The 2-meter frequency may have been used for the event or an amateur antenna may be mounted on the roof of the arena. We’ll be discussing the Scout, Digital Scout, and new “X Sweeper” device in a future column.

The Masters Golf Tournament

Next, from a recent message by Chris Parris, our traveling On-Scene Commander and Broadcast Engineer: “In case I forgot to mention it, I’m up in Augusta, Georgia, doing The Masters golf for CBS...thought I would pass this info along...”

Augusta National Golf Club

WPUI781, LTR Trunked System
461.5375 461.7875 462.0375 463.2125 463.4875 463.7875

Talk Groups:
003001 Groundkeepers
003003 Unknown
003005 Facilities Maintenance
003007 Gate Security Units
003009 Housekeeping
003011 Unknown - Chit Chat
003100 Weather Announcements
003103 Game / Course Operations
003105 Unknown
003106 Player Security
003107 Unknown
003108 Scoring

003114 Unknown
003118 Course Announcements
003119 First Aid Units

Here’s what I’ve been finding as far as media stuff:

154.5400 Unknown
450.2375 CBS TV
450.3875 CBS TV
450.4375 CBS TV
450.4775 Japanese TV Production
450.4875 CBS TV
450.5375 CBS TV
450.6375 CBS TV
450.6875 CBS TV
450.7250 CBS TV
450.7875 CBS TV
450.8375 Japanese TV Production
450.8875 CBS TV Production
461.0625 Augusta Golf Course
461.2125 PGA Tour KDS2446
461.4125 Unknown - LTR Trunking?
461.5375 PGA Tour KDS2446 / Used by Augusta Nat’l
462.0125 Unknown
462.8875 PGA Tour KDS2446
462.9375 TV Crew, Mentioned Camera Covers
463.0875 Fiber Crew, Mentioned Cobras
463.3375 PGA Tour KDS2446
463.3875 PGA Tour KDS2446 / Possible CBS / Fiber Freq
463.4875 PGA Tour KDS2446 / Used By Augusta Nat’l
463.8875 PGA Tour KDS2446
463.9375 PGA Tour KDS2446
464.0750 Possible Augusta National Golf Club Rpt
464.0750 Unknown Repeater
464.0875 PGA Tour KDS2446
464.5000 TV Crew - Audio Talkaround
464.5000 Unknown - Player Interviews Mentioned
464.8125 PGA Tour KDS2446
466.2125 PGA Tour KDS2446
466.5375 PGA Tour KDS2446
467.2500 Unknown
467.8750 Unknown
468.8875 PGA Tour KDS2446
468.9375 PGA Tour KDS2446
469.0875 PGA Tour KDS2446
469.8125 PGA Tour KDS2446

Qualcomm Stadium

Chris next traveled to San Diego to cover the Billy Graham Evangelistic Association (BGEA) event at Qualcomm Stadium. Again, these channels represent a variety of event man-
amgement, facility management, security and media production uses:

460.2375 461.2875 461.6125 461.6375 461.2125 464.5000 464.5500 464.9750 465.7275 466.2375 466.2875 466.6125 467.4125 468.4625 469.5500 469.7000

Qualcomm Stadium Operations
461.1250 464.4250
466.1250 469.4250

Houston Update
Finally, Robert Hinz reports some corrections to Police Call, Vol. 7, and specifically to page 434: “Holiday Inn Crowne Plaza Houston, 464.9875, is no longer correct. The hotel closed for renovations and re-opened in April 2002 as the Intercontinental-Houston, still owned by the same company.”

“They went overboard on new radios and are using seven (7) repeater frequencies...the only hotel in Houston that has this. Here are the confirmed frequencies:

Intercontinental-Houston
CH. 1 451.850 Food & Beverages
CH. 2 461.200 M.I.S.
CH. 3 461.800 Housekeeping
CH. 4 462.350 Misc & Special Events
CH. 5 463.350 Security/Engineering/PBX
CH. 6 463.900 Misc & Special Events
CH. 7 464.275 All Call (Activates all repeaters simultaneously)
462.575 Towne Park Valet at the Hotel
469.500 PSI Audio Visual on Property

Robert provided more confirmed information for the Houston area:

Sheraton Suites Galleria
CH. 1 467.800
467.925
CH. 1 463.4625 Galleria Mall Security
CH. 1 462.550 Houstonian Hotel

They went overboard on new radios and are using seven (7) repeater frequencies...the only hotel in Houston that has this. Here are the confirmed frequencies:

Table One: The [http://www.azrepeaters.net](http://www.azrepeaters.net) Frequency List

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Description</th>
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<tbody>
<tr>
<td>154.3250</td>
<td>Apache Junction Fire Department Dispatch/Operations</td>
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<tr>
<td>155.6250</td>
<td>Apache Junction Police Department Dispatch</td>
</tr>
<tr>
<td>460.2500</td>
<td>Avondale Police Department Car-to-Car</td>
</tr>
<tr>
<td>460.4500</td>
<td>Avondale Police Department Dispatch/Operations</td>
</tr>
<tr>
<td>460.0250</td>
<td>Casa Grande Highway Patrol Dist #7</td>
</tr>
<tr>
<td>154.4300</td>
<td>Chandler Fire Department Dispatch</td>
</tr>
<tr>
<td>155.9550</td>
<td>Chandler Fire Department Fireground Repeater</td>
</tr>
<tr>
<td>49.8300</td>
<td>Fountain Hills, Out of Africa Wildlife Park, Wireless Microphones</td>
</tr>
<tr>
<td>49.9000</td>
<td>Fountain Hills, Out of Africa Wildlife Park, Wireless Microphones</td>
</tr>
<tr>
<td>155.9550</td>
<td>Fountain Hills, Out of Africa Wildlife Park, Wireless Microphones</td>
</tr>
<tr>
<td>453.9750</td>
<td>Gila River Tribal Fire Department - Dispatch/Operations</td>
</tr>
<tr>
<td>154.2800</td>
<td>System 1, All Arizona Fire Departments</td>
</tr>
<tr>
<td>155.4750</td>
<td>Intersystem, Police/Fire/Sheriff Special Events</td>
</tr>
<tr>
<td>155.3550</td>
<td>Litchfield Park Emergency Services Dispatch/Operations</td>
</tr>
<tr>
<td>155.3850</td>
<td>Litchfield Park Fire Department Rural Metro</td>
</tr>
</tbody>
</table>
last month we took a hasty peek at the new digital radio systems that are quickly sweeping away all the old traditional systems from Canada's emergency services. Monitoring our local fire, police and ambulance services used to be a consuming pastime for many of us. As we saw, for now at least, the change to digital radio systems looks set to take a huge bite out of our hobby. Unless we are willing to dig deep into our pockets we may not be able to afford the new, expensive digital scanners that are now on the market in Canada's radio stores.

Even if we have the budget, the federal government has legislated restrictions on the sale of digital scanners that will leave many of us out in the cold. Recapping what this column revealed last month, you will need an amateur radio licence or a special commercial license just to be granted permission to buy a digital scanner in Canada.

Many of us are still wondering if the never-ending outlays of hard-earned cash necessary to keep up with our hobby will ever end. It seems like only yesterday that we were shelling out large amounts of money to buy the new trunk tracking scanners. Hobbyists all over the country still have a drawer full of old non-trunk tracking analog scanners. We are all becoming increasingly concerned about what we should do with these obsolete radios. Should we turn them in at the local pawn shop, or is there something that we can still do with them?

Well yours truly, ScanCan, is a self-confessed hoarder. Nothing electrical or mechanical ever hits the curb on garbage day at this household. OK, I did sell one of my old handheld analog scanners to a friend in need a few months ago, but I still have at least a couple of others. That's not including my growing collection of ham radios, most of which have wideband scanning modes on the receive side.

Here are some suggestions for Canada's scanner owners who are willing to untie the bonds to emergency services traffic and seek other targets.

Keeping Track of Transportation

Canadians move about the country by road, rail, air and water. Fortunately you can still monitor all of these transportation systems using good old fashioned analog scanners. Scanning Canada has touched on all of these monitoring targets over the last couple of years.

This column has swept across the nation's airports from the Pacific coast to the Atlantic coast to the Arctic coast. For this scanning hobbyist, monitoring air traffic control at major airports is an exciting and sometimes bizarre pastime. Routine loggings from Toronto's Lester B. Pearson airport are peppered with appearances by dignitaries including the Prime Minister, the Pope, and the Queen. A common log entry a couple of years ago was Concorde. There was always an air of superiority in the radio traffic accompanying the approach of that particular "Speedbird" (the callsign used by British Airways).

The bizarre aspect of the hobby has come with the occasional diversion from the usual straight-laced exchange between pilots and controllers. Canadians are not allowed to divulge what they hear on the air, and with that proviso we enjoy fairly wide-open monitoring privileges. Therefore, I will leave it to readers to accumulate their own humorous anecdotes from the tower.

Occasionally the pressure on runway operations leads to airplanes squeezing just a little too close together during take-offs and landings. I have seen many examples of aborted landings caused by a preceding aircraft lingering too long on the runway. What seems like an impending disaster to the casual observer is handled with aplomb and perfect calm by the pilot and controller. So, when it came my turn to be in an aircraft approaching Pearson airport and I heard the engines dramatically increase power, the flaps retract and the aircraft suddenly soar back into the sky, I sat back with satisfaction knowing all was well. My fellow passengers, on the other hand, were somewhat less self-assured.

The summer season brings airshows with their own brand of excitement. I usually know when the Snowbirds are approaching long before the rest of the crowd. In fact, long before most other scanner owners at the show, because most common scanners do not cover the military airband. Although, once again, I cannot reveal the exact dialog that I heard. I feel safe in disclosing that one airshow log contained an exchange between an Air Boss and a European fighter aircraft that I will never forget. The radio traffic gave me cause to consider immediate departure from the show in light of the display threatened by said aircraft.

Moving on to road transportation, we can also find some very interesting monitoring targets. My all-time favorite is school buses. The big yellow, road-blocking monsters that crawl from driveway to driveway in rural areas are piloted by an army of drivers with a whole different outlook on radio etiquette. Much of Canada enjoys challenging winters and many rural school bus routes take these unwieldy yellow monsters along country lanes that, shall we say, are inadequately maintained in the snowy season. Monitoring school buses provides a "down to earth" picture of the state of winter roads. School buses start very early and there are not better, or more interesting, reporters of driving conditions than these stalwarts of the rural routes.

Next month Scanning Canada takes a trip down east to the Maritimes. Until then, keep the hobby alive!
## UNIDEN

<table>
<thead>
<tr>
<th>Model</th>
<th>P/N</th>
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<tbody>
<tr>
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<tr>
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<td>BC125 digital board for BC250D &amp; BC780D</td>
<td>ACC4</td>
<td>$299.95</td>
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## ICOM

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## ALINCO

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### Antennas & Cables

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### Miscellaneous Accessories

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<td>$2500+</td>
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* Price includes shipping in the U.S.

** Call for special promotional pricing
Old "German Numbers" Broadcast Resumes

The Northern Hemisphere spring brought a return of balmy weather, blooming flowers, and - German-speaking numbers? Yup. Years after German unification caused a huge decline in these transmissions, a weird, machine-edited, male voice was heard speaking German on 5315 kilohertz (kHz). Something similar was heard on another frequency.

On 5315, the initial callup was "Sieben Drei Zwo," "732" in German, being repeated mechanically. This was followed by several repetitions of "964," and finally a message in 5-number groups.

The particular human voice being assembled by machine into the transmission was unfamiliar to veteran "numbers" listeners. Also, upper sideband (USB) was being used instead of the former amplitude modulation (AM). Everything else, though, suggested the return of a station not heard since late 1995. Among other things, there was the same distinctive hum in the audio, as if the same circuits had been put back into use, and the same use of "Null" for "zero."

Both of these suggest the old “German Man” transmission from Russian intelligence. The recordings reveal a great similarity to the same agency's ultra-load transmission to the United States. This one substitutes a voice in English, but the format is otherwise very close.

Once again, we see a good reason never to take old "numbers" stations off the lists.

FCC Experimental Licenses

The United States Federal Communications Commission has long granted special licenses with callsigns that look amateur. However, they're from the specially reserved "X" block. The first letter of the callsign suffix, immediately after the number, is always an X, for experimental. It's assumed that some new type of device or application is being studied for research or the development of new technology.

Some pretty ambitious commercial operations have started out with these amateur-style calls. When WLW in Cincinnati wanted to build a 500,000-watt AM broadcasting station, they first tested it as W6XO. In New York City, WQXR started out as W2XR ("Experimental Radio"). When FM broadcasting really was experimental, one Los Angeles TV station began as W6XAO, broadcasting snowy test patterns to a handful of experimental receivers.

Today, however, the experimental calls all seem to come from the "2" area, and ordinary amateurs have been given X calls with the other numbers. In the last year or so, some rather interesting test licenses have been granted by the FCC. These promise more funny noises ahead on the high-frequency (HF) band.

Right up there in the noise department would be WD2XAX, with transmitters in Florida, and licensed to the Department of Marine Science at the University of North Carolina, Chapel Hill. The operation's purpose is not immediately evident from the FCC's sketchy description, but a quick look at the frequencies gives it away fast. These authorized frequencies are 4470, 4550, 4800, and 4900 kHz.

This frequency range is one of three commonly used by HF coastal radar stations for basic research and development. Maybe you've heard the dweep, dweep, dweep sound, as their pulsed carriers make an upward sweep of 50 to 100 kHz from the assigned frequency, once or twice per second. Sure enough, a quick trip to the university's web site turns up a research contract for development of HF sea surface radar in Florida and North Carolina, both for survivability and current mapping.

The technical parameters sound like the SeaSonde system, made by Codar Ocean Sensors. This company was started by the original developers of Codar (Coastal Ocean Dynamics Applications Radar), who left the US weather service to market it commercially. It's not a major interference machine, with its small transmitters and simple antennas. But if reception gets dweepy on these frequencies, again, here's one guess who's doing it. (More on p.35)

Another experimental license in the North Carolina area is WD2XBL, granted to Thales Mackay Radio. Frequencies are listed as 2142.4, 4916.5, 7422, 9973, 10423, 13423, 15711.5, 18178.5, 23007, and 27547 kHz. The purpose is "test and development of communications technology."

Thales, a wholly-owned subsidiary of Thomson-CSF in France, supplies a lot of the transmitters and receivers used by the US Navy. They are typically remote-controlled rack units, with sophisticated user interfaces and Automated Link Establishment (ALE) operation. They are also rated for Link-11, the multitone, HF, tactical data link which allows participating military units to exchange target tracking data.

The only really ominous test license, though, is to WC2XXK, Ameren Energy Communications, Inc., for operation ANYWHERE from 1705 kilohertz to 30 megahertz – the WHOLE band! This is another of those new schemes for sending high-speed data through power lines, presumably getting our newly deregulated electric companies right into the broadband communications business.

In April, the FCC issued a Notice of Inquiry soliciting comments on the effects of these systems on radio users. FCC has gotten a real earful. According to ham radio organizations which have examined the technical data, there is no way such a system could be deployed throughout the entire power grid without radio waves leaking out and buzzing HF from one end to the other. The American Radio Relay league's technical expert predicts "a significant increase in noise levels." This one is really worth watching, as it could be yet another of those seemingly yearly threats to the whole radio hobby.

New York VOLMET Returns

As mysteriously as it had vanished, New York VOLMET suddenly came back onto the air several weeks later, with a very nice signal on 3485, 6604, 10051, and 13270 kHz USB. It had been down to very low power, or no transmissions at all, for at least a month. VOLMET means "flying weather," and it's one of those repeating broadcasts of weather observations and forecasts for airports in a particular region. Pilots had been heard asking about the disappearance, indicating that, even with all today's fancy data systems, someone's still using these.

The schedule stays the same, with 20-minute broadcasts on the hour and half hour. The two other ten-minute periods, at 20 and 50 minutes after the hour, are used by Gander Radio in Newfoundland, Canada.

We'll come back, too, next month.
All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (kilohertz) and all times are UTC (Coordinated Universal Time). "Numbers" stations (encrypted, usually unidentified, broadcasts thought to be intelligence-related) are identified in ( ) with their ENIGMA station designators, as issued by the European Numbers Intelligence Gathering and Monitoring Association.

5154.0 "C"-Russian Navy, Moscow, single-letter CW beacon (MXC), simulcast on 7039.0, 8495.0, 10872.0, 13528.0, and 16332.0, at 1954. (Boender-Netherlands)

5422.5 Auxiliary Radio Medio-US Coast Guard Auxiliary net, working Auxiliary Radio-Choptank, at 0036. (Perron-MD)

5598.0 BAW246-British Airways 777, working Santa Maria at 0533. (Patrice Privat-France)

5696.0 Coast Guard 1502-US Coast Guard HC-130, patching Atlantic Area Command via CAMSLANT Chesapeake, VA, reporting no radar contact on an emergency beacon source, which news later reported was an accidental activation by a turtle, at 0058. (Mark Cleary-SC) CG Rescue 1502, patching LANT area command again, same search, at 0244. (Stern-FL)

5705.0 Blue Eyes-US military, with a 28-character EAM, simulcast on 6697, 8992, and 11244, at 0535. (Jeff Haverlah-TX)

5708.0 Hilo East-US Air Force, Scott AFB, IL, working an unheard aircraft in an ALE-initiated voice contact, at 0049. (Perron-MD) Reach 8051-US Air Force transport, ALE-initiated patch to Charleston AFB Meteo, at 0054. Reach 5205, ALE-initiated patch to Hilo East, at 2344. (Cleary-SC)

5732.0 Coast Guard 6001-US Coast Guard helicopter, in radio check with CAMSLANT, at 0021. (Cleary-SC)

5759.0 Cuban "Atencion" (V2a), AM numbers callup in 3-message format, at 0403. (Camilo Castillo-Panama)

6604.0 New York-New York VOLMET, transmitter in New Jersey, back on the air with aviation weather and a good signal, at 0330. (Hugh Stegman-CA)

6622.0 Gander-North Atlantic air traffic control, taking position report from KLM 672, at 0228. (Stern-FL)

6779.0 DHU55-German Navy, Wilhelmshaven, calling DRAO, FGS Luebeck, no joy, at 2311. (Perron-MD)

6797.0 Cuban "Cut Number" station (MBo), CW 3-message format, twice at 1202. (Castillo-Panama)

6912.0 MiW2-Transmitter keying noises at 0055, then Israeli intelligence AM callup (E10a) at 0315. VLZB-Israeli intelligence (E10a), AM callup in progress with fast CW in background, which went away some time as the station, at 0350. MiW2, E101a, AM callup in progress at 0435. (Barry Williams-AL)

6933.0 Cuban "Cut Number" station (MBo), CW callup in 3-message format, twice at 1203. (Castillo-Panama)

6987.0 ART-Israeli intelligence (E10a), AM callup and "Group 41," then message, began at 0430. (Williams-AL)

7508.4 ZS1-South African Navy, Silvermine, with an RTTY gate warning from Pretoria Meteo, at 1030. (Bob Hall-RSA)

7567.0 another 400-US DEA, Bahamian, drug interdiction with 63A, at 0122. (Hugh Stegman-CA) Look 6697, 8992, and 11244, at 0535. (Jeff Haverlah-TX)

7777.0 DIAMANTE-Mexican Army, working JADE, in ALE at 0122 (Perron-MD)

7889.0 Cuban "Cut Number" station (MBo), CW 3-message format, twice at 1302. (Castillo-Panama)

8047.0 HQ3NGB-US National Guard Readiness Center, Andrews AFB, MD, working CUBING, National Guard, SC, at 2133. (Perron-MD)

8050.0 LOBITO-Mexican Army, working 123 in ALE, at 0202. (Perron-MD)

8126.4 CGD9-US Coast Guard District 9, Cleveland, OH, working NRLX (Cutter Karmi Bay), in ALE, at 0203. (Bob Hall-RSA)

8281.6 MARTE-Mexican Army, ALE with TIERRA, at 0136 (Perron-MD)

8353.0 DHU59-German Navy, Wilhelmshaven, working DRAN, FGS Augsburg, in English and German, at 2105. (Perron-MD)

8449.0 "V-5-J"- Probable US Coast Guard, testing in SITOR-A at 0227. (Cleary-SC)

8764.0 "V-5-J"-Probable US Coast Guard, discussing SITOR problems with CAMSLANT at 0225. (Cleary-SC)

8825.0 New York Oceanic-North Atlantic air traffic control, taking position report from Corssair 868, gave 6628 as secondary frequency, at 0220. (Stern-FL)

8837.0 Ben Gurion Airport-Israeli ground station working an unknown aircraft in Hebrew, at 2205. (Perron-MD)

8846.0 NAF 49-Dutch Air Force tanker, inbound to FL with 9 Dutch F-16s, working New York at 1401. (Stern-FL)
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3406.0 Air France 656-Flight passing position to Shanwick, Ireland, at 1637. (Privat-France)
3412.0 CG-6034-US Coast Guard helicopter, working CAMSALNT at 0118. (Cleary-SC)
3418.0 Aero Mexico-possible company dispatch, working aircraft at 0124. (Perron-MD)
3468.0 E31605DAT-US Air Force E-3B, making secure data injection through ICSZPR, Sigiona, Italy, at 2238. (Perron-MD)
3497.0 Trident 71C-US Navy, working Fidel (Jacksonville, FL), clear and secure, at 2103 Trident 45, working Golden Hawk (Brunswick, ME), at 2141. Bluestar-US Navy, PR, working Bat 01, at 2311. (Cleary-SC)
3498.0 Coast Guard 1790-US Coast Guard, patching Clearwater Air via CAMSALNT, at 0107. CG 1790, different search, patching Miami Ops at 2017. (Cleary-SC)
3498.0 CAMSALNT-US Coast Guard, VA, working Army 26552 at 2130. (Cleary-SC)
3499.0 Reach 93J-US Air Force transport, in patch to Hilda East via Trenton, at 0658. (Perron-MD)
This month we focus on CODAR or Coastal Ocean Detection And Ranging, a form of radar that is appearing increasingly on HF frequencies throughout the world. We also check in with a mysterious PacTOR network that has so far eluded identification.

**CODAR**

Back in the late 1960s a scientist named Donald E. Barrick pioneered much of the theory behind the use of HF radio for the purposes of measuring and monitoring ocean currents. While at NOAA (the National Oceanic and Atmospheric Administration), Barrick and others in the Wave Propagation Laboratory successfully developed HF-based radar theory and systems to measure sea wave height, period and flow.

CODARs make use of a phenomenon called Bragg scattering, something that happens to any electromagnetic radiation (radio signals or light) when the wave encounters fluctuations or turbulence which are small compared to the wavelength when the wave encounters fluctuations or turbulence. When the wave encounters fluctuations or turbulence, it scatters in many directions.

According to Bragg, the radar signal will return directly to its source only when it scatters off a wave that is exactly half the transmitted signal wavelength, and that wave is traveling in a path directly away from or directly towards the radar. In this case, the scattered radar signals add together and produce a strong returning “echo” at a very precise wavelength. You can read more about the theory of CODAR at the website of the firm that Barrick started after leaving NOAA, and which supplies the majority of CODAR systems, Codar Ocean Sensors.

Most modern CODARs use a variety of HF frequencies from 3-50 MHz to do their work and can therefore use a variety of sea waves for scattering:

- 25 MHz radar = 12m radio wave can observe 6m ocean waves
- 10 MHz radar = 25m radio wave can observe 15m ocean waves
- 4 MHz radar = 75m radio wave can observe 37.5m ocean waves

Suffice to say, with these basic facts and a lot of sophisticated signal processing, today’s CODARs are able to measure sea wave length, period, travel direction and speed. And, by using two or more transmitting stations aimed at the same area of water, their reflected signals can be combined to produce information about the overall surface current direction. Figures 1 and 2 shows some typical output (surface flow and wave height) from Rutgers University’s CODAR on the New Jersey coast.

**Listening in on CODAR**

The best time for hearing these radars is at nighttime, when many drop to their lower frequencies. At Digital Towers here in the northeastern US, we are able to hear several CODARs during any evening as we slowly tune the receiver from 4 to 5 MHz. There are also regular daytime signals in the band 13400 to 13600 kHz and 23000 to 25000 kHz.

The signals have an unmistakable metallic “schwip, schwip, schwip...” as the radar signal is swept across a narrow range of frequencies, typically around 20 or 50 kHz. By the time you read this article, there should be a clip of CODAR audio available from Leif Dehio’s excellent website (see Resources). In our case, it’s quite likely that we’re hearing the established set-up of the University of Rutgers Institute of Marine and Coastal Science’s project COOL, operating from its sites in New Jersey and Florida. Here are the data from the FCC website. Figure 3 shows the sites for WA2XXF.

**Experimental license WA2XXF**

- Short-range CODAR (70 miles): Brigantine, Brant Beach, Tuckerton, NJ
- Long-range CODAR (200 miles): Wildwood, Loveladies, NJ

Frequency Bands: 4800 to 4900 kHz (50kHz sweep) 24700 to 25900kHz (150kHz sweep)

**Mystery PacTOR networks**

For over a year we’ve been hearing a network of very weak PacTOR stations on two frequencies: 7987.75 and 8016.15. To date there have been no reports of traffic between the many stations involved, only selcals take place. Some reports have guessed that the networks may be connected to missionary work in southern Venezuela and the Amazonian interior of Brazil. Here are the selcals used:

- 7987.75: BRR, DMT, JMX, MAR, MUT, PAR, PJJ, SML, WAR, YANOMA, YAW
- 8016.15: COSH, JAL, JANK, MMG, VEN, YAJA

Until next month, enjoy your listening.

**Resources:**

- Coda Ocean Sensors: http://www.codaros.com
- Rutgers Project COOL: http://www.marine.rutgers.edu/nrs
- Scripps Project SDCODAR: http://www.sdcoos.ucsd.edu/index.html
- CODAR Clip: http://www.rover.wildpixel.com/*—signals/

July 2003

**Digital Digest**

Mike Chace
mikechace@monitoringtimes.com

All at Sea with CODAR

Experimental license WD2XAP monitors the ocean off the West Florida shelf:

Short-range CODAR (70 miles): Venice, FL
Frequency Bands: 4400 to 4900 kHz (50kHz sweep)

The Rutgers project will soon be running a new CODAR based in Nantucket, MA.

With today’s sophisticated digital signal processing (DSP), most CODAR systems use relatively modest levels of power from about 50W to maybe 1kW. The transmit and receive antenna systems are also small as Figures 4 and 5 show.

**For those listeners on the West Coast of the US, Scripps Institute of Oceanography at UCSD San Diego operates CODARs from Point Loma, Imperial Beach, and La Jolla under callsign WC2XYM. Similar to the Rutgers systems, the frequency ranges are quoted at 25000 to 25700 kHz but with a larger 500 kHz sweep. Scripps also provide a video camera controllable from the Internet, that looks out over the wonderful stretch of California coastline monitored by this CODAR.**
STEVE ANDERSON - A trial date has been set for the white supremacist SW radio operator [United Patriot Radio, Kentucky State Militia Radio] who allegedly shot up a Bell County deputy sheriff’s cruiser and then eluded authorities for over a year — July 28 in US District Court in London KY. U.S. Judge Danny Reeve will hear the case, while Assistant United States Attorney Martin Hatfield will prosecute. Somerset attorney David Tapp is representing Anderson. A federal grand jury handed down an indictment of 18 weapons-related charges against Anderson last November. If convicted, the maximum potential penalties are life imprisonment, a $250,000 fine and supervised release for a period of three and not more than five years for forfeiture of the listed firearms, according to Jeff Neal, in the Somerset KY Commonwealth-Journal.

HARRY KLIPHUIS - Andy Sennitt writes in Media Network: Many of my colleagues from the English department attended the funeral of a much-loved former employee of Radio Netherlands. Harry Kliphuis, who for many years was a familiar voice on our English language service, passed away April 2 I general of a much-loved former employee of Radio Netherlands. Harry Kliphuis, who for many years was a familiar voice on our English language service, passed away April 2 I general of a much-loved former employee of Radio Netherlands. Harry Kliphuis, who for many years was a familiar voice on our English language service, passed away April 2 I general of a much-loved former employee of Radio Netherlands. Harry Kliphuis, who for many years was a familiar voice on our English language service, passed away April 2 I general of a much-loved former employee of Radio Netherlands. 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ECUADOR [and non]

I hate to see any SW broadcaster going away, especially one with the history of HCJB and that broadcasts in English. They were the first SW station I ever logged in 1992. However, I believe their programming has been going downhill for nearly a year. I appreciated the high octane of a year ago, but the current content is weak, much like Radio Today and Saludos Amigos on weekends intermixed with great Christian messages. My wife and I would relax with HCJB's strong signal booming in. Then, for some reason, as if to the program management was shifted to the weekend. Lengths of programs were shortened. And any time during the week I'd tune in, I'd get fire and brimstone. I couldn't tell sometimes the difference between Dr. Gene Scott and HCJB's broadcasting operation by Prof. John MacArthur. But if you noticed that, I'd have to say you'll miss me. Ever since the above-mentioned programs were stumped on, schedules changed, you only had a token place on the memory of my radio. Thanks for the QSL cards, the magazine, the chance to watch Andes DXers club. Your friend in Christ, (Adam Christian Smith, EDXP)

After HCJB announced it would be terminating English broadcasts, I launched a successful campaign on their website to express their reaction, and HCJB management promised it would read the messages at http://hcjb.edxp.org (Bob Padula)

HCJB's 'soft-sell' approach to evangelism was tremendously more effective than their 'fire and brimstone' preaching all the other SW religious broadcasters use. Rather ironic that the effective style goes away, and the ineffective approach will be for us the foreseeable future. And did you notice that, except for a couple of stamps when writing for a QSL, HCJB never asked you for a dime? I wonder if HCJB President Dave Johnson really knows what he's done? (Ben Loveless, WB9FFJO, MI, DX Listening Digest)

Sure enough, you developed your interest in SW radio from HCJB, the "Call of the Andes from Quito, Ecuador, South America." Good things never last forever, and it seems that HCJB World Radio, like many other international broadcasters, no longer views the HF medium as the one to do business in. As one caller put it, "We're just a part of the HCJB speaking world. Many DX programs have closed down and more will follow. International broadcasting is highly competitive, and many broadcasters will not survive and could close down in years to come. This is not only because DX news and information about how their competitors may be heard. Indeed, they want themselves to be heard! I feel sad about HCJB's decision, mainly because of my very long continued association with that station, both as a listener, technical monitor, and producer of new features over DX Partlyline. I am in discussions with HCJB-Australia here in Melbourne about a regular DX news/information segment following the planned termination of DXPL at the end of May. The new feature will be produced under the EDXP banner (Bob Padula, World Broadcast Magazine)

We are not shutting down the possibility of restarting some English to North America in future. But at this time that this is not what we will be doing. In years to come we have high hopes for digital, and what will do for SW radio, and that may be the single thing that will resurrect our English language service to parts of the world that we are now cutting. It's not just Quito anymore; we're just a part of the HCJB picture. Most English will come from elsewhere (Curt Cole, HCJB DX Partlyline)

I am again paying more attention to La Voz de los Andes, since Spanish to NAm will continue. Música del Ecuador was confirmed UT Sun at 0430-0500 on 9525. At least I assume that was the program, since there were no announcements whatever during the half hour; not even a title, but certainly Ecuadorian music was played, much of it with harmonica, very nice. After ID break at hoorup, the martial Ecuadorian national anthem (Glenn Hauser, OK, DX Listening Digest)

EL SALVADOR: R. Imperial, 17835.3, does not have E-mail, but there is a good chance they will reply to postal reports by fax if you give them your number; or fax them. Their number is +(503) 4500189. If you fax when rates are lowest, this can cost less than a letter (Humberto Molino, San Salvador, DX)

ERITREA [non]
The Canadian-based Christian organization voice of the Martyrs http://www.persecution.net says that, starting this summer, it will start broadcasting in Amharic, Oromo, and Somali to encourage persecuted Christians there. Plans are for half the program to consist of dramatic readings from VOM's best-selling book, "Jesus Freaks" in the Tigirigna language. The Voice of the Martyrs was founded in the mid 80's in the USA by Paul and Elizabeth Willoughby who was impressed by Communist authorities in his native Romania for fourteen years (ID Radio Netherlands Media Network)

GERMANY: 1 May 2003. Munich airport pleased to exist after almost half a century. The station, which began broadcasting western programs into the GDR in 1954, is merging with Ostdeutscher Rundfunk Brandenburg to form a new broadcasting organization called Rundfunk Berlin-Brandenburg (RBB). The station is as much away from the name and logos of the two stations. But full integration is planned for further down the line, and that could lead to significant job cuts. (ID Radio Netherlands Media Network)

RBB will be on SW, as Rohrdorf 7265 carries SW Cont.Ro, the new mediumwave network of SWR. This results in a relay of RBB on SW because SWR Cont.Ro relays Infradina from Berlin every night between 2200-0400. (DWSWI, TXD, World Broadcast Magazine)

Siemens shortwave transmitter at Rohrdorf now again carries programming produced at Masurenalle in Berlin. This is the very same transmitter that had been operating before the war. Radio Bremen extensively relayed SFB programming on shortwave until 10 years ago (Kai Ludwig, Germany, DX Listening Digest)

There are projects to establish local low power DRM stations in the southeast of Germany. In Nürnberg 26000 kHz tested on Feb 27th with ten watts by the university of applied sciences. The 2nd project http://www.bitexpress.de/plans to broadcast regionally on 1582 for Nürnberg and Erlangen. DLF reported plans to link the project with other DRM stations.

On 27 June, Deutsche Welle will mark its 50th birthday with festivities at the Plenarsaal in Bonn. Federal President Johannes Rau will be the guest of honour and will stress the importance of the daily news program, which is going to move from Cologne to Bonn. The building, designed by German and American architects, which is under the same roof as the government quarter, is one of Europe's most modern broadcasting centers (DW Press release) New address will be: Deutsche Welle, Kurt-Schumacher-Str. 3, D-53113 Bonn, Germany. Tel: +49(228)/249-310, FAX +49/228/429-3202(T) or +49/228/429-3220(F); e-mail: tb@dw-world.de (Peter Kruse, May BDXC-UK Communication)

ICELAND [and non]

AFRTS heard around 1000-1600 on new 13855 US (Dan Goldfarb, Brentwood, England, DX Listening Digest) 13855 US heard carrying American commercial shows and news at 1600, strong and 5 kHz from BPS 13860 (Noel R. Green, UK, Cumberlad) Usual AFN stuff. BPS 13860 signed off around 1800 and they no sputter. But at 1803 a uste-station came on 13855 with "CQ DE OXT" and fantastic broadcasting (Jari Savolainen, Kuusankoski, Finland, ibid.)

OXT is D BNark's central station for all shortwave, the Radio, which has been on 13855 and other frequencies from long before they became shared with broadcasting; fax broadcasts of ice charts for southern Greenland are on 13855 at 1218-1240, 1308-1330, 1803-1825; also until 1900, 9360, 1370 at other times (Erik Kaie, Copenhagen, Denam, DX Listening Digest)

William Herbst in Northern Denmark has 20 Beverage antennas at his disposal on a North Sea beach; he narrowed the azimuth to 300 degrees (Bernd Trutenau, DSWCI DX Window) 13860 used to transmit a reactivation of the Kellfavia station (Martin Elbe, Germany, dxing.info) Trish Huizinga, Officer-in-Charge, Naval Media Center, Kellfavia, confirmed by e-mail that 13860 was inserted from the California. While AFN was on 13855, ISBS was heard on 13865-US plus carrier, 1800 ID "Uvahk Reykjavik," news (Jari Savolainen, Kuusankoski, Finland, DX Listening Digest)

ISRAEL

Indeed, they want themselves to be heard! I feel sad about HCJB's decision, mainly because of my very long continued association with that station, both as a listener, technical monitor, and producer of new features over DX Partlyline. I am in discussions with HCJB-Australia here in Melbourne about a regular DX news/information segment following the planned termination of DXPL at the end of May. The new feature will be produced under the EDXP banner (Bob Padula, World Broadcast Magazine)

The shift is about 4 Hz which indicates a speed of just above 500 km/h. The canned IDs had a slight echo effect. Mentions of frequencies in-
feature with news (Bjorn Malm in Quito, Ecuador, translated by SWB editor Thomas Nilsson for DX Listening Digest)

R Union, 6115 at 0915, good signal with no QRN. Beautiful Peruvian sky with VOR. We are going to hear them back on frequency with fine audio. This excellent domestic SW station make for enjoyable early morning listening (David Hodgson, TN, DX Listening Digest) Also excellent near Moscow at 0130 with VOR on air. (Aryman)

SAUDI ARABIA [non] R. Al-salah 1800-2000 in Arabic on new 1570D (TP via Silvian Domen, Belgium, DX Listening Digest)

SEYCHELLES [non] Counterfeit QSL: BEFA UK for transmitters via Russia heard and noted on 15600 kHz. The station has longer owns its transmission stations but uses a number of different service providers. For this reason we are no longer able to verify such reports or send out QSL cards. Apologies to fans of Radio World (Artyom Prokhorov, Cumbre DX)

SRI LANKA [non] After testing the frequencies 7115 kHz, 7300 kHz, and 7300 kHz at 0020-0400 & 0800-1530 in Hindi, Tamil, Telugu, Malayalam & Kannada. 9770 continues in parallel. That leaves 7115 only for VOA Sri Lanka. More Pacific language programming will enhance the networks. More targeted programming from four to ten hours each day. The new money will enable RNZI to increase its level of targeted programming. RNZI recently informed the FCC that they are in the final stages of purchasing a 50 kW transmitter which they plan to have installed and operating within a year. So, there is finally beginning to be some light at the end of tunnel. (Mike Cooper, DX Listening Digest)

SYRIA [non] The Arab Radio, clandestine heard on 7510 at “0303-0400.” Arabic music and ID: “Al Idha’at al Arabiyyah,” choir, comments against Anker Petersen, Denmark, DSWCI DX Window)

TAIWAN [non] A new Rypin station, RTY, has been making quite a bit of noise on the following frequencies: 570 kHz. It was there for three days but then back on its permanent frequency (7300 kHz). It is quite clear that the station is not going away any time soon. (Mike Cooper, DX Listening Digest)

UNITED KINGDOM Write On shows in a new BBCWS schedule folder: UT Sat 0800-0900 2100-2200 on 11670, 13680, 17750 kHz. Other stations on these frequencies are KRO and DXLD.

UNITED NATIONS [non] UN Radio has published the first issue of its quarterly frequency schedule in the United Nations, 250 kW, 224 degrees, excellent, ex 11520 (Ivo and Angell Observer, Bulgaria)

MEXICO [non] A local station for very much, but I’m concerned that for more than two months the sound of your station has been very deficient. Previously only 11770 was defective, but now 9770 is too. It affects the quality in the studio transmitter link. This bothers me a lot since XERMX represents Mexico to the world, and should be maintained as carefully as IMER’s AM and FM stations in the DF. I want you to correct these problems right away, and I wish you much success in broadening your audience and music to include the music of Pepe Gonzalez, Kalapa, Veracruz, open letter to R. Mexico International Community Radio (Ramon)

LEBANON [non] Sawt Lubnan Al-Houriyah at 1600-1700 in Arabic moved to 11645 7354 kHz. It was noted a number of weeks before using 7354 kHz at 0030-0400, and 0800-1530. It was heard better on 9599 but with very bad modulation, at 2100, simulcasting 11670 kHz. It was audible (Glenn Fanali, DXLD) UN Radio SW frequency schedule: http://www.un.org/aviradio/frequencyschedule.htm

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0025 UTC on 15745
SRI LANKA: SLBC. Open carrier followed by drums at 0027. Group of people choral to time picks at bottom of the hour followed by station ID and English announcements. Pop music standards with poor signal and deep fades. (Rich D'Angelo, PA/NASWA Flash Sheet) 15745, 1335-1400. Hi-Lo From Germany. (John Wilkins, Wheat Ridge, CO)

0028 UTC on 6925
PIRATE: Radio Pigmeat Intl. Funk tunes including Message in a Bottle. Long version of Rebel Yell by Billy Idol. Station ID and last tune monitored was by Mojo Nixon. Pirates monitored: WHYF 6925, 0126-0137+ with great signal for IDs, rock music, email address, and report on 3rd Annual James Brownyard event. Tentative on Shadow Radio 6950, 0100-0133 including Fibber McGee & Molly segment. (Joe Wood, Gray, TN) Big Thunder Radio 6950 US1, 0105. Auxiliary for Hawaiian Funch & Music. See also noted reports to: bigthunderradio@hotmail.com. Scratchy audio that needs work. (Harold Frogg, Midland, MI) Radio Spaceman Euro pirate 6289.94, 2236 with address, telephone number. (Jerry Berg, MA/NASWA)

0030 UTC on 6955
PERU: La Voz del Campesino. Spanish ID for Huramarca, Peru, to 2236 with address, telephone number. (Jerry Berg, MA/NASWA). bigthunderradio@hotmail.com. Scratchy audio that needs work. (Joe Wood, Gray, TN) Big Thunder Radio 6950 USB, 0105. Shadow Radio 6950, 0130-0133 including Fibber McGee & Molly for IDs, rock music, email address, and 0126-0137+ with great signal for IDs, rock music, email address, and monitored was by Mojo Nixon. Pirates monitored; WHYP 6925, 0115-0137. (Arnaldo Slaen, Buenos Aires, ARG) Mexico's La Candela reactivated apparently via XEQM transmitter. Heard from 0842 with music, phone calls, and "Candela" ID. List shows their FM as 95.3 XHMH. (Berg, MA/NASWA)

0040 UTC on 6955
THAILAND: Radio Thailand. Station ID on the hour closing French service. World and Asia News to 2149. (Garcia, MD)

0045 UTC on 6955
MEXICO: Radio Mil. Great signal for Mexican pops to lady's identification. Time/frequency quote to Cultural Panorama program. (Kraig Krist KG4LAC, Annandale, VA)

0050 UTC on 6955
AUSTRALIA: Radio. Late Night Live interview with book author's biography of Samuel Pepys. (Bob Fraser, Cohasset, MA) HCJB Kununurra 15480, 1545-1560. Religious program to, "you are tuned to HCJB Australia...the voice of the great southland on 15480 kilo-herz". (Sam Wright, Biloxi, MS) VLBA Alice Springs 2310, 1040. (Garcia, MD)

0055 UTC on 6955

0100 UTC on 6965
BRAZIL: China Radio Intl Brasilia relay. Spanish service with news into Hoy en China, industrial technology program closing at 0157. Radiodiffusion Nationale Chad in Arabic 6135//9630, 2300. (Garcia, MD) Radio Inconfidencia 6010.2, 2357-0003+. (Frank Hillton, DC) Radio Difusora Roraima 4875, 0930-1000; Radio Brasil Central from Goiania 4985, 0130; Radio Aparecida 6188, 1015+; Radio Maliku 4796.7. (Garcia, Baltimore, MD) Radio Brasil Central from Goiania 4985, 0130; Radio Aparecida 6188.1, 1015; Radio Libertad 5039, 1030; Radio Virgen del Carmen 4886.7, 1045; La Voz de las Huaringas 6819.7, 1100. (Fernando Garcia, Latin America)

0105 UTC on 6965
PERU: Radio Santa Cruz. Spanish ID/frequency quote. Regional time check into Criollo music. Anniversary and birthday greetings. Peruvian's monitored on subsequent sessions: 6115, Radio Union 0815; Radio Oriente 6134.8, 0930; Radio Nacional 11780, 0020-0230. (Stewart MacKenzie, Huntington Beach, CA) Radio Inconfidencia 6010.2, 2357-0003+. (Frodge, MI) Mexico's La Candela reactivated apparently via XEQM transmitter. Heard from 0842 with music, phone calls, and "Candela" ID. List shows their FM as 95.3 XHMH. (Berg, MA/NASWA)

0110 UTC on 6965
MEXICO: Radio Mil. Great signal for Mexican pops to lady's identification. Time/frequency quote to Cultural Panorama program. (Kraig Krist KG4LAC, Annandale, VA)

0115 UTC on 6965
THAILAND: Radio Thailand. Station ID on the hour closing French service. World and Asia News to 2149. (Garcia, MD)

0120 UTC on 6965
KUWAIT: Voice of the Mediterranean. Sign-on to Iraq news update, including ID, freq and national anthem at -0002'. (Frank Hillton, DC) China Radio Intl's Canadian relay 13680, 2315.. (Fraser, MA) Radio Mil. Great signal for Mexican pops to lady's identification. Time/frequency quote to Cultural Panorama program. (Kraig Krist KG4LAC, Annandale, VA)

0125 UTC on 6965
ARTENIA: Voice of Interval signal, anthem to "this is Yerevan" identification. Time/frequency quote to Cultural Panorama program. (Kraig Krist KG4LAC, Annandale, VA)

0130 UTC on 6965

1230 UTC on 4606
INDONESIA: RRI Saru. Fair to good classic country & western tunes to mentions of "Republik Indonesia" and interval signal at 1300. Not a bad signal for listed kW. (Patrick Martin, Seaside, OR; Wilkins, CO)

1245 UTC on 11650
AUSTRALIA: Radio. Late Night Live interview with book author's biography of Samuel Pepys. (Bob Fraser, Cohasset, MA) HCJB Kununurra 15480, 1545-1560. Religious program to, "you are tuned to HCJB Australia...the voice of the great southland on 15480 kilo-herz". (Sam Wright, Biloxi, MS) VLBA Alice Springs 2310, 1040. (Garcia, MD)

1339 UTC on 21605

1650 UTC on 15140

1732 UTC on 15660
FRANCE: Radio Jamahiriyah. English service including Afro and Libyan music. Iraq and Middle Eastern news update to "the great Jamahiriya" at 1737 followed by French service. SIO 233. (Frodge, MI)

2030 UTC on 9535
THAILAND: Radio Thailand. Station ID on the hour closing French service. World and Asia News to 2149. (Garcia, MD)

2040 UTC on 9960
MEXICO: Radio Mil. Great signal for Mexican pops to lady's identification. Time/frequency quote to Cultural Panorama program. (Kraig Krist KG4LAC, Annandale, VA)

2140 UTC on 4915
GHANA: GBC. Pops and choral music to drum/pips signal, local time check and station ID into news. Additional Africans monitored: Radiodiffusion Nationale Chad in Arabic 6135//9630, 2300. (Garcia, MD) Radio Difusora Roraima 4875, 0930-1000; Radio Maliku 4796.7; Radio Atlantida 4790, 1000+. (Arnaldo Slaen, Buenos Aires, ARG)

2150 UTC on 9770
CANADA: Radio Canada Intl. Report on how vampire bats avoid toxic foods. China Radio Intl's Canadian relay 13680, 2315.. (Fraser, MA) CKZN New Foundland 6160, 2100 with news for Labrador area to local time check. CBC national and regional news to financial report. (Garcia, MD)

2200 UTC on 12000
TURKEY: Voice of Sign-on ID, freqs and program schedule. News of Greek and Turkish Prime Ministers' desire to help rebuild Iraq. Segment on Turkish composers. (Wood, TN)

2346 UTC on 6536
PERU: Radio Huancabamba. Spanish ID to musical program, La Ponderosa la Voz de la Frontera to local time check at 2356. (Garcia, MD) Heard 0155 with ID and SIO 322. (Wood, TN) Radio San Miguel 4748, 2357-0008 (Bourbour, NH/NASWA) Radio Victoria 6020.06, 0852+; Radio Atlantido 4790, 1000+; Radio Oriente 6188, 1015+; Radio Tacna 9504.76, 1055+; Radio Jesus 6192.97. (Slaven, ARG)

Thanks to our contributors – Have you sent in YOUR logs? Send to Gayle Van Horn, c/o Monitoring Times (or e-mail gaylevanhorn@monitoringtimes.com) Please note: paper strips and cassette recordings will no longer be accepted. English broadcast unless otherwise noted.
Mark your DX calendar! Here is a new slant to your QSL collecting: The amateur radio Islands on the Air (IOTA) contest is planned for July, and shortwave hobbyists are welcome to participate. The contest commences at 1200 UTC on Saturday July 27, and closes Sunday July 28 at 2400 UTC. The aim of the contest is to promote contacts between stations in qualifying IOTA island groups and the rest of the world, and to encourage expeditions to IOTA islands. Contacts may be logged from 3.5, 7, 14, 21 and 28 MHz using Morse code and SSB traffic.

Electronic submission of logs by disc or email is encouraged, and, in fact, required for top scoring entrants and all who use a computer to log or prepare the logs. Email entries may be sent as a normal attachment to: hf.contest@rsgb.org.uk. Postal entries should be addressed to: RSGB IOTA Contest, P.O. Box 9, Potton Bar, Herts. EN6 3RH England. Postmarks must be postmarked by September 1, 2003. For additional rules and contest information, consult the SM/CER Contest Service site at http://www.sk3bg.se/contest/rsgbiota.htm.
Close your eyes and imagine this. (On second thought, I guess you’ll have to read this first and then imagine it again from memory.)

How about a warm, breezy moonlit evening. The windows and shades are thrown wide open. The room is dark but for the green pulsating circle of the tuning eye and soft orange glow reflecting off the dial of that old Grundig-Majestic tube table model with the rich, deep audio. (It could be your favorite portable, but this is my dream sequence, thank you.)

You’re stretched out on the couch (or the rug, or the recliner, on the screen porch – whatever!) That grand radio is playing a familiar classical piece; or is it a string of hits anyway! That grand radio is playing a favorite song again from memory.)

It’s much more than this.

Regardless, it works seamlessly in both places. After the “1:00 news” (0100 UT) and nationwide weather report, it’s Cadenza, Cadenza, an hour of shorter classical music pieces – spanning the spectrum but mostly mainstream – offering a thoughtful, pleasant background for your nighttime musings. It’s produced and presented by Peter Fry, who serves as a friendly but unintrusive guide.

Following the news and weather “at 2” (0200 UT), the pace changes some with Wayne’s Music, the first hour of In Touch with New Zealand. Wayne is Wayne Mowat. National Radio’s afternoon host, and there isn’t a more relaxed and relaxing host than the warm-voiced Mowat. The National Radio online guide says it best, “Wayne aims to settle you into cruise mode right away with an oasis of nostalgia, Wayne’s Music….This is a delightful part of the day, whether you’re thirty-something or eighty-wards inclined – a chance to reconnect yourself with the hits of your era, from the 1920s to the 1970s, and everything in between. Each week Wayne takes us back to a different decade to reawaken some of those sleeping memories. From Fats Waller to Abba, Doris Day to the Beatles, Alberta Hunter to Dean Martin, Duke Ellington to Supertramp…”

In my opinion, this is the most refreshing and relaxing two hour block on shortwave radio. After a hard day at the office, I find myself looking forward to two hours with RNZI. I only wish reception was as good in our winter months as it is in the summer. But then again it’s that “limited time only” availability that makes it all the more special.

Tune in Monday-Friday 0100-0300 on 17675 kHz.

A Little Laughter

Laughter may be the best medicine, but comedy has hurdles in an international environment. Because it requires a common context, what Brits, Kiwis or Canadians find funny, Americans sometimes don’t, and vice versa. Furthermore, comedy relies on language – a turn of a phrase, a double entendre, a play on words. Slang and meanings differ from place to place. Is there any wonder that there’s so little comedy on international shortwave?

There is some, nonetheless, and most SWLs are savvy enough to learn the context and get the joke. Here’s the shortlist:

BBC World Service (Mon. 1532, Tue. 0132, Sun. 2332) – The BBC still carries a bloc of “light entertainment” programming rotating several series – both new and recurring. The most popular of these are the panel games that have long been a staple of the BBC domestic services and which have found an enthusiastic audience on the World Service, as well. Two have been turning turns on the schedule this season:

Quote Unquote is Nigel Rees’s quiz that relies on the curiosity of the listener as to who said what when. A wide variety of guests from British broadcasting, its press and theatre ponder over all kinds of quotes, whether from a great novel, a line from a film, a song title or a catchphrase. It’s the ensuing inevitable play on words that provides the humor and entertainment.

Just A Minute is one of my favorites. It relies on the seemingly simple task, set to the four celebrity contestants, of speaking for one minute on unlikely subjects without hesitation, deviation or repetition. It’s much harder than it sounds and prompts a bevy of challenges, counter-challenges and friendly harrassment that often provoke deep belly laughs.

These two undoubtedly will return in the coming months; but for the next six weeks from June 30, broadcaster Simon Fanshawe (according to BBC On-Air) “will bring a cornucopia of comedy, quotations, literature and laughter” in Fanshawe Gets to the Bottom of… (presumably all sorts of things!)

Radio Canada International – For some time, RCI has scheduled two programs from the CBC Radio One domestic network:

The first is Vinyl Cafe (Sat. 1405), which will remind stateide listeners of A Prairie Home Companion to some extent. Humorist Stuart McLean presides over a fictional record store in a fictional Canadian small town with its own peculiar cast of fictional characters. McLean spins stories a la Keillor and features Canadian musicians.

The other is Madly Off in All Directions (Sat. 2230), a satirical half-hour spearing Canadian politicians and regional foibles. During the summer, it’s replaced by a program featuring Canadian stand-up acts and excerpts from various comedy shows.

Radio New Zealand International – The Saturday Comedy Zone (Sat. 0130) and Play It Again Zone (0130) originate from the domestic National Radio service. Both programs feature a random selection of humorous series and programs – the former usually of Kiwi vintage and the latter often old BBC chestnuts.

For frequencies, consult the MT Shortwave Guide and, until August, r e l a x with good listening!
Shortwave Guide

HOW TO USE THE SHORTWAVE GUIDE

Convert your time to UTC.

Broadcast time on ① and time off ② are expressed in Coordinated Universal Time (UTC) - the time at the 0 meridian near Greenwich, England. To translate your local time into UTC, first convert your local time to 24-hour format, then add (during Daylight Time) 4, 5, 6 or 7 hours for Eastern, Central, Mountain or Pacific Times, respectively. Eastern, Central, and Pacific Times are already converted to UTC for you at the top of each page.

Note that all dates, as well as times, are in UTC, for example, a show which might air at 0030 UTC Sunday will be heard on Saturday evening in America (in other words, 8:30 pm Eastern, 7:30 pm Central, etc.).

Find the station you want to hear.

Look at the page which corresponds to the time you will be listening. On the top half of the page English broadcasts are listed by UTC time on ①, then alphabetically by country ②, followed by the station name ③. If the station name is the same as the country, we don't repeat it, e.g., "Vanuatu, Radio" [Vanuatu].

If a broadcast is not daily, the days of broad- cast ④ will appear in the column following the time of broadcast, using the following codes:

- S/S: Sunday
- M/M: Monday
- T/T: Tuesday
- W/W: Wednesday
- Th/H: Thursday
- F/F: Friday
- Sa/A: Saturday
- D: Daily
- mon/MON: Monthly

In the same column ⑤, irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vl" (various languages).

Choose the most promising frequencies for the time, location and conditions.

The frequencies ⑥ follow to the right of the station listing; all frequencies are listed in kilo- hertz (kHz). Not all listed stations will be heard from your location and virtually none of them will be heard all the time on all frequencies.

Shortwave broadcast stations change some of their frequencies at least twice a year, in April and October, to adapt to seasonal conditions. But they can also change in response to short-term conditions, interference, equipment problems, etc. Our frequency manager coordinates published station schedules with confirmations and reports from her monitoring team and MT readers to make the Shortwave Guide up-to-date as of one week before print deadline.

To help you find the most promising signal for your location, immediately following each frequency we've included information on the target area of the broadcast. Signals beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible.

Target Areas:
- Asia
- Australia
- Central America
- Latin America
- Europe
- Middle East
- North America
- South America
- Various

Choose a program or station you want to hear.

Selected programs for prime listening hours appear following the frequencies - space does not permit 24 hour listings nor can every station be listed. However, listings for the most popular stations and selected lesser-known stations illustrate the variety available on shortwave. The format of the listings alternates among three different styles - by station, by genre and by day - month by month. Times listed are approximate and programs are subject to change.

The program listings emphasize broadcasts targeted to North America. In most cases, the stations and programs listed should be readily receivable in North America using a portable radio. Most broadcasters produce one broadcast in English per day that is repeated over a 24 hour period to all areas. If you are able to listen to transmissions to other areas of the world during "non-prime time" hours, referring to the prime time listings for those stations will likely be helpful in determining what programs will be broadcast.

Occasionally, a program or station listing may be followed by a reference to another listing for the same program or station at a different time. This is done to conserve space and make it possible to provide more listings.

MT MONITORING TEAM

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Mark Fine, VA
markfine@monitoringtimes.com

Program Highlights

John Figliozzi

AN RCI REVIVAL

Thankfully, listeners - both Canadian and international - have never given up on Radio Canada International even on the all-too-many occasions when its prospects looked bleaker. That steadfast faith appears to be paying off as RCI slowly but steadily emerges from its most recent near-death experience with a roster of developing programs that demonstrate a sharper and more consistent focus than in recent years. One program (though no longer on the schedule) already has earned international accolades: Wojtek Gwiazda's documentary "Refugees," from his Canada in the World series, received special commendation from the Asia Pacific Broadcasting Union. (The audio file of the program remains available from http://www.rcinet.ca.)

RCI's in-house productions now bring a strong, welcome, and much-needed Canadian focus and perspective to major areas of interest to international listeners. After all, if RCI doesn't do it, who will? Current features on the schedule include Business Sense (Canadian products, businesses and practices), Media Zone (Canadian journalists' forums), Sci-Tech File (Canadian research and innovations), Spotlight (Canadian arts and culture), and The Maple Leaf Mailbag. The daily magazine Canada Today also appears in two editions, including a new live edition hosted by Gwiazda for the Americas and India.

Full details for RCI's service to the Americas in English are included in each month's SWG.

DRM LAUNCHES

From June 16, Digital Radio Mondiale (featured extensively in April's MT) has launched officially a regular schedule of daily transmissions with broadcasters like Deutsche Welle, Radio Netherlands, BBC World Service, Radio Sweden and RCI. There are sure to be others by the time you read this. Details on this and on how to receive these broadcasts may be found at http://www.drm.org and http://www.rnw.nl/realradio/html/drm.html. Consumer-grade standalone portable receivers are expected to be available within the next year.
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### 1900 UTC - 3 PM E / 2 PM C / 1 PM P

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Shortwave Guide

[Full text of the Shortwave Guide provided here]

VOICE OF RUSSIA

0200 D News; 0211 S/M/H Moscow Mailbag, T/F Soviet Radio Business; 0230 D News in Brief; 0232 S Songs from Russia, M This is Russia, T Kaleidoscope (Russian events), W Musical Portraits, H Moscow Yesterday & Today, F Russian Today by Radio, A Audio Book Club (Russian lit.); 0246 S You Write to Moscow; 0254 W Russia: People & Events.

WBCQ, Maine

7415 kHz: 0200 S Pocket Calculator (about small electronic devices), M Radio New York International (cont'd).

WHRA, Tennessee

5745 kHz: 0230 M DXing with Cumbre.

WWCR, Tennessee

5070 kHz: 0230 S World of Radio.

RADIO BUDAPEST

0230 D News; 0235 S Insight Central Europe; M Eu- rope Unlimited (trade) or Headline Hungary (travel) or Spotlight (culture) or And the Gatepost (letters), T/A Hungary Today (current events magazine); 0250 A DX Corner.

RADIO SVERIGE

0230 S Network Europe (Europe magazine-1st week)/Studio 49 (topical discussion-4th), M In Touch with Stockholm (listener contact-1st)/Sounds Nordic (rock music-ec.1st), T/A Six Degrees North (regional report); 0245 S Sports Scan, W Close Up (profiles of Swedish athletes), T/M Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), A A Review of the Newsweek.

VOICE OF VIETNAM


0300 UTC/11pm E/8pm P - Page 44 Freqs

BBC WORLD SERVICE (am)

0300 D News; 0306 S From Our Own Correspondent, M Talking Point, T/A Outlook (magazine); 0332 People & Politics; 0345 T/A Off The Shelf (book readings).

CHINA RADIO INTERNATIONAL

0300 D News & Reports, 0310 S Report on Developing Countries; 0315 A Cutting Edge (sci/tech); 0320 S In The Spotlight (cultural magazine); 0330 M People in the Know (China's leading personalities), T Biz China, W China Horizons (China outside Beijing), H Voices from Other Lands, F Life in China, Aisten- ters' Garden.

RADIO AUSTRALIA

0300 D News; 0305 S Feedback (letters, station news, on communications), A Rural Reporter; 0310 M-F Regional Sports Report; 0320 M-F Life Matters (social issues); 0330 S Jazz Notes, A Australian Country Style; 0345 Heywire (young rural Australians).

Special service: 0305 S/A Grandstand (live sports action) on 9660, 12080, 17580, 21725 kHz. only.

RADIO HABANA CUBA


RADIO NEW ZEALAND INTERNATIONAL


RADIO FOR PEACE INTERNATIONAL, Costa Rica

0300 S Far Right Radio Review (cont'd), M Voices of Our World (Maryknoll program), T Honoring Mother Earth: Indigenous Voices (cont'd), W Living Enrich- ment Center, H Global Community Forum (cont'd), F A Woman's Voice (cont'd), A A World of Possibilities; 0330 S World Citizens Weekly Commentary, M Perspec- tive (UN program), T In the Moment, W Peace Forum, H Scope (UN program), F Tropical Conserva- tion News(airforests), A Newman Report; 0345 S/M Hightower Report (commentary), T/A UN Today; 0348 S/M Earthwatch (ecology); 0351 S/M Earth & Sky (astronomy); 0355 S/M World Opinion (on terrorism).

RADIO PRAGUE

0300 D News; 0305 S Magazine (local color), M Letter from Prague, T/H Asian (media), F Nordic Lights (Ist)/Greer Scan (Swedes-1st/3rd), A Review of the Newsweek.

RADIO TAIPEI INTERNATIONAL

0300 D News; 0315 S Great Wall Forum (discussing the mainland), M Taiwan Economic Journal, T Jade Bells & Bamboo Pipes (traditional music), W Music Lounge, H Taïpeï Magazine, F Taiwan Gourmet, A Kaleidoscope (life in Taiwan), 0330 S Asia Pacific (from Radio Australia), M People, W/ F Concerns & Inspiration Beyond, H Life Unusual, F Discover Taiwan, A Mailbag Time; 0345 M-F Let's Learn Chinese (M/W/F elementary, T/H intermediate).

RADIO UKRAINE INTERNATIONAL

0300 D News; 0310 S Ukrainian Diary (weekly review), M Music from Ukraine, T/A Ukraine Today (magazine); 0335 S The Whole World on the Radio Dial (DX program); 0330 S Hello From Kiev (listener letters/music), M Roots (culture & education); 0345 T/A Closeup (current issues).

RVI, Belgium

0300 D News from Flanders, M Radio World, T/A News; 0304 T/A Flanders Today (incl. press review); 0308 M Tourism in Flanders, 0313 F Focus on Europe, W Green Society (ecology), H/A Around the Arts, F Economics, 0314 M Brussels 1043 (letters); 0318 T Sports, H Around Town, F International Report, A Tourism in Flanders; 0324 M-A Soundbox (film music).

VOICE OF AMERICA, Africa Service

0300 S/A News & Reports, M Unbreakafrika (morn- ing newsmagazine); 0323 S/A Sports; 0300 D News Headlines; 0333 S Issues in the News, M Business Report, A Our World (ecology, science & tech- nology); 0345 V Peace & Security (documentary); 0355 S/M Government Editorial.

VOICE OF RUSSIA

0300 D News; 0311 M Sunday Panorama, T/S News & Views; 0324 M Russia: People & Events; 0330 D News in Brief; 0332 S Kaleidoscope (Russian events), M Audio Book Club (Russian lit.), T/H/A 20th Cen- tury, W/Russian history/culture.

[Full text of the Shortwave Guide provided here]
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**Shortwave Guide**

**VOICE OF TURKEY**
0300 D News; 0310 D Press Review; 0315 S Outlook, M Tunes Spanning Centuries, T Last Week, W Live From Turkey, H Review of the Foreign Media, F Big Powers & the Armenian Problem, A Archaeological Settlements in Turkey, 0320 S The Stream of Love or DX Earlier, T 9660 Colors of Anatolia, H Letterbox; 2225 M/A Music, F In the Wake of a Contest; 0330 S/T Music; 0335 S Turkish Arts, M Turks in the Mirror of Centuries, T From Past to Present, H Turkey's Off the Beaten Track Sites, F The Culture Parade, A The Travel Itinerary of Anatolia.

**KWHR, Hawaii**
17510 kHz.: 0300 M DXing with Cumbre.

**WBQC, Maine**
7415 kHz.: 0300 S You Are What You Think, M Radio New York International (cont'd).

**WWCR Tennessee**
3215 kHz.: 0300 S The Golden Age of Radio Theatre.
5070 kHz.: 0300 S Spectrum (communications discussion).

**RADIO SWEDEN**
0330 S Network Europe (Europe magazine - 1st week)/Sweden Today (2nd)/Spectrum (arts magazine - 3rd)/Studio 49 (Providus, Youth Club, H Partners in a Changing World, A Cultural Survey)/0440 S, Bucharest Along the Centuries, T Pages of Romanian Literature, W/F Skylark (folk music), H Stage and Screen, A Spectator (voice of the people)/0445 S DX Mailbag, T Romanian Hits, H Romanian Musicians, A Romanian Folk Music At Its Best/0450 M Romanian Folk Music At Its Best, A Sports Roundup, W Athlete of the Week, H Sports Club, F Football Flashes, A Sports Weekend.

**VOICE OF VIETNAM**

**0400 UTC/12am E/9pm P - Page 45 Freqs**

**BBC WORLD SERVICE (am)**

**CHINA RADIO INTERNATIONAL**
0400 D News & Reports; 0410 S Report on Developing Countries; 0415 A Cutting Edge (sci/tech); 0420 S Studio 49 (Providus, Youth Club, H Partners in a Changing World, A Cultural Survey)/0440 S, Bucharest Along the Centuries, T Pages of Romanian Literature, W/F Skylark (folk music), H Stage and Screen, A Spectator (voice of the people)/0445 S DX Mailbag, T Romanian Hits, H Romanian Musicians, A Romanian Folk Music At Its Best/0450 M Romanian Folk Music At Its Best, A Sports Roundup, W Athlete of the Week, H Sports Club, F Football Flashes, A Sports Weekend.

**DEUTSCHE WELLE**
0400 D News; 0405 S Inside Europe, M Mailbag, T-A Newslink Africa, H People in the Know (China’s leading personalities), T Biz China, W China Horizons (China outside Beijing), H Voices from Other Lands, F Life in China, A Listeners’ Garden.

**RADIO AUSTRALIA**
0400 D News; 0410 S/T Australian Broadcasting Corporation: Press Review, H Making Contact, A Honoring Mother Earth: Indigenous Voices; 0415 S/F In Touch with New Zealand (cont'd), W/A Science and Engineering, H Alternative Radio, F Cards on the Table (debate) or DX Mailbag, T Ockham’s Razor (science opinion); 0420 M -F Margaret Throsby (listener contact); 0430 D News in Brief; 0432 S/A DX Reports and music; 0434 M People in the Know (China’s leading personalities), T Biz China, W China Horizons (China outside Beijing), H Voices from Other Lands, F Life in China, A Listeners’ Garden; 0435 S Cuba Music.

**RADIO NETHERLANDS**
0400 D International News; 0405 S Adam & Eve, A Dutch Horizons, T Research File (science), W Music 52-15 (international music), A Documentary, F Aural Tapestry (culture), A A Good Life (development issues).

**RADIO NEW ZEALAND INTERNATIONAL**
0500 S/RNZ News Lines, F/M Daybreak (morning newspaper); 0506 S/A RNZ News, M -F Checkpoint (major domestic news), H/A Business Update, W Tourist News, F Listeners’ Letterbox; 0508 S Radio Pictures, M Romanian Itineraries, H/A Business Update, W Tourist News, F Listeners’ Letterbox; 0510 5 Link-Up (music requests); 0515 M -F In Touch with New Zealand (cont'd), A Channels Viewpoint; 0520 S Best of Talk to America, M -F VON Scope (news magazine); 0525 S/A Oman, M -F VON Scope (news magazine).
RADIO HABANA CUBA
0600 D International News; 0610 M From Habana (Cuban musicians), M-F Report and music; 0615 S Reports and music; 0630 M The Jazz Place or Top Tens, T-S News Bulletin; 0635 S World of Stamps, T-A Reports and music; 0650 S Cuban music.

RADIO JAPAN - NHK WORLD

RADIO NEW ZEALAND INTERNATIONAL
0600 D RNZ News; 0607 S Whenua (Maori magazine), M-F What's Going On? (arts & entertainment), A The Mix ('live' music acts); 0630 M-F Worldwatch (international news) 0645 S/M-F Pacific News.

RADIO FOR PEACE INTERNATIONAL, Costa Rica
0600 S World of Radio, M Spiritual Awakening, T-A Freespeech Radio News (Pacificas Reporters Against Censorship daily newscast); 0630 S/RPF Mailbag, M World of Radio, T/H/A Hightower Radio (commentary), W Counterspin (media analysis), F This Way Daily (magazine); 0635 T/H/A Earthwatch (ecology); 0640 T/H/A Earth & Sky (astronomy); 0645 T Tropical Conservation Newsbureau (rainforests), H World Citizen's Weekly Commentary, A Women (UN program).

VOICE OF AMERICA, Africa Service
0600 S/A News & Reports, M-F Daybreak Africa (morning newsmagazine); 0623 S/A Sports; 0630 S/A News Headlines; 0633 S Main Street (about America, incl. Kim Elliott media report), A On the Line (US foreign policy).

VOICE OF NIGERIA

KWHR, Hawaii
17780 kertz.; 0600 A DXing with Cumbre.

1000 UTC/6am E/3am P - Page 48 Freqs

BBC WORLD SERVICE (am)
1000 S/A News, M-F World Briefing; 1006 S From Our Own Correspondent, A Assignment; 1032 S Reporting Religion, M-F World Business Report, A The Interview; 1045 S/M-H Sports Roundup, F Football Extra.

RADIO AUSTRALIA
1000 D News; 1005 S Go Zone (pop music), M-F Asia Pacific (regional current affairs), A Australian Express (magazine); 1010 M Health Report, T Law Report, W Religion Report, H Media Report, F The Sports Factor.

RADIO NETHERLANDS
1030 S/A News, M-F Newsline; 1035 S Wide Angle (week in review), A Europe Unzipped; 1055 S The Week Ahead (program previews), A Insight (commentary).

RADIO NEW ZEALAND INTERNATIONAL
1000 D News; 1005 S Mediawatch, M-F Late Edition (the day's news), A Deep Purple (relaxing music/nostalgia); 1035 S Sunday Supplement.

VOICE OF AMERICA (NewsNow)
1000 D News and Reports; 1023 D Sports; 1030 D News Headlines; 1033 S/H Main Street (life in the US), F/A On the Line (US foreign policy); 1035 A Government Editorial.

KXWR, Hawaii
11565 kHz.: 1000 A DXing with Cumbre.

WWCR, Tennessee
5070 kHz.: 1000 A Left Behind; 1010 S A View from Europe.
15825 kHz.: 1015 S Ask WWCR (letters).

BBC WORLD SERVICE (am)

BBC WORLD SERVICE (eas)
1100 S World Briefing, M-F News; 1106 M-F Outlook (magazine), A The Ticket (arts performances); 1120 S British News; 1132 S Play of the Week, 1145 M-F Off the Shelf (book readings).

RADIO AUSTRALIA
1100 D News; 1105 S Correspondents' Report, M Asia Pacific (regional current affairs); 1130 S The Arts on RA, M-F Bush Telegraph (rural life), A The Europeans.

RADIO JAPAN - NHK WORLD

RADIO KOREA INTERNATIONAL
1120 D News; 1140 S Korean Pop Interactive (request call-in show), M-F Sixty Degrees North (regional report), A Worldwide Friendship (letters, DX news); 1145 M-F Seoul Calling (magazine).

RADIO NETHERLANDS
1100 S Aural Tapestry (culture), M EuroQuest (Europe magazine -1st week)/Sweden Today (2nd)/Sounds Nordic (rock music-exc. 1st), M-H Nine to Noon (current affairs), F Sports Story; 1130 S Top 5.

RADIO SWEDEN
1130 S In Touch with Stockholm (listener contact-1st)/ Sounds Nordic (rock music-exc. 1st), M-F Sixty Degrees North (regional report), A Network Europe (Europe magazine -1st week)/Swedish Today (2nd)/Spectrum (arts magazine-3rd)/Studio 49 (topical discussion -4th); 1245 M Sports Scan, T Close Up (pro-files of Swedes-1st/3rd), H Nordic Lights (1st/4th/Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), F Review of the Newsweek.

WHRI, Indiana
9840 kHz.; 1200 A DXing with Cumbre.
15105 kHz.; 1230 A DXing with Cumbre.

WWCR, Tennessee
5070 kHz.: 1205 S Rock the Universe (Christian rock music).
15825 kHz.; 1230 T Musical Memories.

1300 UTC/9am E/6am P - Page 49 Freqs

BBC WORLD SERVICE (am)
1300 D NewsHour; 1305 M-F Caribbean Business; 1310 M-F Caribbean Morning Report 2nd Edition; 1315 M-F NewsHour (cont'd.).

BBC WORLD SERVICE (eas)
1200 S Play of the Week (cont'd. from 1130), M-A News; 1205 M/F Courtenay, T-Martin, A Worldwide Friendship (cont'd); 1215 M Korea Today & Tomorrow (peninsula issues), T Korean Kaleidoscope (Korean society), W Wonderful Korea (tourism), H Seoul Report (interviews)

RADIO AUSTRALIA
1200 D News; 1205 S The Spirit of Things (spiritual matters), M-H Late Night Live (discussion and interviews), F Sound Quality (innovative music), A The Music Show, 1235 S The Pulse (aussie music now).

RADIO CANADA INTERNATIONAL
1200 S/M-F News; 1205 M-F The Current (current affairs joined in progress).

RADIO KOREA INTERNATIONAL
1200 S Korean Pop Interactive (cont'd.), M-Seoul Calling (cont'd.), A Worldwide Friendship (cont'd); 1215 M Korea Today & Tomorrow (peninsula issues), T Korean Kaleidoscope (Korean society), W Wonderful Korea (tourism), H Seoul Report (interviews).

RADIO NETHERLANDS
1200 S/A News, M-F Newsline; 1205 S Sincerely Yours (letters), A Europe Untipped.

RADIO NEW ZEALAND INTERNATIONAL
1200 S/F RNZ News, A Forces Programme (cont'd.); 1205 S Sportsworld (recap magazine), M-F Late Edition.

RADIO FOR PEACE INTERNATIONAL, Costa Rica
1200 S World of Radio, M Spiritual Awakening, T-A Freespeech Radio News (Pacificas Reporters Against Censorship daily newscast), 1200 S/RPF Mailbag, M World of Radio, T/H/A Hightower Radio (commentary), W Counterspin (media analysis), F This Way Daily (magazine), H Aural Horizons (science), F Documentary, A Amsterdam Forum (conversations); 1230 T/H/A Earthwatch (ecology); 1240 T/H/A Earth & Sky (astronomy); 1245 T Tropical Conservation Newsbureau (rainforests), H World Citizen's Weekly Commentary, A Women (UN program).

RADIO SWEDEN
1230 S In Touch with Stockholm (listener contact-1st)/Sounds Nordic (rock music-exc. 1st), M-F Sixty Degrees North (regional report), A Network Europe (Europe magazine -1st week)/Swedish Today (2nd)/Spectrum (arts magazine-3rd)/Studio 49 (topical discussion -4th); 1245 M Sports Scan, T Close Up (pro-files of Swedes-1st/3rd), H Nordic Lights (1st/4th/Green Scan (ecology-2nd)/Heart Beat (health-3rd)/The S-Files (things Swedish-4th), F Review of the Newsweek.

58 MONITORING TIMES July 2003
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Aerial Refueling Tracks, Part II

The following is a comprehensive list of aerial refueling tracks and anchors, frequencies, and scheduling units set up in the continental United States, Puerto Rico, Bermuda, Alaska and Hawaii. The listing was started last month, which included the map showing the track locations.

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<tr>
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<th>Assigned</th>
<th>Scheduling Unit</th>
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Notes: 8000-14000 restricted to C-130 receivers only scheduled by the 16505 Uhrfult, FL190/230 scheduled by 93BS Barksdale.
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**Aerial Refueling Anchors**

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<td>NE ADS Rome NY</td>
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(Continued next month)
Converting Console IDs

Information about talkgroups in a trunked radio system is often available in different forms. Lists posted on the Internet or released by public safety agencies may have different formats or report numbers in unexpected ways.

**Rapides Parish, Louisiana**

Dear Dan,

I live in Rapides Parish, Louisiana. The parish was on a Type I system, but is in the process of switching to a Motorola Type II system. I was able to obtain some talkgroup ID information for this system. The talkgroup IDs I have start at 800001 and go to 801117. All talkgroup IDs that I have seen for other areas only go to 5 digits and are usually even numbers. When I put these numbers into a scanner, it says invalid ID. Do these numbers need to be converted and can they be converted by some formula to an ID that the scanner will monitor?

Ron

Ron, what you probably have is a list of “Console” Identifiers (IDs), which are the numbers that appear on the operator’s console in the dispatch center when a radio is using the system. As you’ve seen, each of these console numbers has a prefix of “8.” The rest of the number is either a talkgroup or radio identifier. It does not include the four status bits that are transmitted over the air and displayed by your scanner as the final digit.

Talkgroup identifiers are usually shown as even numbers because they are reported with all status bits off. In a Motorola Type II system the last four bits (“binary digits”) represent the status of the radio.

If the left-most of those four bits is set (has a value of ‘1’ rather than ‘0’) it means the transmission is encrypted. The three right-most status bits indicate if the message is an emergency and whether the talkgroup is interconnected in some way. More information about Motorola Type II trunking can be found in the April 2001 Tracking the Trunks column.

A status of all zeroes indicates a normal transmission, so a regular message has status bits of 0000 (0 in decimal). Since the status bits are the least significant part of the talkgroup number, they determine whether the number is odd or even. Since all four bits are normally set to zero, lists of decimal talkgroup numbers show differences of 16 or some multiple of 16. Some lists drop the last four bits altogether.

So, to convert each of those console identifiers, remove the “8” prefix and multiply the remaining number by 16. What you have at that point is the decimal representation of the talkgroup number that most scanners and software programs recognize. For example, the console identifier 800050 would be 50 times 16, or 800 decimal.

If you need that number in hexadecimal format, the easiest way to change it is by using a calculator with a conversion capability. Microsoft Windows has this capability in their Calculator accessory, if you choose the “Scientific” mode under the View selections. Click on the “Dec” radio button and enter your decimal number. Then click on the “Hex” radio button and the hexadecimal value will be displayed.

Below is a table that with some examples that should help you perform the conversions.

<table>
<thead>
<tr>
<th>Console Identifier</th>
<th>Decimal</th>
<th>Hex</th>
</tr>
</thead>
<tbody>
<tr>
<td>800001</td>
<td>16</td>
<td>0010</td>
</tr>
<tr>
<td>800002</td>
<td>32</td>
<td>0020</td>
</tr>
<tr>
<td>800003</td>
<td>48</td>
<td>0030</td>
</tr>
<tr>
<td>800004</td>
<td>64</td>
<td>0040</td>
</tr>
<tr>
<td>800005</td>
<td>80</td>
<td>0050</td>
</tr>
</tbody>
</table>

...800010     160     00A0
800011     176     00B0
...800050     800     0320
800051     816     0330
...80100     1600     0640
801001     1616     0650
...801000     8000     1F40
801001     8016     1F50
...801002     16000     3E80
801003     16016     3E90
...801117     17872     45D0

The frequencies I find listed for Rapides Parish are 855.7125, 855.9625, 856.7125, 856.9375, 857.7125, 857.9375, 858.2625, 858.7125, 859.7125, 859.9375, 860.2625, 860.7125 and 860.9375 MHz. I don’t have any talkgroup information, so Ron, please send along your list of talkgroups!

**Jacksonville, Florida**

The police in Jacksonville, Florida, have begun encrypting the digital radio transmissions on their trunked radio system. Under the cover of homeland security, the decision was made to use the optional encryption capability in their system. In defending their decision, the department also indicated that criminals use scanners to keep track of police patrols.

It is not clear which police transmissions, if any, will remain “in the clear” (unencrypted). It is also undecided whether the news media will be given access to some of the less sensitive police talkgroups. Fire and rescue transmissions, as well as public works and other municipal agencies, are expected to remain in the clear.

The decision of the department to encrypt has raised the normal concerns about visibility and accountability within the police department, which has been troubled by corruption and excess-
sive force complaints in the past.

The Jacksonville trunked radio system is a ten-site Motorola ASTRO system used by police, fire, emergency medical personnel as well as city and Duval County employees. This $41 million system has nearly 10,000 radios, half of which are used by police and other law enforcement departments.

Frequencies used on the system are 854.9625, 855.2125, 855.4875, 855.9626, 855.9875, 856.2125, 856.2625, 856.4625, 856.7125, 856.7375, 856.9375, 856.9625, 856.9875, 857.2375, 857.4625, 857.7125, 857.9375, 857.9625, 858.2125, 858.2625, 858.3625, 858.4125, 859.4125, 859.4625, 859.7125, 859.7375, 859.9375, 859.9625, 859.9875, 860.4625, 860.7125 and 860.9375 MHz.

**Talkgroups:**

Jacksonville Fire/Rescue (Digital) 17360 43D Main
17392 43F Fire Dispatch
17424 441 Emergency Medical Service 1

Jacksonville Sheriff's Office (Digital, Encrypted) 18320 47A Zone 1
18352 47B Zone 2
18394 47D Zone 3
18416 47F Zone 4
18448 481 Zone 5
18480 483 Zone 6

Analog talkgroups
16 001 Public Works
48 003 Public Works
336 015 Parking Enforcement
432 018 Parks Department
688 02B Street Department
944 03B Parks Department
1104 045 Jacksonville Fire Rescue
1136 047 Jacksonville Fire Rescue Tactical
1168 049 Jacksonville Fire Rescue Tactical (simulcast 460.525 MHz)

Nearby Jacksonville Beach operates a Motorola Type II system on 856.7625, 857.7625, 858.7625, 859.7625 and 860.7625 MHz. Some talkgroups:

57360 Fire Dispatch
57392 Fireground
57968 Lifeguard Dispatch
58000 Lifeguard Supervisors
58768 Police Dispatch
58800 Police Tactical

**Anne Arundel County, Maryland**

Anne Arundel County, Maryland, will be updating their radio system to the tune of $12.7 million over the next year. The county is working to reduce or eliminate cellular tower interference at more than 60 locations, where officers have been unable to reliably communicate with their dispatch center. An additional 16 radio frequencies, to be added as part of the upgrade, should help this situation. Improvements will also include the ability to handle both analog and digital radios.

The county currently operates a Motorola Type II analog system on the following frequencies: 856.3625, 856.3875, 856.4125, 857.3625, 857.3875, 857.4125, 858.3625, 858.3875, 858.4125, 859.4125, 860.3625, 860.3875 and 860.4125 MHz.

**Talkgroups:**

57360 E01 Emergency Medical Service Dispatch
57392 E03 Emergency Medical Service Dispatch
57424 E05 Emergency Medical Service Dispatch
57488 E09 Fireground Operations
57520 E0B Fireground Operations
57552 E0D Command
57584 E0F Mutual Aid (simulcast on 154.280 MHz)
57808 E1D Fire to Police

**Annapolis, Maryland**

Meanwhile, in the state capital of Annapolis, Maryland, a new $330,000 mobile data system from Motorola has come on-line. Twenty patrol cars are equipped with the Mobile Workstation 520 (MW520), a computer system with a radio-modem and flat-panel color touch screen running the Windows operating system. The unit will be able to display text as well as photographs and fingerprints from state and federal databases. To the north of Annapolis, in Pennsylvania, the state police there are deploying MW520 wireless workstations in more than 600 vehicles after a successful test in the southern part of the state.

**Marin County, California**

In April of this year Marin County voted to begin operation of their $21 million trunked radio system without a resolution on the placement of a repeater site in Tiburon, in the southern part of the county. The system was originally scheduled to go on-line more than a year ago, but local objections to the construction of some of the dozen or so sites in Marin and Sonoma counties have delayed completion. The towns of Belvedere, Mill Valley and Tiburon will lack effective coverage until the repeater site issue can be resolved.

Marin County, just north of San Francisco, currently operates a Motorola ASTRO mixed analog and digital system in the UHF (Ultra High Frequency) band with a base of 482 MHz, spacing of 12.5 MHz and an offset of 380. The system frequencies are 482.3500, 482.6250, 482.8750, 482.9375, 483.0250, 483.1250, 488.7000 and 489.0750 MHz.

**Hamilton County, Ohio**

Hamilton County, in the southwestern corner of Ohio, is planning on having their $35 million radio system up and running by fall. It will replace a 25-year-old UHF system and a VHF fire network. The county has purchased nearly 2,000 radios for the 40 communities and agencies that will join the system, although some local police departments are objecting to the user fees charged by the county to construction and operating costs.

Meanwhile the city of Cincinnati is expected to fully complete their new $24 million system in about a year and half, at which point users from both systems will be able to talk to each other directly.

The Hamilton County radio network is a Motorola ASTRO digital system, but some reports indicate analog traffic is also in use. There are a half-dozen sites operating on the following frequencies: 866.1625, 866.2500, 866.2750, 866.3000, 866.6500, 866.7875, 867.2375, 867.5375, 867.7375, 867.7625, 867.8125, 867.8500, 868.1250, 868.2625, 868.3625, 868.5625 and 868.9500 MHz.

Some talkgroups on this system include:

48 003 Engineering
4816 12D Water Department
4848 12F Sewer Department
6512 197 Building Inspectors
9616 259 Fire Mutual Aid
33616 835 County Fire Dispatch (East)
33648 837 County Fire Dispatch (West)
33776 83F County Fireground 1
33808 841 County Fireground 2
33840 843 County Fireground 3
33872 845 County Fireground 4
33904 847 County Fireground 5
33936 849 County Fireground 6
33968 848 County Fireground 7
34000 84D County Fireground 8
35216 899 County Sheriff Dispatch (East)
35248 89B County Sheriff Dispatch (West)
35280 89D County Sheriff Dispatch (Central)
35536 8AD County Sheriff Dispatch Car-to-car

The new Cincinnati system is a Motorola ASTRO digital system (with a 3600-baud control channel) using the following frequencies: 866.1125, 866.1875, 866.2125, 866.4625, 866.5625, 866.5875, 866.6875, 866.8125, 866.8375, 867.0875, 867.1125, 867.2625, 867.3125, 867.3375, 867.6125, 867.6375, 867.6625, 868.6375, 868.7875 and 868.8625 MHz. Detectives have been heard on talkgroup 12912 (hex 327).

Can anyone in the Hamilton County area give us a more up-to-date report on the activity on these two systems?

As a reminder, APCO Project 25 systems frequencies and tower locations are available on my website at http://www.signalharbor.com. I welcome your questions, comments and corrections via my e-mail address, dart@monitoringtimes.com. Until next month, happy monitoring!

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**Longwave Resources**

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-530 kHz</td>
<td>WWVB, Omega, Whistlers, beacons and utility stations. Covers 0-530 kHz.</td>
<td>$13.95 postpaid</td>
</tr>
<tr>
<td>0-530 kHz</td>
<td>Sounds of Longwave 60-minute Audio</td>
<td>$13.95 postpaid</td>
</tr>
<tr>
<td>3.3-5 MHz</td>
<td>Audio Guide listing Longwave Resources</td>
<td>$13.95 postpaid</td>
</tr>
<tr>
<td>3.5-5 MHz</td>
<td>The BeaconFinder A 65-page guide listing Frequency, ID and Location for hundreds of LF beacons and utility stations. Covers 0-530 kHz.</td>
<td>$13.95 postpaid</td>
</tr>
</tbody>
</table>

---

Kevin Carey
P.O. Box 56, W. Bloomfield, NY 14585

Jul 03 Monitoring Times
Homeland Security, Part Deux

In the May edition of this column we presented an overview of the new Department of Homeland Security (DHS). In this month’s edition we will start looking at some specific bureaus within the new Department and their frequencies. We start this off with the one DHS agency that is the most visible and has received the bulk of the press coverage since 9/11 – The Transportation Security Administration or TSA.

Transportation Security Administration

On November 19, 2001, President George W. Bush signed into law the Aviation and Transportation Security Act (ATSA), which, among other things, established a new Transportation Security Administration (TSA) within the Department of Transportation. Of course, the TSA was rolled into the Department of Homeland Security earlier this year.

The Transportation Security Administration is responsible for civil aviation security and has established federal security operations in the nation’s 429 commercial airports. The most visible sign of the TSA is the presence of federal passenger and baggage screeners at U.S. airports. Several readers have written The Fed Files over the last few months and asked, “What frequencies can we hear the TSA on?”

Since the TSA’s original roots came from their bureau assigned to the FAA, we went back to check our extensive notes on where those operations have appeared in the radio spectrum in the past. For many years 172.150 MHz (simplex - channel 9) was a part of the FAA’s National Radio Communications System (NARACS) bandplan and was used for security/law enforcement.

TSA Radio Bandplan

Recently several Fed File regulars have reported TSA activity on 172.150 MHz. One of our regular reporters, Brian J. Cathcart, passed along the following:

F1 172.150  S1 simplex 1 [digital]
F2 172.150  S1 simplex 2 [digital]
F3 172.150  S1 simplex 3 [digital]
F4 172.150  S1 simplex 4 [digital]
F5 172.900  S2 simplex 5 [digital]
F6 169.300  S3 simplex 6 [digital]
F7 172.900  R1 repeater 1 [169.300 input][digital]
F8 172.900  R1 repeater 2 [169.300 input][digital]
F9 172.900  R1 repeater 3 [169.300 input][digital]
F10 172.900  S2 simplex 7 [digital]
F11 172.900  S2 simplex 8 [digital]
F12 166.4625  F1 Treasury Simplex (with 103.5 CTCSS) [analog]
F13 166.4625  F1 Treasury Simplex [digital]

Note: Channels F12 and F13 are only used with Joint Treasury Operations, not in daily use.

TSA is apparently using digital conventional talkgroups (a digital feature of APCO-25 conventional), as the channels do not hear each other (i.e. TX on Channel 3 is not heard on Channel 4, etc). The exception to this is Channel 10 which can be heard on Channel 7.

The radios are Motorola Astro XTS5000 Model 1 with these features:

- Hard Ware Encryption
- AES/DES-XL/DES-OFB Encryption
- Astro 25 and MDC OTAR
- Advanced Secured Multi/OTAR

Brian says he does not know if they actually have encryption modules installed in the radios, but if they don’t, the radios are ready for them. So far, in all of the airports that he has traveled through, none of the TSA agents are using encryption, so he has been able to hear everything. However it’s rather mundane conversations, nothing of national security importance!

In addition to Brian’s report above, two other Fed File regulars, Chris Parris and MT’s Robert Wyman, have been traveling out and about to see what TSA they could snag. Chris, Bob, and Brian have reported TSA activity at the following airports:

- CLT Charlotte-Douglas International, North Carolina (172.900/169.300 repeater)
- DTW Detroit Metropolitan Wayne County Airport, Michigan
- EWR Newark Liberty International Airport, New Jersey (172.150 simplex)
- FLL Fort Lauderdale-Hollywood International, Florida
- LAX Los Angeles International, California (172.150 simplex)
- MCO Orlando International, Florida (172.900/169.300 repeater)
- PDX Portland International, Oregon (172.150 simplex)
- PIA Greater Peoria Regional, Illinois
- PIT Pittsburgh International, Pennsylvania (172.150 simplex, 172.900/169.300 repeater)
- RDU Raleigh-Durham International, North Carolina
- SAN San Diego Limbergh Field, California (172.150 simplex)
- SFO San Francisco International, California (172.150 simplex)

Brian also mentions, “One airport I just passed through that wasn’t using the new TSA frequencies was at Columbus, Ohio (Port Columbus International - CMH). TSA was using UHF analog portables. However, with a small airport like Peoria using the digital radios it’s probably safe to say that most airports in the U.S. are now (or will soon be) using digital. And I would guess that all of them would be programmed the same, since coordinating all of those radios across the U.S. would be easier that way.

“At all locations listed above, 172.150 was heard in use in simplex, with only some locations using the repeater. At Fort Lauderdale, the “input” 169.300 was heard as simplex with no activity on the output of 172.150 (of course, it’s possible they are using a different output frequency).

“Most of the XTS-5000’s I’ve seen have a big white sticker on front with the channels listed, but it’s hard to see the writing when the radio is on their belt, and with security these days you can’t exactly walk up and say “Hey can I write down what the front of your radio says?!?”

FAA NARACS

Since we mentioned the FAA NARACS net above, I thought I might as well pass along the latest known NARACS bandplan in use nationwide in Table One. CTSS Private Line tones are used within the FAA radio system with PL1 (136.5 Hz) selected as the system’s primary tone.

NEST is Moving

Kenton Hoover reports that the Nuclear Emergency Search Team (NEST) is moving into the Department of Homeland Security from the Energy Department. No word at this time if their Department of Energy (DOE) frequencies are also being transferred during their shift to the DHS.

P-25 Activity Found

Since the new Uniden APCO P-25 digital scanners hit the streets earlier this year, radio enthusiasts are discovering that a lot of the digital signals they hear in the federal bands are in fact P-25 digital streams. This is leading to a bit of a renaissance in federal monitoring among radio hobbyists. Here are just a few examples of this sort of P-25 activity from Chris Parris and Steve Donnell.

165.2875 Portland, OR [Bureau of Alcohol, Tobacco and Firearms-LVH]
Table One: National Radio Communications System

<table>
<thead>
<tr>
<th>FAA CTCSS Tones:</th>
<th>PL1 – 42 136.5 Hz (Primary), PL2 – 4B 146.2 Hz, PL3 – 5A 156.7 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 172.925/169.325</td>
<td>Air Facility Region/Sector Maintenance*</td>
</tr>
<tr>
<td>F2 172.950/169.350</td>
<td>Air Facility Region/Sector Maintenance*</td>
</tr>
<tr>
<td>F3 172.975/169.375</td>
<td>Air Facility Region/Sector Maintenance*</td>
</tr>
<tr>
<td>F4 172.850/169.250</td>
<td>Air Facility Region/Sector Maintenance*</td>
</tr>
<tr>
<td>F5 172.875/169.275</td>
<td>Air Facility Region/Sector Maintenance*</td>
</tr>
<tr>
<td>F6 172.900/169.300</td>
<td>Air Facility Region/Sector Maintenance*</td>
</tr>
<tr>
<td>F7 172.825/169.225</td>
<td>Security at Seattle, WA (SEA)</td>
</tr>
<tr>
<td>F8 172.125 simplex</td>
<td>Air Traffic Control/Flight Standards</td>
</tr>
<tr>
<td>F9 172.150 simplex</td>
<td>Air Security</td>
</tr>
<tr>
<td>F10 172.175 simplex</td>
<td>Airway Facility Maintenance</td>
</tr>
<tr>
<td>F11 166.175 simplex</td>
<td>FAA National Simplex, National Maintenance Directors Net, Regional Administrators Simplex, Scene of Accident Investigation Nationwide</td>
</tr>
</tbody>
</table>

F12 Local Use
This channel is assigned for local use as needed.
* (also talk around on repeater output)

Table Two lists some additional frequencies from The Fed Files used by the FAA that you might find interesting.

Table Two: Miscellaneous FAA Frequencies

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>165.6375 simplex</td>
<td>Security (Great Lakes Region)</td>
</tr>
<tr>
<td>165.6625 simplex</td>
<td>Flight evaluation teams for facility alignment (Northern Mountain Region)</td>
</tr>
<tr>
<td>165.7500 simplex</td>
<td>Scene of the accident investigation (Nationwide)</td>
</tr>
<tr>
<td>165.7625 simplex</td>
<td>MALSR (Medium Intensity Approach Lighting System) lighting control – Data (Nationwide)</td>
</tr>
<tr>
<td>169.2250 simplex</td>
<td>Scene of the accident investigation (Alaska)</td>
</tr>
<tr>
<td>169.3500 simplex</td>
<td>Administration net (Great Lakes Region)</td>
</tr>
<tr>
<td>169.5750 simplex</td>
<td>Portable repeaters and handhelds for FAA/NTSB scene of the accident coordination (Alaska)</td>
</tr>
<tr>
<td>170.1500 simplex</td>
<td>Cambridge, MA TSC (DOT) security communications</td>
</tr>
<tr>
<td>171.9750 simplex</td>
<td>Portable repeaters and handhelds for FAA/NTSB scene of the accident coordination (Alaska)</td>
</tr>
<tr>
<td>172.1250 aero simplex</td>
<td>Flight check communications with air facilities (Great Lakes Region)</td>
</tr>
<tr>
<td>172.1500 simplex</td>
<td>Flight standards simplex net (West Pacific Region)</td>
</tr>
<tr>
<td>172.1750 aero simplex</td>
<td>Security training net (Nationwide)</td>
</tr>
<tr>
<td>172.325/169.575</td>
<td>Portable repeaters and handhelds for FAA/NTSB scene of accident coordination (Alaska)</td>
</tr>
<tr>
<td>172.875/169.250</td>
<td>Security and flight standards net (Central Region)</td>
</tr>
<tr>
<td>172.875/169.350</td>
<td>Security/Sky Marshal net (Airports nationwide)</td>
</tr>
<tr>
<td>172.925 simplex</td>
<td>Flight evaluation teams for facility alignment (West Pacific Region)</td>
</tr>
<tr>
<td>172.900/169.250</td>
<td>Security at Seattle, WA (SEA)</td>
</tr>
<tr>
<td>172.900/169.275</td>
<td>Security and flight standards net (Nationwide)</td>
</tr>
<tr>
<td>172.900/169.275</td>
<td>Security and flight standards net (Central Region)</td>
</tr>
<tr>
<td>172.900/169.300</td>
<td>Security at Seattle, WA (SEA)</td>
</tr>
<tr>
<td>173.175/169.575</td>
<td>Portable repeaters and handhelds for FAA/NTSB scene of the accident coordination (Alaska)</td>
</tr>
<tr>
<td>173.4375/169.575</td>
<td>Portable repeaters and handhelds for FAA/NTSB scene of the accident coordination (Alaska)</td>
</tr>
</tbody>
</table>

The 6th edition of the ARTSCI publication Federal Government Frequency Assignments lists several assignments as noted in Table Three and implies they might be nationwide assignments. Further research indicates that in fact they are not and that they are local use frequency assignments and designators.

Table Three: Local Frequency Assignments and Designators

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01 172.900/172.100</td>
<td>SoCal FAA Assignment – Maintenance Net (Hawthorne repeater)</td>
</tr>
<tr>
<td>A02 170.200/169.250</td>
<td>SoCal FAA Assignment – Los Angeles Federal Executive Board Emergency Net (San Pedro Hill)</td>
</tr>
<tr>
<td>H01 170.150/169.225</td>
<td>Hawaii FAA Maintenance Assignments</td>
</tr>
<tr>
<td>H02 172.150/171.2625</td>
<td>Hawaii FAA Maintenance Assignments</td>
</tr>
</tbody>
</table>

FLETC Getting New Radios
EFI, Inc. announced earlier this year that its E.F. Johnson subsidiary has received a $970,000 order from the Department of the Treasury for SMARTNET, SmartZone and Project 25 digital portable and mobile radios. The Treasury Department will deploy E.F. Johnson's software programmable portable 5100 series radio and 5300 series mobile radio at the Federal Law Enforcement Training Center (FLETC) in Gly neo, Georgia. The FLETC serves as an interagency law enforcement training organization for more than 70 federal agencies with personnel located throughout the United States and its territories. The Center also provides services to state, local, and international law enforcement agencies.

New Encryption Standard
AES (FIPS 197) is going to replace DES as the U.S. encryption standard for sensitive, but non-classified communications. It is based on the Rijndael (pronounced Rhine-doll) formula. If you want more information point your browser at: http://csrc.nist.gov/encryption/aes/. Thanks to Mark Cobbeldick for the heads up on this.

The Boeing Company in Florida
Robert Wyman, while doing an FCC search, came across these UHF business band frequencies for the Boeing Company (WPPB577) at the Kennedy Space Center in Florida. Of course, Boeing does a lot of contract work for the government and NASA in particular.

An anonymous reporter amplifies Bob’s report about the Boeing system at the Cape. “Just happened to find the Boeing Company using ASTRO on a repeater output at Cape Canaveral AFS. Frequency in use was 452.175. ‘Delta Control’ has been heard reference the gates. My FCC search on the frequency revealed the following information.”

Note: Site A are listed for Phillips Parkway (WPPB577)

### Site 1
- 451.400
- 451.250
- 452.175
- 452.225
- 461.250

### Site 2
- 451.400
- 451.250
- 451.925
- 456.9256
- 452.175
- 457.175
- 452.225
- 457.225
- 461.250
- 466.250

Our anonymous reporter indicates that so far the other frequencies have been quiet. Robert Wyman also passes along these channels which are licensed for use by Boeing at Cecil Field, Florida (ex-Naval Air Station):

- 123.225
- 123.475
- 452.175
- 452.225
- 461.250

And that does it for this edition of The Fed Files. Until next time, 73 and good hunting.

July 2003

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>165.950</td>
<td>Portland, OR [IRS Criminal Investigation Division-LVH]</td>
</tr>
<tr>
<td>170.625</td>
<td>Swanton, VT [Immigration and Naturalization Service-LVH]</td>
</tr>
<tr>
<td>170.825</td>
<td>Unid simplex traffic [Probable FBI simplex-LVH]</td>
</tr>
<tr>
<td>414.725</td>
<td>Portland, OR [US Postal Inspector Service-LVH]</td>
</tr>
</tbody>
</table>

PORTLAND, OR [IRS Criminal Investigation Division-LVH]
Digital Radio

The conversion to digital is keeping broadcasters busy. It’s keeping DXers (or at least those who write about DXing) busy, too. This month, I want to review the status of this conversion.

In the U.S., the “in-band on-channel” scheme for digital radio, better known as “IBOC,” has been approved for general use. This system puts digital subcarriers in the unused “guard bands” between channels. On AM, it also uses parts of the adjacent channels. Each station’s digital signal is broadcast on the same frequency and antenna as its analog signal. Since March 20th, U.S. stations may begin IBOC digital broadcasts at any time; they need only notify the FCC.

Canada has chosen the “Eureka” system. In doing so, they’ve joined most of the rest of the world; to my knowledge the U.S. is the only country using IBOC. I have heard rumors that stations in Windsor, Ontario, may broadcast with both systems – Eureka and IBOC – recognizing their large U.S. audience in Detroit. The Eureka system requires a different frequency band. Canada is using frequencies near 1450 MHz.

A single Eureka transmitter, using a single frequency, can broadcast as many as six different stereo programs. For example, Toronto-area stations CIAO-530, CHWO-740, CJMR-1320, CFMX-96.3, and CIRV-88.9 are all broadcast over a single digital transmitter.

Canadian stations wishing to begin digital broadcasts must apply for a license. In general, the practice seems to be for most of the stations in a given city to apply simultaneously. Digital stations are on the air in Vancouver, Windsor, Toronto, Ottawa, Halifax, and Montreal. Government practice is to assign all digital stations in a city the same power and transmitter site – all stations get the same coverage. (This is probably one reason the U.S. has rejected this system.) Note below that Toronto is getting a digital-only station – one with no analog counterpart.

Digital TV

The U.S. and Canada have agreed on a single standard for digital television. In theory, all U.S. full-power TV stations were to have begun digital broadcasts by May 1st. Many stations have obtained extensions. Roughly half are on the air, though many of them at greatly reduced power with special temporary authority. There is no mandatory deadline for digital conversion in Canada. So far, only one digital station (CITY-TV Toronto, on channel 53) is operating north of the border.

Like Eureka digital radio, digital TV cannot be broadcast on the same frequency as the analog signal. Unlike radio, the governments (both U.S. and Canada) have found second channels for digital operation within the same frequency bands used for analog. At the same time, plans call for the removal of channels 52-69 from TV service. Four of these channels will be used for public-safety communications. The rest will be auctioned for commercial service.

In theory, analog television is to come to an end in the U.S. in 2006. Few observers believe this deadline will be met. High prices, the economic slump, and slow rollout of digital carriage on cable, have limited sales of digital receivers. Poor coverage by low-powered and not-yet-on-the-air stations hasn’t helped. Some stations may decide it’s impossible to make enough money in broadcasting to pay the costs of the digital conversion. KLKE channel 24 in Albion, Nebraska, has already made this decision. They’ve turned in their license and have gone out of business.

There are three digital-only TV stations operating in the U.S. WHDT-DT in Stuart, Florida, is an independent station; WTLF-DT is a UPN affiliate in Tallahassee, Florida; and WTPX-DT is a Pax station in Antigo, Wisconsin. All three stations are running very low power. I strongly suspect their sole purpose is to qualify for “must-carry” protection on cable. I’m familiar with the Antigo area and I rather doubt there are any digital TV receivers within WTPX’s 50 kW coverage!

Comings and Goings

Toronto is getting some new radio stations. At least one of them will be widely heard outside Canada as well. A station on 1610 kHz (1,000 watts fulltime) will broadcast largely in Spanish, with some programs in five other languages including English. Another proposal for a new expanded-band station on 1650 kHz was denied, as was one for 790. Approved were two new ethnic FM stations, on 101.3 and 105.1. The existing station on 101.3 will move to 91.9.

North America will be getting its first digital-only radio station. Two groups had filed for ethnic digital stations in Toronto on 1454.56 MHz. Because the Eureka system used in Canada allows up to six stations on the same frequency, it would have been technically feasible to grant both requests. However, for non-technical reasons only one of the applications was granted. The station will broadcast in Punjabi, Hindi, and Urdu.

Elsewhere, there’s a new station operating in the expanded band. WTN1-1640 is the sister station of WVM1-570 Biloxi, Mississippi. WTN1 carries a news-talk format, and has been widely heard across North America. Mississippi can be a tough state to log; if you need it, be sure to give 1640 a try. (WCPC-940 is also widely heard near sunrise.)

Another station has returned to the air after a lengthy silent period. Kraig Krist KG4LAC, near Washington, heard “Super Power 1020” testing with oldies on April 19th. This station was formerly known as “Caribbean Christian Radio.” It’s located in the Turks and Caicos Islands, a British possession off the far east end of the Bahamas. This should be a relatively easy catch if you’re not too close to Pittsburgh.

WSAI-1530 in Cincinnati is reported testing IBOC digital broadcasting. I haven’t had much chance to check the effects on adjacent channels. It does seem to cause quite a mess on 1540.

Write me at 7540 Highway 64 West, Brasstown NC 28902-0098, or by email to dougsmith@monitoringtimes.com. Good DX!
Although the fighting in Iraq has died down, the USA's clandestine Information Radio broadcasts to Iraq are continuing. Ironically, now that the intensity of the war has scaled back dramatically, the number of loggings of your tax dollars at work on 9715 kHz around 2200 UTC and somewhat later has increased in North America lately. This station remains an excellent DX catch, so you might want to check this out during the late afternoon hours in North America. The station has been reported using various modulation modes, sometimes in AM, and sometimes in upper sideband, with an occasional logging in lower sideband. Some European listeners are still hearing this one on an alternative frequency of 4500 kHz, but propagation to the Americas on this one during the daytime is highly unlikely.

North American Pirates Shifting Frequency
Most veteran North American pirate DXers realize that 6955 kHz has been the standard frequency for pirate broadcasting for several years, since the former standard frequency of 7415 kHz was appropriated by licensed stations such as the Voice of America from Botswana, and then WBQO in Maine. But, in recent months, pirates have been active much less frequently on 6955 kHz, largely because of interference from the licensed Peruvian broadcaster La Voz de Campesino on 6956.5 kHz. More than half of the stations that Our readers heard all of these North American pirate broadcasters this month, despite an alleged decline in pirate broadcasting volume. Most broadcasts are found on 6940 or 6955 kHz, or on nearby frequencies (see above). All pirates operate on a sporadic schedule, but shortwave pirate broadcasting increases noticeably on weekends, and during major holiday periods.

Big Thunder Radio - Their distinctive name is normally associated with rock music, and some genuine advertisements from TV mixed into the stew. They claim to be broadcasting live from Mexico City, Mexico. (Uses bigthunderradio@hotmail.com e-mail)

Crazy Wave Radio - This pirate in East Asia was heard during the spring in North America with some high-powered relays of other pirates and some transmissions of its own on 6955 kHz, a frequency rarely used by Eupiradores but commonly used by North American pirates. (Uses crazywave@gmx.net e-mail)

Grasscutter Radio - Relatively new pirate has been broadcasting rock music “from the isosphere,” mixed with some “yeah, man” commentary by their announcer. (None, asks for reports to the Free Radio Network web site)

KRMF - Radio Michigan International normally programs rock music, but they have been producing special programs for various holidays. (Uses krmf6955@yahoo.com e-mail)

Ragnar Radio - Although this new one normally broadcasts rock music, they have mixed patriotic songs into their playlist lately. (None)

Radio Pigment International - Their obviously non-kosher identification is not clearly related to their programming format, which is rock music. (None)

Shadow Radio - This one still features a mix of rock music and rebroadcasts of old time radio “The Shadow” detective dramas, sometimes using an interval signal of chimes. (Battle Creek, MI)

Sunshine Radio - Programming on this relaunched pirate has largely consisted of oldies and soft rock music from the fifties and sixties. (Address not yet clear)

UPMB - Joe Wood heard this new one playing xylophone music and comedy material. Does anybody else know anything about them? (Unknown)

VUDU - This new pirate has been playing classic rock music. It appears to be unrelated to a recent move by the government of Haiti, which has classified Voodoo as an official religion in Haiti. (Uses vudu11@hotmail.com e-mail)

WBNY - Commander Bunny from the Rodent Revolution returns with his clandestine parody shows every year around Easter. But, the Rodent Revolution is now extending its broadcasts beyond Easter. (None, former addresses now invalid)

WHYP - The James Brownyard memorial station still broadcasts antique audio clips from the licensed radio WHYP in North East, PA, but it also programs comedy, rock music, croquet tournament coverage, and pirate radio commentary. (Providences)

WMOE - The station’s call letters come from its Three Stooges memorial content, but it also plays rock music. (Belfast)

WRAY - Rock music is the dominant feature in the shows on this one, sometimes from the group Link Wray, perhaps accounting for the identification. (None)

QSLing Pirates
Reception reports to pirate stations require three first class stamps for USA maildrops or $2 US to foreign locations. The cash defrays postage for mail forwarding and a souvenir QSL to your mailbox. Letters go to these addresses, identified above in parentheses: PO Box 1, Belfast, NY 14711 and PO Box 28413 Providence, RI02908.

Some pirates prefer e-mail, bulletin logs or internet web site reports instead of snail mail correspondence. The best bulletins for sending pirate loggings with a hope that pirates might QSL them remain The ACE ($2 US for sample copies via the Belfast address above) and the e-mailed Free Radio Weekly newsletter, still free to contributors via niel@icdata.net. The Free Radio Network web site, another outstanding source of content about pirate radio, is found at http://www.frm.net on the Internet.

Thanks
Your loggings and news are always welcome via 7540 Highway 64 W, Brasstown, NC 28902, or via the e-mail address atop the column. We thank this month’s valuable contributors: Dave Balint, Wooster, OH; Kirk Baxter, North Canton, OH; Artie Bigley, Columbus, OH; Jerry Berg, Lexington, MA; Ralph Brandl, Tinton Falls, NJ; Jerry Coatsworth, Merlin, Ontario, CA; Ross Comeau, Andover, MA; David Crawford, Titusville, FL; Rich D’Angelo, Wyomissing, PA; Brian Duddy, Nyack, NY; Harold Fodge, Midland, MI; William Hassig, Mount Prospect, IL; Harry Helms, Las Vegas, NV; Chris Lobbeld, Stoneham, MA; Greg Majewski, Oakdale, CT; Larry Mague, Penn’s Park, PA; Bill McClintock, Wellington, OH; Mike Prindle, New Suffolk, NY; Lee Reynolds, Lemper, NZ; Zeke Russell, Williams, AZ; Martin Schoech, Merseburg, Germany; John Seldlacke, Omaha, NE; Ronnie Stroup, Wooster, OH; Niel Wolfish, Toronto, Ontario, and Joe Wood, Gray, TN.

July 2003

MONITORING TIMES
### Satellites Mexicanos Solidaridad 2

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What do you think of when someone mentions slow-speed CW? Five words-per-minute? Two words-per-minute? How about less than one word-per-minute? If you chose the last speed, you’ve entered the realm of QRSS – a relatively new computer-assisted mode for copying extremely weak signals. QRSS has become a mainstream mode for experimenters on the 160-190 kHz license-free band, and it is sure to become a favorite among those exploring the 136 kHz band.

The new mode gets its name from the Q-signal “QRSS” used by hams to request an operator reduce sending speed. By extension, QRSS has come to mean “super-slow” CW, where speeds are often measured in dot lengths of 3 to 60 seconds. Why would anyone want to go this slow in today’s world of broadband, high-speed Internet connections? A brief explanation is in order.

Taking a Narrow View

You may already know that CW occupies one of the narrowest bandwidths of any transmission mode. That’s one of the reasons it has remained popular on today’s amateur bands. In fact, it is possible for several CW signals to fit into just one 5 kHz slice of spectrum – all communicating simultaneously – without causing mutual interference. The only requirement is that sufficiently narrow receiving filters be used.

As narrow as CW’s bandwidth is, it can be made even more so by reducing the transmission speed. A characteristic of CW (or any form of on/off keying) is that the bandwidth is directly related to the speed of transmission. Slow the speed down, and you lower the bandwidth. For example, if a 12 WPM CW signal occupies 10 Hz of bandwidth, slowing the keying down to 4 WPM signal will reduce the bandwidth to a mere 3.3 Hz, and so on. As you get down to the speeds used for QRSS, the bandwidths become so narrow that they are rated in millihertz – that’s less than 1 Hz!

With narrower bandwidths, you can employ a narrower receiving filter, and this brings us to the main benefit of QRSS. With CW speeds of less than 1 WPM, extremely narrow audio filters can be used, virtually eliminating adjacent signals and extraneous noise from the received signal. Nearly all of the receiving energy can be focused on the desired signal, bringing a dramatic increase in signal-to-noise ratio – often 22 dB or more. Of course, this improvement could also be accomplished by raising the transmitter power, but it would require a significant increase in circuit complexity, not to mention the legality of running higher power under FCC rules. All things considered, QRSS is a better solution for boosting the signal-to-noise ratio of a weak signal.

QRSS in Action

Experiments have proven QRSS to be effective for weak signal work. Recently, several long distance records have been set with QRSS, including a few ocean-spanning intercepts. QRSS seems to be the “magic” solution Lowfers have been looking for years. Figure 1 shows an example of QRSS reception using Argo software. In this instance, W4DEX (NC) was receiving ZL6QH (New Zealand) on the 136 kHz band at a distance of 8,471 miles. This set a record in amateur LF work.

Of course, everything comes with a trade-off, and in this case we are trading transmission speed for signal-to-noise ratio. At 3-second dot lengths (QRSS3), it could easily take half an hour to complete a short contact with another station. For this reason, QRSS sees only limited use in real-time communication.

Where QRSS really shines is in identifying Lowfer beacons. In these cases, you don’t mind waiting a little while to confirm reception of a station’s short ID. Another common technique is to let the computer monitor activity overnight for later “playback.” This takes advantage of enhanced propagation that may occur at various times during the night. Imagine waking up in the morning and discovering that you have logged a Lowfer beacon from five states away! It is possible with QRSS.

What’s more, the computer can play back the received signal at a much faster rate, sparing you the agony of sitting through hours of slow speed reception. Think of it as time warp listening for the longwave DXer!

Hardware/Software Requirements

A computer is needed to reap the benefits of QRSS. Although copying by ear is technically possible, it requires a great deal of patience to decode even short message strings, and you would not gain the advantages of signal processing and display offered by a computer.

Most computers sold in the last eight years or so are up to the task of copying QRSS. First, you’ll need a sound card, which is standard (built-in) equipment on all but the oldest computers operating today. You will also need to connect a short length of cable between your receiver’s audio output and your computer’s sound input jack. (Shielded cable is recommended.)

QRSS software is available for free download from the Internet. Programs such as Argo, Spectran and Spectrum Lab are three examples of currently available packages. These downloads will place an executable (.exe) file on your computer that can be double-clicked to install the full program in the location you specify. Sources for downloading these software programs are listed below:

Argo: www.qsl.net/padan/argo/
Spectran: www.qsl.net/padan/spectran.html
Spectrum Lab: www.qsl.net/dl4yhf/spectra1.html

Learning More

There simply isn’t enough room to discuss all of the details of QRSS in a one-page column, but I encourage you to learn more about this exciting mode by doing some research and experimentation of your own. Enter “QRSS” in your favorite search engine and you will find a multitude of websites where you can learn more about this exciting mode. For Lowfer operating schedules and frequencies (including QRSS speeds as applicable) visit the Longwave Club.
In the whole, I figure it's a good department. I am a dedicated ham, but not of the amateur radio family. Dates of those folks who have taken up the Callbook and just get periodic up-down to swap QSL cards be so much easier if I've had three callsigns and six addresses since I first got on the air. No more reasonable. Heck, I can't even say address for their entire life!"

Of course this is a wholly unreasonable request, and just because it's shouted loudly at the floor of the ITU by such an esteemed amateur radio personage as myself makes it no more reasonable. Heck, I can't even say I've abided by it either. I've had three callsigns and six addresses since I first got on the air.

Ah, but wouldn't tracking someone down to swap QSL cards be so much easier if the ITU enacted international law based upon my maniacal ravings? We could have one edition of the Callbook and just get periodic updates of those folks who have taken up Uncle Skip's challenge and joined the ranks of the amateur radio family.

So what brings on this line of thinking? For me, this is the time of year that things slow down a bit in the operating department. I am a dedicated ham, but not so rabid that I try to get on the air during active thunderstorms (a practice I would not recommend to anyone with intentions of continued participation in this plane of existence). So since I have a few hours of surplus playtime not taken up with keying down, I go through my logs to see where folks have not responded to my requests for confirmation of our QSOs.

As I have stated many times in this column and other places, my personal QSL policy and practice is to send a card to everyone I work either directly or through the ARRL Outgoing QSL Bureau. But, those stations that I truly need a response from for support of an award or some other operating activity, get a card sent directly or through a known QSL Manager with return postage. As a rule this system serves me, and I hope those people I've communicated with, well.

But even such diligence and honoring of the QSL tradition does not extract a valid confirmation from every attempted request. This can happen for a number of reasons and only some of them can be controlled.

### You're Busted

For example, there is the classic *Busted Call*. In the heat of battle in a contest or through bleary eyes at the end of a long day, you simply don't write the other station's callsign down correctly in your log. Sometimes even through QRQ and QRM a "G" becomes a "J" in voice mode. Or perhaps a CW Fist that is a bit too syncopated turns a "G" into "TN" or "ME". In such cases you are simply sending the card and request to the wrong party.

When I get such a QSL in the mail I make a point of returning it with an explanation that the OM or YL was not in my log with wishes best wishes for contact in the future. I'll even return such requests directly at my own expense because it happens rarely enough and I know what it feels like to wait a year for the bureau process to let me know of the incorrect logging.

What gets my goat a bit are those fellow hams to whom I've wrongly sent a card and return postage for or whatever reason I did not appear in their logs as stated. Since I have already paid the freight, at least respond using my return postage and let me know, so I can clean up my log book.

### What's Good About The Internet Is What's Bad

Back when I was a newly minted ham, The West Jersey Radio Amateurs club would always purchase the most up to date "Flying Horse" Domestic and DX Callbooks. (Now being published by a German firm, ITTM -- *Informations-Technologie für Menschen* [http://www.callbook.com/) They would also subscribe to the quarterly updates of same. It was an easy process to bring your list of contacts from your log to a meeting and make note of the names and addresses you needed to initiate the QSL process.

There was an inherent problem with these books. If the ham changed addresses but did not update their information with the telecommunications entity in their home country within the same time frame as any forwarding practices of their postal service, QSL requests could come back as "Return to Sender -- Address Unknown" if you were lucky enough to be dealing with a country whose post office provided reliable return service.

And the problem was not limited to DX stations. You can see where publishing deadlines could have someone appear out of the loop for a year or more with the old books. Domestic hams to this day move around, and, with longer license periods, tend to forget to notify the FCC, leaving folks out in the cold once their forward with the USPS runs out. I wonder how many of these hams are sitting in their shack, grousing about their poor QSL returns?

The Internet now provides many excellent QSL and QSL manager lookup sites. However, just like the old hard copy books, they are only as good as the information provided; usually, if the ham does not take it upon his or herself to see that their information is updated on these sites, they remain out of the QSL loop for many people.

Thankfully, the Internet still offers a number of options to the tenacious ham in search of a correct address for a direct QSL. When I am specifically worrying about tracking down a ham whose previously
published information is incorrect, resulting in a returned card, I get back to the basics of Web searching first.

I find I get surprisingly good results by just entering the callsign in question into any of the popular Web Search Engines such as Google or Yahoo. If the DX gods are in your corner, it may turn up current information or even an e-mail address so you can check things out at the source.

Even if the direct callsign search does not turn up specific information about the station, check everything that turns up. Often the search engine will hit on a mention of that station’s callsign in the log of someone else who worked the station. I’ve had positive results from contacting the ham who posted the log. On more than one occasion this has turned up a QSL route when nothing else has worked.

⚠️ Unstuck in Time

Okay let’s take a look at another common problem. Let’s say Joe Ham gets permission to operate during the Big Time DX Contest from the land of Freedonia. He is issued a callsign for the duration of his stay in that country. However, a year or so later Sam Amateur flies over to Freedonia and the Freedonian Office of Radio Affairs & Indoor Plumbing issues Sam the same callsign that they gave to Joe. A trip around the web is likely to reveal both Joe and Sam as accurate QSL addresses.

Many (but not all) QSL route sites post, at the very least, the date the information was provided or updated to help sort such things out. It is also likely that a DX station may have had more than one QSL manager over the years. A station’s current QSL manager might not have access to the older logs or the earlier manager might not have any current information for any number of reasons.

I do note, however, that most “old” QSL managers are very good at responding to let you know they are not in the game anymore, so that helps you at least rule some things out as you go about trying to get that elusive QSL card nailed down.

⚠️ We’re All Friends Here

Something you may not have thought of is the international fellowship that amateur radio represents. I once had a station I simply could not track down. Every resource I could find turned down a dead end. Then I took an odd chance that maybe another ham from the same country as my missing person might be able to help out. I checked my logs and found a station that was from the same nation and also just happened to have a valid e-mail address. I sent a short e-note to this known ham and he was more than happy to help me figure out the situation. A couple of days later I had a correct direct route. QSL manager and e-mail address, allowing me to easily add one more station to the verified QSL list.

Another place where hams can work together to figure out QSL routes is the QSL-INFO Group on http://www.yahoogroups.com. This site can often help give you some ideas as to how to proceed even if you can’t get a direct route. A whole bunch of heads is better than one.

⚠️ IRCs, Green Stamps and Mint Stamps

I don’t know about your neck of the woods, but it has become increasingly difficult to locate International Reply Coupons (IRCs) at local Post Offices. With this problem you’re either forced to wait for the Bureau to turn things around (that is if the country participates as mentioned above), make use of mint stamps from the nation in question or green stamps, the almighty US Dollar Bill.

I have always chafed at sending currency because I feel it is against the spirit of the hobby. Further, mail with cash in it is much more likely to be diverted into some unscrupulous person’s pocket than ever arrive at its intended destination. Still...in some cases it’s the only game in town or it is even expected (a pox on the coax of hams who want money!). If you must resort to sending currency, use a secure style of envelope that is not easily opened up to the light and seal things up well against “accidental” opening.

Mint stamps from the country of your contact is probably the easiest way to go these days. Two particular outfits have been serving hams along these lines for years.

William J. Plum DX Supplies
12 Glenn Road
Flemington, NJ 08822-3322
(908) 788-1020 FAX (908)782-2612
James E. Mackery, K3FN
PO Box 270569
West Hartford, CT 06127-0569
http://users.netlplus.com/ryoung/index.htm

⚠️ Things Easily Forgotten

Even though I have been at this for quite a long time, I still occasionally make the mistake of sending a card through the Bureau to a fellow ham in a country that is not part of the DX Bureau system. After a month or so this card will come back via my Incoming Bureau stamped “Not Available Through Bureau.” At this point I will usually smack myself on the forehead and then go look up the station’s direct QSL route.

Checking the list at the ARRL Outgoing Bureau site http://www.arrl.org/qsl/qslout.htm will help you avoid this mistake. Remember also that there are also a few countries that restrict Bureau services to members of their national amateur radio organization. A list of the current countries that hold to this practice is also available on the League site.

It has become the practice of many top drawer DXpeditions to publish their logs on the Internet. If you have any question about whether or not you made the log during the pile up, save yourself a few steps and a few stamps and check the on line information first. Very often these operations will publish the best QSL route and policies on their sites as well.

It is perfectly acceptable to list more than one contact on a card. Contest and DX stations often do this to cut down on postage and handling.

So, until the ITU decides to listen to Old Uncle Skip’s rants, we will just have to accept QSL research as part of the fun of ham radio. I’ll see you on the bottom end of 40 meters.

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July 2003 MONITORING TIMES 73
Cubical quad antennas are popular with many beam users. This is because quads offer more gain per element than Yagi-Uda beams; quads are noted for their relatively low response to noise; and they perform well even without being mounted high in the air. When I lived in California I tested a 14-MHz quad which I had made before I put it up in the air. It was sitting on the ground. It had no mast; it was just the antenna sitting on my lawn. I called "CQ," and a station in Guam came right back with a good signal report! And after it was mounted on its mast it continued to nicely outperform my halfwave dipole and my trap vertical. That beam was a two-element quad like the one described below; so it offered useful off-beam interference and noise rejection, plus about 7 dBd forward gain.

One problem with building cubical-quadrant antennas is that either special hubs or special X-fittings are needed to mount the arms which hold the antenna's elements. These problems, and their expense, can be avoided by making a homemade hub (fig. 1) patterned after one designed by Richard E. James, W4DQU (CQ, May 1970).

Let's Make One!

If you're planning to make an HF quad it's a good idea to check on availability and price of arm material in your area (see step 8) before you start.

1. Check Table One for the sizes and number of hub pieces you'll need. Use 3/4-inch wood no softer than pine to make those pieces for HF; use 1/2-inch wood for VHF.
2. Sizes for the end braces shown in fig. 1B are given in table one. These braces can be of 1/4-inch plywood for HF, or 1/8-inch plywood (door skins) for VHF.
3. Make a drawing of the rectangle and its enclosed "X" as in fig. 1A. Use the HF or VHF dimensions as appropriate for your antenna. You will use this drawing as a pattern for the angles of the ends of the hub pieces, the length of those pieces, and as a template for putting those pieces together to make the hub.
4. It's good to put some waxed paper (like that used for wrapping sandwiches) under the template to prevent gluing it to your work table. Fit one long and two short pieces into an X directly on the X of the template which you have drawn. This gives the correct angles to your hub. As you build the hub put strong, weather-resistant glue on all surfaces that are to be joined.
5. Build the hub up by topping each long X leg with two short X legs, and each two short ones with one long one. This alternation is shown in fig. 1B.
6. When finished, lay a piece of waxed paper followed by a modest weight (a few books or whatever) on top of the X to make sure all the pieces stay close together for drying.
7. When that glue is dry (set) then glue the end braces in place; holding them in place with small nails. Let this glue set.
8. Arms for antennas above 100 MHz can be made of material such as wooden dowels, plastic or fiberglass rods such as those used for bicycle safety flags, or small-diameter PVC pipe. For HF arms, dry, stout bamboo poles work well. This grows wild in some warm locations; it's also sold for fishing poles other places. Fiberglass poles work for HF, but PVC water pipe is too limber for the longer lengths used at HF. Some companies sell fiberglass arms (e.g. http://www.cubex.com/hard.htm), also check ham radio magazine ads for these.
9. Cut the VHF arms an inch or two longer than needed, and the HF arms 2 to 3 inches longer than needed. Trim the excess as desired later. Driven element arm lengths, in inches, from hub center to where the elements attach, is 2222/F_mH for the reflector. For lengths in meters use 56.44/F_mH (driven element), and 58.26/F_mH (reflector).
10. Mount the arms on the hub as shown. U-bolt clamps are good for holding larger (HF) arms to the hub. Small tubing or dowels (VHF) arms can be drilled, and then attached to the hub with small bolts. For wooden arms the use of glue in addition to the bolts will help hold the arms securely.
11. Total loop lengths, in inches, are 11970/F_mH for the driven element, and 12318/F_mH for the reflector. For lengths in meters use 304/F_mH (driven element), and 312.9/F_mH (reflector). About any size of bare, solid, or stranded copper wire about number 14 or larger should work OK for the elements. The larger
12. Connect the reflector-element ends together to make one continuous loop. One end of the driven element connects to the 50-ohm coax center-conductor, and the other end to the coax braid or shield. For VHF quads no center insulator is needed on the driven element. For HF quads a small insulator, as shown in Figs. 1C and 1D, is needed.

13. The loops can then be attached to the arms, holding them in place with a number of turns of nylon string or dental floss. Later cover these ties, and all wood, with varnish for durability.

14. Spacing between the elements is automatically set by mounting each element fully expanded into a square on the arms as shown.

15. Solder all electrical connections. Seal the coax end against weather with coax sealant, or black-plastic tape if no sealant is available.

16. U-bolt clamps work well for attaching metal-pipe masts. For the smaller VHF antennas, strong, wood masts are OK.

17. Smaller VHF models can be used for pedestrian-mobile work. A short, handheld wooden mast attached to the hub with wood screws works well for this.

18. If you mount this antenna outside don't forget lightning protection. The minimum is to never use the antenna during weather likely to produce lightning. The ant is available.

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The Hallicrafters S-40A: Clearing the Decks

Before getting started, I want to acknowledge some reader e-mails I received after concluding the Zenith restoration last month. Bob Pote, John Ebeling and Larry Fowkes wrote to let me know that they are enjoying the column.

Larry said that he had been bitten by the collecting bug, big time, since “Radio Restorations” first appeared in the January, 2000 MT. Back then he had two vintage radios; now he owns over 40 and has restored about half of them. He attached a pic of part of his collection, which I’m including here. The results of the Zenith restoration have inspired him to take a closer look at radios he had previously considered to be junk.

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Part of Larry Fowkes’ growing collection of vintage radios (see text). Philco 16-B cathedral and RCA T10-1 are just to left of TV set. A Zenith “black dial” similar to the 6S229 but in a more modern low-profile cabinet is second from left on top shelf.

About This Project

Last month, we began the restoration of this Hallicrafters S-40A, an early post World War II receiver targeted for shortwave listeners and radio amateurs. Though an inexpensive radio, it was several cuts more sophisticated than its low-end companion of the same era, the S-38 – which was primarily for beginning SWLs and not really suitable for serious radio communication. In line with my original instructions from MT’s editors, I’ve been building up to gradually more complex receivers in my restoration columns and this set continues the trend.

Though previously we’ve done a military surplus long-wave “Command Set” and couple of radios with shortwave capability (National’s S-38 equivalent, the SW-54, as well as a broadcast receiver with a few shortwave bands, the Zenith 6S229), our current subject combines features we haven’t seen before in a single receiver. Like the command set, it includes a stage of r.f. amplification and two stages of i.f. amplification where the SW-54 and 6S229 have none and one. Like the SW-54, the S-40 is a multiband receiver. But it boasts a more elaborate array of controls for communications use and has a tube complement of nine, compared to the five in the command set and SW-54 and six in the 6S229.

Looking at the S40’s schematic, which I’ve included here, you’ll see the familiar superheterodyne layout. The extra tubes are for the r.f. amplifier, the extra i.f. amplifier, the noise limiter/AVC and the c.w. oscillator. During the later testing of the receiver, we’ll discuss the functions of the various controls.

One bit of circuit sophistication we haven’t run into up to this time involves the tuned circuits for the oscillator and r.f. stages. In the SW-54, for example, the oscillator and r.f. stages each had a single fixed coil; adjustable trimmer capacitors for the various bands were wired across switch-selected segments of these coils. In the S-40A, however, the tuned circuit for each band is an individual transformer consisting of a coil-and-trimmer-capacitor assembly. Many of these coils have adjustable slugs that are included in the alignment process – improving the tracking between the high and low ends of each band.

“BAMA” Saves the Day

I began this month’s work with a trip to “BAMA” (Boat Anchor Manual Archive) at http://bama.sbc.edu to try to find a copy of the service manual for the S-40A. The one I had in my files was incomplete and of very poor quality. I’ve mentioned BAMA’s wonderful collection of manuals for tube gear before. The site is maintained by ham radio operator K4XL, as a service to those who love to restore vintage equipment. The collection is large and growing. You may download what you wish at no cost and are free to pass on copies of anything you receive to others – as long as you do not charge for them. If you visit the site, look over the list of items that are still needed and – if you can help – follow the instructions to scan and upload your material.

Since the manuals at BAMA are scanned and contributed by many different individuals, users are warned that quality will vary. Though you’ll probably get the data you need to restore your piece, it may not be perfectly crisp and clear. In spite of that warning, I was able to download very nice copy of the service manual and an operating manual copy that was at least readable.

BAMA’s delivery system has been improved since I last visited the site. Previously the pages of each manual had to be downloaded individually – a tedious process. Now all the pages in a given manual are combined in one file (compressed into remarkably small size) by a program called “DejaVue.” This utility is similar to the more familiar Acrobat and, like the Acrobat reader, the DejaVue reader can be downloaded free. Once you open a file for a manual in the reader, you can page through it on screen and/or print out a copy.
my fingers as tools turn the nut while rotating the switch body in the opposite direction. The phone jack was secured with an ordinary hex nut and I was able to remove that safely with a flat open-end wrench. After unsoldering the leads to the speaker, I was able to separate the panel and set it aside.

Next to be removed were the plastic main tuning and bandspread dials (after noting their proper orientation with respect to the position of the tuning capacitor plates). Now exposed with the removal of the panel, they would be subject to damage when the chassis was turned upside down for restoration work. I should mention that the bandspread is electrical, instead of being mechanical as in the SW-54. Turning the bandspread dial moves an auxiliary set of low-capacity plates built into the main tuning capacitor.

Now it became obvious that, in order to facilitate chassis cleaning and painting, I would have to remove the hardware holding the tuning shafts, flywheels, and drive pulleys. This would mean disturbing the dial cord system so that it would have to be restrung on reassembly. I didn't mind that at all because the old cords often break when a vintage receiver is put back into service, and this would be an excellent opportunity to renew them. I did take the precaution, prior to disassembly, of supplementing the dial cord restringing information in the service manual with some additional notes of my own.

After pulling the tubes, the only items left on the chassis were the tuning capacitor, electrolytic capacitor, power transformer and i.f. transformers. In the SW-54 project I had decided to remove both the i.f. transformer cans and tuning capacitor prior to chassis repainting. Thinking about that experience, I decided that removal of the S-40A's i.f. cans would require much too much busyness for the benefit gained. These straight-sided units would be very easy to mask before painting and could be left in place.

**Decisions, Decisions**

I had to do some soul searching about removing the tuning capacitor. It would be more difficult than on the SW-54. Connections were a little more inescapable and there were more of them. (Because of the r.f. stage, the S-40A had three gangs rather than two.) But realizing that I would never be able properly to paint the chassis or clean the tuning capacitor with the latter in place, I gritted my teeth and went about the removal.

After I had made up my mind to do it, the job wasn't as hard as I thought—particularly since my oversized 250-watt iron made short work of removing the heavy ground braid-sweat-soldered to the capacitor frame. And as it turned out, the removal process unmasked a problem that would have been very difficult to track down otherwise. One of the connecting leads looked as if it were firmly soldered to its terminal, but separated immediately as I was applying the soldering iron. Apparently corrosion had loosened an already poor bond.

I plan to remove the electrolytic capacitor can prior to painting. All of its sections will be replaced with new capacitors placed under the chassis. However, I don't want to disconnect it until installing the replacement caps, otherwise I might lose the information about the proper connection points. Later, after completing refinishing of the chassis, I'll reinstall the old can just for looks.

Now I had to make a decision about the non-original power transformer. I would remove that only if I was planning to replace it with an original unit from my S-40 parts set. Otherwise, I would leave it in place and mask for painting. I powered up the transformer so that I could check the voltages it was delivering. Since the rectifier tube had already been pulled, there would be no risk of introducing plate or screen voltage into the circuitry at this stage. The high voltage was spot on according to the specs in the manual. Whoever had replaced the transformer had done his homework! The filament windings were fine, too.

After comparing the underside of the power transformer in my S-40 parts set with that shown in the S-40A manual, I decided not to make the swap. The unit in the parts set had an exposed core fitted with terminal lugs while the one in the manual had wire leads emerging from a metal end bell. Swapping would bastardize the radio just as much as leaving the replacement installed. Furthermore, though the new unit had been neatly installed, the mounting hole had to be widened to accommodate it. Replacing the transformer with the smaller Hallicrafters unit might expose the definitely non-factory file work. In this case, I could take the lazy man's way out and be perfectly justified!

Next month we'll begin by deep-cleaning the tuning capacitor and cleaning and painting the chassis. See you then!
he ICOM IC-R5 is a tiny, handheld scanning receiver with wide frequency coverage. Like the IC-R2 it replaces (April 1999 MT), the IC-R5 detects FM, wide FM, and AM signals from the VLF to UHF spectrum.

The palm-sized IC-R5 provides memory channel labeling, but lacks a full numeric keypad. It competes with the Yaesu VR-120 (July 2001 MT), the Japanese-only VR-150 (November 2002 MT), and the Alinco DJ-X3 (March 2002 MT). The accompanying photo shows an IC-R5, IC-R2, and a VR-120. All these models are simply powered by two AA batteries, except the DJ-X3, which requires three.

The USA version IC-R5 is furnished with two 1100 mAH NiCd AA batteries and a 6 VDC 1000 mA wall wart which can be used recharge the batteries while in the radio.

**Frequency Coverage**

The IC-R5 covers 25 pairs of frequencies. Like the IC-R2, it requires the use of two AA batteries. The IC-R5's coverage is limited to the FM broadcast band. The IC-R5 is designed for use in the VLF to UHF spectrum. It is capable of detecting FM, wide FM, and AM signals.

**Memory**

The IC-R5's memory organization is a departure from other scanners. It provides up to 1000 channels of variable memory. The IC-R5 has a single memory band, with up to 100 channels in a bank, with a maximum number of 1000 channels. Banks are named with a single letter: A-H, J, L, N, O-R, and may be identified by an optional text label, as well.

The variable size memory channel scheme is designed in an interesting way. There are 1000 regular memory channels, 000 to 999, which hold the frequency, mode (AM, FM, WFM), CTCSS or Digital Code (DTCS) settings, scan skip, and offset information.

In addition, you can associate a regular memory channel with bank and channel number within that bank. For example, regular memory channel 205 may be assigned to bank A, channel 7. A regular memory channel can be associated with only one bank or none at all. If you want the frequency 155.475 MHz to appear in three different banks, you must program it into three different regular memory channels first.

As with the other wide coverage handhelds, memory programming requires you tune the frequency and select other settings using a VFO, then write the information to a regular memory channel. But, IC-R5 memory programming is more complex than other palm sized scanners. If you want the channel to appear in a bank, you must then assign the regular memory channel to a bank and channel number.

**Scanning and Searching**

The IC-R5 follows ICOM's tradition of restricting memory scanning to a single bank or all banks. The IC-R5 stores active frequencies. You can scan the regular memories, too, but you cannot scan a combination of memory banks. Channels may be locked out by setting the Skip flag.

The IC-R5 provides 25 pairs of scan "edges" for searching between frequency limits, the same as the IC-R2. A single range may be searched, though multiple ranges cannot be chained together for searching. Frequencies may be skipped during searches by programming them in a memory channel with the Pskip flag set.

A memory write scan stores active frequencies found while searching into a special group of 200 channels. The IC-R5 is smart enough to recognize duplicate hits and store only unique frequencies.

**CTCSS and Digital Code Squelch**

One of the IC-R2's major assets is its CTCSS squelch. The IC-R5 carries forward this CTCSS tradition and adds a Digital Coded Squelch (aka DTCS, DCS, and DPL), too.

You can program a known CTCSS or DTCS code for a memory channel or sit on a frequency and search for the proper CTCSS or DTCS code. When a signal is present, the IC-R5 slowly steps through all codes in sequence until it finds a match. You can find the code unless listening to an unusually long transmission.

**Other Features**

The IC-R5's power save function can be enabled to cut battery drain while the radio is in use. The IC-R5 has a built-in 40 channel scanner. An auto power-off feature can turn off the IC-R5 after 30, 60, 90, or 120 minutes. You can program a known CTCSS or DTCS code for a memory channel or sit on a frequency and search for the proper CTCSS or DTCS code. When a signal is present, the IC-R5 slowly steps through all codes in sequence until it finds a match. You can find the code unless listening to an unusually long transmission.

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justable and the larger display is easier to see than the IC-R2.

The IC-R5 may be cloned to another radio or configured using a computer. ICOM has not made the IC-R2.

Measurements

ICOM IC-R5 Receiver S/N 01085

ICOM America Inc.
2380 116th Ave NE
Bellevue, WA 98004
Phone: (425) 454-8155
Fax: (425) 454-1509
Customer Service: (425) 454-7619
http://www.icomamerica.com

Frequency coverage, USA version (MHz):

<table>
<thead>
<tr>
<th>Step sizes (kHz)</th>
<th>Modes</th>
<th>NFM modulation acceptance: 10 kHz</th>
<th>Audio output at earphone jack: 0.1 watt @ 9% distortion</th>
<th>Attenuator:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10, 12.5, 15, 20, 25, 30, 50, and 100</td>
<td>AM, WFM, FM, user selectable</td>
<td>0.1 watt @ 9% distortion</td>
<td>0.1 watt @ 40 MHz</td>
<td>16 dB @ 155 MHz</td>
</tr>
</tbody>
</table>

Intermediate Frequencies (MHz):

| 266.7, 19.65, 0.45 |

Image Rejection Due to 1st IF (266.7 MHz):

| 51 dB @ 40 MHz | 76 dB @ 460 MHz | 37 dB @ 860 MHz |

Squelch tail near threshold (1 uV @ 155 MHz): 20 ms.

Practical memory scan speed: 9 ch/sec

ICOM IC-R5
FM 12 dB SINAD Sensitivity s/n 01085

The recorder's "hang time" is adjustable between 2.5 and 2.5 seconds.

The BMI Nitelogger II is a tape recorder activator. It may be used with recorders which lack their own sound activation feature. We were very impressed with the Nitelogger II and found it worked better and was more flexible than the sound-activated feature built into our VOX recorders. As time passed, we could not find Nitelogger II's being sold. Recently, a representative of In Compliance Corporation told us they still sell the Nitelogger II for $69.95 plus shipping.

For more information, contact: In Compliance Corp., 3260 N. Hayden Road #106, Scottsdale, AZ 85251. email: incompliancecorp@aol.com. To order, call In Compliance at (800)239-0441.

The Icom IC-R5 pocket-size receiver is available for $199.95 from Grove Enterprises. Check 1-800-438-8155 for sale pricing and current shipping charges.

PRACTICAL MEMORY SCAN SPEED

| CHANNELS / SECOND |

Notes:
1) Measurements are approximate and made using one sample of each model.
2) Schemed with memories programmed with unsorted frequencies in various bands and AM and NFM detection modes.

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The World in Your PALM

It’s been a few years (1999) since we last visited the then-new Palm Pilot and saw how it could be used for radio monitoring. Since that time the price of used Palm IIIIs and Vs have skidded to unbelievable lows. This month we’ll take a look at what I consider to be some of the best value-for-money Palm programs for controlling radios. We will use the Co-Pilot, a Palm emulator, which runs on the PC, to run the programs and produce the figures. Cost conscious as ever, I have chosen the least expensive Palm III to run the programs. As requested by some readers, links for downloading the programs mentioned this month are included at the end.

The current groups of Palm-based radio control programs have been written primarily for three radios: Icom’s IC-PCR1000, the Ten-Tec 320 and Uniden’s BC780/245XLT. Let’s begin with the radio that was one of the first of its kind, the Icom IC-PCR1000.

**Where All It Began**

PC-controlled radios can trace their roots back to the Comfocus product, circa 1995. This radio was revolutionary in all respects. However, the Icom ICP1000 was the first mass-produced PC-controlled radio. Although designed to be controlled via a PC’s serial port, as the Palm computing platform became more popular, creative programmers found ways to control the PCR1000 with the Palm handhelds.

**PCRPilot3C**

The PCRPilot, which I first reviewed in this column a number of years ago, has been updated a number of times. Today it is available in two forms to cover the different Palm operation systems. Figure 1 displays the simple, yet very useful, layout of PCRPilot’s display. The frequency is displayed in nice big digits at the top (must be an over-fifty-year-old programmer!).

**Figure 1 PCRPilot Main Screen. I love the size of the digits!**

**Frequency Selection**

Changing the frequency can be accomplished by direct numeric input at the big digits from the Palm “keyboard.” Selecting either the letters (abcde) or numbers (12345) at the bottom of the Palm screen accesses the keyboard. Alternatively, the up/down arrows, located below the digits, step the frequency by the amount shown to the left of the arrows. The frequency Step is set directly from the Palm “keyboard” as is the Name, or description, of the frequency.

**Storing Channel Data**

The twenty-six memory channels, labeled A through Z, can be seen in the center of Figure 1. Tapping the boxes along the right side the Palm screen allows the user to select radio functions such as AGC, ATT (attenuation), NB (noise blanker) and the rest. All radio settings visible on the display – including mode, filter, volume and squelch settings – are uniquely “remembered” for each of these channels. In addition, a name or description (for example, NOAA Weather) can be added for identification.

**Why Only Twenty-six?**

Now you’re getting greedy! We should remember that regardless of the fact that Palm calls their machine a computing platform, the early Palms, such as the Palm III, are little more than a high-powered microcontroller, albeit very cleverly designed. I’m sure that the original Palm design concept did not consider it would be used to control a receiver, let alone store hundreds of channels of radio settings.

**PCRPilot3C Summary**

Perhaps it is because it was the first Palm radio control program I ever tried, but I have always enjoyed using the PCRPilot programs. I am always amazed when I consider how well the Palm III functions with the PCRPilot3C program!

**Two for Ten-Tec RX 320**

Ten-Tec’s RX320 receiver was another milestone in PC-controlled receivers. It was the first mass-produced, under $1000 receiver utilizing digital signal processing (DSP) technology. This little brick of a radio does a great job on the shortwave bands (see review June MT - ed). The Palm320 software is an easy-to-use program that does a nice job of controlling the 320. The Palm320 main screen can be seen in operation in Figure 2. This program takes you to a different screen for each function setting. For example, tapping “Enter Freq” brings up a keyboard for entering frequencies. The frequency can be “stepped” by selecting the step size from one of the four boxes (.01 to 5 kHz). Then the user taps the + or – box to step the frequency.

Four basic radio functions are controlled from the main display (Figure 2): Frequency, Step Size, Mode and Volume. Tapping the “Menu” button allows you to control the AGC, Filter selection, and speaker muting. Storing or recalling all displayed radio setting, plus a user-supplied description is also accessed from the Menu button.

**Simple But Powerful**

Palm320 requires three small applications to be downloaded and installed on your Palm. It’s well worth the small effort. I suggest you give it a try. I cannot find where I originally obtained the program, but no problem! The author, Greg Majewski, has given Monitoring Times permission to make it available from the MT website.

**The Layered Approach**

The RX320 program by Michael A. Newell, WB4HUC, has a different design philosophy. Two small Palm applications are required to be downloaded and sent to your handheld. The RX320’s Main screen is seen in Figure 3. You can see that this program is designed around a layered approach where each screen leads to another screen for...
detailed control. Tapping "control panel" brings up the screen shown in Figure 4, which is where the action is.

Tapping one of these function boxes brings up the next layer of detail screen. For example, clicking "Filter" brings up a screen that allows the user to scroll through all the thirty plus filter bandwidth choices. I think you get the idea. The "ms" memory store and "mr" memory recall buttons, seen under the frequency display, control the memory functions (Figure 4). All radio settings are stored and the user can fill in a description of the intercept. The volume and the BFO settings are controlled from the "General Settings" as seen on the Main screen in Figure 2.

RX-320 Comments

This program does everything but make the Ten-Tec RX-320 sing! If you have an RX-320 and a Palm Pilot, you should have this program.

Trunk Tracking on the Palm?

A company with the intriguing name of Black Bag Software has control software for a number of scanners/receivers. ScanPro780 is their Palm-based control software for the Uniden BC-780XL/T. This program can run on just about any Palm handheld having an operating system of version 3.1 or higher.

Downloading and installation on the Palm was quick, easy, and went without a problem. Figure 5, from Black Bag's website, shows the Frequency editor screen. All screen layouts and operating functions are easy and intuitive.

Searching new frequencies with some programs requires the user to memorize quite a number of keystrokes. Using ScanPro780, searching new frequencies is very easy and is accomplished by entering the start and stop frequencies. That's all it takes.

Heck, for FREE Why Not Try Them All!

Oh, I forgot to mention that all the programs we have looked at this time have more than the Palm handheld in common. All available free for downloading. I don't think you can kick about the price of the software. However, we owe a debit of gratitude to these talented software writers for their efforts.

Cost of a Used Palm?

Well, they are not quite as inexpensive as the software, but not far behind. Auctions on Ebay for Palm IIs have ended in the twenty-dollar range! That just covered the cost of shipping my new Palm III a few years ago.

More On Palm Emulator

This month I used a Palm Emulator program running on a Pentium II laptop to run these programs. The emulator makes screen copying for inclusion as figures in the column much easier to generate. Having written Palm application programs I can tell you that the emulator is indispensable for debugging programs.

The Palm Emulator program is available from the Palm site. However, in order to use it you must have a software image of a Palm handheld, if you own one. See the Palm website for instructions for uploading. Or you can join the Palm Developers group and then get access to their downloadable ROM files.

Go For It!

If you have one of these computer-controlled radios you can now easily afford a Palm pocket controller and software. Internet download links for each of the programs we looked at are listed below.

Till next time, remember, you can now have the world in the Palm of your hands .. well, at least you can listen to it.

NOTICE: It is unlawful to buy cellular-capable scanners in the United States made after 1993, or modified for cellular coverage, unless you are an authorized government agency, cellular service provider, or engineering/service company engaged in cellular technology.
Radio direction finding (RDF) is both fascinating and useful. It provides the capability of locating sources of interference or unknown signals, beacons from downed aircraft, intentional repeater jammers, hidden transmitters and other radio signal sources.

Most RDF exercises are done at VHF, typically in the 100-200 MHz range, since that's arguably the busiest swath of communications spectrum. Hams occupy the popular two-meter (144-148 MHz) band, and handy-talkies (HTs) by the zillions are propagated among both licensed and unlicensed users of the VHF spectrum.

On a broader scale, RDF can be conducted virtually anywhere in the spectrum, although propagation characteristics change with frequency, and different techniques are required.

In the civilian sector, most RDF projects are conducted by the hams as they pursue their "fox hunts," competitive meets in which participants look for a hidden transmitter.

But in more serious sectors, RDF techniques are used both by federal agencies and military organizations hunting for specific individuals or groups using radios or cellular telephones and, on a smaller scale, by law-enforcement investigators tracking suspects, stolen cars (Lo-Lack system), or even robbed cash parcels equipped with hidden radio-beacon transmitters.

While an extensive RDF system with integrated remote terminals can cost $1 million or more, those of us with thinner wallets can get into the tracking game with much less. Let's take a look at two popular RDF kits available to the experimenter.

**Building the Ramsey DF1 “Foxhound”**

Ramsey Electronics is an established company with a wide selection of electronic kits for hams and experimenters alike. Their DF1 “Foxhound” is advertised to work "with any radio, any frequency," but realistically, with the dimensions given for the antenna array, its range is roughly 100-200 MHz.

Lower frequencies (longer wavelengths) require wider element spacing, and higher frequencies (shorter wavelengths) require shorter spacing, and the radio must supply a signal with a steady carrier like AM or FM, not SSB or CW bursts.

The kit comprises a circuit board, all electronic components, and the four telescoping whips; the optional case is available at extra cost. The builder must supply PVC pipe, couplings, glue and adequate workshop tools, including a drill and hacksaw as well as the expected soldering utensils, to execute the project.

Component quality is quite good; the circuit board is professionally laid out, tinned for soldering and screen-printed for component placement. I would have preferred a BNC jack over the RCA phono plug for antenna connection, and 1/8" (3.5 mm) audio jacks rather than the 3/32" (2.5 mm) provided, since the former choices are more standardized in the communications industry.

The assembly manual is generally quite good as far as it goes, but there are numerous errors of both commission and omission which are expected to be corrected in future editions. Because of the confusion which I encountered during construction, I estimate that I have approximately 8 hours in what should have taken, according to the advertising, about 2.5 hours for an experienced kit builder.

But to Ramsey's credit, a courteous and helpful customer service department is maintained for just such contingencies, although it is open only during weekdays, not during evenings or weekends when many kit builders are likely to be assembling their projects and encountering problems.

**How does it work?**

In the simplest terms, the DF1 is a phase detector which measures the time lag (phase difference) between two antennas produced by a signal's arriving wave front. If both antennas are equally distant from the target signal, the wave front strikes the two antennas simultaneously, but if one antenna is closer to the signal, the wave front arrives first on that one, producing a phase differential in the detection circuitry.

Even the displacement of an antenna by a fraction of an inch is detectable, assuring tight accuracy when taking bearings of the target signal. A pair of LEDs provides visual indication of whether the antenna bearing is to the right or left of center. A meter gives additional null indication, registering more precise orientation of the hand-held array.

In use, the DF1 is plugged into the antenna and speaker jacks of the companion radio, most likely a hand-held scanner or HT. A separate jack is provided for an optional headset or speaker since the radio's internal speaker is disabled by the audio interconnect.

Once the target signal is being received, the audio output of the radio is adjusted in combination with the gain control of the DF1 until a good left/right null indication is provided.

It is crucial for the operator to have a good map and a compass, otherwise only a visual indication can give a bearing; this might be OK for final close-in on a signal, but it certainly isn't adequate for a distant start! An initial compass bearing should be penciled on a map, followed by a second bearing taken at another location; under perfect conditions, the two lines cross on the location of the target signal.

Distant signals are harder to pinpoint than nearby signals, and the wider the angle between the bearings, and the more bearings taken (discarding wildly-divergent bearings), the better the final accuracy.

Since the DF1 is operated on a 9 volt battery and current drain is a consequential 30-35 mA, the unit should be left on only long enough to take bearings. For more extensive periods, a 9-12 volt jack is available on the panel to connect an external DC source such as a battery belt pack or car battery.

For such external power applications, the...
internal battery must be disconnected since it remains in parallel with the external power jack. A circuit-breaking jack would have been a much better choice here to avoid frying the internal battery.

We Test the DFI

My trusty Uniden Bearcat BC3000XLT hand-held scanner was connected to the Ramsey DFI. Since these are all low-impedance lines, any loose or intermittent contacts produced enormous fluctuations in readings during bearing-taking. Cables with proper plugs soldered at both ends are strongly recommended over adaptors.

Using a Hewlett Packard signal generator out in the open as a signal source, I tested the DFI from 25-850 MHz. The lower the frequency, the more accurate and stable the direction finder.

Clear through VHF high band (170 MHz or so), bearings were quite good, but at higher frequencies, the fixed separation of the antennas allowed multiple readings since the pattern assumed the familiar cloverleaf pattern. It is also important to shorten the lengths of the wires as frequencies go higher to avoid multi-lobing and high takeoff angles from excessive length in terms of electrical wavelength.

A means of substituting antenna arrays of different spacing would certainly allow reliable frequency range extension of the DFI.

Signal strength and gain control adjustments were also critical; when properly adjusted, the audio tone produced by the switching circuit would smoothly disappear and the meter deflection would null as the array was pointed at the signal, but as it was rotated, distorted tones would come and go and the meter would fluctuate.

On assessment, the DFI makes a good direction finding accessory provided the operator was fully aware of and familiar with its idiosyncrasies.

The DDFI Doppler Direction Finder

Most readers have encountered the Doppler effect, a gradual raising or lowering of a pitch from a siren, car horn, jet aircraft, train whistle, or other audio source as it rapidly approaches or recedes from a listening point.

The same effect may be noted from stars (the "red shift") and radio signals as well, although the speeds are much faster.

Doppler direction finders work on the principle of rotating antennas—in this case, electronically-switched antennas, thus called "pseudo-Doppler" since there is no actual physical movement.

If a circular array of antennas can be switched rapidly and consecutively, their relative positions to an arriving radio wave can be compared. Those on the side moving toward the signal will record an upward frequency shift (as with an approaching car horn), while those switching away from the signal will record a downward shift (as heard when a sound source passes by and recedes into the distance).

Explained simply (too simply—this is a sophisticated product!), a resolver circuit provides a readout of this comparison on a circular compass rose of 16 LEDs, alerting the observer to the directional bearing of the signal. This 2.25 degree spacing provides adequate horn bearings for most applications.

A detailed description of the DDFI circuitry is presented in the manual.

What's in the Box?

To save time, instead of ordering the kit, I ordered the factory-assembled DDFI, comprising the control unit, four whips, flexible magnet strips, and the manual (the same one included with the kit version).

All the user needs to do is stick on the magnetic antenna pads to mount the roof array, plug in the DB9 interconnect cable, attach a source of 12 volt DC power (100 mA average drain) and the audio cable, and dial in the desired frequency on the user-supplied radio! Virtually any frequency in the VHF/UHF land mobile spectrum may be selected.

A comfortable audio level from the DDFI speaker is set and the automatic antenna scan is started, resulting in a 500 Hz tone overriding the signal. Audio is readjusted to extinguish the overload lights so that only one LED in the circular compass array should remain lighted. Others will flicker erratically, but this jitter may be dampened and a stabilized reading taken with a control for that purpose.

A phasing switch assures that the pattern shifts in the correct direction with respect to the movement of the vehicle, and the calibrate control is adjusted to align with the forward direction of the vehicle. You're ready to catch that fox!

How Well did it Work?

With the four-antenna array stuck to the roof of my Jeep Liberty, and the cable running from there to the control unit and my scanner, I was ready for action.

The manual warns against road speeds with the antennas in place, yet the manual recommends testing the system by driving past a known transmitter.

It's a respectable warning; the antennas are held in place by extremely weak rubber magnets, and the slightest motion will tip them over. Even when they are fully collapsed to 4" or so, a slight breeze tips them. Not surprisingly, the manual recommends they be replaced by stronger magnets. Good idea; so why didn't they do that at the factory?!

Like its little brother, the DFI, antenna length and spacing are critical for performance, depending upon the frequency. Fortunately, unlike the DFI, the antenna spacing can be easily adjusted, supporting a wide frequency range of operation.

The control unit is handsome and functional, with every adjustment you will need at your fingertips. The advertising says the DDFI can be used from 130-1300 MHz; at a nearby shopping center I tested the DDFI from 30-470 MHz with excellent results. We have no communications systems in the area above that to test its upper limit.

Aiming the front of my car north and calibrating the LED readout, I found the bearings for our NOAA weather broadcasters, a local Taco Bell kiosk, nearby Wal-Mart handy-talkies, and the sheriff's repeater. And they were all correct.

This is a nice RDF at a reasonable price. Properly adjusted, it will provide excellent reliability and accuracy for determining bearings on target radio transmissions in the VHF/UHF spectrum. And if you replace the antenna magnets, you can even do it while you're moving!

DFI "Foxhound" kit, $69.95 less case and knob, $84.90 with case and knob, plus shipping. DDFI Doppler RDF, $149.95 kit, $269.95 factory wired, plus shipping from Ramsey Electronics. Call (800) 446-2295 or visit their website at http://www.ramseyelectronics.com.
Two Eras of Technology
The National NC-183D vs. the Icom R-71A

By Alan Johnson, bench tests by Ben Hester

At first glance, it would appear the comparison we propose would be totally apples and oranges, with no common ground between these receivers. On reflection, however, it is apparent that, although the Icom appeared 30 years later than the National, both were designed for the same task; the reception of radio signals. The companies' engineers just had different tools with which to implement their design goals.

Comparing the two receivers allows for a better understanding of receiver design and the inherent trade-offs of implementing various technologies in a cost-effective manner. Hopefully, this review will assist those listeners who are in the market for a used receiver to better define their goals and choose a receiver design that effectively meets those goals.

The Old

The National NC-183D was produced from 1952 to 1957. The National Company had a well-deserved reputation for technical innovation and quality products, especially for the amateur and commercial market. The NC-183D was a refinement of the previous NC-183, which had been produced from 1947 to 1952. The “D” stood for double conversion, and the I83D used the more modern miniature tubes.

It is a typical radio for its era, both in electrical design and in following the dictum that “bigger is better.” The NC-183D measures 19-1/4 x 10-1/4 x 16-3/4 inches (WxHxD) and weighs in at 65 pounds. Although it is not a portable radio, provision was made for battery operation with a six-volt storage battery for the tube filaments and 135 to 180 volts for the plates.

It utilized dual conversion above 4 megahertz and employed the typical tuning setup of the time—four bands covering from medium wave up to 32 MHz and a separate bandswitch position for six meters (50 – 54 MHz).

There is a main tuning knob with dial calibration every 50 kHz on the range 1.6 to 4.4 MHz, every 100 kHz from 4.4 to 12 MHz and every 200 kHz from 12 to 31 MHz. There is a separate bandspread (fine-tuning) knob with a dial scale calibrated for the ham bands. Unlike cheaper sets of the time which used backlash-prone dial cord to couple the tuning knob to the tuning dials and tuning capacitors, the 183D used a smooth geared dial drive.

The 183D had several other high-quality features, such as two tuned stages of RF amplification before the first mixer for improved sensitivity. (Manufacturer’s spec was 3.5 microvolts for 10 dB signal to noise ratio, but Ben Hester measured a much better 0.4 to 0.6 microvolts across the HF spectrum on his '183D.) Image rejection was rated by the manufacturer at 80 dB below 12 MHz., and a pair of 6V6 audio tubes in push-pull configuration produced eight watts of audio output.

Selectivity was provided by both the IF transformers and the customary single crystal with a sharp nose and very broad skirt response. (The catalog specs were 3.5 kHz and 12.5 kHz at -6/-60 dB with the crystal filter off and 100 Hertz/7 kHz with the crystal filter at its sharpest setting.)

The New

What a difference thirty years makes! Although transistors had been invented in the late 1940s, it took quite a while for them to be incorporated into radios. That same 1956 ARRL Handbook devoted all of 5 pages to semiconductor devices versus 19 for vacuum tubes.

The Icom R71A weighs less than a third of the 183D (17 pounds) and measures 11-34 x 4-1/2 x 11 inches, but it’s packed with features that would have been considered beyond science fiction by the listener of the fifties. The receiver’s frequency coverage is from 100 kHz to 30 MHz without gaps. Not only could frequencies be tuned in with a dial precision of 100 Hertz (minimum tuning steps are 10 Hertz), but a desired frequency can be punched in via a keypad, or 32 favorite frequencies can be stored in memory for instant recall.

The factory’s sensitivity specifications in the range of 1.6 to 30 MHz are 0.15 microvolts in SSB/CW modes and 0.5 microvolts in AM mode. (Ben’s measurements for the R71A in the AM mode were in the range of 0.4 microvolts with the preamp off and 0.2 microvolts with the preamp on.)

The R71A supports single sideband reception with a product detector. This also permits ECSS tuning, which is tuning in a broadcast station using either LSB or USB modes to reject adjacent channel interference. The R71A is a quadruple conversion design with good quality crystal and ceramic filters, although the filter quality is better for SSB than for AM (another reason to use ECSS tuning).

Reception modes were AM and CW via a variable BFO – there was no product detector since SSB hadn’t come into wide use at the time. A plug-in adapter for narrow band FM was an optional accessory. A separate speaker or headphones are required, since there is no internal speaker. The radio sold new for $399, according to an ad in the 1956 Amateur’s Radio Handbook. Fred Osterman’s book Shortwave Receivers Past and Present lists a used price range of $150 to $290 for the radio.

Are you a fan of ON THE BENCH or monitoring times? Do you want to stay informed about the latest in radio and communication technology? Sign up for our newsletter today and get access to exclusive content, giveaways, and early access to new products.
cessories for the radio were a high-stability oscillator (CR-64), FM unit (EX-257), computer control interface (UX-14 and CT-17), remote control (RC-11) and voice synthesizer (EX-310).

The R71A's retail price varied from $800 to $1200 over its production run. The used price for this receiver currently runs from $350 to $500 depending on which options have been installed.

The front-end design of the R71A is completely different from that of the NC-183D. Instead of tuned RF amplifiers, the R71A has a series of bandpass filters (the appropriate filter is selected by the tuning logic circuits) to provide front-end selectivity. After the signal has passed through the filter, it can be amplified 10 dB by a wideband amplifier, attenuated 20 dB or passed unaltered to the first mixer stage.

In the first mixer, the RF signals are converted to the 183D uses a 1st digitally controlled phase-locked loop (PLL) to provide tuning and intermediate frequency conversion. The master oscillator for the PLLs is crystal controlled, resulting in minimal drift. This technology permits 10 Hertz tuning steps, direct frequency tuning via a keypad and the ability to store 32 frequencies in memory.

The Comparison

Before I go into the operational comparison of the two radios, I should relate my experiences with getting them working, as a guide for those contemplating purchasing a used receiver. This is the third NC-183D I've purchased - the first was in poor cosmetic shape, but worked OK. The second unit looked good but had very low audio output, which I was able to fix, but the second conversion oscillator didn't work properly and I've been unable to find the problem. The third unit works fine, although I have not yet checked for weak tubes or done an alignment (the dial calibration is spot on, however).

The R71A worked well in AM mode with the wide filter, but signals were muffled and distorted with the narrow filter (a FL-44A in this unit) - much more than I would expect just from the narrower bandwidth. Although amateur SSB signals were received clearly, ECSS reception of broadcast signals was distorted and muddy. Since I had the service manual, I was able to adjust the BFO and passband tuning circuits and set the endpoints for the voltage controlled oscillators in the phase-locked loops and now I have a fully functioning R71A.

The lesson to be learned is to insure you can get a refund on a used radio purchase or at least be able to check the radio thoroughly before purchase. If you are technically competent, be sure to get the manual for the radio. The NC-183D manual has full schematics and alignment information, but the Icom has separate operating and service manuals. Fortunately, there are several third-party sources of manuals copies for older equipment.

I decided to use an indoor Datong active antenna to test the radios since I am out of desk space in the usual radio room. The output from the antenna was fed through an antenna switch to A-B the radios. The Icom has an SO-239 coaxial socket for antenna input and the National has screw terminals designed for either a single wire feed-in or a twin-lead dipole feed. I used identical Radio Shack mini-speakers for the audio output of each radio.

The Icom wins hands-down for convenience in tuning with its digital frequency readout and keypad tuning. Pressing the "Band" button allows jumping around in one megahertz steps via the main tuning knob and the "TS" button toggles the main tuning between one kHz and 10 Hertz tuning steps (50 Hertz if the knob is turned rapidly). The National tunes smoothly, but requires some cranking to get from one end of each tuning range to the other. I found it easiest to set the main tuning to the high end of the band of interest and then use the bandspread to tune from station to station.

Frequency readout on the National, especially if not using the bandspread on harmonics, is appallingly bad. There are add-on frequency counters that can be added to these older tube radios (see http://www.aade.com for one example), although the 183D's switching from single to double conversion might require some mental arithmetic to determine the actual tuned frequency. It helped having a digital read-out receiver next to the 183D to determine what it was tuned to.

Other than the frequency readout accuracy, I was somewhat surprised by how closely matched the radios were. I did expect that sensitivity would be close and that was the case - there were no stations that could be heard on one receiver and not the other. Most receivers have adequate sensitivity, since reception in the lower shortwave bands is primarily limited by atmospheric and local noise.

Selectivity was better on the Icom due to the ability to tune using the ECSS technique and the 2.4 kHz filter, although I preferred the 2.8 kHz filter for better fidelity, when conditions permitted. The 183D easily separated stations 10 kHz apart, even in the widest bandwidth position. Under tougher conditions, switching in the crystal filter to the "1" or "2" position and tweaking the phasing control for best intelligibility worked quite well. I previously had the impression that Icom radios had poor audio fidelity and had expected the National to sound much richer, but the R71A in AM mode with the wide filter and an external speaker sounded quite good. Both receivers were pleasant to listen to for extended periods.

The R71A wins hands-down for reception of single-sideband signals, thanks to its inherent stability and product detector - simply select the appropriate mode and filter and tune the radio for best intelligibility. On the NC183D, the operator must turn down the RF gain, then adjust the tuning, antenna trimmer and BFO frequency for best signal - a procedure which requires some practice. Also, since the radio does drift, occasional touch-up of the bandspread tuning is required. Overall, the 183D is a very "hands-on" receiver, while the Icom is more of a "set and forget" operation.

The Choice

Deciding which of these receivers (or their class of technology) is best for you depends on the intended use. For someone looking for a step-up from a portable receiver who intends to use "DXing" or the more modern receiver is the obvious choice, due to stability, filtering, tuning precision and the product detector. For those who already have a modern receiver and want a radio for program listening or casual bandscanning, the NC-183D would be an attractive addition to the radio desk, if there is room for it.

Reliability is also something to be considered in maintaining equipment. The NC183D is fifty years old and still perking along. Unless the bandswitch or one of the coils fail, most of the parts can be replaced with modern equivalents, and tubes are still available. The open point-to-point wiring of these older receivers makes repairs easier than on the densely packed circuit boards of the modern radios.

One would expect the Icom to be more reliable, since it uses solid-state parts, but there are some particular reliability issues with the R71I. The primary one is that the operating software is stored in volatile memory, which is powered by a lithium battery. When the battery dies, the radio must be sent back to Icom for reprogramming. Most users have not reported having this problem. Icom America details how to replace the battery without losing the memory contents at their service FAQ's webpage (start at http://www.icomamerica.com).

In addition, there have been problems with electrolytic capacitors drying out and trimmer capacitors failing, detailed in the troubleshooting guide listed on the service FAQ's page. Over time, the integrated circuits used in modern receivers will become unavailable for purchase, potentially rendering these radios inoperable, should one of these IC's fail.

This is your equipment page. Monitoring Times pays for projects, reviews, radio theory and hardware topics. Contact Rachel Baughn, 7540 Hwy 64 West, Brasstown, NC 28902; editor@monitoringtimes.com.

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Cobra’s Excellent PR 350-2WXVP

Once again, the outlook has improved for folks who think they might like to have a pair of two-way radios. When Family Radio Services radios were introduced several years ago, it was not uncommon for a single handiTalkie to cost $150 or more. If you wanted rechargeable batteries and a drop-in charger, you could expect to spend considerably more. And if you wanted a pair of radios, rechargeable batteries, and chargers, it would cost you twice as much.

Now, however, you can obtain a pair of 22-channel Cobra PR350WX radios with rechargeable batteries and a drop-in charger that will charge either both radios or both batteries outside the radios, for a measly $89.95 suggested retail price, neatly packaged in a blister pack and called the “PR 350-2WXVP.” Even better, both radios have NOAA weather radio (10 channels) and weather alert capability built in. That, dear reader, is a “Good Deal” in anyone’s book.

The PR350WX offers transmit and receive capabilities on 22 channels – 7 FRS/GMRS, 8 GMRS, and 7 FRS.

Here’s how they are allocated according to the owner’s manual:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Service</th>
<th>Power (watts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>462.5625</td>
<td>FRS/GMRS</td>
<td>1</td>
</tr>
<tr>
<td>462.5875</td>
<td>FRS/GMRS</td>
<td>.5</td>
</tr>
<tr>
<td>462.6125</td>
<td>FRS/GMRS</td>
<td>.5</td>
</tr>
<tr>
<td>462.6375</td>
<td>FRS/GMRS</td>
<td>.5</td>
</tr>
<tr>
<td>462.6625</td>
<td>FRS/GMRS</td>
<td>.5</td>
</tr>
<tr>
<td>462.6875</td>
<td>FRS/GMRS</td>
<td>.5</td>
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FRS, of course, stands for Family Radio Service, an unlicensed radio service that is limited by FCC regulation to one-half watt transmitter power. GMRS is the abbreviation for General Mobile Radio Service, a licensed radio service. You pay a fee to the Federal Communications Commission to get a license to use GMRS frequencies. While there are GMRS repeaters across the country, the PR350WX is simplex only.

GMRS handiTalkies often have two watts of power. As a result they generally can talk farther than FRS radios under the same condition, so there is an advantage in combining FRS and GMRS in the same two-way radio. The PR350WX has only one watt of transmit power on GMRS frequencies, but as we’ll see in just a bit, the impact on performance is minimal.

Page four of the PR350WX Owner’s Manual states clearly that a license is required to operate on GMRS frequencies. The Owner’s Manual gives complete information on where to obtain the necessary forms and instructions on page 18 of the manual, but it wouldn’t surprise me if few people actually do so.

We Test the PR350WX

Let’s take a tour of the PR350WX. The first thing that my test partner (and wife) noticed is the sculpted shape that nestsles comfortably in the hand. The other thing that struck my eye is that there are no knobs on this radio... not one. The upper front panel of the PR350WX is dominated by a backlit liquid crystal display that is surrounded by five soft rubber buttons. The LCD lets the user know what is going on with the radio – the active channel, CTCSS code, low battery, roger beep status, even a NOAA weather radio all hazards alert icon.

Directly to the left of the LCD is a rocker button for raising and lowering the volume; next to that (moving counterclockwise around the display), a CALL button; next, a MODE button for activating various functions of the radio (such as weather radio, weather alert, channel and CTCSS code scan). To the right side of the display, a roger button for changing channels, and, directly above the display, a LOCK button. Below the display, the bottom of the radio is dominated by a speaker/microphone grill.

On top of the radio is a stubby flexible antenna, a jack for plugging in a headset, and a soft rubber ON/OFF switch. To turn the radio, press the switch and hold it down for a few seconds until the radio wakes up. You also have to press and hold to turn it off. This prevents inadvertent powering on or off while clipped to your belt.

I like the PR350WX a whole lot. The audio was exceptionally clear and strong and the range was within a tenth of a mile of the best FRS/GMRS radios I have tested. The rechargeable batteries can be popped out on a moment’s notice and replaced with four ordinary AAA alkaline cells. The push-to-talk button has an audible “click” that never leaves you in doubt whether the button is fully depressed. You can even leave the radios in the charging stand as long as you like without damaging the rechargeable batteries.

In short, the PR350-2WXVP package delivers a whole lot of goodies, with commendable performance, at a very reasonable price. Highly recommended. For additional information, visit http://www.cobra.com.

The Cobra PR350-2WXVP: a lot of goodies, commendable performance, and a very reasonable price.

The Gadget Guy

Jock Elliott KB2GOM

jockelliott@monitoringtimes.com
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The AOR WL500 captures and amplifies transmissions in the 3.5 - 30 MHz range (shortwave). Up to 16dB of gain can be realized, using a 9 V battery or an external 12VDC power source. The diamond-shaped antenna, with a diameter of about 2 feet, can hang freely or be placed in a window.

Remote Possibilities

Swl-remotes.com has introduced a new product for remote control of the ICOM IC-R75 receiver. You can now control your R75 while relaxing in your easy chair instead of hunched over the radio.

The SWL IR Remote is a full-featured remote control box for the R75 that permits controlling the receiver using a standard TV universal remote. Using the universal remote, you can enter frequencies directly, move through frequencies, adjust the volume, set modes, and even adjust the RF Gain, Squelch, and PBT controls. The memories on the R75 can be directly entered, transferred to the VFO, saved from the VFO to memory, and scans initiated from the remote.

The keys on the universal remote are used in a very intuitive way and with a minimum of key-strokes to perform the operations. The built-in LED on the SWL Remote gives feedback on the operation of the TV controller and even informs the user when the RF operation of the TV controller and even informs the user when the RF signal is lost.

The SWL IR Remote connects to the R75 Remote port with the supplied cable and uses the CI-V protocol built into the R75 to control the radio. The DC wall adapter supplies the necessary power for the control unit. A comprehensive operating manual is available as a download from the Internet. The SWL IR Remote is $79.95 plus shipping. Order or for more information visit the web site at http://www.swl-remotes.com or contact sales@swl-remotes.com (sorry, no phone number or address was given).

There is also a version of the SWL IR Remote available to operate ICOM transceivers and receivers that use the CI-V protocol.

Connect to Your Old TV Set

Most older TV sets do not have the audio/video connections needed to hook up a new DVD player, gaming console, or camcorder. But that old TV can be put back to good use with the Monster’s ConnectAll 200 that converts S-Video to RF signals for older video tuners.

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high performance S-Video RF Modulator connects it all!
ConnectAll 200 retails for $29.95 from your local Monster Cable dealer.

ARRL Reviews by
Larry Van Horn, N5FPW

Now You're Talking! 5th edition

For many years the amateur radio Novice class license was the entry level ticket for operating in the ham (amateur radio) bands. In April 2000 the FCC reworked the amateur license structure and the Novice class license was abolished. Now the Technician amateur radio license is the entry level license for this service. To help the prospective ham study for the 35 question Technician license test, the ARRL has released the new 5th edition of its publication - Now You're Talking!

Now You're Talking! is amateur radio's most popular beginner's study guide. In one book, you have everything you need to earn your Technician class license. Study this book and you should have no problem passing your 35-question license exam. (There is no Morse code test required to earn the Technician class license.)

Inside this ARRL publication you'll find friendly, easy-to-understand theory and rules associated with the Technician class license. This new edition also has the latest Technician class question pool (Element 2) with the answer key that is being used by the Volunteer Examiners (VE) for use on exams beginning July 1, 2003. There are detailed explanations for all questions in the Tech pool, including FCC rules.

But Now You're Talking! is far more than just the Tech exam question pool. You will also learn how to select and set up radios, accessories and antennas for your ham radio station. It will also guide you through your first contacts on all the popular operating modes, including FM repeaters and packet radio. Practical information every beginning ham needs is presented clearly and simply, in small doses. Now You're Talking! shows you how to enjoy ham radio to the fullest.

And when you pass that Tech license, you now have a boatload of frequencies to operate on (50 MHz and above). You can experience a wide range of amateur operating activities including digital communications, space communications, terrestrial repeaters, amateur TV and much more.

So what are you waiting for? Time to quit making excuses and start studying for the Tech ham exam. It has never been easier to get on the ham bands and Now You're Talking! makes it a snap.

This first printing of the 5th edition (#8810) is available for $19.95 plus shipping and handling from the ARRL online http://www.arrl.org or by calling their toll free number at 1-800-277-5289. The snail mail address is ARRL, 225 Main Street, Newington, CT 06111-1494.

ARRL 2003-2004 Repeater Directory

Good things come in small packages, and the 32nd edition of this ARRL publication is no exception. If you travel and carry your VHF/UHF gear along for the trip, or if you want a detailed listing of repeater operations in your area, state or nationwide, nothing fits the bill for the price better than the pocket size ARRL Repeater Directory.

In this latest League missive you will find updated listings for thousands of repeaters across the United States, its insular territories, and Canada. There are repeater listings for the following frequency ranges: 29.5-29.7 MHz, 51-54 MHz, 144-148 MHz, 222-225 MHz, 420-450 MHz, 902-928 MHz, and 1240 MHz and above. You will also find listings for ATV (Amateur Television) repeaters and the new IRLP (Internet Linked nodes) repeaters.

In addition to the repeater listings, this publication also includes: operating tips for newly licensed amateurs, frequency coordinator contact information, CTCSS and Digital Coded Squelch (DCS) information, VHF/UHF bandplan listings, and a 2-meter channel-spacing map.

Large on information and small in size, this publication also carries a small price tag — $9.95 plus shipping and handling. You can order this new repeater directory (#8918) or any other League publication via the contacts listed above.

WinScanDP

If you're the owner of a new Uniden digital scanner, you may be waiting for the newest WinScan software to be released before getting hot and heavy into programming those 1000 channels. But, while the anticipated WinScan 3 program will allow you to control the radio through your computer, you don't have to wait for its release to manage your frequency lists.

The inexpensive WinScanDP Version 1.0 will let you enter and manage frequency and talkgroup IDs, bank settings, search criteria, alpha tags and more. If you own both a BC250D and a BC785D, you can switch radios at the click of a button; the software will detect which radios are connected to your PC on what COM ports.

WinScan DP is $24.95. You can purchase and download the software directly from http://www.pozilla.com (a demo version is also available) or if you prefer a CD they are available for purchase from The Ham Station, Scanner Master, or MGH Distributing.

Business News

Much concern has been expressed by Grundig fans at the news earlier this year that the German corporation declared bankruptcy. Bottom line: no need to worry. The insolvency of Grundig in Europe has no bearing on the US company (formerly Lextronix, now E-Ton). For the past eighteen years they have been a separate entity and they, not Grundig Europe were manufacturing the shortwave radios. Therefore, sales and repair of Grundig shortwave radios will be unaffected.

Books and equipment for announcement or review should be sent to "What's New?" c/o Monitoring Times, 7540 Highway 64 West, Brasstown, NC 28902. Press releases may be faxed to 828-837-2216 or emailed to Rachel Baughn, editor@monitoringtimes.com.

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July 2003  MONITORING TIMES  89
As I write, some seventy people—including me—are taking part in the first continuous test transmissions from Europe’s new all-digital, geostationary weather satellite (WXSAT) MSG-1. But this was not a scenario the developers intended!

Meteosat Second Generation (MSG-1) was launched last August, but during commissioning in October, a solid-state-amplifier unexpectedly failed—causing a re-think of strategy. In an amazing fortuitous move, the decision was taken to expand the already-in-operation HotBird-6 digital video broadcast (DVB) transmission of some polar orbiting WXSAT data to include MSG-1 high rate information transmission—the highest resolution transmissions available.

Unlike the situation in America where such data is transmitted free-to-air from government funded satellites, transmissions from the European satellite are to be largely encrypted after the testing phase is over. One reason for encryption is that not all European countries have funded the cost of the Meteosat program, so the Council of Ministers decided on this controversial move. With few exceptions, amateurs have had very limited access to high resolution data from the Meteosat satellites during the last ten years or so. Now, amateurs and professionals are helping Eumetsat to establish the reliability of this mode of data transmission.

Fig 1: MSG-1 HRIT test image copyright Eumetsat 2003 received and processed by Arne van Belle.

The two main image streams that will eventually come from MSG-1 and GOES are HRIT and LRIT. HRIT can be compared to Primary Data (PDU) or GVAR, and LRIT to WEFAX. LRIT—Low Rate Information Transmission—from MSG-1 is being tested later this year.

Amateur interest in HRIT reception would have been virtually zero because of the requirement for a giant dish to receive the data stream direct from MSG-1; in Britain, 3m dishes are not normally acceptable on domestic properties by the local authorities. In addition, the specialist HRIT receiver is likely to be considerably over the budget of the average hobbyist!

Suddenly we have a failed amplifier, followed by a changed downlink plan. Routen via HotBird-6, a European satellite television transponder, means a much cheaper method for hobbyists to obtain quality data. Cheap systems to receive HotBird data were quickly made available by Timestep Weather Systems, UK, and a package that included a DVB card for the receiving computer was included if required. The Eumetsat packet decoding software issued by T-Systems is a compulsory purchase—and you have to produce the pictures! David Taylor of Edinburgh, UK, has developed an MSG-1 data manager that produces all 12 channels.

NOAA - HRIT and LRIT

Between now and 2010, NOAA is implementing LRIT, amongst other changes that take advantage of the new technologies. Meteorologists have requirements for additional data, and there is a need to achieve a cost effective United States environmental satellite program.

GOES WEFAX

The earliest change will be the replacement of the GOES analog WEFAX transmission service with the digital Low Rate Information Transmission during this year and continuing through to 2005. Test LRIT transmissions will be made from the GOES-East (GOES-12) satellite. During 2004, a regular schedule of alternating analog WEFAX and digital LRIT transmissions will be made each hour. By early 2005, it is expected NOAA will have completed this transition and WEFAX will no longer be transmitted from the NOAA GOES satellites.

LRIT will continue to be transmitted on 1691.0 MHz, but users will have to replace receiving hardware and processing software to utilize it. A definition for the global specification for LRIT was agreed to by the nations operating meteorological satellite systems, and NOAA will follow this definition. LRIT is to be implemented by all meteorological/environmental satellite operators during the next few years.

NOAA has released its general hardware specifications as well as the source code for processing the LRIT data stream to manufacturers for the development of LRIT receivers. For further information and documentation on NOAA LRIT transition plans, refer to the LRIT web site. http://noaasis.noaa.gov/LRIT/

NOAA-17 reduced transmission power

Near the end of April, NOAA-17’s STX-3 transmitter (1707.0 MHz) power dropped from 8 watts to 2.4 watts. For those of us receiving signals using nominal-sized tracking dishes, the main effect seems to be extra noise near the lower elevation parts of passes.

GMS-5 to GOES-9 Transition Plan

Thomas Renkevents reminds us that GOES-9 (formerly GOES-west) was taken out of service some years ago and replaced with GOES-10, when it was thought that GOES-9 was in imminent danger of failing. Since that time, GOES-9 has been taken out of storage on two separate occasions, and the data do not suggest an imminent failure. Imagery data appears the same as when GOES-9 was shut down. During the most recent time that GOES-9 was tested (December), GOES-9 did experience some problems with its momentum wheels; the satellite was placed back in storage.

The operators are confident that when GOES-9 is brought into operations they can run the spacecraft in a different momentum wheel configuration and we should expect good data. Recall that GOES-8 was running in a similar momentum wheel configuration for years without additional problems.

GOES-9 should be able to provide data over the Pacific until MTSAT-1R (the Japanese Meteorological Agency’s replacement for GMS-5) is launched.
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July marks the anniversary of a very important player in MT’s evolution. Assistant editor Larry Van Horn first began writing for Monitoring Times 20 years ago, and 10 years ago he moved to Brasstown as a fulltime Grove Enterprises staff member! We quizzed Larry about his long career with radio and with MT.

MT> Larry, how did you get started in the radio hobby?

LVH> In 1964 my parents gave me my first radio, an old five tube GE AM clock radio as a Christmas gift. It was supposed to help get me up for school. But that old black clock radio did much more. I also used it to explore the local broadcast dial during the daytime. I soon discovered I could also receive distant stations (especially at night) as well. I then started picking up Popular Electronics, Electronics Illustrated (with articles by my old friend Tom Kneitel) and other magazines of the era to learn more about this hobby of distant radio station listening. I soon discovered that others also listened to distant stations in other bands such as shortwave, the FM and TV broadcast bands. The following Christmas I asked for and received a Hallicrafters S-120 tube/analog dial shortwave radio and the rest is history. I haven’t looked back since!

MT> How did you get started writing for MT, and what was your first contribution?

LVH> I actually first started writing the Satellite Listeners column for the now defunct RCMA Scanner Club newsletter, back around 1980-1981. It was there I was first introduced in print to Mr. Bob Grove, the RCMA Federal/Military columnist. Soon afterward I was one of several hundred that received the first paper edition of MT from Bob and Judy. In the summer of 1983 Bob invited me to write a satellite listening column for MT and a book on satellite listening for Grove. My first MT column was written in July or August 1983 and appeared in the Sep/Oct 1983 issue. The column was entitled Signals from Space and it was very popular. The July 1983 issue was nearly sold out!

MT> What was your most memorable moment in monitoring?

LVH> My first issue for the now defunct RCMA Scanner Club newsletter, back around 1980-1981. It was there I was first introduced in print to Mr. Bob Grove, the RCMA Federal/Military columnist. Soon afterward I was one of several hundred that received the first paper edition of MT from Bob and Judy. In the summer of 1983 Bob invited me to write a satellite listening column for MT and a book on satellite listening for Grove. My first MT column was written in July or August 1983 and appeared in the Sep/Oct 1983 issue. The column was entitled Signals from Space and it was very popular. The July 1983 issue was nearly sold out!

MT> What is your favorite radio target today?

LVH> What's your best piece of advice for newcomers to the hobby?

MT> Do you have a favorite receiver among all the radios you have owned over the years?

LVH> Do you have a challenge to issue to those who think there's nothing new to listen to or that digital comms are the end of radio monitoring?

MT> Do you have a favorite receiver among all the radios you have owned over the years?

LVH> Do you have a challenge to issue to those who think there's nothing new to listen to or that digital comms are the end of radio monitoring?

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**HAMS NOTE:** The Scanner Beam can be used for transmitting up to 25 watts on VHF/UHF with the following average VSWR: 50 MHz @ 1.9:1, 144 MHz @ 3:1, 222 MHz @ 3:1, and 430 MHz @ 1.5:1.

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