Spotlight on the FCC

MT Reviews:
Sony ICF-SW07 Portable OptoElectronics OptoCom
Download
Supported by Radio Manager for Windows for downloading recorded frequencies to a computer.

APS105
The New APS105 Pre Selector can be interfaced to increase the Xplorer's sensitivity up to 10x.

Radio Checks
The Xplorer is ideal for radio quick checks. Just key the radio and the Xplorer instantly displays the frequency, and either CTCSS, DCS, LTR, DTMF, Signal Strength, or Deviation.

EXPLORE THIS !!!
30MHz - 2GHz Nearfield Test Receiver*, sweeps entire range in less than 1 second

Frequency Blocks allows the user to preselect up to ten different frequency ranges to Lock In/Out

Lock out up to 1000 individual frequencies

Two line character LCD displays frequency and either CTCSS, DCS, LTR, DTMF, Signal Strength, or Deviation

Automatically record up to 500 frequencies in memory with number of hits and time and date

Internal speaker, Audio earphone/headphone jack

Built-in PC interface for downloading memories to a computer

800 feet pick up distance from 5 watt UHF radio

Manually record CTCSS, DCS, LTR, DTMF, Signal Strength, and Deviation to memory

Locks onto strong signals in less than 1 second

Automatic or manual hold

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It offers MORE of what you want to hear for LESS than what you'd expect to fork over.

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- Two optional filter slots
- Optional DSP
- Optional PC control

- Synchronous AM detection
- Automatic notch filter
- Twin passband tuning
- Triple conversion

Presenting the ICOM IC-R75 HF Receiver
Cutting edge technology for today's serious DX'er, yet easy & affordable enough for casual listener use.

Setting a new standard in affordable HF communications, the ICOM IC-R75 comes fully equipped to satisfy both the serious DX'er and the serious DX'er's wallet. Hear MORE of what's out there. Pick up more amateur, marine and shortwave broadcasts; the new 'R75' covers from 0.03 – 60.0 MHz. (That's wider rx than most other HF receivers.)

Pull out the weak signals. The IC-R75 sports a remarkable arsenal of signal detection weapons ready for your command: a triple conversion receive system rejects image and spurious signals. An automatic notch filter reduces interference by minimizing "beat" and "howl" signals. Use Twin Passband Tuning (PBT) to zero in on signals by shaping the IF passband. ICOM's all new Synchronous AM detection (S-AM) technology reduces signal fading in AM broadcasts. Optional Digital Signal Processing (DSP) noise reduction in the AF stage converts analog SSB, AM and FM signals to crisp, clear audio output (you'll hear the difference on the 'R75's large, front mounted speaker). Further tailor the 'R75 to meet your listening needs by installing up to two optional filters.

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Cover Story

Compliance Enforcement at the FCC

By Hans Johnson

"Welcome to the FCC Columbia Operations Center" reads the sign outside the Federal Communications Commission's one remaining manned HF monitoring station. How is this agency able to fulfill its duty of safeguarding broadcast and communication signals in the new "lean and mean" FCC? See page 8 for an inside look at how modern radio direction-finding can pinpoint signals from the other side of the continent.

In spite of stepped up enforcement activities, staff reductions, and on-going reorganization, the FCC is on the hot seat in front of the congressional committee charged with its oversight (see Closing Comments). So this month we focus on the FCC and also on various aspects of direction-finding.

Alone on the Pacific .................................................. 12

By D.K. Howe

Not so many years ago, an attempt to row around the world would have been foolhardy without the best HF radio money could buy. But modern-day Hawaiian voyager Mick Bird travels with an Inmarsat/Orbcom satellite uplink system; his VHF radio is just to contact passing ships and nearby shore stations. As they did for the now-successful balloon circumnavigators, satellites provide weather reports and forecasts, position reporting and navigation, plus the ability to contact family and supporters.

On the Road with GPS and ITS ..................................... 16

By Russell Steele

IT-who?! You may not be familiar with the term Intelligent Transportation Systems, but you'll recognize some of its commercial applications — in-car navigation systems found in luxury and rental cars, fleet management systems for buses, trucks, ambulances, trains, planes — you name it. GPS has become so critical to the smooth flow of transportation and business that the system is being beefed up to support the expected explosion in users.

The OptoCom Communication Receiver ............................ 20

Review by Haskell Moore

The big story in scanning for 1999 has been the introduction of the OptoCom — a GRE-Optoelectronics collaboration that marries the circuitry of the already-excellent PRO-2042 scanner to software solutions which can follow multiple types of analog trunked systems. This scanner can do almost everything but follow digital systems ... but getting started with the software isn't necessarily easy.

Moore reviews the hardware and five of the software packages currently available for this break-through product.

Reviews:

In addition to the computer-controlled OptoCom on page 20, MT is proud to be the first to review another innovative product — Sony's ICF-SW07 ROM-tuned portable HF receiver. Magne gives the clamshell-design radio high marks for a travel portable, although it's a little pricey (p. 90). Bob Grove reviews the internal VHF/UHF converter for the JRC NRD-545 on page 96. For aero fans who are dabbling with ACARS reception, Catalano finds SkySpy software helps smooth the way (p.88).
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Subscription Rates: $23.95 in US; $36.50 in Canada; and $55.45 foreign elsewhere, US funds. Label indicates last issue of subscription. See page 103 for subscription information.

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The Wireless Privacy Enhancement Act of 1999, HR514, introduced by Rep Heather Wilson of New Mexico passed the House on February 25th by a vote of 403-3. Like previous attempts at suppressing scanner use, the bill directs the FCC to do what it already has done in a number of regulatory proceedings. The bill requires the FCC to deny equipment authorization to scanners capable of receiving transmissions in the cellular and Personal Communications Services (PCS) — already denied as a result of previous legislation, although Congress has been pointedly critical of poor FCC enforcement in this area.

The bill prohibits modification of scanners in a manner that would cause the equipment to fail to comply with FCC regulations. Such modification is already illegal because authority to operate a Commission-authorized device only applies if the device is not altered from the version the FCC authorized.

The bill says the FCC “may adopt” regulations necessary to enhance privacy on frequencies shared between commercial mobile radio services and public safety radio systems. It directs the FCC to consider requiring warning labels on scanners, an idea the FCC once considered and rejected.

Under current law, unauthorized interception of radio signals can be permissible if the content is not disclosed. The bill would prohibit the unauthorized interception of communications even if the content is not disclosed.

This is one of the biggest changes to eavesdropping laws in years, and could hit the various scanner and shortwave hobby publications that print digests of message traffic. (See www.grove-ent.com/mt514.html for the full bill)

One politician definitely not in favor of establishing a Low Power FM broadcast radio service is Rep. Billy Tauzin, Republican of Louisiana and sponsor of the wording in HR514. Tauzin is the top Republican overseeing telecommunications policy. He chairs the powerful House Commerce Committee’s communications subcommittee.

Tauzin believes the plan to establish what could be thousands of small “microradio” stations on the FM broadcast dial “…would reduce the audience and advertising revenue of current stations and possibly create severe interference.” He said “The FCC is an agency out of control that demands congressional action to straighten it out.” Tauzin said he planned to introduce legislation to revamp the agency’s “structure and powers.”

FCC Chairman William Kennard urged Tauzin to talk to the educational, religious and community groups that support the microradio plan before opposing the idea. “There is enough room for the voices of churches, schools, and neighborhood groups as well as established radio companies.”

Taxing Internet online commerce is a certainty that is coming. There will be just too much money changing hands online for there not to be. The only questions are how and when.

Right now, though, they can’t even decide on the makeup of the commission which is to provide guidance to Congress. According to the law which established it, the Advisory Commission on Electronic Commerce must have eight members from private industry, eight from state and local governments — including at least one from a state with no sales tax — plus the commerce and treasury secretaries and the U.S. trade representative.

But whoever appointed the commission members bungled the job. Currently it has the three federal officials, plus nine members from industry and seven from state and local governments, none from a state with no sales tax. State and local governments are not happy and have vowed that there will be no meetings until the difference is cleared up. So far, none of the private industry appointees has volunteered to step aside.

The committee was supposed to begin work three months ago. The three year moratorium on new Internet taxes is due to expire 2001.

Pirate Radio “Vibes 89.1 FM” has been shut down. Working with the US Marshals Service and the United States Attorney, the FCC seized radio equipment used in the operation of an unlicensed FM radio station in Oakland Park, Florida, on 15th January 1999. The seizure of the equipment followed numerous FCC warnings to the operator about the penalties for unauthorized broadcasting and attempts by FCC agents to have the station voluntarily discontinue transmission.

Stating that operational misconduct will not be tolerated, the FCC has ordered three Amateur Radio repeaters located on San Francisco Bay area’s Grizzly Peak off the air for at least the next 4 months.

The repeater operator suspension is based on the Part §97.7 requirement that every Amateur station have a control operator who must (§97.105) “…ensure the immediate proper operation of the station, regardless of the type of control.”

According to the FCC, the Grizzly Peak control operators have for almost a year allegedly not only permitted, but encouraged use of the repeater by unlicensed operators; rebroadcast of cordless telephone calls, playing of music …and profane and obscene language on the amateur airwaves. There have even been extended communications between the control operator and unlicensed stations …all in violation of the rules.

The FCC ordered the system shut down as of February 28th, charging that the control operator assigned has not only invited unlicensed operators to use the repeater but has encouraged jamming and does not require operators to comply with the rules.

The FCC has sent violation notices to two ham operators who had used their stations to engage in illegal shortwave broadcasting on 6955 kHz. Cited were Henry L. Landsberg, WB6MEU, (Advanced Class) of Sierra Madre, California, and Richard F. Jurrens, KC5RGK, (Technician) of Katy, Texas. Also charged were two non-hams.

Landsberg and Jurrens were both cited for operating on a frequency not authorized by their Amateur Service licenses. In both cases, the Commission used radio direction-finding techniques to track the source of the 6955 kHz music transmissions. Landsberg and Jurrens both admitted that they had been responsible for the shortwave music transmissions broadcast from their homes. Jurrens was charged with operating a station identified as “Rock It Radio.”

The FCC has suspended the HF operating privileges of Walter P. Miller, Jr., W2YEE (Advanced Class) of Edison, New Jersey, for a period of six months. In a letter to Miller, the FCC’s Riley Hollingsworth said that on Feb. 4th and 5th “…you were apparently broadcasting and talking to no particular station for several hours, during which time you prevented the use of the frequencies by others and maliciously interfered with other stations attempting to use the frequencies.”
### NIL-JON Antennas

**STRONGER, MORE COMPACT ... SUPERIOR CALCULATED PERFORMANCE ... NO TUNING NECESSARY**

Highly acclaimed in the March MT’s “Scanning Report” column by Richard Barnett!

Makes use of UNIQUE FORMULAS where EXTENSIVE MATHEMATICS derives element length & spacing for best gain/pattern/impedance/SWR/bandwidth, taking into account interaction between EVERY component of the final product: (EVERY ELEMENT AFFECTING EVERY OTHER ELEMENT), reflector, director, directors, yagi-to-yagi effect, end mount mast effect, & the hardware of the antenna down to the mounting plate.

A “FERROMATCH SYSTEM” (no lossy gamma match!), but a straight forward method of tackling (reducing TV, RFI) the ‘down-the-outside-of-the-shield’ RF problem with an unbalanced feed to a balanced driven element utilizing newer ferrite technology & materials. NO PERFORMANCE ALTERING END CAPS! ...

Instead, maintain optimum calculated performance ...NO end capacitance effect & no ‘skin effect’.

---

**HD-TV-VHF/UHF-FM-F**

**HD-SCANNER-WB-OMNI-F**

**HD-TV-FM-S.OMNI-F**

**HD-146-V3-U**

**HD-6M or 10M-WB-OMNI-U**

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<th>Weight (lbs)</th>
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<td>F (*) 68° 108° 7.5 1.5 N/A 12.5 LBS.</td>
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<td><strong>HD-SCANNER-WB-OMNI-F</strong></td>
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<td>F (*) 67° 90° 7.5 1.9 N/A 12.5 LBS.</td>
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<td><strong>HD-TV-FM-S.OMNI-F</strong></td>
<td>TV Ch49 Selective Omni-Directional Mount Almost Anywhere onto Wall or Mast</td>
<td>F Unity 30° 1.6 0.2 N/A 3.0 LBS.</td>
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<tr>
<td><strong>HD-146-V3-U</strong></td>
<td>End Mnt, 3 ea. vent., using mast/tower for reflector Detailed, easy to follow, stacking instructions included for even higher gain</td>
<td>U (10 dB) 36° 36° 3.5 0.4 600 W 6.5 LBS.</td>
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<tr>
<td><strong>HD-6M or 10M-WB-OMNI-U</strong></td>
<td>High performance, compact, easy to install, 100 mile range!</td>
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**Notes:**

(*) For Ham antennas, usable frequency range transmitting with an SWR of 1.5:1 or less, typically less than 2.1:1. Frequency Range shown is usable without retuning the antenna.

- No tuning is required for any NJA antenna, just assemble and use the guidelines in your instruction manual.

- HD-SCANNER-WB-OMNI-F has a 1:1 SWR at 67° elevation.

- HD-3M-WB-OMNI-U and HD-4M-WB-OMNI-U have a 1:1 SWR at 36° elevation.

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### HD-146-V3-U Specs:

- **Dimensions:** 72° 204° 5.5 1.6 1000 W 10.5 LBS.
- **Weight:** 6.5 LBS.
- **Wind Load:** 40°(w) x 3°(d)
- **Power Rating:** 600 W
- **Shipping Weight:** 6.5 LBS.

**HD-TV-FM-S.OMNI-F CLAMP KIT**

**HD-146-V3-U**

**HD-SCANNER-WB-OMNI-F**

**HD-6M or 10M-WB-OMNI-U**

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**HAMS-CMNI VERTICALES — SIDE ARM MOUNT WITH HARDWARE INCLUDED**

<table>
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<tr>
<th>Category/Model</th>
<th>Description</th>
<th>Gain (dB)</th>
<th>Dimensions (in)</th>
<th>Weight (lbs)</th>
<th>Wind Load (Gust)</th>
<th>Power Rating</th>
<th>Shipping Weight</th>
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<tr>
<td><strong>HD-10M-WB-OMNI-U</strong></td>
<td>20-50 MHz, Top side mount, S.M.A. (WI) 2.1 (HAR) 10.5 (CE UNGO)</td>
<td>U (9) 72° 204° 5.5 1.6 1000 W 10.5 LBS.</td>
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<tr>
<td><strong>HD-4M-WB-OMNI-U</strong></td>
<td>50-54 MHz, Top side mount, S.M.A. (WA)</td>
<td>U (4) 45° 108° 3.5 0.9 1000 W 8.5 LBS.</td>
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**holes include bumpers, where applicable**

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**Order Information:**

- **To Order:** Make out to ‘Nil-Jon’ & send to Nil-Jon Antennas, 29462 Lorain Rd., N. Olmsted, OH 44070 [state model(s) on memo of check/M.O.]
- **Credit Card:** Call 440-777-9460 with M/C/Visa/Discover/American Express Acct. 

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**Your Satisfaction Guaranteed!**
“Road warriors” in state of transition

Many urban areas have been blessed with trained volunteers who devote countless hours tuned to their radios in order to respond to motorists in distress. Often they work in tandem with road patrols who may be trained as first responders and equipped with basic automotive and medical kits.

However, recognizing the importance of roving vans or emergency response operators during rush hour, some cities are mounting their own units, sometimes replacing the volunteers. Trouble is, they’re not always as well trained or as flexible as the volunteers. And, while they may have faster access to helicopters or emergency vehicles, they may forget to interact with the volunteers, who are usually part of experienced teams like REACT (Radio Emergency Associated Communications Teams), CVSS Samaritans, Emergency Services, Commuter Assistance Network, and many others.

These volunteers monitor a mixture of citizens band (CB), general mobile radio service (GMRS), and amateur radio frequencies — as well as VHF and marine frequencies where appropriate. GMRS has been the service favored by REACT members, because of the lack of congestion on the channels and the area that can be covered by the GMRS repeater network.

But this, too, may be changing. REACT is concerned about the FCC’s loosening regulations on the use of GMRS repeaters. They are concerned because, according to recent revisions, any licensed GMRS user may now operate on any GMRS frequency on any repeater. The FCC did retain the limitation that the nationwide 462/467.675 pair is for use through repeaters only, so that it remains the primary channel for emergencies and travelers assistance.

Responding to apprehensions voiced by some users, the FCC denies it has any plans to make GMRS an unlicensed service like the citizens band.

Volunteers track interference

A security guard in Hartford, Connecticut, was charged with 45 counts of criminal mischief, interfering with police and breach of peace after he was finally located by a volunteer radio tracking team called Capitol Region Malicious Interference Tracking (CRMIT). The group had fingerprinted Joel Langdo’s radio transmissions which confirmed that the profanities, music, moaning, and other noises which had interfered with at least 35 frequencies on hundreds of occasions came from his radio, which had been illegally altered. Langdo apparently made the transmissions while at work “as a joke.”

The police lieutenant said such cases didn’t happen often. The CRMIT assists in around 15 incidents each month, most of which involve accidental interference.

Next best thing to being there

Watching a NASCAR race on television just isn’t the same after you’ve been there in person with your scanner. But now you can still tune in to the scanner action over the Internet. The Charlotte, North Carolina, company MotorTrax interactive (MTi) purchased exclusive rights in May 1998 to distribute NASCAR Online in-car audio over the internet. The company has also signed licensing agreements with 25 top NASCAR drivers, including Jeff Gordon, Dale Earnhardt, Rusty Wallace and Dale Jarrett, so you can pick who you want to hear.

The current price is $4.95 per event; go to www.motortrax.com to log in.

Shrouded history of VOA site

The Voice of America’s Greenville facility, shut down in 1995, transferred ownership in March to East Carolina University. Professor Byron Burlingham, who is helping with the transition, learned that, of the 98 antennas on the property, only one was used for transmitting: Greenville was primarily a receiving and listening site. Incoming radio programs were relayed to two nearby transmitting facilities. The site did route messages from US embassies, but VOA officials refused to discuss what other agencies or types of communications may have been handled at the tightly-guarded 594-acre facility.

The VOA disposed of the facility because satellite systems have largely replaced radio receiving equipment. ECU plans to use the property for the “Millennium Campus,” with graduate-level programs, medical clinics, an institute for agromedicine, residential area for retired professors, wetlands preservation, and athletic training center.
"Privacy Czar" in Washington

Vice President Al Gore has named an Ohio State law professor as the nation’s first "privacy czar." His job will be to help the Clinton administration, the federal government, and the states to discuss privacy issues such as the selling of Dept. of Motor Vehicles information to private companies. He will likely have a hand in privacy bills relating to the issue of electronic access to financial and personal information. Privacy of information in the Internet has also become a big concern. Wonder if this new czar knows anything about radio waves?

New ham in Congress

Greg Walden, WB7OCE, elected to Congress from Oregon’s second Congressional district of Oregon, was sworn in March. He replaces Rep. Bob Smith, who retired last year. No stranger to the Capitol, Walden served as Smith’s chief of staff from 1981 until 1987. Walden is an American Radio Relay League member and broadcaster who owns several radio stations in Oregon. Previously, he served in the Oregon legislature.

Bottom feeders

“Want to hear your what your neighbors are saying? Then pick up this handy eavesdropping device scanning radio. You can also hear military and commercial aircraft “ So, we are told, went a radio ad for the SportCat scanner which aired on the Howard Stern show on the Entertainment network. While such a blatant pitch to the lowest element of human nature might be expected on the shock jock’s show, it is also very probably illegal. Promoting a device for the purpose of illegal interception is against the law.

Most folks know it’s illegal to monitor cellular frequencies, which are supposed to be blocked in the SportCat. But many people—and even many courts—still think monitoring cordless phones is allowed. A Michigan court, for example, just overturned a circuit court which had ruled that under state law conversations intercepted from a cordless phone are not private. Under federal law, there’s no question about it.

In the same month, the TV cartoon “The Simpsons” showed Marge Simpson becoming hopelessly hooked on listening in on the neighbors by listening to a baby monitor.

Once again, media uses the sleeze factor to pull an audience and make a quick buck—and adds more incentive to enact legislation like HR 514 that will injure legitimate users.

Satellite customers could get reprieve

Satellite customers who lost Fox and CBS channels or are due to lose them April 30th may get a reprieve until Dec. 31. The Senate Commerce Committee approved a bill (S-303) which would delay the action and restore the channels to the 700,000 customers who have already lost them due to an order from a federal court in Miami. It would also prevent other networks from following suit.

S-303 would give satellite TV customers (for the first time) the right to receive local TV stations on their satellite systems. After Dec. 31, customers who can not receive a local network channel by rooftop antenna or by cable would be permitted to request a waiver to receive non-local network channels.

The battle has just begun to get interesting!

Signs of the times?

Eric Cooper reports listening to the “Sincerely Yours” mailbag program on Radio Netherlands on Sunday night when the two hosts were congratulating one of their correspondents on receiving his 5000th QSL. One of the hosts said “I am not even sure what the letters ‘QSL’ stand for” to which the other host replied, “I think its some kind of reception report or something.”

John Tuscherer

MT columnist Kevin Carey noted with deep sadness the passing in March of the man who has been his mentor since 1985. John Tuscherer of Neenah, Wis., was a DXer of over 60 years who was always willing to “Elmer” younger hobbyists in the nuances of DX.

John was a distinguished veteran of World War II, serving with distinction in the US Army Air Corps, overseeing radio communications installations on Kwajalein, Majuro and Iwo Jima.

His legacy in the radio monitoring hobby is immense and varied. He was one of the first “armchairs” to study the vagaries of propagation; he was a ferocious QSLer who had thousands of cards in his collection. He was one of the first to write reception reports in Spanish, and his knowledge of Peruvian tropical stations was enormous.

His research of radio propagation conditions as they related to DXpeditions resulted in astonishing catches worldwide. John was a key figure in IOTA (Islands on the Air) and may have been credited with being the shortwave DXer with the most IOTA QSLs. John Tuscherer was 88.

DX awards

The Association of North American Radio Clubs ("ANARC") has renamed its DXer of the Year award to recognize the accomplishments of ANARC's first Executive Secretary, Don Jensen. The first Don Jensen Distinguished Service Award was presented at Winterfest 1999 to John McColman for his many years of dedication to the listening hobby. While best known for his research in scanner monitoring, John has been a monitor of all portions of the spectrum for many years. McColman is the author of numerous books, and is well known for his work with the former Northeast Scanning News (NESN) and currently with the All Ohio Scanner Club.

Certificates of Recognition were also given to Bill Oliver, Bob Brown, Harold Cones, and Kris Field.

“Communications” is a collaboration between Rachel Baughn, mtediter@groveent.com, and these fine reporters: Anonymous, NY; Jim Boehm, TX; Chet Copeland, via email; Ken Dupuis, NY; Dean Hale, via email; Richard Johnson, PA; Kevin Klein, WI; Bob Leaf via email; Fred Moira, WYSI, TX; Mark Meese via email; Ed Muro, NY; Ira Paul, MI; Doug Robertson, CA; Ed Schwartz, IL; Richard Sklar, WA; Walt Szczepaniak, PA; Larry and Gayle Van Horn, NC; William White, NC; ARRL Report

![Rave Review Pup Comm April '96](http://www.americanradiohistory.com/)

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The government's Federal Communications Commission (FCC) performs a variety of tasks, but none are more familiar to MT readers than the commission's work in busting illegal pirate stations. Yet the FCC has gone through a recent reorganization that downsized the agency significantly. Until last October, there hadn't been a shortwave pirate apprehended in years.

The network of manned high-frequency (shortwave) monitoring stations, created in 1941 to find illegal stations and spy transmissions, has been reduced to a single manned station. So how is the FCC's Compliance and Information Bureau (CIB) carrying out its enforcement duties now?

**Lean and Mean**

The network of monitoring stations ranging from Puerto Rico to Hawaii is no longer manned, but it is equipped. CIB now remotely controls this net. During business hours, that takes place at the FCC's Columbia Operations Center in Maryland. Located about halfway between Baltimore and Washington, the Center is just a few miles from highway I-95. Once in the countryside, it is now crowded by the growing city of Columbia. "Our noise floor gets higher every year," laments Charles Magin, district director.

It's hard to imagine a high frequency direction finding (HFDF) site without an elephant cage, the old modified Wullenweber antenna, but the FCC has gotten rid of their cages and replaced them with a better antenna of their own design. The interferometric antenna hardly looks like an antenna!

Eleven elements that look like fence post are arranged in a V, each leg being 1000 long. Starting from the bottom of the V, the distance between each element is double the distance between the two previous elements. It works similar to a phased array, with each element taking its own measurement of the signal.

Some rhombics, once used for program monitoring during World War Two, plus some other shortwave antennas, continue to stand but really aren't used. The new "I" antenna is the new workhorse of the site.

The next stop is the HFDF group building — actually a couple of trailers. As a result of the reorganization, Columbia quickly outgrew its original buildings. "It takes an act of Congress to construct a building, so trailers were the way to go," explains Charlie Magin.

**The FCC Casts a Wide Net**

Dave Larrabee, chief watch officer, dove right into our topic. "We know where the pirates on shortwave are," he says. He then explains how easy it is for the FCC to DF something on shortwave.

The HFDF group consists of three identical consoles. From any of the consoles, an officer can control receivers at FCC sites from Alaska to Hawaii to Puerto Rico, as well as a variety of sites in the contiguous United States. He can monitor the output from two different sites at the same time and instantly conduct direction finding against any shortwave signal he chooses. The commission's sites are all equipped with Watkins Johnson WJ 8711s, the government version of the HF-1000.

The WJ in the pictures is a dummy of sorts.
The FCC’s new type “I” antenna.

By tuning this unit, the officer can set the receivers for other receivers in the net. He can also do it via the keyboard, but the operators prefer using the dummy.

We proceeded to run a DF against a station in an aeronautical band. One push of a button and azimuths start shooting across a map a computer screen. Within seconds it is pegged down to a 10 nautical mile radius. If the officer is not satisfied with the automatic fix he can manually refine the data, accepting some azimuths and rejecting others.

Throughout his shift, the officer will run several such test fixes to make sure that the system is operating accurately. The computer is loaded with a pile of maps so that the officer can get a good picture of the area in which the station is operating.

The HFDF system is most often used for interference complaints on the aeronautical or maritime bands. Officers are given a list of tasks or may receive complaints from the FCC’s newly established national call center (1-888-225-5322).

Some of the tasks aren’t complaints, but requests for help in monitoring. “We have a task to monitor the signal strength of Radio Tirana in the Chicago area,” explains Dave Larrabee. It’s all part of international cooperation and the Commission works regularly with its counterparts in countries such as Australia, Great Britain, and Japan.
From this high frequency direction-finding console, the FCC can remotely control its network of stations to locate signals from Hawaii to Puerto Rico.

Black Sedans

But the HFDF system can't pinpoint a pirate, and it can't do anything against microbroadcasters on the FM band. That is where the fleet of late-model sedans that the FCC has comes in, known in the commission as the MDDF, mobile digital direction finding. While Charlie Magin didn’t want pictures taken of the entire vehicle, he did give me a tour and demonstration of the system.

The trunk is crammed full of gear, various computer displays and outputs are arranged in a stack next to the driver. There are no visible antennas; they're built into the roof. Monitoring signals over a wide part of the spectrum, the direction finding system tells the driver which way to go. It's also possible to display the azimuths from other vehicles on the system to get a better position.

A set of maps detail the area. Video records the scene, the mapping screen, the DF receiver screen, and the RF spectrum analyzer screen.

Our target this day was WHFS on 99.1 MHz. Luckily for them, they were transmitting as licensed from Annapolis on this day.

Columbia is also home for the FCC's satellite monitoring operations. The large dish here can view the programming on many different satellites. The FCC's success against offenders such as Captain Midnight, who interfered with an HBO broadcast, has made this a very quiet area for illegal activity in recent years.

Always Watching

When Columbia goes home for the evening, and on weekends and holidays, CIB's Communications and Crisis Management...
Center at FCC headquarters in Washington, D.C., takes over. This is the FCC's watch center, and there is always at least one officer on duty. A few punches on a cipher lock and you are inside the door.

The Commission wouldn't allow any pictures of the Center, due to some of the secure communications gear here, but you can forget about visions of something out of the movies. The reality of the center is that this is a work area, not a glamour set. Some things look out of place and there is a distinct lack of uniformity throughout. What will catch your eye as you come in is a bulletin board filled with pictures of previous busts — both Allan Weiner and La Voz de Alpha 66 were prominently displayed.

The watch officer on duty sits behind a high frequency direction finding console virtually identical to those at Columbia. So while the carpet may not match the walls, the business end of the center, the important end, is very modern.

The FADF (Fixed Automatic Direction Finding) is the VHF/UHF equivalent of the HF system. From this position, the operator can also monitor FADF systems installed in both San Diego and Boston. The system is usually used for finding sources of interference to government communications, be they federal, state, or local. The system also solves its share of complaints on the maritime channels in the latter locations, too, with one of the prime culprits being marine radios stuck in the transmit mode.

The FCC is well equipped to find stations from dc to daylight. Depending on when and where a station is operating, its location is just the push of a button away. Pirate station busts continue to draw the most attention from the media and the public. The FCC is still very active in this arena if the large microbroadcaster and shortwave raids of 1998 are any indication.

However, the FCC's work in keeping the aeronautical and maritime bands free of harmful interference deserves a great deal more recognition and credit. For without this work — which many don't know enough about to even take for granted — traveling by sea or air would be much more hazardous.

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Mick Bird was tightly wedged into the bunk of his 28-foot row boat Reach when his Collision Avoidance Radar Detector began to wail. At first he thought someone was e-mailing him, because that same alarm announces incoming messages. But then he remembered he'd turned the receiver off. This was the real thing.

Leaping to his feet, Bird stuck his head out the hatch. Less than 500 yards away, he could see a large black vessel bearing down on him. Diving into the cockpit, Bird grabbed the oars and began to row like mad. His mind raced. He wondered if he could be seen in the light of the full moon. But even if someone saw him, it would be too late for the captain to turn the fast-moving, slow-to-respond ship. Ninety seconds later, Bird watched, his mouth wide open, as hundreds of tons of rumbling steel skinned by, so close he could see men moving about on deck.

The next day, Bird took a break from his rowing to sit down at his lap top and write about the previous night’s event. With a push of the button he sent his daily report out onto the World Wide Web.

“It is hard to imagine that with millions of square miles of open sea, two ships will find the same few square yards at the same few seconds.”

He ended with the casual words, “It happens.”

**A TOUGH ROW**

Mick Bird, a 41-year-old singer, songwriter, husband and father of two, is rowing around the world alone. He is a gregarious individual, a man with closely cropped hair and a round face, who loves to talk, smile, and make contact with everyone around him. So far, Bird has rowed from California to Hawaii and from Hawaii to the Marshall Islands. As you read, Bird is underway to Australia, the longest leg so far in his journey around the world.

For some reason unexplainable even to himself; Bird, who measures 5-feet 8-inches and weighs 160 pounds, has a need to place himself and his 2,000-pound, double-ended, Dutch-shoe-looking wooden vessel at the mercy of the winds and the waves — powerful forces that sometimes knock his boat about so hard that it’s all he can do to hold on.

He thinks his obsession with rowing around the world may have something to do with being half Hawaiian. When he was a young boy, Bird’s grandfather told him legends of the great paddlers. All he knows for sure is that the driving force comes from the na’au, a Hawaiian term meaning from the gut. Bird’s expedition is called na’au.

When Bird rows he renews himself; a sense of peace, patience, and belonging. It is a way he remains connected to the ocean, the earth, people and the spirit of it all. He also reaffirms his belief that he can do anything he wants to do.

“I’ve got Hawaiian blood, the Hawaiian voyager, the spirituality involved. Being in that environment is really natural. It feels comfortable.”

But rowing around the world is not an easy task. The ocean’s winds and currents have more control over Bird and Reach than Bird and his boat have over them. Unlike a sail boat with huge sails that capture the wind and overpower currents and waves, Bird has only muscle, determination, and nine-and-a-half-foot oars with which to battle the forces.

Leaving Hawaii, Bird had to fight a current that insisted on pulling him back to land. Still, he managed to make sixty miles to the south, but then the current got the upper hand and pushed him north, not the direction he wanted to go. Finally, Mother Nature forced his hand and he changed course. Instead of his original destination, Kiribati, he headed for the Marshall Islands.

**A MODERN HAWAIIAN MARINER**

On board Reach, a sophisticated communication system keeps Bird in touch
A VHF radio allows Bird to talk with passing ships and, when close in, to contact shore. A single side band radio provides long distance voice communication, but Bird doesn’t use it much because of its heavy drain on the solar-charged batteries. Occasionally though, he will pick up the mike, as he did to call his wife to wish her a happy birthday and when he did a live interview with Brickwood and Shaner on their morning show at KCNN in Hawaii.

During the leg from Hawaii to the Marshall Islands he had a camera mounted on board by CBS. Bird has been featured on the television shows Public Eye With Bryant Gumbel, Extra, The Late Late Show With Tom Snyder, and Discovery’s Travel Daily.

Bird’s decision to go hi-tech has been part of an evolving process.

“It’s a fluid kind of thing that’s changing since it first hit me to do it [row around the world]. At first, it was purely coming from a place of escaping the world, doing something adventurous, giving me a vessel to meet interesting people.”

Standing in the tiny kitchen of the guest house he leases in Malibu, California, Bird leans in, touches my arm, and laughs, “Then I met Stacia and the whole thing went to hell.” After Stacia came the twin girls, Kenna and Hayden. His family became the reason for communication, the communication became a reason for sharing his adventure with the rest of the world.

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his seat spinning and swiping. Bird, the booby, held tight, squawking and flapping.

Some reports share the pain of blisters, bruises and aching muscles incurred while gliding continuously, forwards and backwards, on a sliding seat, drenched in sweat and salt, pulling on long heavy oars for eight hours a day.

Other reports tell of the beauty of the *olekukahi* moon (half moon waxing) and Bird's connection with the sea.

"I swim in the ocean every day. Actually, you might call them dips. In the morning, evening and several times during the day. The morning one is to wake me up and connect me with the ocean. I don't like feeling separate from it. During the day it is necessary to cool off, and the evening one is pretty much the last thing I do before closing shop for the day. Sometimes it's dark. I'm always lashed to the boat and just drop over. Every time I hop back up into the cockpit, I always feel a little more blessed and honored," wrote Bird in his August 12, 1998, report.

Throughout the day, Bird takes a reprieve from the grueling task of rowing and reads the incoming mail from friends and followers, like school children who ask, "What do you eat?" and "What does the sky look like out there?" The "small pockets of joy" are the ones from his wife telling him about the twins, like the one that said, "The girls pick up the phone and say, 'Papa, row, row, papa. Bye, bye.'"

**THE PRICE OF ADVENTURE ...**

Between legs, Bird returns to his family in Malibu. He spent nine months between Leg 1 from Ft. Bragg, California, to Hilo, Hawaii, and Leg 2 from Hilo to Majuro. During that time, he recorded a newly released album, *na'au*, with Jackson Browne singing backup on one song, he shared in the parenting of his girls, and raised funds for his expedition, as well as the National Tuberous Sclerosis Association. Bird also spoke at schools, sharing his sense of adventure, his enthusiasm for life, and his knowledge that the seemingly impossible is possible.

Since satellite communication is pricey—a penny a character—fundraising and looking for contributors occupy a lot of Bird's time. Donning a sports jacket and jeans, Bird speaks at yacht clubs and knocks on the doors of big business like COMSAT and Toshiba. Toshiba donated the laptop, but COMSAT, a satellite communication company, has declined Bird's request for sponsorship. Their interests lie elsewhere: *Around Alone*, a single-handed around-the-world high-profile yacht race.

"Our vast commitment of company resources to *Around Alone* generally precludes us from also sponsoring other maritime events during the same nine month time frame," says Dave Groobert of COMSAT.

The $5,000-a-leg satellite communication bill may be small change to COMSAT, but it's big bucks for Bird.

"It's a very expensive process to do my daily link," says Bird. "Just to say hello costs me five cents."

**... AND THE REWARDS**

Besides daily reports back to his Web site, Bird talks via e-mail with school children around the country. No matter what
and dry. He was to return it to her when he reached Hawaii.

Arriving in Hilo after 64 days at sea, Bird’s mother was on the dock. She stood there with about 100 people: Bird’s wife and children, friends, and members of the news media. Pua Kanahaele’s voice, a noted Hawaiian teacher and chanter, floated across the harbor while Bird rowed towards shore. When he reached the dock, Bird stood up in his boat, kikepa in hand and spoke. He thanked his mother for the garment that carried him safely across the sea.

"I bring it back to you in the spirit of the lone voyager," he told her.

And to the crowd he said:

Follow your heart.

Don’t forget your dreams.

It can be done.

Let people help you.

And believe in yourself.

You’ll be all right.

His words were interrupted by long, hard sobs that forced their way up and out from somewhere deep inside, somewhere from the gut.

Note: You may contact Bird and follow his journey at www.nauu.com.

The author has exchanged a yacht in the Pacific to construct a rustic home in New Mexico. Other articles for MT include a profile of Barry Goldwater and marine radio topics.

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On the road with GPS and Intelligent Transportation Systems

By Russell W. Steele

Would you recognize an Intelligent Transportation System if it was parked in your driveway? Never heard of ITS? Few citizens have. Those that have, show little interest, even though the US Department have, show little interest, even though the US Department of Transportation launched a major initiative in 1991 to integrate vehicles and highways into Intelligent Vehicle Highway Systems. This label was later shortened to Intelligent Transportation Systems (ITS), reducing the emphasis on highway centered solutions to traffic congestion.

The 1991 Intermodal Surface Transportation Efficiency Act called for a system capable of reducing traffic congestion, improving air quality and traveler safety. After spending millions on research and demonstration programs, citizens are not clamoring for automated highways with autonomous vehicles, automatic mayday systems and hand held multi-modal traveler information systems. As one ITS Consultant noted, “More people know about alien abductions than they do about ITS.”

While few products carry the “ITS” label, consumers and businesses are being offered products that implement ITS concepts. Many of these “telematic” products, combining GPS position and timing with radio communications, are improving transportation efficiency, enhancing traveler safety and increasing customer satisfaction. However, these onboard systems are not often recognized as ITS products.

Some consumer-related ITS products offered in high-end cars are: GM’s OnStar, Ford’s RESCUE and Siemens’ TetraStar. Public transit vehicles equipped with GPS systems are providing better customer service and increased efficiency. Long haul trucking companies are using GPS to improve fleet management, reduce thefts, and monitor driver and vehicle performance.

Small businesses are also adopting GPS technology to improve efficiency and customer satisfaction. A few months ago, I ordered some new rain gutters. When the estimator arrived in his pickup truck, he had a home-built console in the passenger seat with a laptop computer, mapping software, and a GPS sensor on the dashboard. He estimated this under-$200 system saved him forty-five minutes to an hour every day. However, in his opinion the best feature was improved customer relations by projecting more accurate arrival times.

Consumer vehicle applications

General Motors’ OnStar service is a hands-free, voice-activated cellular phone, combined with a GPS navigation set. The driver is linked to a service center where operators can locate the car on a computer workstation display and respond to the user quickly. When an air bag deploys, the car’s system automatically notifies the OnStar Center of the vehicle location. The operator can call the car to check on the occupants’ condition. Depending on the need, the operator notifies the nearest emergency response unit or dispatches a tow truck to the scene of the accident.

Also, OnStar subscribers can get immediate remote diagnostics of the vehicle’s engine, power train and brake system, if a warning light flashes on the car’s instrument panel. The system also detects any unauthorized entry into the vehicle and tracks the stolen vehicle. Using GPS navigation information relayed by cellular phone, the service center can notify the police of the vehicle’s location. OnStar is a 24-hour, seven-day-a-week service in all 50 states and Canada.

While GM has OnStar, Ford has developed its own onboard emergency communication system for the Lincoln Continental, called Remote Emergency Satellite Cellular Unit (RESCU). Lincoln Continental’s overhead console has a button for requesting a tow truck or ambulance. When one of the buttons is pressed, the integrated hands-free, voice-activated cellular phone automatically sends an electronic message to the Lincoln Security Response Center. This message includes the longitude and latitude obtained from the vehicle’s GPS navigation system. This is also a 24-hour, seven-day-a-week service.

RESCU’s capabilities are more limited than OnStar’s. RESCU does not have convenience features such as directions, remote unlocking, theft tracking, and hotel/restaurant services. However, Motorola Telematic Information Systems and Visteon Automotive Systems (a subsidiary of Ford Motor) recently announced a new vehicle emergency messaging system, designed for aftermarket installation on selected new vehicles. The system offers emergency and roadside assistance, turn-by-turn route guidance, theft tracking, assistance, theft alarm, and door unlock capabilities like OnStar.

The Siemens TetraStar Traveler Information System is a more stand-alone system with a GPS sensor and an internal gyroscope for accurate vehicle positioning. It provides turn-by-turn navigation instructions from on-board data. The system includes a four inch LCD display, on-board computer with roadway database and map displays. TetraStar was showcased during the 1997 Summer Olympics in Atlanta. In a Battelle Research Center survey of participants, better than 80% of the respondents would consider installing TetraStar in their vehicles. Some 86% felt the system reduced overall stress.

Gwen Tower and GPS antennas at Appleton, Washington, used to demonstrate NDGPS concept.
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brought on by traveling and 96% said that TetraStar, in general, made driving easier for them.

According to a recent Strategis Group survey of the Automatic Vehicle Location (AVL) market, technological improvements and declining prices are expected to boost the number of passenger cars equipped with telematics from 58,000 in 1998 to over 1.2 million by 2003.

Transit vehicle applications

Bus fleet operators need to know where their buses are, and whether drivers are meeting route schedules. Real time vehicle tracking systems accomplish this by coupling GPS navigation systems with radio communication links. In one demonstration, Kansas City saved $400,000 in operating expenses and cut the response time to emergencies from four minutes to one minute by installing AVL technology on 200 buses.

Commercial trucking applications

Loaded trucks are favorite prey of thieves. Today large corporate truck fleets — J.B. Hunt, Schneider National, and Yellow Freight — all rely on AVL technology. However, less than 1 percent of the 5.7 million private fleets carry automatic locating systems for reporting a truck’s locations to dispatchers. When an AVL-equipped truck is stolen, the truck’s exact whereabouts can be reported to the police by the dispatcher (assuming the system is not disabled).

The adaptation of the truck-tracking technology to a theft-recovery system is a natural, but far from its only use. The Iowa Department of Transportation is working on a program to log the miles interstate truckers run in each state, for fuel-tax reports. On-board computers with GPS sensors can also track a driver’s service hours and make an electronic log that’s easier to keep and harder to fake.

Problems to be overcome

Selective availability. GPS satellites broadcast two signals, one military and one civilian. In order to deny adversaries the accuracy that we provide our own soldiers, the civilian channel employs selective availability (SA), enabling the military to control signal accuracy. When SA is set to its highest point, it limits the civilian channel accuracy to a radius greater than 100 meters. Normal SA settings produce accuracies within 100 meters. With SA set to zero, accuracy should be within 15 meters.

Single frequency. Transportation agencies and business are building mission critical functions which rely on GPS timing and navigation signals. Mission critical safety systems require a backup capability; this is especially true for aircraft operations, train separation monitoring for positive control, and large ship operations in bad weather. Therefore, two or more GPS signals are desired for these mission critical applications. Two signals can also improve reception when signal levels are marginal.

Standards. Standards are a major ITS issue. A great many standards have reached the point of public comment and balloting. However, even as industry praises the standards process, an undercurrent of reservations and market concerns is slowing progress. Once again, as we experienced in the computer and video industries, consumers may be called upon to set the final standards with their checkbook and credit card.

Some solutions on the horizon

Last June Clinton signed into law the compromise ISTEA (Intermodal Surface Transportation Efficiency Act) reauthorization bill, dubbed the “Transportation Equity Act for the 21st Century” or “TEA-21.” The legislation includes a nice present for GPS users. TEA-21 includes funding for a nationwide differential GPS system (NDGPS).

Nationwide Differential Global Positioning System. When complete, the NDGPS will provide nationwide differential signals from 66 sites around the country. It will be integrated with three existing Federal differential GPS systems: the Coast Guard’s DGPS system used in harbors and major rivers, the National Geodetic Survey’s Continuously Operated Reference Station (CORS) system for tracking shifts in the earth’s crust, and the National Oceanic and Atmospheric Administration’s Integrated Precipitable Water Vapor System for collecting real-time water vapor data.

To reduce the cost and accelerate NDGPS deployment, TEA 21 directs the Air Force to transfer its 53 Ground Wave Emergency Network (GWEN) sites to the Department of Transportation in 1999, when they are scheduled to be decommissioned. An excellent use of our tax dollars, this 30 million dollar system of 66 stations will provide dual frequency differential coverage, 99.9 percent availability and 1-5 meter accuracy.

Additional Frequencies. The Department
Garmin utilizes and provides automatic mapping within seconds—anywhere in the U.S., Canada, and Mexico—as you are satellite-tracked in your journey! The Garmin utilizes up to 12 GPS satellites for unsurpassed accuracy! NMEA 183 and RS232 ports provided.

No longer a figment of futuristic fantasy the Garmin StreetPilot provides automatic mapping within seconds—anywhere in the U.S., Canada, and Mexico—as you are satellite-tracked in your journey! The Garmin utilizes up to 12 GPS satellites for unsurpassed accuracy! NMEA 183 and RS232 ports provided.

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In 1994, computer-controlled scanning took a giant leap forward when Optoelectronics introduced the OptoScan456 computer interface for the Realistic PRO-2006 scanner. By adapting one of the best scanners ever made to computer control, the scanning hobbyist could at last long enjoy the features that had been limited to rather expensive radios. Offering ease of installation and relatively low price, the OS456 was an instant success.

A short time later, a similar computer interface was released for the then-new PRO-2035/2042. And now, Optoelectronics has taken computer-controlled scanning to the next level with the introduction of the OptoCom Communications Receiver.

The OptoCom was a collaboration between Optoelectronics and GRE. As you may recall, GRE was the manufacturer of the PRO-2006 and several other highly popular scanners marketed by Radio Shack. Optoelectronics started with a PRO-2042 receiver, removed the display, and put the package in a neat, black box. However, under the hood, the OptoCom has several innovative features not found on the original PRO-2042.

The most notable of these features is the internal "data slicer." Without getting into too much technical detail, the data slicer is a circuit which allows the radio to decode certain digital signals and translate them to data which can be sent to a personal computer via an RS-232 connection. The data signals which may be decoded include, but are not limited to, the control channels for Motorola Type I and Type II, Johnson LTR, and GE/Ericsson trunked systems.

For those of us who frequently monitor trunked systems, this used to require building our own 2-Level FSK interface (also known as the "Hamcom" interface). It also required modifying the scanner intended to drive the interface to obtain the discriminator audio. Discriminator audio is the clean, unfiltered audio signal before it gets conditioned for ease of listening (which also distorts it beyond use for digital interface purposes). However, the OptoCom's built-in data slicer makes the process considerably simpler and more efficient. Just hook the radio up directly to the computer and you're ready to go. The data slicer is already connected to the discriminator audio inside the radio.

The OptoCom also features a host of input/output connections which provides a wide range of functionality to the user. First, there are the basic connections and switches you'd expect on a high-end computer controlled scanner: BNC antenna connection, external speaker jack on the rear and headphone jack on the front, RS-232 serial connector, and a 10dB attenuator switch. But, in addition to these, there is a tape recorder controller, tape audio output jack, two CI-V connections and a discriminator audio jack. Between the hardware and software features, the OptoCom comes with just about every option you could need or want in a scanner.

Performance of the radio was generally very good, considering the test environment. I gave the radio a test run in my office in the center of downtown Houston. This is one of the most RF-rich environments in the nation, having literally hundreds of antennas within less than a mile radius. In this environment, the OptoCom performed very well, but with some intermod, predominately in the 450-470 MHz region. However, when the PL (Motorola's "Private Line" subaudible tone) decode function was enabled on the software, performance was rock solid with almost no intermod interference.

Optoelectronics' chief engineer Bill Owen has indicated that there is an important upgrade in the works for the OptoCom. This new circuitry will be known as the "bit banger," and will enhance the ability of the OptoCom's data slicer to work with Windows-based software. Currently, all packages which utilize the data slicer are DOS based because of the timing issue between the serial port and the radio when running under Windows. The bit banger will offer the necessary translation and buffering to allow seamless communications between the hardware and software.

Street price on the OptoCom communications receiver is $459.95 from Optoelectronics (800) 327-5912, Grove Enterprises (800) 438-8155, and other MT advertisers. But what is a computer-controlled radio without the software to run it? There is a variety of software packages available for use with the OptoCom, and more slated for release in the near future. There is even a free program which will control the OptoCom with a Palm Pilot.

For this article, we'll take a brief look at five of the software products currently available for the OptoCom: the OptoCom utility...
software, TrakkStar, TrunkTrac, Trunker, and E-TRAX.

**OptoCom Control Software**

The OptoCom Communications Receiver also includes a small DOS utility to essentially test and perform basic functions with the radio. You can tune into a single frequency and put the radio in standalone mode to monitor that frequency. You may also control the volume of the radio, the mode (AM, FM or FM-Wide), and activate a tape recorder though the tape jack control of the radio. The OptoCom software will display the relative strength of any received signal, the CTCSS/DCS (Continuous Tone Controlled Squelch System/Digital Coded Squelch) or LTR (Logic Trunked Radio) codes, and various statuses of the radio.

If there are frequencies already loaded in the radio's memory, the radio can be placed in the stand-alone mode, and it will begin scanning. If the OptoCom Control Software is connected to the radio, the frequency, signal strength, and CTCSS/DCS or LTR codes will be displayed on the computer, but no other control of the scanning function is available through this software.

TrakkStar is a very versatile package, and can follow both conventional frequencies and trunked talkgroups in a single scanning session — something that no other computer-controlled scanning package can do. However, in order to accomplish this, TrakkStar does not use the trunking data channel information, but instead, the sub-audible information which is actually embedded along with the audio on the voice channel.

This method works relatively well, except on large, busy trunked systems. Then, because the software has to take time to decode the sub-audible for every signal it encounters, it sometimes misses part or all of the transmission when following selected talkgroups. Another problem encountered is when a trunked system uses both even and odd talkgroups. When TrakkStar attempts to decode the sub-audible, it may confuse an even numbered talkgroup with a consecutive odd-numbered talkgroup. This is a relatively rare situation which I've not encountered personally, but it does occur on some systems.

There are four different displays available with TrakkStar. The always-on-top Standard display can be moved to one side of the screen, and can keep you up to date on the channel name, frequency, signal level, and other key information, currently active on the scanner. The full screen Tactical display shows agencies or frequencies selected to be monitored, history list of most recent channels received, and a wealth of other information. The Mini-Status window is a small, inconspicuous bar that shows only the most critical of information, and can easily be tucked out of the way when scanning a lessor priority function. And finally, when TrakkStar is minimized, the active frequency and channel name is shown on the icon.

During scanning with TrakkStar, it is easy to lock out either individual nuisance channels, or even entire banks of channels. You can also put a channel on hold if you happen across some interesting activity. Signal level is also displayed, as are any DTMF (Dual Tone Multi Frequency) digits received in the transmission.

The TrakkStar program also allows search banks to be created, which allow the user to find new frequencies by searching between frequency boundaries. The searches may be allowed to run in an unattended mode for days on end, and a log will be built of all activity during the search. Finally, several scan and search files may be created and executed in series during a session. The percentage of time dedicated to each task may be specified to allow even greater control over the scanning session.

The Data Manager program included in the TrakkStar package has extensive features which make entry and management of stored frequencies comparatively easy. It offers excellent import/export utilities with four data format options. Since the scanning software is not limited to the number of banks and channels of the radio, an almost unlimited number of virtual banks and channels may be allocated.
TrunkStar is everything I love in a program; it's a small DOS-based executable, works great, runs on just about any PC, and it's free! It is by far one of the most useful programs I've used with the OptoCom. Trunker has an almost cult-like following. There's a multitude of postings on the Internet regarding its setup, usage, and schematics for interfacing the program to various radios.

Trunker has two modes of operation. First, it can be used as a simple Motorola Type I, II or Hybrid system monitor. Just tune the radio to a control channel, start up Trunker, and it automatically lists all the active frequencies and talkgroups in use.

When using Trunker with any radio other than the OptoCom, it's necessary to build an external data slicer circuit to interface the scanner's discriminator audio to the computer. However, with the OptoCom, the built-in data slicer allows a direct connection via the RS-232 from the radio, straight into the computer. Also, of all the data slicers I've created, sorted and rearranged with the Data Manager.

Additionally, the Data Manager tracks the number of "hits" and elapsed airtime for each channel. And all of this information is available through a variety of report formats. The Data Manager is a very flexible and useful part of the TrakkStar package, and contains many beneficial features for the management and reporting of frequency and channel information.

The OptoCom also has limited functionality in a stand-alone mode. Using TrakkStar, up to one thousand frequencies may be loaded into the radio's memory. You may then disconnect the radio from the computer and listen to these frequencies or to one specific trunked talkgroup. However, since the OptoCom has no display or controls (except volume and squelch), the major limitations in this mode are the inability to either see the frequency being received or control the scanning functions.

You can, however, interface the radio to the Optoelectronics Scout, and use it to "Reaction Tune" the radio to any frequency intercepted by the Scout.

In summary, TrakkStar is an efficient, feature-rich product which has evolved over the past five years to a mature, robust package. This package allows monitoring of conventional frequencies, as well as Motorola and LTR trunked systems (but not EDACS). It is an excellent complement to the OptoCom, and brings out the best of the radio's features.

TrakkStar is included in the purchase price with the OptoCom Communications Receiver. You can learn more about TrakkStar, and its companion products, at www.scanstar.com.
This new triple-conversion OptoCom scans at 65 channels per second on any frequency range, 25-550 and 760-1300 MHz (less cellular), in AM and wide or narrow FM, using any laptop or tabletop PC. Now you can monitor conventional communications as well as track civilian and government Motorola, GE/Ericsson (EDACS)*, and LTR (Johnson) trunking. Scan Star’s exclusive TrakStar software operates under Windows 3.1, 3.11, or 95.

Memory capacity is limited only by your computer. Up to 28 channels, or one trunk user group ID, may be stored in the OptoCom for stand-alone mobile or portable use away from the host computer! And you can use your Opto Scout to Reaction Tune the OptoCom as well!

**Bonus Features!**

- You can decode five-tone squelch, CTCSS, DCS, LTR, DTMF, and Motorola talk group IDs. RS232C interface included, and you can interface with CI-V receivers like the Icom and AOR using pass-through technology. Remote-control the squelch, volume and all other receiver functions. Use its internal speaker, or feed up to 1.8 watts to an external speaker (headphone and tape out jacks provided).

- Power required: 12 VDC (AC adaptor included). Computer required: 486 or higher, minimum 66 MHz, with 16 meg RAM.

**Order SCN3, only $459.95 plus $18 shipping**

*optional E-TRAX software required to receive GE/Ericsson (EDACS)*... Order SFT-4/$59.95
Unlike some trunk tracking programs which require two scanners to monitor trunked conversations, TrunkTrac can accomplish this with just one. The TrunkTrac software mimics the operation of a conventional trunked radio by dwelling on the control channel until a talkgroup becomes active, then switching to that frequency for the duration of the conversation. When the talkgroup becomes inactive, the radio is switched back to the control channel until another talkgroup is detected. TrunkTrac also offers the ability to track multiple trunked systems in a single scanning session.

Installation of the TrunkTrac card is simple and straightforward. Just plug the card into any open ISA slot, plug the supplied discriminator audio interface cable to the scanner, connect the serial cable, and you’re ready to go.

Software installation is also relatively uncomplicated. The DOS-based program is only 250K in size, and comes with a clear, concise printed manual. Like the TrunkTracker scanner, it is necessary to load the frequencies into TrunkTrac manually. Name assignments and color selection for the various talkgroups may then be entered, or you may simply choose to let the program run in the search mode.

When running TrunkTrac, the user can designate specific talkgroups to monitor (analogous to scanning), or can jump to the next talkgroup that becomes active on the control channel (analogous to searching). Certain talkgroups can also be excluded from the search by entering them into the lockout list.

TrunkTrac allows the user to change most of the many of the parameters on the fly. The channel format, talkgroup format, and various other displays may be changed at the touch of a key. Additionally, you can switch between search and scan mode with just a function key. You may also hold on a talkgroup (referred to as the “track mode”) or skip a talkgroup that is active with a keystroke. You can even add talkgroups to either the scan list or lockout list without ever exiting the main scanning program.

TrunkTrac requires a minimum 6 MHz PC and runs under MS-DOS, or in DOS mode under Windows. TrunkTrac is designed for scanning only Motorola trunked systems, and will not support scanning of non-trunked frequencies. This package is available exclusively from Scanner Master Corporation at (800) 722-6701. You can read more about TrunkTrac at www.scannermaster.com.

E-TRAX

With the Optocom, it is possible to follow the conversations on a GE/Ericsson trunked systems using the E-TRAX software package. E-TRAX is also a DOS product, and is rather straightforward and simple in its operation. However, before beginning, you must know the trunk’s control channel frequency, plus all frequencies used in the system in the sequential order in which they are accessed. Failure to enter this information correctly will result in E-TRAX not functioning correctly. Fortunately, much of this frequency information can now be obtained over the Internet. To make it a bit easier to get started, several system files for the United States and Canada are included on the distribution diskette.

E-TRAX requires no additional hardware or interface cable, other than the RS-232 serial cable from the computer to the Optocom. To begin, you must modify or confirm the parameters in the configuration file. Next, you must create a file for each trunked system to be monitored. This is where the frequencies must be entered, along with the specific group IDs for up to 1,000 group IDs. You may also specify lockouts for nuisance or unwanted group IDs.

When E-TRAX is initiated, it automatically locates the control channel and begins tracking conversations on the system. The E-TRAX display indicates the frequencies, channel assignments, ID and type, which are shown in a columnar format. Active group IDs are displayed at the bottom of the screen, along with the alpha tag information.

E-TRAX is compatible with 9600 baud EDACS systems, and allows you to either scan known group IDs, or search the system for unknown IDs. It should also be noted that E-TRAX is designed exclusively for scanning EDACS systems, and will not support any other trunked system or non-trunked scanning.

E-TRAX requires a minimum 486/66 computer and runs under MS-DOS. It is available for $89.95 from Grove Enterprises at (800) 438-8155, Optoelectronics, Inc at (800) 327-5912, and other MT advertisers. You can find out more about E-TRAX at http://www.erols.com/jcardani/e-trax.htm.

A FINAL WORD REGARDING COMPUTER-CONTROLLED SCANNING

Computer-controlled scanning has added a whole new dimension to the scanning hobby. With the right software, it enables the scanner to search large ranges of frequencies for new and exciting action. You can even monitor Motorola, LTR or EDACS trunked systems. For a computer-controlled scanner, software is as integral a piece of the total scanning package as the hardware. However,

TrunkTrac hardware, software and cable
there are a few things to consider before putting out the checkbook.

First, due to timing problems associated with serial communications, you're probably going to have to subsc... more with two or three year subs!

Also, some of the trunking programs require that you have all of the frequencies for that system available before beginning. And though, thanks to the Internet, these are becoming more readily available, it can be particularly frustrating locating some of these frequencies. And like most software, each program has its own set of quirks and nuances that take a bit of getting used to.

Personally, I have found the effort to be more than worthwhile. For me, the added functionality available through computer-controlled scanning has been worth every minute of frustration it has taken to get even the most cantankerous of programs to run. Even as I write this, I am scanning a range of frequencies from a database and have found lots of interesting new activity I've never heard before. However, to avoid frustration and disappointment, you should research the software carefully before buying. Check for postings on the Internet, including Web pages and newsgroups. Then when you make an informed purchase, you will have a good idea of what to expect before you ever open the package.
Scanner Marketing: You tell us

The earliest scanners, developed in the late 1960's, became an almost overnight success due to one very significant piece of luck: good timing. The country was in turmoil, political leaders were the targets of assassins, the country was embroiled in the Vietnam War, and race riots were burning up the urban landscape. People found sanctuary in their homes, but they lacked timely information about what was going on around them. The scanner was the answer.

With their new-fangled police monitoring device, citizens could stay abreast of what was really happening. A few years earlier — before Bearcat, Regency and others developed their products — people were able to listen to police and fire calls using tunable receivers. That was cumbersome and only allowed you to listen to one agency at a time. The scanner changed all that.

Thirty years later, there's been quite a turnaround in our nation. Crime is down, the country is not at war, and just about the most civil unrest you'll find is when the local toy store runs out of beanie babies. On top of that, we're now inundated with information, from tabloid television news to the Internet. We're much more attuned to what's going on around us.

Scanners, however, still sell — and sell well, although not in the numbers they did 10 years ago. We've been through the reasons before: the number of dealers has declined (there are few remaining mom-and-pop CB/scanner stores for example), people have become fascinated with the Internet or another of a myriad of new distractions. While there will always be a ready market for scanners amongst the public safety, military, auto-racing and scanner-buff contingents, the question remains whether or not there is still an untapped market for our beloved product.

The success of scanner manufacturers, scanner book publishers, accessory makers and others within the industry may depend on finding this new market for their products. So, we thought we would turn to the faithful scanner elite for answers. Let's begin a discussion here that might help the industry leaders sell more units and therefore, invest more heavily on the business. Send letters, care of Rich Barnett, to Monitoring Times magazine, or send e-mail to scanmaster@aol.com. Tell us:

1.) What new group of users, or type of person, would be most inclined to buy a scanner if they haven't already?
2.) What types of features or designs would encourage them to buy such a scanner? Does it have to be small, does it have to include shortwave coverage, the TV audio band or a TV itself?
3.) Does the scanner have to be more user-friendly? How so? How can the basic scanner be made easier to use?
4.) How do you currently interest family and friends in scanning?
5.) How would you go about telling the general public about scanners?

We've discussed before what features you would like to see on a scanner. We heard about your desire for alpha displays, Ericsson truncktracking, LTR tracking, CTCSS/DCS, and the like. Now we would like to know your thoughts on how we can bring new people, and new groups of people, into the fold. We hope to hear from you soon.

Disaster Monitoring in Canada

There have been numerous books and articles on the topic of disaster monitoring. The question has been asked and answered time after time, "what agencies, and what frequencies, should you monitor during a local disaster?"

Fortunately, most of us never have the chance to monitor a true disaster. David George of Nova Scotia did have that chance when a Swiss Air flight went down off the coast of Canada, September 2, 1998. Here's his report which was filed only a few weeks after the tragedy:

"The crash site off of Peggy's Cove, Nova Scotia, was too distant for the Halifax Regional Municipalities 800 MHz SmartZone IIi system to reach. This area is also outside of the Municipalities' police jurisdiction and is in Royal Canadian Mounted Police (RCMP) territory.

The humble cell phone was the main communications link. When the media arrived it was hard to get an outside line, so cell service providers MT&T and Cantel set up portable cell sites on location in the parking lot in front of the light house that is the mark of Peggy's Cove. It was interesting to note that Cantel, which has rather poor coverage in Nova Scotia, brought in a ready-to-go cell site with pop-up tower, while our own telephone company MT&T had to jury-rig something using an antenna mounted to a boom crane truck.

The first call for EMS help came at around 10:30 p.m. Thirty-five ambulances responded from all over Nova Scotia with seventeen fire trucks. When it was discovered that there were no survivors, the ambulances were sent back."

Communications were in these ranges:

**Ambulances**
- 158.940 Health services repeater
- 155.640 Tantallon repeater
- 155.670 Ground search and rescue operations

**Marine**
- 156.940 Channel 19 - Salvage and recovery

**Fire**
- 153 - 155 Volunteer fire departments

**Emergency Medical Operations**
- 148.585 Hammonds Plains repeater - Red Cross

The World Above 30 MHz

Richard Barnett
ScanMaster@aol.com
While there, MT&T put hardline phone cables into all the remote emergency operations centers, ground search and rescue command buses, and military sites. Even with the remote cell sites set up, only one in three calls were going through at the peak of the operation.

Ham radio played a key role in providing most of the radio traffic in and out of the area. We were able to provide trained radio operators used to passing this type of traffic, as we have been training for this for well over a year now. Amateur radio had been written into the communications plan for Halifax Regional Municipality three years ago. It worked and things flowed smoothly.

The salvage operation continued for several weeks. The wreckage appeared on beaches from Martinique to the Ovens Park — a distance of almost 75 miles up and down the coast. It was the job of the 30 volunteer ground search and rescue teams in Nova Scotia to track down and recover these remains. The teams used the two Provincial Ground Search and Rescue radio frequencies of 142.575 MHz and 142.875 MHz for tactical communications. However, because of the limited range of the rubber duck antennas on the commercial handhelds, each team was given a cell phone to use as well. This proved to be the only workable solution in many areas of the crash zone.

David George added, “I am very proud of the rescue service providers and of the people of Nova Scotia for coming to the aid of those in need at this time.”

Trunking News and Notes

Jon Van Allen of Utah wrote us with the following information for his state:

“Orem City is on the Utah County system. There is currently only one other user on the system besides Orem City PD, but Provo is reportedly close to being ready to move on the system. Here’s what I have so far — there are currently 10 frequencies in use for call sign WPI.P584, listed as Lehi, Utah, in the FCC database.

“There are an additional eight frequencies licensed with the same call sign, listed at Spanish Fork. I have not heard anything on the other eight frequencies; I think they are reserved for future use to tie the system together. Either that, or they are too far away for me to hear. Lehi is at the north end of Utah County, Spanish Fork is on the south end, over 60 miles south of me.”

Motorola Type II Smartnet System Licensed to Utah County

Lehi Frequencies confirmed in use by Jon Van Allen:
1) 866.2250
2) 866.6250
3) 866.8375
4) 867.0875
5) 867.2875
6) 867.5750
7) 867.7250
8) 868.8875
9) 868.2875 (currently the data channel)
10) 868.6250

Talkgroup IDs:
16 - Link to UHP Statewide
4816 - PD Dispatch
4848 - PD Ch.2
4880 - PD Ch.3
4944 - Fire linked to 154.145

5648 Unknown user - seldom heard - sounds like maintenance of some sort.

The additional eight frequencies licensed to Utah County, Spanish Fork, not yet heard:
1) 866.4250
2) 866.4500
3) 866.8875
4) 867.2375
5) 867.4875
6) 867.9375
7) 868.6125
8) 868.9000

Pennsylvania 65000 (Talkgroups, that is)

One of the newer trunking systems in the nation can be found in Montgomery County, Pennsylvania. The following is a detailed analysis of their system:

Montgomery County, PA, 800 MHz Trunked System

<table>
<thead>
<tr>
<th>T.T. ID</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1616*</td>
<td>County Police North Central Dispatch</td>
</tr>
<tr>
<td>1648*</td>
<td>County Police South Central Dispatch</td>
</tr>
</tbody>
</table>

1680* County Police South West Dispatch
1712* County Police North West Dispatch
1744* County Police Data
1776 Secure Communication Between Dispatch Units
1808* Police Region 1 (car to car) <61.63>
1840* Police Region 2 (car to car)
1872* Police Region 3 (car to car)
1904* Police Region 4 (car to car)
1936* Police Region 5 (car to car) <33.31>
1968 Police Tac 1 (active when needed)
2000 Police Tac 2 (active when needed)
2032 Police Tac 3 (active when needed)
2064 Police Tac 4 (active when needed)
2096 Police Tac 5 (active when needed)
2128* County Wide Police
2160* County Detectives (13 cars)
2192* County Detectives Secure
2224* County Sheriff (19 cars)
2256 Abington Township Police
2288* Cheltenham Township Police (26 cars)
2320* Upper Dublin Township Police (41 cars)
2352 Lower Gwynedd Township Police
2384* Hatboro Borough Police (37 cars)
2416* Horsham Township Police (39 cars)
2448* Lansdale Area Police (dispatch on 1616)
2480 Lower Merion Township Police
2512 Upper Merion Township Police
2544 Lower Moreland Township Police
2576 Upper Moreland Township Police
2608 Montgomery Township Police

BC-895 Cables $20 inc S/H ($15 with RadioMax purchase!!)

Monitor what's happening in REAL TIME. Search, sort and scan by freq, comments, hits etc. PC can even play back audio hits with the soundcard while scanning at full speed. Ascii and direct DBF file support. Tape controls, alarms, many new features.

RadioMax...just $45 (includes s/h in USA) - FUTURE SCANNING SYSTEMS

May 1999 MONITORING TIMES 27

www.americanradiohistory.com
3600* Norristown Borough Police (link from 501.1125 MHz)**
2672 Plymouth Township Police
2704* Pottstown Borough Police (94 cars)***
2736* Lower Providence Township Police (100 series #s)
2768* Springfield Township Police (28 cars)
2800 West Norriton Township Police
2832 Whitmarsh Township Police
2864* Whitpain Township Police (46 cars, dispatch on 1648)
2896 Local Municipal Detectives
2928 Mont. Co. Correctional Facility

Fire and EMS
2992 Fire Dispatch
3024 Fire 1
3056 Fire 2
3088 Fire 3
3120 Fire 4
3152 Fire Ground 1
3184 Fire Ground 2
3216 Fire Ground 3
3248 Fire Ground 4
3280* EMS Dispatch (linked to 46.0400 MHz, testing)
3312* EMS 1 (linked to 45.9200 MHz, testing)
3344 EMS 2
3376 EMS 3
3408 EMS 4
3440 EMS County Wide 1
3472 EMS County Wide 2
3456 EMS County Wide 3
3536 EMS County Wide 4

Miscellaneous
3568 Public Safety Coordination
3600* Public Safety Department Management (1500 units)
3632* Court House Security (23 cars)
3664 County Communications (1500 units)
3696 LGS Coordination
3728 North Wales Water Authority
3760* Montgomery County Parks (500 units)
3792 County Public Works
3824* County Wide Emergency Traffic 1
3856 County Wide Emergency Traffic 2
3888 County Wide Emergency Traffic 3
3920 County Wide Emergency Traffic 4
3952 County Wide Emergency Traffic 5

Notes:
* Known to be an active talk group.
** Norristown Borough Police ID as 52-100 to 52-900 series #s 100 = Administration, 200, 300, 400 = Patrol by shift.
*** Pottstown Police also dispatches North Coventry Township, Chester County's Police on their talk group, they ID as 17 cars.
44* When (and if) Lower Moreland Township Police switch to 800 MHz, they will continue to dispatch Bryn Athyn Borough Police (27 cars) on their talkgroup.

Trunked Radio System Frequencies:
CH1 = 866.7625
CH2 = 867.375
CH3 = 867.2625
CH4 = 867.1375
CH5 = 866.8875
CH6 = 866.6375
CH7 = 866.2625
CH8 = 856.7375
CH9 = 855.9375
CH10 = Blank
CH11 = 854.9625
CH12 = 851.3625

Conventional Frequencies:
Local 1 = 866.0375 (County Wide Local, PL = 136.5)
Local 2 = 866.4125
Local 3 = 867.6500
Local 4 = 867.7625
Local 5 = 868.7125 (Parks Local, PL = 136.5)

National Law Enforcement Frequencies:
Hailing = 866.0125
1 = 866.5125
2 = 867.0125
3 = 867.5125 (Montgomery Co. Primary)
4 = 868.0125 PL = 156.7

California Trunking

With the OptoCom and the forthcoming introduction of the BC-245 TrunkTracker II, we thought it would be interesting to report the following press release, distributed a year ago by Ericsson. This new system implementation should, by now, be well under way. It sounds as if the East Bay in northern California will become almost entirely EDACS territory.

"Citing Ericsson's strength and strong record in the Bay Area, the city of Richmond, California, has selected the company to provide its digital access trunked radio system for all its city agencies' communications needs, in a contract totaling $8.3 million.

"Richmond will receive a five-channel, four site GPS simulcast system with six C3 Maestro Consoles for Windows NT. They will use approximately 610 LPE 200 portable radios and 400 Orion mobiles. The contract will cover Richmond's police, fire and public works departments, as well as its Housing Authority.

"The city of Richmond is located in Contra Costa County, 6 miles northeast of San Francisco and 12 miles north of Oakland, BART (Bay Area Rapid Transit Authority) and the city of Oakland are both users of Ericsson's trunked radio systems and played a key role in Richmond's selection of the company.

"As part of our research, we visited Oakland, toured their facilities and listened to their experiences with Ericsson and things they liked about the company,’ said Levron Bryant, interim city manager for Richmond. ‘We also were impressed with Ericsson's presence in other parts of the Bay Area, as well.’

"Richmond will allow other neighboring jurisdictions to utilize its network, including the cities of El Cerrito, Kensington, Hercules, Pinole and San Pablo. The city also will be using encryption technology for various departments within its police force, such as Narcotics. Richmond is planning to link its system to the city of Oakland's as part of the East Bay Public Safety Corridor Initiative, which is seeking to interconnect cities' communications networks along Interstates 80 and 880 in the Bay region.

"We hope that linking our system to Oakland's will create a seamless line of communications between our cities during emergency situations,' Bryant said. According to Bryant, both the police and fire departments will be implementing mobile data on a separate, two-site Ericsson conventional system. Police will use it for vehicle identification, background checks and outstanding warrant searches. The fire department will utilize data for GIS (Geotechnical Information System), which will project a map of the city on the mobile data terminal to help direct fire personnel to the scene quicker.'

Editor's Note: It has also been reported that the city of San Francisco, which has long been in need of a new radio system (they have used an odd mix of UHF and low-band for years), has selected Motorola for a new APCO-25 digital radio system. We'll keep our eyes and ears tuned to this situation.

And a final observation for this month: Did you catch the History Channel special about the St. Valentine's Day Massacre? It was reported that Capone's personal car was equipped with a police radio receiver. Something tells me, though, that it was the police who supplied the receiver in that instance.
Be prepared. Relm two-way transceivers from CEI are year 2000 compliant.

Communications Electronics is offering a great deal on the RELM MP series transceivers. Visit CEI on the web at www.usascan.com to see our 30th anniversary special savings. Get your free fax-on-demand catalog, dial 734-663-8888 from the telephone handset on your fax machine for instructions. Get many free benefits such as extended warranty coverage on new RELM transceivers when you use your Communications Electronics Platinum MasterCard® issued by MBNA. No annual fee. Call 1-800-523-7666 anytime. Mention offer C591 to request your copy.

RELM® MPV32-A or MPU32-A Transceiver

Special Package Deal - Only $299.95

Manufacturer suggested list price $515.00. Special $299.95

Looking for a great hand-held two-way transceiver? To celebrate our 30th anniversary, CEI has teamed up with RELM Communications to offer you our transceivers guaranteed to work in the year 2000 and beyond. With the CEI package deal, you will get your choice of VHF or UHF MP series portable transceiver, belt clip, wall charger, 700 ma rechargeable battery, antenna, and two year limited factory warranty. The CEI RELM package deal is only $299.95 plus $19.00 shipping. You'll save over $215 off the regular retail price when you order now! Firefighters and rescue workers depend on the RELM MPV32 transceiver for direct two-way communication with their fire and police department, civil defense agency or ham radio repeater. The MPV32 is our most popular programmable frequency agile five watt, 30 channel hand-held transceiver that has been built-in CTCSS, which may be programmed for any of the standard EIA tones, frequency range 136.0 to 174.0 MHz, UHF range 450-480 MHz. The full function, DTMF compatible keypad also allows for DTMF Encode/Decode operation. Weighing only 5.0 oz, it features programmable synthesized frequencies either simplex or half duplex in 2.5 kHz increments. Other features include PC programming and cloning capabilities, scan list, priority channel, selectable scan delay, selectable 5 watt/1 watt power levels, liquid crystal display, time-out timer and much more. When you order the MPV32 from CEI, you'll get an antenna, 700 ma rechargeable battery, charger, belt clip and user operating instructions. Other useful accessories are available. A heavy duty leather carrying case with swivel belt loop is available. 4LCMP is $49.95, rapid charge battery pack, part #SCMP is $29.95, speaker/microphone, part #SMPM is $54.95, extra high capacity 1000 ma. ni-cad battery pack, part #BMP1 is $79.95; extra 700 ma. ni-cad battery pack, part #BMP7 is $59.95; cloning cable, part #CCMP is $34.95; PC programming kit, part #PCMP is $224.95. Your RELM radio transceiver is ideal for many different applications since it can be programmed with just a screwdriver and programming instructions in less than 10 minutes. Programming is even faster with the optional PC kit. The programming instructions part #PMPV is $19.00. To order this special RELM deal, call CEI at 1-800-USA-SCAN or visit our web site at http://www.usascan.com.

SAVE $125 on one Bearcat@895XLT Radio Scanner

Mfg. suggested list price $799.95. Special $574.95

Bearcat@895XLT-A Radio Scanner

The Bearcat 895XLT is superb for intercepting trunked communications transmissions (see BC235XLT description below) with features like TurboScan™ to search VHF channels at 100 steps per second. The base and mobile scanner is also ideal for intelligence professionals because it has a Signal Strength Meter, RS232C Port to allow computer-control of your scanner via optional hardware and 30 trunking channel indicator annunciations to enable to users for an entire trunking system. Other features include Auto Store - Automatically stores all active frequencies within the specified banks(s). Auto set lets you select channel activity from the scanner onto a tape recorder. CTCSS Tone Band (Continuous Tone Control System) which allows the squelch to bebroken during scanning when a selected CTCSS tone is received. For maximum scanning enjoyment, order the following optional accessories: PS001 Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter $14.95, PS002 DC power cord - permits permanent operation from your vehicle's fuse box $14.95, MB001 Mobile mounting bracket $14.95, EX711 External speaker with mounting bracket $8.00 feet of cable with plug attached $19.95. The BC235XLKit comes with AC adapter, telescopic antennas, owner's manual and one year limited Uniden warranty. Order from CEI today. Call 1-800-USA-SCAN.

SAVE $100 on one BC235XLT

Mfg. suggested list price $299.95. Special $199.95

Bearcat@235XLT-A TrunkTracker XLT

Bearcat@235XLT-A TrunkTracker XLT is a state-of-the-art trunked radio scanner that has been built-in CTCSS, which may be programmed for any of the standard EIA tones, frequency range 136.0 to 174.0 MHz, UHF range 450-480 MHz. The full function, DTMF compatible keypad also allows for DTMF Encode/Decode operation. Weighing only 5.0 oz, it features programmable synthesized frequencies either simplex or half duplex in 2.5 kHz increments. Other features include PC programming and cloning capabilities, scan list, priority channel, selectable scan delay, selectable 5 watt/1 watt power levels, liquid crystal display, time-out timer and much more. When you order the MPV32 from CEI, you'll get an antenna, 700 ma rechargeable battery, charger, belt clip and user operating instructions. Other useful accessories are available. A heavy duty leather carrying case with swivel belt loop is available. 4LCMP is $49.95, rapid charge battery pack, part #SCMP is $29.95, speaker/microphone, part #SMPM is $54.95, extra high capacity 1000 ma. ni-cad battery pack, part #BMP1 is $79.95; extra 700 ma. ni-cad battery pack, part #BMP7 is $59.95; cloning cable, part #CCMP is $34.95; PC programming kit, part #PCMP is $224.95. Your RELM radio transceiver is ideal for many different applications since it can be programmed with just a screwdriver and programming instructions in less than 10 minutes. Programming is even faster with the optional PC kit. The programming instructions part #PMPV is $19.00. To order this special RELM deal, call CEI at 1-800-USA-SCAN or visit our web site at http://www.usascan.com.
Monitor the Y2k Countdown

The Millennium has already arrived.

In February of 1999, the United States Navy ships USS Kinkaid and USS Ingraham set ahead the clocks in most of their computer systems, letting them pass over into the dreaded year 2000. As everyone must be tired of hearing by now, this is the “Y2k” of computer jargon, when civilization over into their computer has all the Guard cutter One sight into utility frequencies of times its lasting con for Defense (DoD), along Navy may hold many more tests arescribed. The supposed “Y2k bug” come once, while the doom prophets.

These clocks are back on real time, but the supposed “Y2k bug” can’t occur any more. Many, many other agencies plan Y2k preparations. One US Navy carrier group, a US amphibious group, one Canadian ship and one US Coast Guard cutter all put out to the Pacific, set up all the usual tracking and communication circuits, and let everything change centuries all at once, while computer technicians watched and talked on the radio.

Nothing happened. The system has been tested for a brief instant, after which everything happily set itself to a date described as “1/1/0.” The human race survived.

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Nothing happened. The system has been tested for a brief instant, after which everything happily set itself to a date described as “1/1/0.” The human race survived.
Utility Loggings

Hugh Stegman

4739.0 Red Claw 713-US Navy P-3 giving Spare Group report to 9-N-Q, at 0245. (Perron-MD)
5015.0 WUG-US Army Engineers, in weekly Monday Southern Region net on "Channel 2", parallel on channel 8 (9125.5), at 1511. (Bunyan-MO)
5140.0 Missouri State, in weekly Wednesday Operation SECURITY net, at 1530, at 1530. (Bunyan-MO)
5565.0 Dakar-Dakar Radio, Senegal, in South Atlantic-2 MWARA net with KLM 793, at 0208 (Perron-MD)
5574.0 San Francisco Radio, patch from unid aircraft to dispatch at 0604. (Perron-MD)
5616.0 Gardner-Gander Radio, Canada, in North Atlantic-B MWARA net with Delta 60 and Exxon 71 (US Air Force KC-135 tanker), at 0211. (Perron-MD)
5700.0 Abnormal 20-US Western Test Range, Wheeler AAF, HI, passing ARIA net frequencies, in same Delta countdown as on 4030, at 0642. (Jones-CA)
5711.0 Moffett Rescue-US Air Force Aerospace Rescue & Recovery Command, also using callwords Mad Dog, in tactical exercise with airplane King 61 and helicopter Jolly 18, at 2020. (Jones-CA)
5715.0 North Korean numbers, powerful AM, at 1400. (Yamaguchi-Japan)
5717.0 Mohawk-US Coast Guard cutter, working Cape Radio for STS-88 launch, no interference there, transexual transmitters, parallel... (Jeff Jones -CA)
5800.0 Nightwatch 01-US Air Force airborne CP, working WAR 46, ground station at Joint Alternate CP, moved to 2160 (6715 kHz) at 0915. (Haverlah-TX)
6151.0 Unid ALE burst heard here, could be FEMA, at 1550. (Bunyan-MO)
6215.0 North Korean numbers, in powerful AM, at 1400. Rare for them to

All transmissions are USB (upper sideband) unless otherwise indicated. All frequencies are in kHz (kiloherz) and all times are UTC (Coordinated Universal Time).

<table>
<thead>
<tr>
<th>AAF</th>
<th>Army Airfield</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAFB</td>
<td>Air Force Base</td>
</tr>
<tr>
<td>ALE</td>
<td>Automatic Link Establishment</td>
</tr>
<tr>
<td>AM</td>
<td>Amplitude Modulation</td>
</tr>
<tr>
<td>ARIA</td>
<td>Advanced Range Instrumentation Aircraft</td>
</tr>
<tr>
<td>ARQ</td>
<td>Automatic Repeat Request teleprinting scheme</td>
</tr>
<tr>
<td>ASCII</td>
<td>American Standard Code for Information Interchange</td>
</tr>
<tr>
<td>CP</td>
<td>Command Post</td>
</tr>
<tr>
<td>CW</td>
<td>Morse code telegraphy</td>
</tr>
<tr>
<td>EAM</td>
<td>Emergency Action Message</td>
</tr>
<tr>
<td>FACSFA</td>
<td>Fleet Area Control and Surveillance Facility</td>
</tr>
<tr>
<td>FAPSI</td>
<td>Russian intelligence and communication agency</td>
</tr>
<tr>
<td>FEC</td>
<td>Forward Error Correction teleprinting scheme</td>
</tr>
<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>FM</td>
<td>Frequency Modulation</td>
</tr>
<tr>
<td>HQ</td>
<td>Headquarters</td>
</tr>
<tr>
<td>LDOC</td>
<td>Long Distance Operational Control</td>
</tr>
<tr>
<td>MFA</td>
<td>Ministry of Foreign Affairs</td>
</tr>
<tr>
<td>M/V</td>
<td>Motor Vessel</td>
</tr>
<tr>
<td>MWARA</td>
<td>Major World Air Route Area</td>
</tr>
<tr>
<td>Ops</td>
<td>Operations</td>
</tr>
<tr>
<td>Packet</td>
<td>Computer networking and teleprinting scheme</td>
</tr>
<tr>
<td>Pol-ARQ</td>
<td>ARQ scheme used by Polish embassies</td>
</tr>
<tr>
<td>RTTY</td>
<td>Radio Teletype</td>
</tr>
<tr>
<td>SAM</td>
<td>Special Mission</td>
</tr>
<tr>
<td>SECURE</td>
<td>State Emergency Capability Using Radio Effectively</td>
</tr>
<tr>
<td>STS</td>
<td>Space Transportation System</td>
</tr>
<tr>
<td>Unid</td>
<td>Unidentified</td>
</tr>
<tr>
<td>VIP</td>
<td>Very Important Person</td>
</tr>
</tbody>
</table>

Abbreviations used in this column

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use this international maritime calling and distress channel. Maybe that's why she said, "Thank you" in Korean at the end. (Yamaguchi-Japan)

6321.0 SVU-Athena Radio, Greece, with CW marker at 0421. (Castillo-Panama)

6653.0 Air Guyana 715, told by unident ground station to give Royal No operation/Dispatch in Montreal a position report, at 0016. (Perron-MD)

6683.0 Nightwatch 01-US Air Force airborne command post, signal checks with Andrews at 0250. (Jones-CA)

6697.0 MKL-Royal Air Force, Kinloss, UK, in radio checks with J-4-W (Perron-MD)

6712.5 Charlie 03-Probable US military, working Mike 02, at 2157. (Hawerlah-TX)

6730.0 Andrews-Andrews AFB, MD, calling VIP flight SAM 204, no joy, at 0125. (Jones-CA)

6761.0 SAM 375-US Air Force VIP flight, still on ground, getting working frequencies from control at Andrews AFB. Primary was F287 (1226 kHz), secondary was F451-1 kHz. (Perron-MD)

6770.0 Cuban "Atencion" numbers station, 5-figure groups in AM at 0417. (Camillo-Castillo-Panama)

6797.1 Cuban cut number station, 5-letter CW groups, parallel on 6982.1, at 1203. (Castillo-Panama)

6813.0 Cuban "Atencion" AM numbers, longer transmission than usual, wanting first hour, starting at 1002. (Castillo-Panama)

6815.0 HYS214-General call AM 21 kHz. (Stern-FL)

6882.5 Executive One Foxrot-Hillary Clinton's plane enroute to Chicago, working WGY 912-FEMA, WA, at 1210. (Jones-CA)

6933.1 Cuban cut number station, 5-letter CW groups, at 1205. Same station, different day at 1237. (Castillo-Panama)

8026.0 Air Force 2-US Air Force carrying Vice-President, working Andrews VIP at 0409. (Jones-CA)

8040.0 SAM 204-US Air Force VIP flight, shutting down contact with Andrews VIP, at 0142. (Jones-CA)

8174.5 Nightwatch 01-US Air Force, working Kilo-Lima in LSB link-9 coordination net, at 1138. (J. Bessler-IN)

8186.2 Cuban "Atencion," AM numbers at 1137. (Castillo-Panama)

8240.0 P3AE6-MV Cyprus Thalassia Thymi, a bulk carrier, calling Port Said Radio, UK, at 0219. (Perron-MD)

8776.0 Radiol with EAM 1916, 1945, and 2045. (Jones-CA)

8837.0 Unid air traffic control in Hebrew and English, probably EI Airline’s LDCO, at 2253. (Perron-MD)

8846.0 Titanic 20, signal check with New York at 1845. (Roth-WI)

8971.0 Red Claw 71E-US Navy F-3, Jacksonville, FL, returning to base with engine #2 shut down, at 2123. (Andrews-AFB)

9016.0 WAR 46-US military Joint Alternate CP, in radio checks with Nightwatch 01 and WAR 46 Mobile, at 0565. (Hawerlah-TX)

9025.0 Fuzzy 44-US Air Force, setting up refueling track for Wolf 1 and 2, escorting Royal Jordanian 01 home, at 0906. (Roth-WI)

9120.0 Nightwatch 01-US Air Force airborne CP, signal checks with Andrews at 2239. (Jones-CA)

10162.4 DOR-Bulgarian MFA, Sofia, with news in RTTY, at 1536. (Bob Hall-RSA)

10194.0 WGY 911-FEMA HQ, Washington, DC, working WGY 912, Special Facility, VA, on Foxrot-25, also using WYJ, at 1432. (Byun-MO)

10204.0 Black Car in lengthy satcomm debugging with Nightwatch 01, asking if he should keep transmitting on 308.05 megahertz and receiving on 207.05. Long silence, then WGY 912, telling Nightwatch to go secure, which he did, at 1702. (Hawerlah-TX)

10780.0 King 65-US Air Force, telling Cape Radio, FL, to advise Coast Guard about gyro drop in "Crow drop zone," at 0236. (Jones-CA)

10780.0 King 01-US Air Force. Air Force, several patches to Braveheart Ops (Raymond 17, Moody via Cape Radio, with tactical messages concerning help to Hollywood). (J. Bessler-IN)

11059.0 SPAR 65-US Air Force VIP flight, signal check with Andrews at 1530. (Jones-CA)

11175.0 ADNG-US Army Vessel Port Hudson, LCU 2035, patch via Andrews, at 0100. (Perron-MD) Continental 751-Civilian airliner calling Albrook Global [closed]. When Ascension answered, he asked the dumbfounded op for position relay to Mid-America air traffic control. Op said his net was for the military, but he'd try, at 0705. (Stern-FL) Fuzzy 44-US Air Force, with patch to Duluth CP via Andrews, setting up mission with Wolf 1 and 2, King Hussein's F-15 escort back to Jordan, then went to 0925 kHz at 1606. (Roth-WI)
Welcome to this month’s column, Digital fans. Let’s take a step back from the relatively simple signals we have been discussing over the last few months and consider what it will take to recognize and analyze signals that are a bit more complex.

Signals that would fall into the “complex” category would be multi-tone, multi-channel or multi-phase signals. Just in case you didn’t notice, more and more of the older signals that have been around for years are slowly giving way to more modern equipment with complex wave forms. This makes the job of identification harder and decoding nearly impossible.

Certainly, a good quality radio and antenna should be one of the first acquisitions. I’m not saying every one needs a Watkins & Johnson HF 1000 with a 5 to 30 MHz HF log periodic aerial in the backyard, but one can dream! As with everything else in the hobby, the deciding factor will be money, so go with what you can afford.

A good rule to follow is that a top-of-the-line decoder will cost as much as a top-of-the-line radio. Remember, feeding a low quality signal into your expensive analysis rig makes for low quality analysis. Also strive to eliminate interference from as many sources as possible. Interference can show up as a strange component of a signal or even mask a narrow digital signal totally, so check carefully.

So what is available in today’s decoder market? Quite a lot, as it turns out. Several great products are now available at affordable and nearly affordable prices to the hobbyist.

In the decoder/analyzer arena you will find that Wavecom and Hoka dominate the field. They offer a number of features you should look for in any decoder: auto signal identification, accurate baud rate measurement, a wide variety of modes decoded and identified, a variety of high quality tools for complex signal analysis, and a save feature.

Following Wavecom and Hoka is the older analog Universal equipment line of decoders which do not offer a number of the features mentioned above yet have a dedicated following. Also worth mentioning is Francois Guillet’s RadioRAFT decoder—lots of capability at a low price.

Let’s take a closer look at what Wavecom, Hoka and Universal are offering.

Wavecom
Wavecom has made great advances in their line of decoders in recent years and offers two PC card decoders, the W41PC (v4.2) and W40PC, that work under Win95/98/NT and two standalone decoders, the W4100DSP (v3.4) and W4050DSP (to be released shortly).

Wavecom seems to continually developing new features, and features, and adding modes for the software. With the introduction of the W40PC—a low-cost variant of the W41PC—they have finally introduced a unit aimed directly at the hobbyist sector. Check out the Wavecom homepage at http://www.wavecom.ch or see the Klingenfuss Publications pages for some great screen shots at http://ourworld.compuserve.com/homepages/klingenfuss/hotfreq.htm.

Hoka
Hoka offers the Code3 (v5.0), Code3 Gold (v1.5W), Code30 (v2.7) and the Code300. The Code300 is a complete standalone unit built into a 19-inch rack PC that incorporates the Code30. The Code3, Code3G and Code30 all require a PC for the software and a serial port for the Code3 or Code3G or an AT slot for the Code30 card.

The Hoka line has always offered a complete set of sophisticated tools and covered a large number of recognized modes. Check out the Hoka homepage at http://www.hoka.net or great information at http://www.tecna.it/lbarbi/.

Universal
Universal offers the commercially available M-8000v7.5 (v7 is government restricted) and M-450v1.5 but still offers the older M-900v2 and M-1200. All Universal decoders are standalone, but there are a few third party offerings, most notably ScanCat’s COPYCAT, that allow PC based control.

Now What?
Now that you have the equipment capable of analyzing complex signals, what kind of tools can you expect to find? Both Wavecom and Hoka are graphically based and do a great job of visualizing the structure of a signal. Tools you can expect to use over and over are tools such as:

Auto Correlate: a great tool for detecting bit patterns within a signal. Also needed to detect those signals that are running with encryption. Encrypted signals will show no bit pattern at all. If you know a signal is encrypted, log it and move on.

Oscilloscope: precise signal tuning is vital for proper signal decoding. Any mistracing can introduce drift and this can cause unexpected bits to be inserted into the output stream.

Shift Speed measurement: precise baud rate measurement is one of the most important signal parameters available. A good decoder should be able to calculate a baud rate out to 3 or 4 decimal places.

Waterfall: To “see” the multi-channel makeup of a voice frequency telegraphy (VFT) signal is almost as good as having a fingerprint. Many VFT signals have a unique channel structure. A waterfall display is also great for visualizing the tone sequence of a multi tone signal.

Auto Classify: The “magic” module of an intelligent decoder. A good signal classification module can have you decoding a properly tuned signal in record time.

Phase display: phase detection of multi-phase signals.

We’ll take an indepth look at tools in later columns.

Still around?
Some monitors on the World Utility News (WUN) list have reported hearing Federal Aviation Administration stations KLO87 (West Virginia) and KEM80 (headquarters in Washington, D.C.) sending 170/110R ASCII as part of the National Airspace System Recovery Communications/National Communications System Exercise. Frequencies used were 5860.0 and 8125.0 in logs posted by J. Metcalfe.

It’s hard to believe that an ancient mode such as ASCII is still to be found in use in this day and age! ASCII was never that popular as a transmission mode and was mostly used by ham operators. As a data transmission mode it had no error correcting in its design, requiring a strong, clean signal to receive error free copy.
GLOBAL FORUM

Shortwave Broadcasting
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Antarctica’s Archangel on the Air

The only continent with only one shortwave broadcast station is Antarctica, but until mid-February that was inactive, as LRA36 at Base Esperanza was waiting for a new 10 kW transmitter to arrive.

When it came up for tests with folk music and IDs, Radio Nacional Arcángel San Gabriel was heard better than ever in North America, as late as 0100 UT on 15475.8, first reported to us by John Cobb in Georgia who noted the signal was even better than RAE Buenos Aires on 15345 — supposedly 100 kW but believed to be very much less.

Appearances were sporadic, and then on March 1, St. Gabriel Day in the Catholic calendar, official broadcasts began, says Horacio Nigro, Uruguay, via The Four Winds, but on an earlier schedule, roughly 1800-2100 UT on Monday-Friday, reports Gabriel Iván Barrera, Argentina, also via The Four Winds. A few days later Saturday and Sunday were added at 1800-2000. As winter deepens, further changes would not be surprising.

Unfortunately, the VOA-Delano relay of Voice of Greece at 1800-2200 on 15485 was so strong — beam 75 degrees right across the US in what is really a domestic SW broadcast — that splatter from it blocked reception of LRA36 during its earlier timeslot.

Europeans had better luck, as Dave Kenny of the British DX Club reports best-ever reception of LRA36, and Finbarr O’Driscoll, Ireland, told Review of International Broadcasting that reception was good along the greyline.

P-mail is a bit slow to Antarctica, so the station now has electronic access via ese 38@satlink.net, says Barrera, as well as fax and phone to 54-2964-421519.

If you can’t hear it in the 1800-2100 period, it still pays to check 15475.8 kHz at other times; later in March, John Cobb and I heard it after 0000 with another test in the clear, and previously it was active in the 1400 UT area. Watch out for Africa Number One, Gabon, on 15475 until 1900. Longtime inactive LRA36 frequencies 6030 and 11955 were also listed as possibly to be used.

Aurora permitting, Antonians no doubt can pick up many SW broadcasts intended for elsewhere. The only countries with a weekly non-daily shortwave broadcasts to their personnel in Antarctica, Russia and France, have not been confirmed recently.

But Argentine army station LTA has been extremely active on 15820 LSB and/or USB relay any or all Buenos Aires AM or FM stations to Antarctica. A great many different stations have been heard at unpredictable times, and the relays are done without their knowledge, says Barrera, so if the originating stations verify, it is only as a courtesy, since they have no official knowledge of the relays. You may hear music and all kinds of programming, but soccer has top priority. By the way, Argentina claims the continent as its own, though international agreements maintain the continent is not to be carved up.

AUSTRIA This is an example of what all the second-tier broadcasters should do — publish week-in-advance program previews on their website: http://www.ort.at/roi/uk/uk_home.htm (Larry Nebron, Review of International Broadcasting).

BELARUS Following the tests of R. Baltic Waves and the successful funding for this project, the Belarusian telecom authorities have put Belarusian Radio 1 on 6230/6235 which was supposed to be the frequency choice for RBW. The signal is very wide and seems to be in FM mode. Email reception reports are urgently needed to (Rimantas Plikiys, ripel@irs.lt — Project Coordinator RBW via hard-core-dx)

BRAZIL From March 29, R. Senado broadcasts M-F 1000-2200 on R. Naciona1 Amazonia’s 6180 for northern and west/central Brazil (Marcio R. F. Bertoldi, Sao Carlos SP, Brazil) So the C-SPAN of Brazil is on SW! (gh).

BULGARIA R. Bulgaria doesn’t stop its transmissions in Spanish since March 28, 1999 (Panview) Announcement that they would be broadcasting “until March 28” simply referred to the validity of the current schedule until season change, rather than implying that the Spanish service would be terminated, so only a well-intentioned misunderstanding (Jorge Aloy, Argentina).

CANADA CBC was hit by a long, debilitating strike by technicians in mid-February; journalists later considered joining them, but got a last-minute settlement. Although RCI workers remained on the job, much of CBC programming carried on RCI was affected, and certain transmissions from Sackville were suspended (gh) Russian and Ukrainian via Sackville 1600-2000 disappeared (Anne Fanelli, NY, Review of International Broadcasting) Russian at 1800 heard only via Selkjet relay 9795, 7235 (Sergey M. Kolesov, Ukraine, Cumbre DX) What MUF will it take for RCI to use the 21 MHz band? I know they did at polar peaks, but for A-99 not a single 1 MHz channel for any broadcast from anywhere! (gh).

CHNX, 6130: Wayne Harvey, Chief Engineer, told Rich Hankison about their power on February 15th: “We are licensed to transmit 6130 at 500 watts. Due to the failure of our old transmitter we have been for the last 3-4 years broadcasting on a Harris solid state exciter at 40-50 W. We just installed a Marconi transmitter, output power 100 W, connected to a 6 MHz dipole about 40 feet above the ground, pointing NE-SW at the co-ordinates 44°40'49" N. Lat. 63°39'35" W. Long. We will in the future return to 500 W.”

“I am surprised how far we are getting with only limited power but it has been interesting hearing from our listeners so far away... To reduce our power has been due to finances and nothing more.” (G Cumbre DX) Their email address is chns@efs.sympatico.ca (Kolesov, ibid.) 6130 CHNX Halifax using only USB (nothing on LSB) also well audible with usual “Odiote 96” as well as weather,” — a maritime broadcasting system station. “Can still copy this one at 0910, one hour after sunrise in mid-Feb (Noel Green, U.KoGBAni, GB-DX) Radio McGill, 90-3 MHz, Montreal, started streaming online in Feb, including our International Radio Report Sundays at 10:30 am ET (summer timing 1430 UT), which reaches its 600th edition May 9. Everyone is invited to listen at http://www.cksu.ca (Sheldon Harvey and Westernenhaver, IRRI)

CENTRAL AFRICAN REPUBLIC Good news for those who didn’t succeed in picking up the very weak signals from Radio Minurca.

All times UTC; All frequencies kHz; " before hr = sign on, " after hr = sign off; // = parallel programming; += continuing but not monitored; x freq = 2nd harmonic; A-99summer season, Mar-Oct; [non] = Broadcast to or for the listed country, but not necessarily originating there.

www.americanradiohistory.com
late 1998. David Smith informs me that Radio Minuca will have a new and more powerful transmitter by the end of March on 9900 (Stig Hartvig Nielsen, Denmark, hard-core DX)

COLOMBIA Clandestine. Voz de la Resistencia (D.F., México) started with one epicycle (Mahendra Vaghjee, Mauritius) and no domestic targets on 6239. Political commentary and music. Comunicado de Comando Central del Magdalena. (c) BBC Monitoring (Joe Bernard, RFPI) Started with one epicycle to avoid such lamentable incidents. FARC combattants are not turned over to other states, but Galdardo would be punished according to FARC law, signed by Jorge Suárez Briceno (via Jorge Garcia Rangel, Venezuela)

Congo [KINSHASA] R. Bukavu, 6713 USB, heard in late Feb 1620-1804* with African songs, French, Swahili, very poor; next day 1600-1803 (Mahendra Vaghjee, Mauritius). R. Bukavu — although it continues to identify as “RTNC Bukavu” (RTNC = Radio Television Nationale Congolaise) it is currently controlled by rebel forces of the Congolese Rally for Democracy (RCD) and no longer relays programming from RTNC in Kinshasa. is on 6713.3 USB and 88.04 FM to domestic targets only, multilingual daily 0400-0650, 0900-1800 including news in French at 0430, 1030 and 1630; news in Swahili from 0630, 1130, 1700-2000. By March R. Congo was heard on 5066 1550-1650+, nothing on 6713-USB (Vaghjee)

COSTA RICA We have just begun limited on-demand audio services. Links to the program(s) will be on our web site at http://www.clark.net/pub/co/costarica/webcast.html (Joe Bernard, RFPI) Started with one epicycle to avoid such lamentable incidents. FARC combattants are not turned over to other states, but Galdardo would be punished according to FARC law, signed by Jorge Suárez Briceno (via Jorge Garcia Rangel, Venezuela)

CUBA [non] We have confirmed with the US Department of State in September 1998 of the Cuban populace indicates that Radio Marti is at its lowest point of listeners since it first broadcast in 1985. The poll was conducted without the permission of the Cuban government and it indicates that only 9% of Cubans listen to Radio Marti. “(Rosa Townsend, El Pais via Mastrapea) FYI, a 1995 survey showed 76 percent of Cuban populace listened to R. Marti (Armando F. Masta pra, Clandestine Radio Watch)

“DEUTSCHES REICH” [non] Ernst Zundel is back on the air, heard on WGTG (“With Glory To God”) 9400 until 1635 on a Monday, saying that Roosevelt and the Jews were responsible for WW II (Tim Hendel, AL, World of Radio) What a way to “glorify God!” Check the next day at 1100 for a report on “The Nazi Party” as Franz is easy to dial during this time. We have heard him talking about Christians he had dealings with who were really “lying dogs” Said Zundel was example of RESPONSIBLE — emphasis his — free speech, and Zundel doesn’t sound unreasonable. Finally started Voice of Freedom at 1619 (gh)

Dave Frantz said it has been on for a couple of weeks and is on 1600 to 1630 Mon to Thu (if still, presumably 1500-1530 summer) (Hans Johnson, FL, Cumbre DX) We are no longer maintaining WGTG’s website. New site is http://www.wgtg.org (Tom Sundstrom, NASWA Journal)

DOMINICAN REPUBLIC Radio Barahona reactivated on 4930 heard at 1014-1058, not heard in evenings nor every morning (Hans Johnson, FL, Cumbre DX) Daily in 1030-1100 period with news, fairly weak and quite distorted (Dave Valco, PA, ibid)

FINLAND Juhani Niinisto, head of the YLE R. Finland, told me at the SWL Winter Fest that they do not plan to resume an evening broadcast to NAM this summer. Most Finns travelling in NAM do not have very good receivers and reception was not very good (the word we found to be quite good) and what about English which presumably was intended for non-Finns?— gh). Sked shows to NAM: 1540 kHz at 1200-1500 UT, and 1700-2000 includes English daily at 1230-1300. Have considered resuming longer English broadcast on Sunday mornings, but not likely this year (Joe Hanlon, PA, World of Radio)

INDONESIA In absence of RCI 15150 during strike, VO heard on 1514-98 kHz at 2001 UT in English, intended program actually started promptly at 2000; however, tape was playing backwards probably due to an engineering error. Signal very strong and readable but degrading with time (Mark Fine, VA, DSWCI DX Window) Same wrong tape recording also audible here in Saiburg, one week later! (Christoph Ratzer, Austria, DX Window ed.)

IRAN [non] WCWR’s Persian program retired in Feb to M-F 1400-1430 UT on 15685 kHz, instead of THF/SA 1100-1200 on 12160; ought to be optimum time and frequency for actually reaching Iran from WWCR, if still on, summer timing would be 1300-1330. ID only as R. International, mentioned both Teheran and Dushanbe and giving in local times (gh)

Anybody can find some details about the web. Our address is http://www.israelradio.org — CHAIR stands for Committee for Humanitarian Assistance to Iranian Refugees (All “Eric” Javadi, via Tom Sundstrom) Some other pages detail specific cases of mistreatment of refugees, and in particular in women of Iran. Nothing found on the site about the radio program. Since CHAIR clearly opposes the Islamic Republic of Iran, I believe it and its program qualify as clandestine (gh)

IRAQ Rep. of Iraq R. in Arabic heard on Feb 15-20: 1700-2000 UT on new 11650 kHz, SINPO 34433, ex-11785/9684 S; 11650 also heard irregularly daytime v0900-1500v (Panview, Bulgaria) Mother of Battles Radio, Radio of All Arabs (Arabic: idha’at umm al-mal’ank, idha’tu kul al-arab) is a service of official Iraqi radio, intended to be received throughout the Arab world. This schedule lists only those frequencies that have recently been confirmed. As with all Iraqi radio services, transmitter operation may be erratic. All broadcasts will be one hour earlier in summer. Daily in Arabic 1700-2000 on 5915 and 693 kHz, including recordings of Saddam Hussein speeches at 1815-1830, Political commentary at 1910-1930 UT (bc) BBC Monitoring)

ISRAEL Kol Israel summer timings last from April 2 to September 13. See their cool new website http://www.israelradio.org — which has complete schedules and recording of one English broadcast daily. (Doni Rosenzweig via John Norfolk, Ivan Grishin)

Harmonic heard. Hebrew phone-in show at 1807-1645+ on 23180 – 2 x 11500 (Finbarr O’Driscoll, Ireland, Review of International Broadcasting) 11590 kHz now scheduled 1600-1755 UT

ITALY The new Marconi Radio International is on 11390 kHz AM, 0800-1015 UTC every Sunday; Address: C/O Via Umbria 1, IT-74100 Taranto (Ta); E-mail: mxtw@hotmail.com - Confirmation by QSL-card. Add 1 IRC/ IRC/ Dario Monterini, Play-DX

KIRIBATI Radio Kiribati’s manager, Bill Reier, told us they were still waiting for parts from the UK and it would be at least early April before they are back on (Hans Johnson, c) Cumbre DX)

DX Listening Digest

More broadcasting information by country compiled by Glenn Hauser

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May 1999
MÉXICO  XEYU, R. UNAM heard again in daytime on 9600 kHz, strong signal but weak modulation (Hector Garcia Bojorge, DF) 9600.1, classical music, 0330 ID (Richard Hankinson, KS) Barely audible here after more classical music at 0556 ID, 0600 kept you going (gh) Program info from R. Educación, 6185, is available at: http://www.cnca.gob.mx/cnca/buena/radio/index.html (Noticias DX)

MOLDOVA [non] R. Moldavia Spanish 1200-1225 UT and Romanian 1230-1255 UT on 15315 kHz — their 120 kW transmitter did not allow broadcasting; frequency was filled with a terrible hum (similar to some digital broadcast tests), not recognizable but I could hear somebody talking below the noise. There seems to be a total transmitter failure in Moldavia. The hum was so bad that frequencies +/- 10 kHz were “jammed” effectively by all kinds of humming, the noise differs tremendously for each 5 kHz step. (Andre Schmidt, Germany, Electronic DX Press) On the positive side, I have noticed this noise during this hour on 15315 is just about the only European signal to make it through on 19m (gh)

NICARAGUA I noted your report about R. Miskit in March Monitoring Times FYI, I have just returned from station. Tower newly erected last summer got destroyed by Hurricane Mitch. FM transmitter sustained major damage (four solar panels, tower, SW plate amplifier) is being repaired at this time, as is FM transmitter. Operations continue on FM with auxiliary transmitter, and on SW 5770 with exciter. I just completed canou tour of Rio Coco SW target area on Nicaraguan/Honduran border and SW signal is excellent there even with only exciter operating. It is expected possible to get 8877 PA operating again by summer. New full-time engineer will keep you informed on progress (John C. Freeman, Tech Systems, NC, Feb 27)

PERÚ Regarding R. Panorama on 5906.8 kHz, the location is definitely Recopampa, as I originally reported, not Lucampampa as others propose. It is not a district but one of 24 casos en el interior of the District of Sorococha. I have heard it again, on the same frequency, from F. La Voz de los Andes, 1400 kHz which definitely transmits from Sorococha (Rafael Rodriguez, Colombia)

RUSSIA VOR is running a contest until June for the 200th anniversary of the birth of the celebrated poet Aleksandr Pushkin. Listeners are asked to answer several questions (Ilias Solobiev, VOR via Santa Rita DX Club, Brazil) In Portuguese, but presumably in other languages including English, with more details in broadcasts, website (gh)

SA’UDI ARABIA BSKSA keeps appearing in English on SW contrary to schedules, perhaps by mistake: 21670 kHz puts out enormous signal at 1120-1200 UT (Morrison Hoyle, Foster, Victoria, Electronic DX Press) 15435 kHz at 1216-1227 English with finisher “This is a Radio News from good; simple switching error between Arabic Service and Foreign Language Service or new program format? (Mikhail Timofeyev, Russia)

SIERRA LEÔNE SLBS back on air, following damage to its offices and library of recordings, with local news once again. During the rebel occupation of Freetown the two staff members included the following broadcasters: Voice of America (VOA), Radio Free Europe (RFE), Radio Liberty (RL) and Radio Marti. While you're there check out some of the other stuff... like the remote monitoring system at http://voa.his.com/rms (Bill Whitacre, IBB, hard-core DX)

SLOVAKIA Seemingly AWR will use the Rimavská Sobota facilities in Slovakia again more extensively in A99 season, especially to cover events in Germany and Austria.

SOMALIA R. Mogadishu, V. of the People, which was on 11204 for a few weeks, moved to frequencies between 6540 and 6754 in the evenings until 1900 or 2000*, varying greatly from day to day, such as 6754, 6540, 6584, 6620, 6604 kHz. Hargeisa was on 6844 one day, 7071 the next (Mahendra Vaghee, Mauritius)

SUDAN [non] Claddingon on 7000, Voice of Freedom and Renewal, heard *1545-1745* (Mahendra Vaghee, Mauritius)

TAIWAN R. Taipei International, in English direct, includes 1200-1300 UT to Australia on 9610 kHz, and new 1300-1500 UT to Asia on 15125 kHz (BBC Monitoring)

UK The 6/2 B.I. Former director of the BBC World Service, 1986-1992, John Tusa, wrote some extremely critical comments about his successors, published in The Observer. Excerpts follow: New crisis at the BBC: Turning off the World - I was sitting in the Bush House arcade a few months ago over a coffee when an old friend from the Russian Service joined me. 'I'll tell you what is going to happen here,' he offered. 'Now that the English services' programme-making departments have been dismantled and sent over to Shepherds Bush (the final round of John Birt’s reforms), the language services are defenceless. From now on, the BBC will start the process of steadily cutting them down.' I would not have guessed that his assessment would have turned into cruel reality so quickly...

While public attention has usually been drawn to the impact and excellence of the English language World Service, the real impact of the BBC's overseas broadcasts comes from its 40 or so services in other national languages, from Mandarin Chinese to Arabic, Russian, Nepalese, Sinhalese and Tamil. If the English service attracted some 35 million listeners, more than 100m listened in their national language. These services represented an extraordinarily cost-effective way of getting through to mass, national audiences. They represented a perfect counterweight to the elite appeal of the English-language services.

For 50 years, World Service managers directed fought to defend the language services and to extend them, usually against Foreign Office resistance and sometimes with its co-operation. ... Now, staffed by managerial zealots with no sense of ethos or historical values, the very things the World Service once defended are being eagerly dismantled by the BBC itself. And remember, there are more cuts to come. (via Daniel Say, rec.radio.shortwave via John Norfolk, John Figliozzi)

Derek Nimmo, stalwart of BBC's Just A Minute and stuttering comic actor, died Feb 24 following a serious fall at his home in December. He was 68 (Daily Telegraph via Joel Rubin; BBC News Online via Ivan Grishin; The Times via Mike Cooper)

USA Spectrum was to return Feb 14 after a long hiatus, per announcements on the Mike Jarms Show (Alex Draper, Ont.) But it was delayed two weeks due to Marcel's illness. Finally appeared March 1, UT Mon 0200-0300 on WWCR 5070, immediately announcing they coveted their old time of UT Sun 0300. Trouble is, that was occupied by the “DX Block” of VOA Communications World and World of Radio sponsored by Grove (summer timing 2002 UT Sun on 5070). (gh) No excuse on extended hiatus other than “stuff continued to happen.” Stan Lockwood, Mark-Emmanuel were on with Scott Fybush on phone and Dave Mahrhouse on phone from VA (Bob Thomas, CT)

You can find a current Intl Broadcasting Bureau broadcast schedule by FREQUENCY here: http://sds.his.com/4000/fmds_w_schedules/freqsked.txt and by LANGUAGE here: http://sds.his.com/4000/fmds_w_schedules/langsked.txt It's updated daily so it's pretty complete but it doesn't include the following broadcasters: Voice of America (VOA), Radio Free Europe (RFE), Radio Liberty (RL) and Radio Marti. While you're there check out some of the other stuff... like the remote monitoring system at http://voa.his.com/rms (Bill Whitacre, IBB, hard-core DX)

VOA's Radio Theatre recorded some plays in February, March and April at Arena Stage in Washington, for later broadcast on Natl Public Radio, and on VOA [presumably pre-emitting other programming on weekends on short notice] — The Substance of Fire, As Thousands Cheer and Diary of Anne Frank (Jane Horwitz, Washington Post via Mike Cooper)

Into Tomorrow with Dave Graveline is a live three hour broadcast on many stations in the US. We are a network. Air time is Sundays at 2:06 p.m. Eastern Time. Following each broadcast we edit-out all the commercials and reduce it to a one hour program for Armed Forces Radio and Television Service (AFRTS) to air on their five networks the following weekend. Each network offers the program five times over the week starting on Fri. You can visit the website: transmission relayed from Key West on SW. Catch us on the internet. We provide live audio and video. Send some e-mail questions for each of these shows and enjoy each excursion into tomorrow. (Steve Zeigler, Senior Producer Into Tomorrow with Dave Graveline http://www.graveline.com steve@graveline.com - A.R.N - The Advanced Radio Network - Consumer Electronics & Technology (via Bjorn Fransson, Sweden, BC-DX)

Until the Next, Best of DX and 73 de Glenn!

For the latest WORLD OF RADIO schedule see our website: http://www.angelfire.com/ok/worldofradio

GLOBE FORUM

the Global Forum (continued)
Broadcast Loggings

Gayle Van Horn

0015 UTC on 7345
CZECH REP.: Radio Prague. Talking Point show features World Radio Network. (Bob Fraser, Cohasset, MA) <www.radio.cz>

0023 UTC on 5039.2

0050 UTC on 9485
BULGARIA: Radio Bulgaria. Keyword Bulgaria show on monitoring of mtvviautology. (Fraser, MA)

0114 UTC on 7245
GERMANY: Radio Free Europe. Russian broadcast, very good quality. (Lee Silvio, Mentor, OH) Radio Vl充足's German site 6120 at 0042. (Fraser, MA)

0211 UTC on 9635

0215 UTC on 4799.8
GUATEMALA: Radio BuenaNuevas. Spanish religious text to hymns. Send your Spanish report to; 13020 San Sebastian, Huetuetaengo. Guatemala. Radio Kekchi heard in Queusba, 4845 at 2345. (Giampiero Bernardini, Milan, Italy/Gatlashi La Voz Nahusas 3360 at 0216-0226. (Harold Froedge, Midland, MI)

0313 UTC on 9655
TURKEY: Voice of the Team on Balkan pipeline to update on NATO. (Mosers, IL) URL: <www.tsr.gov.tr>

0338 UTC on 15425
RUSSIA: Voice of Text on open market reforms. (Mosers, IL) VOR's program lineup on 5940 at 1900. (Jim Boynton, Newtown, MA) Moscow Mailbag 5940 at 2015. (Fraser, MA) URL: <www.vor.ru> New Market feature on 7300 at 2114-2120. (Froedge, MI)

0417 UTC on 12015
Ecuador: HCJB. Biblical relations to current events. (Mosers, IL) Ham Radio Today on Michael Faraday at 1930, 1511. (Fraser, MA) <www.hcjb.org>

0505 UTC on 9435
ISRAEL: Kol Israel. Talk on replacing Defense Minister and upcoming elections. (Mosers, IL)

0510 UTC on 5110
JAPAN: Radio Japan/NHK. Sports update to report on archeologists' find in Japan. Audible 9505 at 1453. (Mosers, IL)

0615 UTC on 15215
SOUTH AFRICA: Channel Africa. African Games update. (Mosers, IL) Fair signal for sports interview 17860 at 1720. (Boynton, MA) Website: <www.channelafrica.org>

0635 UTC on 4845
MAURITANIA: ORTV de Mauritanie. Holy Koran recitations with 4845 frequency drifting to 4848.70, 4851.70 by 0700. Tentative ID at 0700 in Arabic, drifting to 4846.28. Recheck at 0750 with poor signal on 4844.64. (Piet Piipers, Netherlands/TFW)

0819 UTC on 17635.22
PAKISTAN: Radio Pakistan. English service, 15527.2 (both freqs distorted audio) with pop music tunes. Talk and ID in poor English. (Gianni Serra, Rome Italy/TFW) Station address: P.O. Box 1393, Islamabad 44000, Pakistan. (Serra, Italy/TFW) 1403 news to 1415 on 11570-20, noted on 15464.74 but less readable. Unusual conditions, probably due to K-index of 4. (Mark Fine, Remington, VA)

0825 UTC on 6010
MEXICO: Radio Mil. Spanish. U.S. pop music program to ID. (Ennio Gehrig, Spain/HCDX) Mexico's Radio Huayacocotl 2390 at 2350-0004. (Froedge, MI)

1055 UTC on 4955

1230 UTC on 15155
FRANCE: Radio France Int'l. Club 9516. (Fraser, MA) <www.rfi.fr> 1305 UTC on 4980
PAPUA NEW GUINEA: NBC. Monitored 1315+ with English "NBC News in Brief" promos, including news on Bougainville. Closing ID as "Voice of Papua Radio," station interference from Peruvian station. (Froedge, MI)

1318 UTC on 4753
INDONESIA: RRI-Fak Fak (Irian Jaya). Easy-listening music program from host duo to "Fak-Fak" reference. (Froedge, MI)

1347 UTC on 9840
VIETNAM: Voice of Developments in Vietnam to 1349, followed by Songs About Ho Chi Minh City. (Froedge, MI) Audible 2325 on 4960. (Benardini, Italy/TFW) English *0330 with world news. (Mosers, IL)

1600 UTC on 15325
UNITED ARAB EMIRATES: Radio Dubai. Western pop music show to 1655 newcast, 15396, 15675. (Boynton, MA)

1647 UTC on 4950
INDIA: All India Radio-Shimla. Hindi. Regional disco music to light regional music of fair quality. AIR-Delhi news on 3365 at 1835. (Zacharias Liaggas, Thessaloniki, Greece/Hard Core DX) AIR-Bangalore 13790 at 1932-1930. (Froedge, MI) AIR-Delhi 11620 at 0205. (Mosers, IL) AIR Website: <http://air kode.net>

1730 UTC on 15415
LIBYA: Voice of Africa. Five minutes of English news. 15435. (Fraser, MA)

1745 UTC on 4115
CLANDESTINE: Voice of the Worker. Arabic. Folk songs to 1800 newcast to sign off. Clandestine Voice of Iraq Kurdistan noted on 4085 at 1820. Lady announcer's ID to hymn at 1836. (Liaggas, GRC/HCDX)

1836 UTC on 11920
THAILAND: Voice relay. English service with sports program. Announcements to fair ID at 1845. Radio Thailand on 9535 at 1901. (Serra, Italy/TFW) Thai service on 4830 at 2218. (Liaggas, GRC/HCDX) Real Audio available: <www.radiothailand.com>

1950 UTC on 15315
Netherlands Antilles: Radio Netherlands Bonaire relay. Media Network program. (Boynton, MA; Fraser, MA) URL: <www.rnw.nl>

2001 UTC on 15149.80

2200 UTC on 3214.9
INDONESIA: RRI Manado (Sulawesi) Weak carrier on most evenings, traces of audio. SCI interval signal (Song of the Coconut Island) noted, signal quality too poor to monitor properly. AdditionalIndo's audible at 2200; RRI Gorontalo (Sulawesi) 3264.7 with IDs and recitations; RRI Ternate (Maluccas) 3344.8 weak, although normally easiest to hear in the evening; RRI Merauke (Irian Jaya) 3905 with SCI and music; RRI Pontianak (Kalimantan) 3976.7 noted under Radio Budapest; RRI Serui (Irian Jaya) 4606.5 weak with //4925; RRI Jambi (Sumatra) 4925 weak with utility interferences. RRI Jogjakarta (Java) 7098.1 with news, SCI and very weak. (A.C. Roux, Germany/HCDX)

2200 UTC on 5995
CANADA: Radio Canada Intl. Madly Off In All Directions program. (Fraser, MA; Boynton, MA) Website: <www.rcinet.ca>

2215 UTC on 5010
CHINA: CPBS 2/Huayi. Chinese text referring to Huayi, 6890. CPBS 1 5030 at 2230. News program "shuwen hehao zhe zaya jiemo." (Liaggas, GRC/HCDX)

2238 UTC on 7295
MALAYSIA: RTM 2/Radio Malaysia. English weather forecast, fair quality. (Liaggas, GRC/HCDX)

2302 UTC on 15475.85
ANTARTICA: LRA36-Radio Lisa. English service, 15527.74 with IDs at 2326, 2338, 2345 and possibly 2351. ID sounded "canned" of fair quality. (Silvi, OH)

Thanks to our contributors — Have you sent in YOUR logs?

Send to Gayle Van Horn, c/o Monitoring Times (or e-mail gayle@grove.net) English broadcast unless otherwise noted.

May 1999 MONITORING TIMES 37

www.americanradiohistory.com
The SWL QSL Card Museum

or, How I spent an afternoon in cyberspace.

Besides keeping a shortwave radio on my desk, another great thing about my job is having the opportunity to surf the Internet, as I did this afternoon— with Bob Grove looking over my shoulder! As an active DXer, card collector and columnist, I'm constantly seeking the latest in QSL trends and news.

The Shortwave Listener's QSL Card Museum <www.antique-corner.com/SWLQSL/> is an interesting site featuring QSL collections from various DXers. To view a QSL card from a particular continent, just click on the country name.

Jorma Mantyla of Finland says, "QSLs are historic documents." He has an impressive collection at <www.kaapeli.fi/~jmantyla/eng.htm> from over 25 years of DXing... even one painted by Pablo Picasso for Spain's former Clandestine Radio España Independiente. Comments can go to <jmantyla@kaapeli.fi>.

Jonathan's QSL Card Page <www.qsl.net/kb5iaiv/> has links to cards from mediumwave stations, amateur stations, and a nostalgic view of cards from former stations at QSL.

ETHIOPIA
Voice of the Revolution of Tigray, 5500 kHz. Full data two page verification letter signed by Fre Texfamichael-Director, plus postcard. Received via registered mail in 53 days for a taped report and one U.S. dollar. Station address: P.O. Box #50, Meckelle, Tigray, Ethiopia. (Randi Stewart, Springfield, MO)

FINLAND
YLE Radio Finland, 17660 kHz. Full antenna card signed by R. Makela. Received in 12 days for an English report and mint stamps. Station address: Shortwave Centre, Mäkilähdenmie, FIN-28600 Por, Finland. (Larry R. Zamora, Garland, TX) <rfmdland@yle.fi> Website: <www.yle.fi/findland>

MEDIUM WAVE
CBW, 990 kHz AM. Full data card signed by J. Campbell plus program schedule. Received in 22 days for an AM report. Station address: 541 Portage Ave, Winnipeg, Manitoba, Canada R3B 2G1. Canada. (Terry Jones, Plainfield, SD)

CFRR, 1010 kHz AM. Full data card signed by Steve Cannery. Received in eight days for an English AM report, souvenir postcard and shack photo. Station address: 2 St. Clair Ave., Toronto, Ontario M4V 1L6 Canada. (Ed Lindley, Biddeford, ME)

WJR, 760 kHz AM. Full data QSL card, sticker, and unsigned letter. Received in 30 days for an English AM report, souvenir postcard and shack photo. Station address: 2100 Fisher Blvd., Detroit, MI 48202. (Lindley, ME)

KJOB, 1510 kHz AM. Partial data letter signed by Arlene Robbins-Administrator (letter came from owner in Los Angeles). Received in 19 days for a taped report. Station address: P.O. Box 250026, Los Angeles, CA 90025. (Patrick Martin, Seattle, WA)

KLVL, Pasadena, TX, 1480 kHz AM. Personal note written on report, signed by James Madsen-Administration. Received in 95 days for an English report. Station address: 1302 N. Shepherd, Houston, TX 77008. (Martin, OR)

W Lam, Gomha, ME, 870 kHz AM. Partial data (wrong date) on green paper QSL card signed by Andy Armstrong-Chief Engineer. Received in 18 days for an English AM report. Station address: 912 Washington St., Auburn, ME (Harold Frodge, ME)

WTIC, 1000 kHz AM. Station info sheet and 9x12 certificate signed by Garret Drakke. Received in 24 days for an English AM report, souvenir postcard and shack photo. Station address: 1 Financial Plaza, Hartford, CT 06103. (Lindley, ME)

Cards of the Past. Wonder if he'd be interested in a Tristan du Cunha scanned copy?

Pete's Home Page, still under construction at press time, yields an excellent worldwide utility card collection. Go to the QSL Card link at <www.qslmail.net/com/QSLPage.htm>.

By far the best site is Martin Schoch's QSL Info Page (QIP) <www.swl/ws/swl-de/qsl-link.htm> Surf to links of QSL photos, Help Pages, Online Reception Reports and Clandestine and Pirate Radio Watch. Nice site, Martin.

What's QSLing without a verification signer? Addressing your letter to a particular station personnel continues to be an important practice, proven to speed replies. The Hard-Core DX website <www.kotalampi.com/hard-core-dx/vs.txt> includes a list of veriege signers for email and snail mail replies.


So there you have it, my afternoon in cyberspace... and Bob looking over my shoulder... what a job!
Quantities Limited! Call NOW!

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Bob's Bargain Bin overstocks, factory tested, as-new condition.
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Uniden BC 400 XLT programmable handheld scanner: 10 memory channels, 29-54, 108-174, 406-512 MHz, 10 priority channels, automatic search, LCD display, built-in battery pack, weather scan, 15 channels per second scan/search speed, one touch weather, built-in delay, memory back-up retains frequency programming for 3 days without AC power, low battery indicator, track tuning for crystal clear reception. Includes AC adapter, antenna, and manual.

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Bearcat 60-XLT programmable handheld scanner: 10 memory channels, 29-54, 137-174, 406-512 MHz, 10 channel per second scan/search speed, one touch weather, built-in delay, memory back-up retains frequency programming for 3 days without AC power, low battery indicator, track tuning for crystal clear reception. Includes AC adapter, antenna, and manual.

ORDER SCN32RF Only $49.95 plus $5.95 US Priority Mail or UPS shipping.

Uniden SC150 Sportcat handheld scanner: 29-54, 108-174, 406-512, 806-956 MHz (less cellular), 100 memory channels, 100 channels per second scan, 100/300 channels per second search, Data Skip, 10 priority channels, preprogrammed band search, one touch weather and much more! Available in Black or Yellow (specify color choice when placing your order). Includes AC adapter, antenna, earphone, and manual.

ORDER SCN23RF Only $99.95 plus $5.95 US Priority Mail or UPS shipping.

Uniden BC220 XLT handheld scanner: 29-54, 108-174, 406-512, 806-956 MHz (less cellular), 200 memory channels, 100 channels per second scan, 100/300 channels per second search, 10 priority channels, Data Skip, preprogrammed service search for police, fire, emergency, aircraft and marine frequencies, one touch weather scans all national weather channels. Includes AC adapter, antenna, earphone, and manual.

ORDER SCN34RF Only $149.95 plus $12 US Priority Mail or UPS shipping.

GROVE

Grove Enterprises, Inc.; 7540 Highway 64 West; Brasstown, N.C. 28902
(800) 438-8155 US & Can.; (828) 837-9200; Fax (828) 837-2216;
e-mail: order@grove-ent.com; World Wide Web: www.grove-ent.com
**How to Use the Shortwave Guide**

1. Convert your time to UTC.
   - Eastern and Pacific Times are already converted to Coordinated Universal Time (UTC) at the top of each page. The rule is: convert your local time to 24-hour format, add (during Daylight Saving Time) 4, 5, 6, or 7 hours for Eastern, Central, Mountain, or Pacific Times, respectively.

2. Choose a program or station you want to hear.
   - Some selected programs appear on the lower half of the page for prime listening hours—space does not permit 24-hour listings.
   - Occasionally program listings will be followed by "See X 0000." This information indicates that the program is a rerun, and refers to a previous summary of the program's content. The letter stands for a day of the week, as indicated below, and the four digits represent a time in UTC.

3. Find the frequencies for the program or station you want to hear.
   - Look at the page which corresponds to the time you will be listening.
   - Comprehensive frequency information for English broadcasts can be found at the top half of the page. All frequencies are in KHz.
   - The frequency listing uses the same day codes as the program listings; if a broadcast is not daily, those day codes will appear before the station name. Irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vf" (various languages).

4. Choose the most promising frequencies for the time, location and conditions.
   - Not all stations can be heard and none all the time on all frequencies. To help you find the most promising frequency, we've included information on the target area of each broadcast. Frequencies beam toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible. Every frequency is followed by one of these target codes:

   - **al:** alternate frequency
   - **am:** Americas
   - **au:** Australia
   - **ca:** Central America
   - **pa:** Pacific
   - **va:** various
   - **eu:** Europe
   - **do:** domestic broadcast
   - **af:** Africa
   - **om:** omnidirectional
   - **me:** Middle East

   Consult the propagation charts. To further help you find the right frequency, we've included charts at the back of this section which take into account conditions affecting the audibility of shortwave broadcasts.

   Simply pick out the region in which you live and find the chart for the region in which the station you want to hear is located. The chart indicates the optimum frequencies for a given time in UTC.

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**Shortwave Programs**

### Sundays

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<th>Station</th>
<th>Time</th>
<th>Language</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>0045</td>
<td>BBC (am/eu): &quot;Waveguide&quot;</td>
<td>1115</td>
<td>World Radio Network (WRN1): &quot;World of Radio&quot;</td>
<td>Americas</td>
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<tr>
<td>0047</td>
<td>WWCR #1 (Tennessee): &quot;Ask WWCR&quot;</td>
<td>1300</td>
<td>Radio Milagro: &quot;Radio Waves&quot;</td>
<td>Latin America</td>
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<tr>
<td>0055</td>
<td>HCJB (am): &quot;DX Partyline&quot;</td>
<td>1436</td>
<td>Radio Canada Intl: &quot;Radio Waves&quot;</td>
<td>Canada</td>
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<tr>
<td>0110</td>
<td>HCJB (am): &quot;DX Partyline&quot;</td>
<td>1438</td>
<td>Radio Exterior de Espana: &quot;Radio Waves&quot;</td>
<td>Latin America</td>
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<tr>
<td>0130</td>
<td>Radio For Peace Intl: &quot;Continent of Media&quot;</td>
<td>1451</td>
<td>Radio Canada Intl: &quot;Radio Waves&quot;</td>
<td>Canada</td>
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<tr>
<td>0136</td>
<td>Radio Havana Cuba: &quot;DXers Unlimited&quot;</td>
<td>1500</td>
<td>World Radio Network (WRN1): &quot;Communications World&quot; (ABC)</td>
<td>Americas</td>
</tr>
<tr>
<td>0230</td>
<td>Vatican Radio: &quot;Radio Waves&quot; (23rd)</td>
<td>1534</td>
<td>World Radio Network (WRN1): &quot;Radio World&quot;</td>
<td>Latin America</td>
</tr>
<tr>
<td>0240</td>
<td>WHRI (Angel 2 Indiana): &quot;DXing with Cumbre&quot;</td>
<td>1636</td>
<td>Radio Canada Intl: &quot;Multiwave Feedback&quot;</td>
<td>Canada</td>
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<tr>
<td>0300</td>
<td>WVCR #3 (Tennessee): &quot;Ask WWCR&quot; (9th,23rd)</td>
<td>1638</td>
<td>Radio Canada Intl: &quot;Radio Waves&quot;</td>
<td>Canada</td>
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<tr>
<td>0310</td>
<td>WWCR (Angel 4 Hawaii): &quot;DXing with Cumbre&quot;</td>
<td>1638</td>
<td>Radio Canada Intl: &quot;Radio Waves&quot;</td>
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### Mondays

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<th>Time</th>
<th>Language</th>
<th>Area</th>
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<tr>
<td>0000</td>
<td>KTHW (Guam): &quot;DX'sers Corner&quot; (19th,24th)</td>
<td>0106</td>
<td>Deutsche Welle: &quot;World DX Meeting&quot;</td>
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<td>0106</td>
<td>WWCR #3 (Tennessee): &quot;Ask WWCR&quot; (9th,23rd)</td>
<td>0109</td>
<td>WVCR (Angel 4 Hawaii): &quot;DXing with Cumbre&quot;</td>
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<td>0900</td>
<td>KTHW (Guam): &quot;Pacific DX Report&quot;</td>
<td>1230</td>
<td>WWCR #1 (Tennessee): &quot;World DX Meeting&quot;</td>
<td>Europe</td>
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<td>Radio Sweden: &quot;Radio Waves&quot;</td>
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<td>Radio Havana Cuba: &quot;DXers Unlimited&quot;</td>
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### Fridays

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<td>Europe</td>
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Compiled by Jim Frimmel
Sundays
0000 Costa Rica, R Peace Intl: Living Things. An hour of environmental and ecology topics for young listeners.
0000 Ecuador, HCJB Quito (am): Nite Brites Kids' Club. New program — no information available.
0000 Ecuador, HCJB Quito (am): Saludos Amigos. An international friendship program with listener contributions presented by Ken Macfarl.

Mondays
0000 Ecuador, HCJB Quito (am): A Firm Foundation. Ken Smith with a biographical sketch of a notable personality.

SWL Programs, continued from page 40
0453 Radio Netherlands Intl: "Media Network"
1030 KTWR (Guam): "Pacific DX Report"
1100 Radio for Peace Intl: "Continent of Media"
1930 Radio New Zealand Intl: "Mailbox" (14th, 28th)
1930 Radio for Peace Intl: "World of Radio"
1947 Radio Bulgaria: "Radio Bulgaria Calling"
2000 WWCR #1 (Bernese): "Ask WWCR" (7th, 21st)
2105 Australia, Radio: "Feedback"
2300 WHRA (Salpe): "DXing with Cumbre"
2338 Voice of Turkey: "DX Corner" (weekend)

Saturdays
0005 Australia, Radio: "Feedback"
0005 BBC (as): "Waveguide" (23rd)
0005 BBC (as): "Write On"
2352 Radio Bulgaria: "Radio Bulgaria Calling"
0136 Voice of America (News Now): "Communications World" (A)
0230 WWCR (Ang 3 Hawaii): "DXing with Cumbre"
0300 Radio for Peace Intl: "Continent of Media"
0330 Radio for Peace Intl: "World of Radio"
0335 Voice of America (News Now): "Communications World" (B)
0245 Radio Bulgaria: "Radio Bulgaria Calling"
0338 Voice of Turkey: "DX Corner" (weekend)

0005 Ecuador, HCJB Quito (am): Hour of Decision. See S 1200.
0030 Ecuador, HCJB Quito (am): Mountain Meditations. See S 1330.

Tuesdays
0000 Ecuador, HCJB Quito (am): Insight for Living. See M 1100.
0008 Ecuador, HCJB Quito (am): Money Minute. See S 0000.
0030 Ecuador, HCJB Quito (am): Focus on the Family. See M 1330.
0056 Ecuador, HCJB Quito (am): Beyond the Call. See M 1356.
0057 Ecuador, HCJB Quito (am): Parent Talk Tip. See M 1357.

Wednesdays
0000 Costa Rica, R Peace Intl: A Public Service. See T 1600.
0008 Ecuador, HCJB Quito (am): Insight for Living. See M 1100.
0028 Ecuador, HCJB Quito (am): Money Minute. See S 0000.
0030 Ecuador, HCJB Quito (am): Focus on the Family. See M 1330.
0056 Ecuador, HCJB Quito (am): Beyond the Call. See M 1356.
0057 Ecuador, HCJB Quito (am): Parent Talk Tip. See M 1357.

Thursdays
0000 Ecuador, HCJB Quito (am): Insight for Living. See M 1100.
0028 Ecuador, HCJB Quito (am): Money Minute. See S 0000.
0030 Ecuador, HCJB Quito (am): Focus on the Family. See M 1330.
0056 Ecuador, HCJB Quito (am): Beyond the Call. See M 1356.
0057 Ecuador, HCJB Quito (am): Parent Talk Tip. See M 1357.

Fridays
0000 Costa Rica, R Peace Intl: Our Americas. See T 0100.
0008 Ecuador, HCJB Quito (am): Insight for Living. See M 1100.
0028 Ecuador, HCJB Quito (am): Money Minute. See S 0000.
0030 Ecuador, HCJB Quito (am): Focus on the Family. See M 1330.
0056 Ecuador, HCJB Quito (am): Beyond the Call. See M 1356.
0057 Ecuador, HCJB Quito (am): Parent Talk Tip. See M 1357.

Saturdays
0000 Ecuador, HCJB Quito (am): Insight for Living. See M 1100.
0028 Ecuador, HCJB Quito (am): Money Minute. See S 0000.
0030 Ecuador, HCJB Quito (am): Focus on the Family. See M 1330.
0056 Ecuador, HCJB Quito (am): Beyond the Call. See M 1356.
0057 Ecuador, HCJB Quito (am): Parent Talk Tip. See M 1357.
SHORTWAVE GUIDE

0100-0200
Anguilla, Caribbean Beacon 0600am
0100-0200 vi Australia, ABC/Katherine 05:05do
0100-0200 vi Australia, ABC/Ten Creek 491do
0100-0200 Australia, Radio 9659a 12069as 15242pa 15415as
0100-0200 Canada, CBC N Quebec Sv 9625do
0100-0200 Canada, CFRX Toronto 0670do
0100-0200 Canada, CFYP Calgary 0630do
0100-0200 Canada, CHXK Halifax 0113do
0100-0200 Canada, CKNY St John's 0160do
0100-0200 Costa Rica, Radio 9659a 12069as 15242pa 15415as
0100-0200 Cuba, Radio Havana 0000na 9820do 11705na 13055na
0100-0200 Czech Rep, Prague Intl 7345na 11615na
0100-0200 Ecuador, HCJB 9145na 12095na 15242pa 15415as
0100-0200 Germany, Deutsche Welle 0640na 09640am 11815na
0100-0200 Germany, Universal Life 15185na
0100-0200 Germany, V D Deliverance 1015na
0100-0200 Germany, Good News World R 0615cu
0100-0200 vi Guatemala, Radio Cultural 3300do
0100-0200 Guinea, OBC/Voice of 3290do 5950do
0100-0200 Hungary, Radio Budapest 5604na
0100-0200 Indonesia, Voice of 952as 11765na 15510as
0100-0200 Iran, VORI 6060na 9816na 15165as
0100-0200 Italy, Radio Intl 0610na 9675na 11890na
0100-0200 Japan, Radio/NHK 6150as 11865as 13515as
0100-0200 Kenya, Kenya BC Corp 0020na 09845do
0100-0200 Liberia, LCVR/R Liberia Intl 0510do
0100-0200 Malaysia, Radio 7255do
0100-0200 Mexico v Mexico, Radio 5020na 9910do 15235va 15435va
0100-0200 Morocco, RNZ Intl 11248na
0100-0200 Papua New Guinea, NBC 9675do
0100-0200 Philippines, RFI Intl 15450as
0100-0200 Russia, Voice of Russia VQG 7105na 9675na 12000na 15695na
0100-0200 Senegal, Radio Yolelava 7130na

Selected Programs

Sundays

0100 Costa Rica, R Peace Intl: Second Opinion. Matthew Rothschild, editor of "the Progressive" and guests present their ideas for solving the critical problems facing our world today.
0100 Ecuador, HCJB Quito (am): Latin and International News. Ten minutes of regional and world news.
0110 Ecuador, HCJB Quito (am): DX Partyline. New program host Allen Graham gives you plenty of information to help you get more fun out of shortwave listening.
0330 Costa Rica, R Peace Intl: Continent of Media. Glenn Hauser's monthly look at domestic media developments in the U.S.

Mondays

0110 Ecuador, HCJB Quito (am): Musical Mailbag. HCJB staffers have a good time reading listener letters and playing music.

Tuesdays

0100 Costa Rica, R Peace Intl: Our Americas. The weekly report on Latin America and the Caribbean with Marco Murillo.
0110 Ecuador, HCJB Quito (am): Studio 9. Ralph Kunerback and Curt Cole are the two directors on your daily travel and adventure guide to life in Latin America.
0130 Ecuador, HCJB Quito (am): Adventures in Odyssey. Lively children's dramas from the "Focus on the Family" team.

WEDNESDAYS

0110 Ecuador, HCJB Quito (am): News. See S 0100.

THURSDAYS

0110 Ecuador, HCJB Quito (am): News. See S 0100.
0105 UK, BBC London (EAU): NEW! The Edge. A two-hour program of music, humor, chat and information every Saturday and hosted by Kirsten O'Brien and Steve Merchant.

FRIDAYS

0110 Ecuador, HCJB Quito (am): News. See S 0100.

SATURDAYS


HAUSER'S HIGHLIGHTS

BELGIUM: R Vlaanderen Intl
A-99 English expands use of Bonaire relay.

UPTC via kHz
0400-0430 BON 15565 N America
0700-0730 WAV 9925 NW Europe
0700-0730 WAV 15195 E Europe
1130-1200 WAV 5910 S Europe
1730-1800 WAV 9925 S Europe
1730-1800 WAV 11840 S Africa
1730-1800 JUL 13685 ME, SE Europe
1900-2000 JUL 5960 Europe
2230-2300 BON 15565 N America

BON = Bonaire. Dutch Antilles
JUL = Jueltz, Germany
MAD = Talati, Madagascar
WAV = Wavre, Belgium

More information: http://www.rvi.be

(Paul Brehms, rec.radio.shortwave via John Norfolk)
**FREQUENCIES**

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<td>7900va</td>
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<td>8500am</td>
<td>Greece, Voice of Greece</td>
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**Selected Programs**

**Sundays**
- 0200 Ecuador, HCJB Quito (am): Latin Image. A musical program from HCJB-Australia for young people.
- 0230 Costa Rica, Peace Int'l: RFPI's Mailbag. The latest news and happenings at RFPI and responses to listener letters.

**Mondays**
- 0200 Costa Rica, Peace Int'l: My Green Earth. An environmental program for children that explores the world of animals, plants, and cultures. Check www.ptialaska.net/~kmt/mge.htm for weekly topics.
- 0200 Ecuador, HCJB Quito (am): Radio Reading Room. Readings from new Christian books.
- 0230 Ecuador, HCJB Quito (am): L'Arbi Lectures. Dr. Francis Schaeffer is the speaker.

**Tuesdays**
- 0200 Costa Rica, Peace Int'l: CounterSpin. See S 0300.
- 0200 Ecuador, HCJB Quito (am): Simply Worship. See S 1400.
- 0230 Ecuador, HCJB Quito (am): Let My People Think. See S 1530.
- 0215 Ecuador, HCJB Quito (am): Words for Women. Helpful ideas for family living.

**Thursdays**

**Fridays**
- 0200 Ecuador, HCJB Quito (am): Radio Reading Room. See M 0200.
- 0230 Ecuador, HCJB Quito (am): Inspirational Classics. Scott and Judy Gillen of New Zealand with a program of sacred classical music.

**Saturdays**
- 0200 Ecuador, HCJB Quito (am): Inside HCJB, Paul Bell gives you a inside look at the Voice of the Andes.
- 0230 Ecuador, HCJB Quito (am): Wakin' in the Sunshine. Ben Cummings serves as your host for this.

**HausE's Highlights**

**ISRAEL: KOL ISRAEL**

April 2 to September 13. See their cool new website http://www.israelradio.org for complete schedules and recording of one English broadcast daily.

**UTC** | **kHz** | **Target** | **UTC** | **kHz** | **Target**
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(Doni Rosenzweig via John Norfolk, Ivan Grishin)
**Selected Programs**

**Sundays**
- 0300 Ecuador, Radio Voice of God: *Our Solid Foundation*.

**Wednesdays**
- 0300 Ecuador, Radio Voice of God: *Our Solid Foundation*.

**Thursdays**
- 0300 Ecuador, Radio Voice of God: *Our Solid Foundation*.

**Fridays**
- 0300 Ecuador, Radio Voice of God: *Our Solid Foundation*.
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<td>Australia, ABC/Trent Creek</td>
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<td>Australia, Radio</td>
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<td>Uganda, Radio</td>
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<td>0400-0500</td>
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SELECTED PROGRAMS

Sundays

0400 | Costa Rica, R Peace Intl: Millennium Dreams, An RFI-produced show hosted by James and Debra Latham that promises to be informative, entertaining and enlightening.
0400 | Ecuador, HCBJ Quito (am): DX Partyline. See S 0110.

Mondays

0410 | Ecuador, HCBJ Quito (am): Musical Mailbag. See M 0910.
0430 | Costa Rica, R Peace Intl: Voices of Our World. Maryknoll missionary Steve De Mott hosts this social justice magazine program that brings stories from the people who have lived there.

Tuesdays

0400 | Costa Rica, R Peace Intl: Pacifica Network News. PKN is the only daily progressive news and analysis program produced in the US.
0400 | Ecuador, HCBJ Quito (am): News. See T 0200.
0430 | Ecuador, HCBJ Quito (am): Adventures in Odyssey. See T 0310.

Wednesdays

0400 | Ecuador, HCBJ Quito (am): News. See T 0400.
0410 | Ecuador, HCBJ Quito (am): Studio 2. See T 0110.
0430 | Ecuador, HCBJ Quito (am): Woman to Woman. See F 0130.

0400 | Ecuador, HCBJ Quito (am): News. See T 0400.
0410 | Ecuador, HCBJ Quito (am): Studio 2. See T 0110.
0430 | Ecuador, HCBJ Quito (am): Musica del Ecuador. See A 0130.

HAUSER'S HIGHLIGHTS

CANADA: R CANADA INTL

Noteworthy in the new A99 RCI schedule: 0500-0529 broadcast not only has Sakville frequencies but some now beamed to WNAm — 5995, 9755, 11830 kHz. 12:00-1359 (Sat/Sun -1259) has four frequencies, two of them on the 16 mb — 9640, 13670, 17765, 17820 kHz. Sun 1300-1559 on only two — 13650, 17800 kHz.

Macintosh Software

SHORTWAVE NAVIGATOR FREQUENCY VALET • UTCLOCK

FREQUENCIES/PROGRAMS/COMPUTER CONTROL

(DRAKE • KENWOOD • JRC)

SEND $2 for demo disk to:

DX COMPUTING • 232 SQUAW CREEK RD.
WILLOW PARK, TX 76087

May 1999 MONITORING TIMES 45
<table>
<thead>
<tr>
<th>FREQUENCIES</th>
<th>PROGRAMS</th>
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<tbody>
<tr>
<td>0500-0600</td>
<td><strong>Monday</strong>&lt;br&gt;Costa Rica, R Peace Intl: Spiritual Awakening. Readings and book reviews on a broad range of spiritually-oriented writings from around the world.</td>
</tr>
<tr>
<td>0500-0600</td>
<td><strong>Tuesday</strong>&lt;br&gt;Costa Rica, R Peace Intl: Peace Talks. A Costa Rican program that addresses issues such as drug abuse, economic problems, the UN, and other topics.</td>
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</table>

**SWL Programs, continued from page 41**

**1230**<br>KWHR (Angel 4 Hawaii): "DXing with Cumbre"  
**1147**<br>Radio Bulgaria: "Radio Bulgaria Calling"  
**1336**<br> voice of America (News Now): "Communications World" (B)  
**1342**<br>Radio Tashkent: "Radio Tashkent DX Program"  
**1245**<br> Voice of Turkey: "DX Corner" (biweekly)  
**1455**<br> FEB (Philippines): "DX Dial"  
**1536**<br> voice of America (News Now): "Communications World" (C)  
**1525**<br> Vatican Radio: "Radio Vaticana"  
**1400**<br> World Radio Network (WRN1): "World of Radio"  
**1780**<br> UN Radio For Peace Intl: "Continental Media"  
**1736**<br> BBC (am/eu): "Waveguide" (22nd)  
**1736**<br> Voice of America (News Now): "Communications World" (A)  
**1800**<br> Radio For Peace Intl: "World of Radio"  
**1909**<br> HCJB (eu): "DX Partyline"  
**1936**<br> voice of America (News Now): "Communications World" (C)  
**1936**<br> Voice of America (News Now): "Communications World" (C)  
**1958**<br> Vatican Radio: "On the Air"  
**1915**<br> Voice of Turkey: "DX Corner" (biweekly)  
**2114**<br> Radio Havana Cuba: "DXers Unlimited"  
**2136**<br> Voice of America (News Now): "Communications World" (B)  
**2221**<br> Radio Exterior de Espana: "Radio Waves"  
**2147**<br> Radio Bulgaria: "Radio Bulgarskaya"  
**2300**<br> Vatican Radio: "On the Air"  
**2336**<br> Radio Havana Cuba: "DXers Unlimited"  
**2223**<br> Voice of Turkey: "DX Corner" (biweekly)  
**2330**<br> HRHA (Angel 5 Malawi): "DXing with Cumbre"  
**2330**<br> WHFR (Angel 1 Indiana): "DXing with Cumbre"
Sundays

0600 Costa Rica, R Peace Intl: Disability Radio Worldwide. Jean Parker with issues, events, political analysis and interviews.

0600 Ecuador, HCJB Quito (am): Saludos. See S 0600.

0600 UK, BBC London (AF/AS): The 1996 Reith Lectures - Runaway World (1m/dth). This broadcast is a first for World Service and the theme is globalization.

0630 Costa Rica, R Peace Intl: WINGS. Women’s news and current affairs by the Women’s International News Gathering Service.

Mondays


0630 Ecuador, HCJB Quito (am): Words to Live By. See S 1205.

Tuesdays


0600 Ecuador, HCJB Quito (am): Psychology for Living. Clyde Narramore of California gives Christian advice on issues of today.


0630 Ecuador, HCJB Quito (am): NightSounds. Christian music and thoughtful words from Bill Pearce.

Wednesdays


0600 Ecuador, HCJB Quito (am): Psychology for Living. See T 0600.


0630 Ecuador, HCJB Quito (am): NightSounds. See T 0630.

Thursdays


0600 Ecuador, HCJB Quito (am): Psychology for Living. See T 0600.


0630 Ecuador, HCJB Quito (am): NightSounds. See T 0630.

Fridays


0600 Ecuador, HCJB Quito (am): Psychology for Living. See T 0600.


0630 Costa Rica, R Peace Intl: This Way Out. See S 1500.

0630 Ecuador, HCJB Quito (am): NightSounds. See T 0630.

Saturdays


0600 Ecuador, HCJB Quito (am): Psychology for Living. See T 0600.


Enjoy Monitoring Times and appreciate all the good info (especially the Shortwave Guide). Many thanks for a fine magazine.

—Betty Lucas
| 0900-0910 | Albania, Trans World R | 9680au |
| 0900-0910 v | Anguilla, Caribbean Beach | 6090am |
| 0900-0910 vl | Australia, ABC/Alise Spgs | 2310do |
| 0900-0910 vl | Australia, ABC/Katherine | 2480do |
| 0900-0910 vl | Australia, ABC/Bent Creek | 2230do |
| 0900-0910 | Australia, Radio | 6060es |
| 0909-1000 | Bhutan, Bhutan BC Service | 6030do |
| 0900-0910 | Botswana, Radio | 4820do |
| 0900-0910 | Canada, CFRX Toronto | 6070do |
| 0900-0910 | Canada, CFPV Calgary | 6030do |
| 0900-0910 | Canada, CHRX Halifax | 5130do |
| 0900-0910 | Canada, CKZU Vancouver | 6160do |
| 0909-0956 | China, China Radio Intl | 15210pa |
| 0910-0950 | Costa Rica, RCPE Peace Intl | 9757am |
| 0900-0929 | Czech Rep, R Prague Radio | 21740es |
| 0900-0910 | Ecuador, HCJB | 1515pa |
| 0909-1000 as/vl | East Guinea, R East Africa | 15160af |
| 0910-0920 mthl/af | Equ Guinea, Radio Africa | 15160af |
| 0909-0945 | Germany, Deutsche Welle | 9475do |
| 0910-0910 | Germany, Deutsche Welle | 15440af |
| 0900-0910 | Germany, Radio Bash | 5020do |
| 0909-0940 | Germany, Voice of Hope | 5970au |
| 0910-0910 | Germany, Voice of Hope | 5970au |
| 0909-0940 | Ghana, Ghana BC Corp | 4915do |
| 0910-0910 | Guam, WWG/KWTR | 15200do |
| 0909-0940 | Guyana, GBC/Voice of | 3290al |
| 0910-0910 | Italy, RRS | 7120au |
| 0909-0940 | Kenya, Kenya BC Corp | 4330do |
| 0910-0910 | Lesotho, Radio | 4940do |
| 0909-0945 | Liberia, LCN/Liberia Intl | 5100do |
| 0910-0910 | Malaysia, Radio | 7325do |
| 0909-0940 | Malaysia, RMT KotoNabalu | 5860do |
| 0910-0910 | Malta, VO Mediterranean | 117100au |
| 0909-0940 | N Vanuatu, KFBS Vanu | 94900au |
| 0910-0910 | N Mariana, KHBS Saipan | 116000au |
| 0909-0940 | Nambia, NBC | 8060au |
| 0910-0910 | New Zealand, R NZ Intl | 9700au |
| 0909-0940 | Nigeria, Radio | 5060do |
| 0910-0910 | Nigeria, Radio/Kaduna | 4770do |
| 0909-0940 | Nigeria, Radio/Lagos | 3326do |
| 0910-0910 | Pakistan, Radio | 15527au |
| 0909-0940 | Parau, KBN/Voice of Hope | 7525do |
| 0910-0910 | Papua New Guinea, NBC | 4890do |
| 0909-0940 | Sierra Leone, SLBS | 3980do |
| 0910-0910 | Singapore, RCorp Singapore | 8150do |
| 0909-0940 | Solomon Islands, SIBC | 5020do |
| 0910-0910 | Tandemio, Radio | 5055af |
| 0909-0940 | UK, BBC World Service | 4650as |
| 0910-0910 | UK, Merlon Network One | 9925au |
| 0909-0940 | USA, KAAL Dallas TX | 5810am |
| 0910-0910 | USA, KTBNI Salt Lk City UT | 7510au |
| 0909-0940 | USA, KVHE Naxi Pk HI | 11560au |
| 0910-0910 | USA, WEVN Birmingham AL | 6825au |
| 0909-0940 | USA, WHRI Nobleville IN | 5145au |
| 0910-0910 | USA, WJCR Upton KY | 13950au |
| 0909-0940 | USA, WRNO New Orleans LA | 7295do |
| 0910-0910 | USA, WSDH Cypress Creek SC | 9450au |
| 0909-0940 | USA, WSVR Nashville TV | 2396au |
| 0910-0910 | Zambia, Christian Voice | 9606af |
| 0909-0940 | Zambia, Natl BC Corp | 12655au |
| 0910-0910 | Zimbabwe, Zimbabwe BC | 4038do |
| 0909-0940 | Zimbabwe, Croatica Radio | 11705au |
| 0915-0930 | Guam, WWG/KWTR | 15332do |
| 0909-0935 as | Albania, Trans World R | 9680au |
| 0910-0930 | Canada, CKZU St John's | 5160do |
| 0910-0930 | Georgia, Georgian Radio | 1159au |
| 0915-0930 | Guam, WWG/KWTR | 9685au |
| 0909-0930 | Italy, ARW Europe | 2230au |
| 0910-0930 | Netherlands, Radio | 7260au |
| 0909-0930 | Philippines, FEBC R Intl | 11635au |
| 0910-0930 | Albania, Trans World R | 9685au |
| 0915-0940 | Germany, Deutsche Welle | 1643au |
| 0909-0945 as | UK, BBC World Service | 15205au |

Frequencies for May 1999
Sundays
1100 Costa Rica, R Peace Intl: CounterSpin. See S 0:00.
1100 Ecuador, HCJB Quito (am): Morning Song. Music and thoughts to start the day.

Mondays
1100 Costa Rica, R Peace Intl: Every Living Thing. See S 0:00.
1100 Ecuador, HCJB Quito (am): Insight for Living. Chuck Swindoll applies the Bible to life today.
1128 Ecuador, HCJB Quito (am): Money Minute. See S 0:00.
1130 Ecuador, HCJB Quito (am): Morning in the Mountains. Shelly Sutton with a hearted mix of music, conversation and news helps you start your morning with a live program of music, news, scripture reading, and sports.
1131 Ecuador, HCJB Quito (am): Latin American News. Regional news summary.

Tuesdays
1100 Costa Rica, R Peace Intl: Disability Radio Worldwide. See S 0:00.
1100 Ecuador, HCJB Quito (am): Insight for Living. See M 1100.
1128 Ecuador, HCJB Quito (am): Money Minute. See S 0:00.
1130 Ecuador, HCJB Quito (am): Morning in the Mountains. See M 1:30.

Ecuador, HCJB Quito (am): Gateway to Joy. See M 1:400.
1100 Ecuador, HCJB Quito (am): Your Story Hour. Dramatized children's stories.
1130 Costa Rica, R Peace Intl: World of Radio. See S 0:00.
1130 Ecuador, HCJB Quito (am): We Kids. A fast-moving program for children.

HAUSER'S HIGHLIGHTS
SLOVAKIA: R. SLOVAKIA INTERNATIONAL
A-99 English

UTC Target kHz
0100-0130 North America 5930
1200-1230 Central America 7300
1300-1330 South America 9440
0700-0730 Australia 9540
1500-1530 Australia 17550
1630-1700 Western Europe 5920
1730-1800 Western Europe 6055
1830-1900 Western Europe 7345
Web http://www.slovakradios.k.sk/ri.html
(Richard Buckby, rec.radio.shortwave via John Norfolk, OK)
FREQUENCIES

1200-1300 Sierra Leone, SLBS 5980 do 1240-1250 Greece, Voice

SELECTED PROGRAMS

Sundays

Mondays

Tuesdays

Wednesdays

Thursdays

Fridays

Saturdays
GRUNDIG
Gives you the World

Grundig leads shortwave radio into the new Millennium!
When radio was introduced, back in the 1920's — to pluck voices and music out of thin air — people thought it was magic. With Grundig, it still is! No other manufacturer rivals Grundig for "that European sound." Voices have an "in-the-room" quality and clarity — even from half a world away.

German-engineered quality... German-engineered sound... when people think of shortwave, they think of Grundig. Grundig has specialized in shortwave since the late 1950's, and in North America, shortwave radios are all we sell.

Critics reviews of Grundig models include
Best of Category... Superior Performance... Ergonomically Better... Superb Sound Quality... An Excellent Choice

We listen, too.
We're very good at listening — to our customers. Our engineers design each model so it's easy, intuitive and convenient to use. Critics call this "great ergonomics!" And Grundig model's always deliver top performance for the price. Critics call this "bang for the buck."
Rated Best in Its Class.
Grundig's Yacht By 400PE has received rave reviews from the shortwave press for combining a wealth of sophisticated features in a sleek titanium-look package that doesn't cost a fortune. It incorporates features found on stationary shortwave systems that cost thousands, such as outstanding audio quality, precise 1 kHz increment tuning, up/down slewing, frequency scanning, signal strength indication, and single-sideband signal demodulation.

But the advantage mentioned most often in the reviews is its ease of use for the novice listener. In moments you can listen to foreign broadcasts beamed to North America.

Soon, you will be scanning the airwaves to tune in exotic music programs and sports events from faraway locales. The YB-400PE even picks up shortwave amateur (ham radio) broadcasts and shortwave aviation/military frequencies (cockpit-to-tower communications). The possibilities for family fun, education, and enjoyment are boundless.

For travel or home use, Grundig adds a dual-time travel clock with snooze and sleep timer. The FM band is stereophonic with your headphones. The lighted LCD panel is easy to read in the
Yacht Boy 400PE
The Best in Value!

dark: Comes with a form-fitting pouch, integral telescoping antenna and advanced external antenna on a compact reel, carry-strap, ac-adapter, earphones and complete instructions.

Made by Germany's Grundig.

World leader in shortwave radios, the 400PE measures just 7-3/4"L x 4-1/4"H x 1-1/4"W; weighs only 20 oz. It slips easily into your carry-on for travel and fits on a nightstand, office credenza, or yacht cabin console. One-year warranty.

Grundig's Yacht Boy 400PE Named Editor's Choice.

Passport To World Band Radio is regarded as the leading authority of the shortwave industry. Here's what their testing expert wrote about the Grundig Yacht Boy 400PE:

"Best performance for price size category, and among the choicest portables of any size, at any price."

"The 400's FM performance is right up there with the very best among world band radios."

Please call our shortwave hotline and talk to the experts: 800-872-2228.
Grundig sets the standard for customer service.
Grundig supports the industry's only Toll-free Shortwave Hotline. Consumers and dealers can call 1-800-872-2228 in the United States or 1-800-637-1648 in Canada weekdays from 9am to 4pm Pacific Time. You can speak with a real live shortwave expert, not an automatic message machine. Grundig even answers questions for those who own other brands, for whom no such toll-free hotline service is available!

Grundig warranty service is the best.
Any problems? We fix them fast. Dealers know that customers will be taken care of! Dealer support service is first-rate, too. Remember, all we sell in North America are shortwave radios. We specialize! We do it best!

Watch this space for Grundig's biggest product announcement in years!
Shortwave enthusiasts and Grundig dealers will have an extra-special reason to celebrate the new millennium—the most important Grundig product announcement in years!
1400-1500 Nigeria, Radio/Mador. See M 1404.
1400-1500 Philippines, FEBC R Intl. 11950as
1400-1500 Russia, Voice of Russia WS. 9475as 9490as 9710as 9800as
11500as 11550as
1400-1500 S Africa, Channel Africa. 11900as 17935as 21520as
1400-1500 Sierra Leone, SLBS. 5990as
1400-1500 Singapore/RCOP Singapore. 6150as
1400-1500 Sri Lanka, Sri Lanka BC. 9600as 9730as 15425as
1400-1500 Switzerland, Swiss R Intl. 9590as 11760as
1400-1500 Tanzania, Radio. 5050as
1400-1500 Thailand, Radio. 9530as 11660as 11950as
1400-1500 Zambia, Christian Voice. 4970as
1400-1500 Japan, Radio Tokyo. 3990as 6190as 6193as 9410as
1400-1500 Israel, Kol Israel. 9515as 9740as 11865as 11940as
1400-1500 USA, WJCR Upton. 12096as 15230as 15310as 15480as
15565as 15575as 17640as 17705as
1400-1500 Canada, CHNX Halifax. 17830as 17840as 21470as 21600as
1400-1500 Switzerland, Swiss Radio 15625eu. 1400-1500 USA, KJES Vado. 1400-1500
1400-1500 Germany, Voice of Germany. 1400-1500
1400-1500 Germany, Voice of Hope. 1400-1500
1400-1500 Germany, Overcomer Ministries. 1400-1500
1400-1500 China, China Radio Intl. 12000as 15125as
1400-1500 Costa Rica, RTF Peace Intl. 21460as
1400-1500 Ecuador, HCJB (am). 12000as 15115as 21455as
1400-1500 Equatorial Guinea, R Africa. 15819as
1400-1500 France, Radio France Intl. 11910as 12030as 17500as
1400-1500 Germany, RTE Radio. 15025as
1400-1500 Germany, Sunrise Radio. 3800as
1400-1500a Germany, Universal Life. 5710as
1400-1500a Germany, Universal Life. 9590as
1400-1500a Germany, Voice of Hope. 15710as
1400-1500a Germany, Overcomer Ministries. 6101as
1400-1500a Ghana, Ghana BC. 4915as 6130as
1400-1500a Guyana, GBC Voice of Guyana Radio. 3230as 5990as
1400-1500a India, All India Radio. 9045as 11620as 13710as
1400-1500a Israel, Kol Israel. 15800as 17025as
1400-1500a Japan, Radio/NHK. 9050as 11730as 11880as
1400-1500a Jordan, Radio. 11690as
1400-1500a Kenya, Kenya BC Corp. 4030as
1400-1500a Lesotho, Radio. 4800as
1400-1500a Malaysia, Radio. 7220as
1400-1500a Malaysia, RTM Sarawak. 7160as
1400-1500a Malaysia, RTC Kota Kinabalu. 5980as
1400-1500a Mexico, Mexico Radio Intl. 5985as 9703am
1400-1500a Nepal, KBFS Seapam. 9465as 9495as 5670as
1400-1500a Namibia, Namibia. 6065as 6175as
1400-1500a New Zealand, NZ Intl. 6150as
1400-1500a Nigeria, Radio/rodaan. 6050as
1400-1500a Nigeria, Radio/Raduna. 4710as
1400-1500a Palau, KPBV Voice of Hope. 9950as 9960as 9980as 13840as
1400-1500a Papua New Guinea, NBC. 4890as

Selected Programs

Sundays
1400 Ecuador, HCJB Quito (am). Simply Worship. A Northern Ireland program of music, readings and meditation.
1405 UK, BBC London (AF/AFAS). NEW Talking Point (live). Robin Lustig and Diana Mafalda take listener opinions on controversial topics by phone or e-mail.
1430 Costa Rica, R Peace Intl. WNGS. See S. 0630.

Mondays
1400 Ecuador, HCJB Quito (am). Gateway to Joy. Elizabeth Elliot with contemporary women's issues from a Biblical perspective.
1405 UK, BBC London (AF/AFAS). NEW Talking Point (live). Robin Lustig and Diana Mafalda take listener opinions on controversial topics by phone or e-mail.
1430 Costa Rica, R Peace Intl. WNGS. See S. 0630.

Tuesdays
1400 Costa Rica, R Peace Intl. Steppin' Out of Babylon. Sue Supriano interviews people who speak out against injustice and stand up for freedom and liberty.
1414 Ecuador, HCJB Quito (am). RBC Spot Radio. See M 1414.
1415 Ecuador, HCJB Quito (am). Key Life. See M 1415.
1428 Ecuador, HCJB Quito (am). The Bible Minute. See M 1428.
1430 Ecuador, HCJB Quito (am). The Living Word. Brother Bob Russell of Southeast Christian Church of Louisville, Kentucky conducts the sermon.

Wednesdays
1400 Costa Rica, R Peace Intl. WNGS. See S. 0030.
1400 Ecuador, HCJB Quito (am). Gateway to Joy. See M 1400.
1414 Ecuador, HCJB Quito (am). RBC Spot Radio. See M 1414.
1415 Ecuador, HCJB Quito (am). Key Life. See M 1415.
1428 Ecuador, HCJB Quito (am). The Bible Minute. See M 1428.
1430 Ecuador, HCJB Quito (am). Back to God. The Christian Reformed Church looks at life in the light of the historic Christian faith.

Thursdays
1400 Ecuador, HCJB Quito (am). Gateway to Joy. See M 1400.
1400 Ecuador, HCJB Quito (am). RBC Spot Radio. See M 1414.
1415 Ecuador, HCJB Quito (am). Key Life. See M 1415.
1428 Ecuador, HCJB Quito (am). The Bible Minute. See M 1428.
1430 Ecuador, HCJB Quito (am). Science, Scripture and Salvation. See M 9454.

Fridays
1400 Costa Rica, R Peace Intl. CounterQwin. See S. 0000.
1400 Ecuador, HCJB Quito (am). Gateway to Joy. See M 1400.
1414 Ecuador, HCJB Quito (am). RBC Spot Radio. See M 1414.
1415 Ecuador, HCJB Quito (am). Key Life. See M 1415.
1428 Ecuador, HCJB Quito (am). The Bible Minute. See M 1428.
1430 Ecuador, HCJB Quito (am). Science, Scripture and Salvation. See M 9454.

IT'S BACK AND BETTER THAN EVER

The Worldwide Shortwave Listening Guide
Edited by John Figliozzi
A "must" reference for every shortwave program listener!
$8.99 at all Radio Shack stores.
Catalog No. 62-1335

May 1999 MONITORING TIMES 53
### FREQUENCIES

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<thead>
<tr>
<th>Frequency</th>
<th>Country/Region</th>
<th>Station Details</th>
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### SELECTED PROGRAMS

**Sundays**

- Costa Rica, R Peace Int'l: This Way Out. A lesbian and gay radio magazine.
- Ecuador, HCJB (am): Encounter. Expository biblical preaching by Stephen5 Offord.
- Costa Rica, R Peace Int'l: RPP Reports. Daily news program of Latin American and Caribbean topics not generally heard in the mainstream media.
- Costa Rica, R Peace Int'l: Earthwatch Radio. This informative, succinct two-minute feature explores almost every imaginable topical area.

**Mondays**

- Ecuador, HCJB Quito (am): Back to the Bible. A mix of music and daily Bible study.
- Ecuador, HCJB Quito (am): Joni and Friends. Joni Erickson-Tada presents help and advice especially for the disabled.

**Tuesdays**

- Ecuador, HCJB Quito (am): Back to the Bible. M 1500.
- Ecuador, HCJB Quito (am): Joni and Friends. Joni McGee provides the message.
- Ecuador, HCJB Quito (am): Joni and Friends. Joni McGee provides the message.

**Wednesdays**

- Costa Rica, R Peace Int'l: Peace Forum. A grab bag of individual programs and special short series received by RPP.
- Ecuador, HCJB Quito (am): Back to the Bible. M 1500.
- Ecuador, HCJB Quito (am): Joni and Friends. See M 1525.
- Ecuador, HCJB Quito (am): Thru the Bible. See M 1530.

**Thursdays**

- Ecuador, HCJB Quito (am): Back to the Bible. See M 1500.
- Ecuador, HCJB Quito (am): Joni and Friends. See M 1525.
- Ecuador, HCJB Quito (am): Thru the Bible. See M 1530.

**Fridays**

- Ecuador, HCJB Quito (am): Back to the Bible. See M 1500.
- Ecuador, HCJB Quito (am): Joni and Friends. See M 1525.
- Ecuador, HCJB Quito (am): Thru the Bible. See M 1530.
- UK, BBC London (AF): To Boldly Go. New feature program of the Learning Zone.

This magazine is by far the most informative and helpful radio magazine for SWLs ever. It is truly the best.

---

John Marko
1600-1700 Nigeria, Voice of 7255af
15120va
1630-1700 mtwhf
1600-1625 Netherlands, Radio 12070as
12090as
15585as
1630-1700
1600-1700 Kenya,
1600-1700 Guyana,
1600-1700 Guam,
1600-1645 Germany, Deutsche Welle 6140eu
6170as
7225as
9735af
1600-1700 USA, WHRI Noblesville
1600-1700 Canada, CKZN St John’s 6160do
1600-1700 USA, KTBN Salt Lk
1600-1700 Anguilla, Caribbean
1600-1700 France,
1632 France,
1600 France,
1600 Costa Rica,
1600 Sundays
1632 France, R France Intl: RFI Europe. See M 1232.
1645 France, R France Intl: Arts in France. See M 1245.
1650 France, R France Intl: Insight. See M 1250.
1600 Costa Rica, R Peace Intl: A Public Affair. Discussions of international issues, women’s and children’s issues, media and propaganda, covert actions/government secrecy and the environment.
1634 France, R France Intl: Power and Politics. See W 1224.
1639 France, R France Intl: RFI Europe. See M 1232.
1632 France, R France Intl: Reach Out. Reporting on efforts to overcome world problems such as the banning of land mines.
1648 France, R France Intl: Discovery. See T 1237.
1600 Costa Rica, R Peace Intl: Every Living Thing. See S 0000.
1623 France, R France Intl: Focus on France. See A 1223.
1638 France, R France Intl: Spotlight on Africa. See A 1231.
<table>
<thead>
<tr>
<th>Time</th>
<th>Frequency</th>
<th>Country/Station</th>
<th>Language</th>
<th>City</th>
<th>Timezone</th>
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<td>1777.5 kHz</td>
<td>Anchorage, AK</td>
<td>English</td>
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**Notes:**
- The frequencies listed are for various radio stations and countries, spanning from 1700 to 1900 UTC.
- The times listed are in UTC, with the frequencies corresponding to different radio stations broadcasting in various cities and languages.
### FREQUENCIES

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<tr>
<td>2300-0000</td>
<td>Australia, ABC/Trent Creek 4910do</td>
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<tr>
<td>2300-0000</td>
<td>Australia, Radio 9950as</td>
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<tr>
<td>2300-0000</td>
<td>Bulgaria, Radio 9400as</td>
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<tr>
<td>2300-0000</td>
<td>Canada, CBC N Quebec Svc 9620do</td>
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<td>2300-0000</td>
<td>Canada, CFRK Toronto 6010do</td>
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<td>2300-0000</td>
<td>Canada, CFYP-Calgary 6035do</td>
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<td>Canada, CHNL Halifax 6130do</td>
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<td>2300-0000</td>
<td>Canada, CKXN St John’s 6105do</td>
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<td>2300-2329</td>
<td>Canada, CJCG Vancouver 6105do</td>
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<td>2300-0000</td>
<td>Cuba, Radio Havana 9950am</td>
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<td>Egypt, Radio Cairo 9900am</td>
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<td>2300-2345</td>
<td>Germany, Deutsche Welle 9715as</td>
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<td>2300-0000</td>
<td>Germany, Good News World R 9425do</td>
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<td>2300-0000</td>
<td>Ghana, Ghana BC Corp 3361do</td>
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<td>2300-0000</td>
<td>Guyana, BBC/Voice of India 3290as</td>
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<td>2300-0000</td>
<td>India, All India Radio 7410as</td>
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<td>2300-2315</td>
<td>Liberia, LCN/R Liberia Int 5100as</td>
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<td>2300-0000</td>
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<td>Wellington, New Zealand 4010as 4050as</td>
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<td>2300-0000</td>
<td>China, Radio China 4030as 4070as</td>
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<td>2300-0000</td>
<td>China, Radio China 4030as 4070as</td>
</tr>
<tr>
<td>2300-0000</td>
<td>Greece, Voice of Greece 7450as 9400as</td>
</tr>
</tbody>
</table>

### SELECTED PROGRAMS

#### Sundays
- **2300** Costa Rica, R Peace Intl: World of Radio. See S 0200.
- **2345** Costa Rica, R Peace Intl: Hightower Radio. A commentary by Jim Hightower, the provocative progressive voice from Texas, on national issues.

#### Mondays
- **2300** Costa Rica, R Peace Intl: New Dimensions Radio. Conversations with innovative thinkers whose ideas are on the leading edge of change.
- **2330** Costa Rica, R Peace Intl: The Neumaier Report. Poughkeepsie NY columnist, Dr. John Neumaier, comments on a wide variety of socially relevant issues.
- **2330** Costa Rica, R Peace Intl: The Ticlo Times Report. The most important news from Central America as reported in The Ticlo times in Costa Rica.
- **2345** Costa Rica, R Peace Intl: UN Daily News. A daily news feed from the United Nations News Service reporting on UN activities around the world.

#### Tuesdays
- **2300** Costa Rica, R Peace Intl: University of the Air. Self-directed and participatory learning of a variety of courses.
- **2330** Costa Rica, R Peace Intl: UN Perspectives. A weekly program of political, economic, and social issues.
- **2345** Costa Rica, R Peace Intl: UN Daily News. See M 2345.

#### Wednesdays
- **2300** Costa Rica, R Peace Intl: University of the Air. See T 2300.
- **2345** Costa Rica, R Peace Intl: UN Daily News. See M 2345.
- **2352** Costa Rica, R Peace Intl: Earth and Sky. See S 1552.

#### Thursdays
- **2300** Costa Rica, R Peace Intl: University of the Air. See T 2300.
- **2345** Costa Rica, R Peace Intl: UN Daily News. See M 2345.
- **2352** Costa Rica, R Peace Intl: Earth and Sky. See S 1552.

#### Fridays
- **2300** Costa Rica, R Peace Intl: University of the Air. See T 2300.
- **2345** Costa Rica, R Peace Intl: UN Daily News. See M 2345.

#### MT MONITORING TEAM
- Gayle Van Horn
- Jim Frimmel
- Jacques d'Avignon
- Dave Datko, California
- Mark Fine, VA

#### THANK YOU...

**ADDITIONAL CONTRIBUTORS TO THIS MONTH'S SHORTWAVE GUIDE:**
- Joe Brashear/World Harvest Radio; Dan Eley/WYFR; Bob Fraser, Cohasset, MA; David Franz, McCasville, GA; Hard Core DX; Glenn Hauser, Emil, OK/World of Radio & DX Report, Rev. Michael G. Mayer, Dover, DE; Mike Osborn/KLXL; Bob Paula EDXP; BBCM; Hans Johnson/Combre DX; Mauno Ritola, Finland; Al Quaglieri/NASA Journal; Giovanni Serra/The Four Winds; Usenet Newgroups.

#### May 1999 MONITORING TIMES 59

[www.americanradiohistory.com](http://www.americanradiohistory.com)
Bibliography on the Sun and Related Subjects. (Part 2/2)

- The Geomagnetic Field
  Introduction to Geomagnetic Fields, Wallace Campbell, being published by Cambridge University Press, 1996. An excellent summary of geomagnetism written by one of the leading experts in the field.

- The Ionosphere, HF Propagation and Prediction
  "IPS User Training Course," published by IPS Radio and Space Services, Sydney Australia. A guide to the sun and solar terrestrial environment with emphasis on its effects on HF communications.


- Auroras


- Solar and Astronomical Calculations

There are obviously more books on these subjects, but the above list will at least give you a start and help you stock up on reading material for next winter season! Now that summer is coming, do not forget to safeguard your receiver from the effects of thunderstorms: ground your antenna when you are not using your radio equipment.

And while you are working in the garden, look at the possibility of improving your antenna system. The quality of your reception is dependent on the quality of your antenna system. No matter how much money you have paid for your receiver, if your antenna is not properly installed, the reception will be poor.

As you will notice from the frequencies listed in the forecast chart, the value of the OFW (Optimum Working Frequency) is rapidly escalating. Remember that the OFW is about 80% of the MUF (Maximum Usable Frequency), so you can always go up and see what is up there.

A guide, multiply the frequency value that you see in the chart for a particular circuit and time by 1.20 and you will have the approximate value of the MUF for that same circuit at that particular time. There is nothing that says that there is nothing up there, so go and see!

There is some DX time left before the heavy static starts, so enjoy.

OPTIMUM WORKING FREQUENCIES (MHz)
For the Period 15 May to 14 June 1999 Flux = 177 SSN = 138
Predictions prepared using ASAPS for Windows®

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</tbody>
</table>

International Station Codes

- Unfavorable conditions: Search around the last listed frequency for activity.

(P) denotes circuit across polar auroral zone; reception may be poor during ionospheric disturbances.
One for the Veteran Listener

Last month, we did a column for the beginner. It’s only fair, then, that we should attempt to provide something of equal value for the longtime listener.

Some months back, I wrote two feature articles for this magazine that highlighted the changing environment for international broadcasters in general and looked at how one such broadcaster—Radio Australia—was responding to those changes.

As oxymoronic as it may sound, change is the only constant in life—even in shortwave. The veteran listener might like to hold to the impression that things only started changing lately, but that is just not so. Today’s changes may be coming more rapidly—and seemingly less intelligently at times—but over the years continual efforts have been made to make receivers work better, transmitters operate more efficiently, and programs more accessible to listeners.

Nonetheless, it is both fun and instructive to look back with a certain sense of nostalgia on what has been. Each of us has our own sense of a “golden age” of shortwave radio. For me, it’s the mid and late ‘60s when my hobby was new (and, quite frankly, I was too!)

Recently, I came into possession of some mid and late ‘60s editions of *The World Radio-TV Handbook*. Plying through them I was able to recall receiver manufacturers like Braun, Collins, Edystone, Hammarlund, Loewe Opta, National and Zenith, as well as today’s more familiar names Grundig, Phillips and Sony. But holding an interest in programming as I do, I was fascinated more by notes of the programs on offer during that period. It brought back more than a few fond memories.

I remember my first impressions of the programs I heard back then. I thought that many were rather “old-fashioned” sounding—even for the times. They were certainly a departure from the usual fare that American radio aimed at teenagers of the day. But before long this contrast began to develop its own certain charm.

So, for a little “retro” fun, this page this month has a little matching game based on what was on offer on shortwave some thirty years ago. Answers will appear next month. (OOG! A cliff hanger!)

**Some Things I Should’ve Said**

I’ve done this before, so regular readers of this column won’t be surprised that I’ve looked back over my past few months’ work and found it wanting in one respect or other.

The “Fishing” columns were meant to provide some ideas for those attempting to get some timely information about the programming aired by international broadcasters. In doing so, however, I should’ve also advised that two North American club publications have regular monthly columns that not only provide some listening suggestions, but also present intelligent critiques of programs and station policies.

Richard Cuff edits the *Easy Listening* column for *The Journal of the North American Shortwave Association*. Fred Waterer prepares *Listening In* for *DX Ontario*, the monthly magazine of the Ontario DX Association. Both clubs should get full marks for having the foresight to provide a place within their organizations for those whose interests run toward the content of broadcasts, in addition to the “thrill of the chase” of DXing. Both Richard and Fred are most generous in sharing their considerable expertise and experience in this realm and, in doing so, they not only provide valuable assistance to listeners, but to the stations as well.

If you live in—or, like me, in reasonable proximity to—Ontario, *DX Ontario* might provide the most useful four page centerpiece of any publication. Ivan Grishin maintains a series of bar graphs providing times and frequencies best heard in Ontario for all of the U.S.-based shortwave stations (on the first page) and for international shortwave stations (on the second page).

Ivan also updates a daily list (again with times and frequencies best heard in Ontario and its environs) of media programs on the third page. The fourth page is devoted to the BBC, with Ivan using the top half for some BBC programming highlights for the month and Andrew Reid using the bottom half for a comprehensive check of times and frequencies (again in bar graph format) that the various World Service streams are heard in and around Ontario.

To get a sample copy of *The Journal*, send $2 to NASWA, 45 Wildflower Rd., Levittown, PA 19057. For a sample of *DX Ontario*, send $3 to ODXA, Box 161—Station A, Willowdale, ON M2N5S8.

Finally, in last month’s column, I tried to give some quick suggestions on music. It was such a small effort that it was bound to fall short. We’ll devote an entire future column to music on shortwave, but in the meantime, in addition to the suggestions made last month, try the *Voice of Turkey* (on 7190, 7300, 9445, 9460, 9505, 11725 and 11810 kHz at different times of the day) and the *Voice of Greece* (on 6260, 7430, 9420, 9935, 15175, 15650 at different times of the day) in their native languages. For two countries often at odds, their music is equally exotic and festive and both stations play a lot of it!

Until June, good listening!

---

**A ‘60s Shortwave Match Game**

Match each of the three columns to include the program, station on which it was broadcast, and a personality associated with the program. Give yourself one point for each correct answer with bonus points if you can (1) remember the day or days of the week the program aired; (2) give the present-day name for the stations on the list. Top score will be 60 points.

Two cautions: while all of the programs and personalities have matches, not all of the stations do! Some the stations may have more than one program and personality associated with them. Good luck!

<table>
<thead>
<tr>
<th>Programs</th>
<th>Stations</th>
<th>Personalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday Special</td>
<td>Radio Nederland</td>
<td>Hill Edell</td>
</tr>
<tr>
<td>Calling DXers</td>
<td>Radio RSA</td>
<td>Keith Glover</td>
</tr>
<tr>
<td>Radio Newsreel</td>
<td>Switzerland Calling</td>
<td>Arthur Cushing</td>
</tr>
<tr>
<td>Happy Station</td>
<td>Radio Sweden</td>
<td>Various station staff</td>
</tr>
<tr>
<td>Listeners’ Choice</td>
<td>Radio Peking</td>
<td>Roger Wallis</td>
</tr>
<tr>
<td>This World We Live In</td>
<td>Radio Canada</td>
<td>Arne Skoog</td>
</tr>
<tr>
<td>Shortwave Merry-Go-Round</td>
<td>Radio New Zealand</td>
<td>Dody Cowan</td>
</tr>
<tr>
<td>My Favorite Spot</td>
<td>O.R.T.F.</td>
<td>Bob Thomann</td>
</tr>
<tr>
<td>His and Hers</td>
<td>Radio Australia</td>
<td>Eddie Startz</td>
</tr>
<tr>
<td>Shortwave Club</td>
<td>Radio New York Worldwide (WNYW)</td>
<td>Les Marchak</td>
</tr>
<tr>
<td>The Worldwide Hit Parade</td>
<td>BBC</td>
<td>Pip Duke</td>
</tr>
<tr>
<td>DX World</td>
<td>Radio Moscow</td>
<td></td>
</tr>
</tbody>
</table>
## Audio Subcarriers

Audio frequencies in MHz. All satellite/transponder coordinates are C-band unless otherwise noted.

#### Classical Music
- SuperAudio - Classical Collections (G5, 21) 6.30/6.48 (DS)
- WCPE-FM (98.7) Raleigh/Durham/Chapel Hill, NC (G5, 7) 5.58/6.12 (DS)
- WFMT-FM (99.7) Chicago, IL - Fine Arts (G5, 7) 6.30/6.48 (DS)
- WQXR-FM (96.3) New York, NY (S4, 14) 6.20/6.60 (DS)

#### Country Computer Services
- Superguide (G5, 7) 5.48

#### Contemporary Music
- Radio Desjardins 1 (T5, 14) 6.80
- Radio Desjardins 2 (T5, 14) 6.20
- SuperAudio-Light and Lively Rock (G5, 21) 5.96, 6.12 (DS)
- WBES-FM (94.5) "Charleston's Soft Rock B94.5" Charleston, WV (GE1, 12) 5.90
- WPHZ-FM (96.9) Bremen, IN (South Bend market) (G6, 15) 6.48, 7.30 (DS)

#### Country Music
- SuperAudio - American Country Favorites (G5, 21) 5.04/7.74 (DS)
- WSM AM (650) Nashville, TN (C4, 24) 7.38, 7.56

#### Easy Listening Music
- FCC mandated safe harbor program audio - easy listening music (G3R, 9) 6.80
- SuperAudio - Soft Sounds (G5, 2) 6.80
- United Video - easy listening music (C4, 8) 5.685 (N)

#### Foreign Language Programming
- Antenna Radio (Greek) (S4, 14) 7.80
- Arab Network of America radio network (GE2, 22) 5.90
- La Cadena CNN Radio Noticias (CNN Radio News in Spanish) (G5, 17) 7.56
- KAZNI-AM (1300) Pasadena, CA - Radio Chinese (Chinese) (GE1, 22) 5.80, 6.20
- Radio Serdane Iran (GE1, 15) 6.16
- Radio Tropical (G5, 1) 1.70
- SRC AM Network (GE2, 1) 7.38
- SRC FM Network (G2, 21) 5.41/5.58 (DS)
- Undetected Los Angeles area ethnic radio station (G1R, 22) 5.76
- WCRP-FM (88.1) Guayma, PR-religious (Spanish) (G6, 6) 6.53

#### Jazz Music
- KJLON-FM (98.1) Long Beach, CA, ID-Jazz 88 (G5, 2) 5.59/5.76 (DS)
- Superaudio - New Age of Jazz (G5, 21) 7.38/7.56 (DS)

#### News and Information Programming
- Broadcast News (E2, 1) 5.78
- Cable Radio Network (G5, 2) 7.24 (N)
- CNN Headline News (G5, 2) 8.30
- CNN Radio News (G7, 6) 7.30
- USA Radio Network - news, talk and information (GE3, 13) 5.01, 5.20
- WCBS-AM (880) New York, NY - news (G7, 19) 7.38
- WCCO-AM (830) Minneapolis, MN (GE3, 6) 6.20

#### Religious Programming
- Ambassador Inspirational Radio (GE3, 15) 5.96, 6.48
- Brother Staire Radio (G5, 6) 6.48
- KHCB-FM (105.7) Houston, TX (GE1, 9) 7.28
- LDS Radio Network (C1, 6) 5.58
- Radio 74 international (C3R, 23) 5.58
- Salem Radio Network (GE3, 17) 5.01, 5.20

## Sports
- Anahiem Angels Baseball Radio Network (C1, 7) 7.38
- L.A. Kings Hockey Radio Network (C1, 7) 7.38
- Madison Square Garden Network (MSG) Spanish Language S.A.P. (occ) (C4, 6) 6.20

#### Specialty Formats
- Aries In Touch Reading Service (C4, 10) 7.87
- Colorado Talking Book Network (C1, 3) 5.60
- SuperAudio - Big Bands (Sun 0200-0600 UTC) (G5, 21) 5.58/5.76 (DS)
- Weather Channel - background music (C3, 13) 7.78
- Wisdom Radio Network (GE1, 12) 7.10
- Yesterday USA - nostalgia radio (G5, 7) 6.80

#### Talk Programming
- American Freedom radio network (S4, 19) 5.80
- Amerinet Broadcasting (G1R, 17) 5.58
- Business Radio Network (C4, 10) 8.06
- For the People radio network (C1, 6) 7.50
- Friday Night Live (Fridays) (GE1, 12) 5.70 (N)
- Orbit 7 Radio Network (S4, 16) 5.80
- Radio America Network (C1, 4) 7.48
- Republic Radio International (G7, 14) 7.70
- Talk America Radio Network #1 - talk programs (GE3, 9) 6.80
- Talk America Radio Network #2 - talk programs (GE3, 9) 5.41
- Talk Radio Network (TRN) (C1, 14) 5.80
- Truth Radio (S4, 19) 7.56
- TVRO NET (featuring Keith Vandiver, Lamonica) (S4, 16) 5.80
- United Broadcasting Network (C1, 2) 7.50
- WOKIE Radio Network (GE1, 12) 5.70 (N)
- WWTN-FM (96.5) Memphis, TN - music (G5, 18) 7.38, 7.56

#### Variety Programming
- CBM-FM (88.5) Montreal, PQ Canada - variety/fine arts (E2, 1) 6.12
- KBVA-FM (106.5) Bella Vista, AR, ID-Variety 106.5 (G6, 6) 5.58/5.76 (DS)
- West Virginia Public Radio (GE1, 12) 7.74
- WRNF-FM (106.1) "Mix 106" Wavesh, NC (G1R, 17) 7.92
- WUSF-FM (89.7) Tampa-St. Petersburg, FL (Public Radio) (C4, 10) 8.26

By Robert Smathers, roberts@nmia.com

www.americanradiohistory.com
FM SQUARED (FM²) AUDIO GUIDE

GE-3 Transponder 13 (C-band)
Ambassador inspirational Radio  4.47 and 4.65 MHz
Blank audio carriers  1.05 and 1.14 MHz
Focus on the Family  1.23 and 1.41 MHz
Information Radio Network  3.39 MHz
International Broadcasting Network (IBN)  4.83 MHz
USA Radio Network  4.30, 5.01 and 5.20 MHz
Various Religious Programs (no common ministry)  33 and 3.75 MHz
VCY/America (channel 1)  .51 MHz
VCY/America (channel 2)  .78 MHz

GE-3 Transponder 17 (C-band)
Blank audio carriers  1.28 and 3.57 MHz
Data Transmission  .80, 1.14, 1.21, and 2.06 MHz
Focus on the Family  1.05 and 1.40 MHz
In-Touch Ministries  4.47 MHz
Salem Satellite Network  4.25, 4.84, 5.01, and 5.20 MHz
SRN News  .33 MHz
USA Radio Network  1.77 MHz

GE-2 Transponder-Vertical 13 (C-band)
1178.70 (81.3) NASA space shuttle audio

GE-3 Transponder-Horizontal 13 (C-band)
1207.90 (52.1) Wisconsin Voice of Christian Youth (VCY) America Radio Network-religious programming
1204.25 (55.75) Wisconsin Voice of Christian Youth (VCY) America Radio Network-religious programming
1204.00 (56.0) SRN (Salem Radio Network) News
1201.50 (58.5) Wisconsin Voice of Christian Youth (VCY) America Radio Network-religious programming
1201.30 (58.7) Wisconsin Voice of Christian Youth (VCY) America Radio Network-religious programming

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The frequency in the first column is the 1st IF (typical LNB frequency) and the second column frequency (in parentheses) is the 2nd IF (commercial receiver readout) for the SCPC listing. Both frequencies are in MHz.

GE-2 Transponder-Vertical 13 (C-band)
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GE-3 Transponder-Horizontal 13 (C-band)
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SATELLITE RADIO GUIDE

SINGLE CHANNEL PER CARRIER (SCPC) SERVICES

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1384.20 (75.8)</td>
<td>Sports/Rockies MLB radio network</td>
</tr>
<tr>
<td>1384.70 (75.8)</td>
<td>WBSP AM (750) Atlanta, GA - news/talk/Atlanta Hawks NBA radio network/Bruaves MLB radio network</td>
</tr>
<tr>
<td>1383.70 (76.3)</td>
<td>Motor Racing Network (occasional audio) NASCAR racing</td>
</tr>
<tr>
<td>1383.10 (76.9)</td>
<td>KIRO-AM (710) Seattle, WA - news and talk radio/Minizzlies MLB radio network</td>
</tr>
<tr>
<td>1382.60 (77.4)</td>
<td>Soldiers Radio Satellite (SRS) network - U.S. Army information and entertainment radio/Army college sports</td>
</tr>
<tr>
<td>1382.00 (78.0)</td>
<td>Occasional audio</td>
</tr>
<tr>
<td>1381.60 (78.4)</td>
<td>KEX-AM (1190) Portland, OR - news and talk radio/Portland Trailblazers NBA radio network</td>
</tr>
<tr>
<td>1381.40 (78.6)</td>
<td>Occasional audio</td>
</tr>
<tr>
<td>1381.20 (78.8)</td>
<td>KJR-AM (950) Seattle, WA - sports talk radio/Seattle Supersonics NBA radio network</td>
</tr>
<tr>
<td>1377.10 (82.9)</td>
<td>In-Touch - reading service</td>
</tr>
<tr>
<td>1376.00 (84.0)</td>
<td>Kansas Audio Reader Network - reading service</td>
</tr>
<tr>
<td>1375.40 (84.6)</td>
<td>USA Radio Network/Agrinet Agriculture news service</td>
</tr>
<tr>
<td>1370.10 (89.9)</td>
<td>WRVG FM (89.9) Lexington, KY - blues music format</td>
</tr>
</tbody>
</table>

**Galaxy 6 Transponder 4-Vertical (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1376.00 (84.0)</td>
<td>Data Transmissions</td>
</tr>
</tbody>
</table>

**Galaxy 6 Transponder 6-Vertical (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1347.00 (53.0)</td>
<td>WCRP FM (88.1) Guayama, PR - Spanish language religious programming</td>
</tr>
</tbody>
</table>

**Anik E2 Transponder 1-Horizontal (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1446.00 (54.0)</td>
<td>Canadian Broadcasting Corporation (CBC) Radio-North (Quebec) service</td>
</tr>
</tbody>
</table>

**Anik E2 Transponder 7-Horizontal (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1326.00 (54.0)</td>
<td>Canadian Broadcasting Corporation (CBC) Radio-North (Eastern Arctic) service</td>
</tr>
</tbody>
</table>

**Anik E2 Transponder 13-Horizontal (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1206.00 (54.0)</td>
<td>Canadian Broadcasting Corporation (CBC) Radio-North (MacKenzie) service</td>
</tr>
<tr>
<td>1205.00 (54.5)</td>
<td>Canadian Broadcasting Corporation (CBS) Radio - Occasional feeds/events</td>
</tr>
</tbody>
</table>

**Anik E2 Transponder 17-Horizontal (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1126.00 (54.0)</td>
<td>Canadian Broadcasting Corporation (CBC) Radio-North (Western Arctic) service</td>
</tr>
<tr>
<td>1125.50 (54.5)</td>
<td>Canadian Broadcasting Corporation (CBC) Radio-North (Newfoundland and Labrador) service</td>
</tr>
</tbody>
</table>

**Anik E2 Transponder 23-Horizontal (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1006.00 (54.0)</td>
<td>Societe Radio Canada (SRC) Radio AM Network</td>
</tr>
<tr>
<td>1005.50 (54.5)</td>
<td>Canadian Broadcasting Corporation (CBC) Radio-North (Yukon) service</td>
</tr>
</tbody>
</table>

**Solidaridad 1 Transponder 1-Vertical (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1447.90 (52.1)</td>
<td>Antenna Radio Noticias</td>
</tr>
<tr>
<td>1447.60 (52.4)</td>
<td>Antenna Radio Noticias</td>
</tr>
<tr>
<td>1447.70 (52.8)</td>
<td>La Grande Cadena Roza</td>
</tr>
<tr>
<td>1447.00 (53.0)</td>
<td>XEMZA AM 960, Mananzillo, Mexico</td>
</tr>
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**Anik E1 Transponder 21-Horizontal (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1036.70 (63.3)</td>
<td>In-store music</td>
</tr>
<tr>
<td>1037.00 (63.0)</td>
<td>In-store music</td>
</tr>
<tr>
<td>1037.50 (62.5)</td>
<td>In-store music</td>
</tr>
</tbody>
</table>

**SBS S Transponder 2-Horizontal (Ku-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1013.60 (80.4)</td>
<td>Wal-Mart in-store network</td>
</tr>
<tr>
<td>1013.20 (80.8)</td>
<td>Wal-Mart in-store network</td>
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<tr>
<td>1012.80 (81.2)</td>
<td>Sam’s Wholesale Club in-store network</td>
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<tr>
<td>1004.50 (89.6)</td>
<td>Wal-Mart in-store network</td>
</tr>
<tr>
<td>1004.00 (90.0)</td>
<td>Wal-Mart in-store network</td>
</tr>
<tr>
<td>1003.60 (90.4)</td>
<td>Sam’s Wholesale Club In-store network</td>
</tr>
<tr>
<td>1003.20 (90.8)</td>
<td>Wal-Mart in-store network</td>
</tr>
</tbody>
</table>

**RCA C5 Transponder 3-Vertical (C-band)**

<table>
<thead>
<tr>
<th>Frequency (MHz)</th>
<th>Service Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1404.60 (55.4)</td>
<td>Wyoming News Network - network news feeds</td>
</tr>
<tr>
<td>1400.60 (59.4)</td>
<td>Learfield Communications</td>
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<tr>
<td>1400.40 (59.6)</td>
<td>Learfield Communications/MissouriNet</td>
</tr>
<tr>
<td>1400.20 (59.8)</td>
<td>Occasional audio</td>
</tr>
<tr>
<td>1400.00 (60.0)</td>
<td>Learfield Communications</td>
</tr>
<tr>
<td>1396.60 (63.4)</td>
<td>Kansas Information Network/Kansas Agnet - network news feeds</td>
</tr>
<tr>
<td>1396.40 (63.6)</td>
<td>Liberty Works Radio Network - talk radio</td>
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<tr>
<td>1396.20 (63.8)</td>
<td>MissouriNet/ST Louis Cardinals MLB radio network</td>
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<tr>
<td>1396.10 (63.9)</td>
<td>MissouriNet</td>
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<td>1395.90 (64.1)</td>
<td>Western Montana Radio Network/ Red River Farm Network</td>
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<tr>
<td>1395.70 (64.3)</td>
<td>MissouriNet/Kansas City Royals MLB radio network</td>
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<tr>
<td>1386.40 (73.6)</td>
<td>Learfield Communications</td>
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<tr>
<td>1386.20 (73.8)</td>
<td>Radio Iowa/college sports</td>
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<tr>
<td>1386.00 (74.0)</td>
<td>United broadcasting Network - talk radio</td>
</tr>
<tr>
<td>1384.60 (75.4)</td>
<td>Capitol Radio Network</td>
</tr>
<tr>
<td>1384.00 (76.0)</td>
<td>Occasional audio/ABC Direction Network - network news feeds</td>
</tr>
<tr>
<td>1383.80 (76.2)</td>
<td>Occasional audio</td>
</tr>
<tr>
<td>1383.40 (76.6)</td>
<td>Capitol Radio Network</td>
</tr>
<tr>
<td>1382.90 (77.1)</td>
<td>MissouriNet</td>
</tr>
<tr>
<td>1382.50 (77.5)</td>
<td>Virginia News Network - network news feeds/Washington Wizards NBA radio network</td>
</tr>
<tr>
<td>1382.10 (77.9)</td>
<td>Learfield Communications/MissouriNet/Blues NHL radio network</td>
</tr>
</tbody>
</table>
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US Rates

<table>
<thead>
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<th></th>
<th>6 months</th>
<th>One Year</th>
<th>Two Years</th>
<th>Three Years</th>
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</thead>
<tbody>
<tr>
<td>US Rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US 1st Class</td>
<td>$12.95</td>
<td>$23.95</td>
<td>$45.95</td>
<td>$67.95</td>
</tr>
<tr>
<td>Canada Surface*</td>
<td>$19.95*</td>
<td>$36.50*</td>
<td>$69.95*</td>
<td>$103.95*</td>
</tr>
<tr>
<td>Foreign International*</td>
<td>$28.95*</td>
<td>$55.45*</td>
<td>$108.95*</td>
<td>$162.45*</td>
</tr>
</tbody>
</table>

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May 1999 MONITORING TIMES 65
Satellite Launch Update

This month I'm going to cover some much neglected territory, namely, a look at upcoming satellite launches. What satellites will be where and how this may affect your viewing. I'm also going to dip into the Launching Pad mailbag and share a few of the most recent letters from readers.

Life and Death in the Clarke Belt

It was only three years ago that the broadcast satellite industry was doing what it does best: wringing out its hands. It seems there's always something to fret over and this time it was a shortage of transponder space. A year ago the most obvious sign that the problem no longer existed was the appearance of "This Space for Rent" billboards on several satellites in the Clarke Belt. There may be a few more of those signs soon, thanks to the active launch schedule of the past six months and that of the next half year.

Older domestic broadcast satellites typically had a design life span of 10 years. Current design life spans are for 13 or 14 years. Barring unforeseen complications from on-board anomalies or errant meteors, satellites launched today may serve in an undiminished capacity for up to 15 years. The actual amount will vary depending on how much fuel it takes to fly these birds.

In order to keep a satellite perched at its assigned orbital slot in the Clarke Belt, the orbit must be continually touched up by ground controllers. Fuel used to steer the satellite is on-board and, when the gauge reads "empty," controllers will have already switched the transponder activity to the replacement satellite and the old bird is sent to a higher orbit away from the Clarke Belt.

Incidently, it's possible to extend a satellite's useful capacity even longer by flying the bird in a "figure 8" pattern in its orbital slot. Letting it drift a little more than normal uses much less fuel, thereby extending its life. This is called an "inclined orbit" which is referred to as the "Comsat Maneuver."

If you want to watch a couple of really old satellites chugging along in the Clarke Belt, take a look at Satcom K2 at 81 degrees West which was launched in January 1986 and remains there courtesy the Comsat Maneuver. Spacenet 3R, launched in March of 1988 still hosts a number of services including Home Team Sports (one of the oldest sports networks on satellite) and C3D (one of satellite's newest). SBS 5 was launched in September of 1988 and is home to WNMB, the Russian-American channel, among others.

One other thing to know about today's satellites is that they pack considerably more power output than the older birds. Fifteen years ago a new satellite would have about 4 watts output, which was the main reason for needing a 10-foot diameter dish. By the late '80s, 8 watts was typical, and by the early '90s birds put out an astonishing 16 watts.

The latest satellites, such as the soon to be launched Galaxy 11, feature 20 watt C-band and 75 watt Ku-band transponders. That's five times the power of 15 years ago. Newer international satellites such as Panamsat 5 (58 degrees W.) have 50 watt C-band transponders. No wonder you can pick up those digital video broadcast (DVB) signals on a 4.5-foot dish!

New Birds on the Block

The last six months has seen the launch of Satmex 5 (a C/Ku-band replacement for the aged Morelos 2) at 116.8 degrees West; GE 5 (a Ku-band only satellite at 79 degrees W.); and Telstar 6 (a C/Ku-band combo at 93 degrees W.). That's a good bit of capacity, but nothing compared to what else is coming up this year.

By the time you read this, Galaxy 11 should be in orbit and testing. This 24 C and 24 Ku-band transponder satellite will initially replace the fading Galaxy 6 at 99 degrees W. Next month will see the launch of Telstar 7, a satellite sporting 24 C and 32 Ku-band transponders, which will wedge itself between Galaxy 5 and Satcom C3 at 129 degrees W. This is what's known as the "cable neighborhood" for the close proximity of satellites carrying cable-TV fare almost exclusively.

September will see the launch of GE4 which will replace Spacenet 4 at 101 degrees W. GE4 will have 24 C and 28 Ku-band transponders. A month later Galaxy 10R will be launched. The "R" signifies that the satellite will replace one by that same name which was destroyed on launch. G10R will replace both Galaxy 9 and SBS5 at 123 degrees W. G9 will move to 127 degrees W. between G5 and the new Telstar 7.

Galaxy 4R is scheduled to be launched in October of this year and replace Galaxy 11 at 99 degrees W. G11 will move to parts yet to be disclosed. And, finally, Galaxy 3C will take its 12 C and 48 Ku-band transponders to replace the current G3R at 95 degrees W. Got it all at that?

My rough estimate indicates that by the end of 1999 we'll see a net increase of some 84 C-band and over 150 Ku-band transponders. When you consider that many new services launching this year will use some form of digital compression (DVB or DCII, digicipher II) that means there will be a net increase in capacity of several hundred channel spaces. There ought to be a fire sale on transponder rates!

It should also indicate that if you bought a complete C-band satellite system today, you would still be watching it 15 years from now.

Aging satellite Spacenet 3 is host to satellite TV's newest coming attraction: C3D. Billing itself as "3D Stereoscopic Television" it hopes to lure viewers with its 3D movies which are viewed through their own 3D glasses.

Excess C-band capacity may see more billboards like this one from over a year ago.
The incredibly low prices currently available on C-band equipment, both new and used, represents one of the best satellite viewing opportunities in decades.

**Mail Bag**

- *MT* reader Judy May writes that she has been transferred to a new location and as she and her husband search for a new home they've come across the specter of Home Owner's Association restrictions on antennas in general and satellite antennas in particular. She reports that many real estate agents seem unprepared to deal with the issue. She says, "...I am glad we had the forethought to address this subject before we buy, rather than after it's too late. It is very saddening that the majority of the population looks upon such a fine hobby as being 'an eyesore.'"

She has run across yet another home owner's nightmare. After researching three home owner's insurance policies, she decided to read the fine print and found out that one did not cover "...satellite dishes nor any equipment connected to them." Horrified, I called my local insurance agent who said that it was very unusual and certainly not common practice to write such a disclaimer in a policy. Needless to say, Judy will be signing with one of the other two policies!

What has your experience been with your home owner's insurance related to satellite or radio equipment? Let me know.

- Tin Luu of Garden Grove, California, would like to receive programming from his homeland, Vietnam, and is a fan of Asian Football (soccer). He asks, "...What equipment do I need to be able to receive satellite signals from Asia?"

I looked in Baylin's *World Satellite Yearly* to see if any of the Asian satellite footprints covered any part of California. It seems the best bet would be Intelsat 702 (177 degrees E.) and Intelsat 802 (174 degrees E.) since both have spot beams aimed at the U.S. west coast. Reception will require at least a 10-ft dish, possibly bigger; the lowest noise temperature LNB you can afford; an analog and digital (DVB) receiver.

On U.S. satellites there is only programming from China, Japan, Thailand, Korea, Taiwan, Hong Kong and the Philippines. I hear from a lot of soccer fans and I always recommend Fox Sports World (GE3 87 degrees W.), which has an abundant supply of international soccer and is available by subscription. You'll need a standard C-band satellite system with a VideoCipherII decoder module. If you have access to cable-TV you might inquire if your local cable provider carries Fox Sports World.

- Henry Yamachi writes via email, "...in your (February) column you mention SCPC (single channel per carrier) receivers... the Uniden SQ/590 already comes with SCPC built in. Is it still worth buying a separate dedicated SCPC receiver?"

As far as I know, the Uniden SQ/590 is no longer in production, but may be available used from dealers or individuals or at ham fests. I have not actually played with the SQ/590, but, I've heard from those who have that they were not as sensitive as stand-alone SCPC receivers. I'd like to hear from any readers who have used the SQ/590.

- Rich Piehl writes that he has been "...a radio hobbyist for 30 years, and a satellite nut for 5+ years. I enjoyed your "Radio on Satellite" article. There is one quibble I have with one of your facts, however. You give the westernmost satellite for this hemisphere as F1. That leaves poor old F5 out there as a forgotten orphan..."

It's true Rich, F5, which has no video for the lower 48 and only a handful of analog SCPC radio signals, gets little attention especially from us Easterners whose view of this "lowly" bird is usually obstructed by anything taller than a step ladder. Rich also notes that he plans to route the LNB signal from his 6 foot dish (using a DC voltage blocking "f" connector) to the Winradio 1500e in his computer to tune SCPC signals. Sounds like a great idea, Rich; let us all know how it works!

- I often get letters and email from people who complain that they can't find good used satellite equipment in their area. This is a problem for a lot of folks who don't live near heavily dish-populated areas. *MT* reader Bill Perrelli writes that he might be able to help. Having moved to a new location he is unable to install his satellite system and is forced to sell it. His system includes many top grade components.

This seems like an excellent opportunity for *MT* readers who want a real deal on some excellent gear to get a start in satellite TV. While I can't vouch for the equipment, I can give you his email address and maybe you can all help each other out. Drop me a line and I'll put you in touch with him.

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Most beginners spend their first monitoring season or two setting up their monitoring post anywhere they can. Many people just sort of wander around the house with their portables. If you have your scanner running in the family room, no doubt some members of your family have commented that you should consider moving its location so it does not interfere with their enjoyment of the latest episode of whatever sit-com is hot on TV this week.

You have probably discovered by now that successful listening also involves a certain amount of research and record keeping that is a bit hard to do when your receiver has no permanent home. Much has been written over the years about the kind of desk and chair that makes for good listening. Instead we are going to take a look at the room itself.

What is Your Location Situation?

Real estate speculators always say that location is the most valuable thing about a property. However, not all places are ideal locations for enjoying the radio hobby. I also think it is safe to assume that very few folks are willing to pull up stakes and move just for the further enjoyment of monitoring. (If you can afford to do that, drop me a line about my “reasonable” personal consultation fees.)

Further, if you live with other people who are not equally dedicated to radio monitoring, you will find certain limits as to where in your location you may locate your equipment. Seeking out your initial shack space requires that you find the best place in the house that gives you privacy, power and access to the outside of the house.

The Radio Hobby Privacy Act of 1999

Now that is a law that I wish the government would pass. Dedicated radio people sometimes drag themselves out of bed in the wee small hours of the morning to hear something that is not there any other time of the day or night. Likewise, listening during “normal” hours can be frustrating if other members of your clan disturb you, just as that ID of Radio Freedonia you have been seeking for six months comes over the air. What you want is two-way privacy.

Every house I have ever been in seems to have a corner where things that are seldom used get piled up. Stuff that is always sort of out of sight and out of mind. This might be a good place to begin your hunt for a station location. If your children have yet to discover the joys of owning copious amounts of clothing, there may be a closet that can be turned into an ideal monitoring spot. Basements, if they are not too damp and dreary, are also popular places for a listening post.

A great out of the way place is a corner in a spare or guest room that is not in regular use. Besides, when friends visit you can introduce them to the greatest hobby in the world! Avoid attics and garages unless they are sufficiently climate controlled. If you want to wear two pairs of longjohns while enjoying a hobby take up ice fishing.

More Power

With apologies to Tim Allen, part of thinking out your shack location is going to be your direct access to sufficient power for your receivers and any other equipment you draw into the fray. Of course these needs will be different for each person. Minimally, you will need to have one grounded outlet to plug in the receiver. If you have more than a few accessories you will want to consider one of the many power strips that are available on the market. These are especially useful because they are usually fused and have a master power switch. Better quality power strips also provide protection against line voltage surges, further protecting your investment.

Be careful not to exceed the recommended capacity for either the power strip or the wall outlet. If you have any questions concerning your household power and its use consult a licensed electrician!

In my latest shack setup, I have had to take extra steps in the electrical area because I am beginning to experiment with solar and battery power. I need to make appropriate wire runs for solar panels and provide for safe placement of my batteries, including venting for the charging gases that can form in lead-acid cells. It’s a bit more work, for certain, but in the end I’ll have a station that will keep on running for a long while after the local power goes out.

If you are modifying an area to become a shack, you will want to get with your electrician to discuss installation of sufficient wall outlets to meet your anticipated hobby needs. You might want to discuss putting your shack’s power on one or more separate circuit breakers to allow for additional power needs especially if you plan to enter the world of Amateur Radio. Transmitting requires significantly more power than receiving. Remember, long extension cords are not only tacky, you can trip over them and they can become fire hazards.

I See the Light

This is sort of a sub-subject of power because very few folks monitor by candlelight. You will want to have plenty of light to make reading and writing possible without eyestrain. Depending on which frequencies you frequent, try to stay away from fluorescent lighting. Fluorescences can cause un-
wanted interference. (Is there such a thing as wanted interference?)

Stick with incandescent light bulbs for best performance. Try to locate the lighting so that it does not cast shadows when you are reading and writing. Ceiling lights are notorious for this.

_reaching out to the real world_

One of the first signs that someone has finally decided if they enjoy the radio hobby or not is when they plan to put up an outside antenna. Planning for first and future antenna installations should be part of your shack design project.

Easy access to the outside world for antenna lead-ins is not as tricky as it sounds. Usually the easiest route outside is through a window. A simple system for running cables in and out of your house can be had by installing a piece of 2x4 lumber under a window. Drill holes through the 2x4 to accommodate all the wires. You can also run your ground wire out to an outside ground stake through this 2x4 if you do not have a cold water pipe near your shack setup.

A more permanent solution to outside access can be had by removing one window pane and replacing it with Plexiglass. If you are more experienced in carpentry you can drill through windowsills and even walls. This usually requires extra long drill bits and a real clear understanding of what you are drilling through. Drilling through a water pipe can ruin your house. Drilling through the house wiring can ruin your life!

If you do choose to drill your way out of your house make sure that you insulate the wire’s path through the wall against contact with any metal flashing, insulation or siding. This can be done with common PVC (Poly Vinyl Chloride) piping available at most hardware stores. A more elegant solution can be found at most electronics supply stores. This consists of a plastic tube with fittings on both ends that allow you to feed wires easily through any hole you have drilled.

When planning your outside access, make sure you actually go outside and take a gander at where the wires are going to be coming out. Check to see that the antenna lead-ins will not need to traverse the path of incoming household power or telephone lines. This is a basic safety precaution to assure that your monitoring never becomes a shocking experience.

The actual choice of antennas you may consider is beyond the scope of this article. However, you may want to peruse any of the popular antenna books available through the various radio booksellers found in the pages of _MT_ as part of your shack planning process.

Space Utilization

Now that you have zoned in on your shack location you will want to give some thought to making the space most useful.

After you have picked out a desk and chair that suits your needs you will want to plan for maximum use of the remaining space for that research and record keeping stuff we talked about earlier. Old Uncle Skip’s first law of great shack design is, _You Can Never Have Enough Shelves_, closely followed by my second law, _You Can Never Have Enough Filing Cabinets_. A couple of shelves right over your receivers will hold all of those important frequency reference materials. A two or four drawer file cabinet is just the ticket for storing articles, logs sheets and other record keeping materials.

If you want to make things as efficient as possible there is a neat “Human Engineering” experiment you can preform before you even drive a single nail. Put a chair in the spot you plan to sit during your DX sessions. First look straight ahead. Assuming that your receivers are arrayed on your table top (tilted upward to avoid neck strain, of course), that point at eye level is the ideal place to install a shelf for your most needed reference materials.

Now, from the same sitting position move your dominant hand around the desk top and room space. Everything within the immediate reach of your hand can be controlled quickly. From your operating position you can now envision the most likely locations for desk, drawers, file cabinets, shelves and switches.

Shelving comes in all shapes and sizes and can be had for very reasonable prices. Shop around a few hardware stores and lumber yards till you find what is right for your location. The only proviso I would make is that you make sure the shelving is sturdy and firmly installed. Nothing can ruin a monitoring session quite like a load of books pouring down on your head.

As you can see, planning is essential to setting up a room for the radio monitoring hobby. Take your time. A little bit of extra thought at this stage of the game can help you create a monitoring post that will give you good service for many years to come. Look at several configurations. If you know someone local who is involved in the radio hobby I am sure they will be pleased as punch to show off their shack to you. You can get many great ideas this way. And, of course, Have Fun.
I
n this edition I am looking at the current weather satellite situation, the next GOES launch, how to start monitoring weather facsimile, and a quick glance at a new product.

There are currently seven polar orbiting weather (or similar) satellites transmitting images — though not all transmit continuously. Add to this the constellation of geostationary weather satellites covering almost all longitudes, and the result is that, using basic hardware, we have the means for monitoring the weather anywhere throughout the world.

The only polar orbiters transmitting continuous imagery are the three NOAAs—NOAA-12, NOAA-14 and NOAA-15. These three weather satellites provide us with reliable weather pictures day and night.

The Russian weather satellite Meteor 3-5 was recently joined by Resurs-01-4 that transmits better quality pictures, but uses the same frequency. Although this is by no means the first time that we have had two Meteor-type weather satellites using the same frequency, it is rare — and apparently unnecessary. Resurs has previously transmitted APT on 137.30 and 137.40 MHz, so settling on 137.85 MHz (and therefore clashing with Meteor 3-5) is curious.

Because the satellites have slightly different orbital characteristics, it was inevitable that their pass times would periodically coincide in various places around the globe. Meteor 3-5’s orbit has a period of 109 minutes and slowly precesses with respect to the sun; Resurs is nominally sun-synchronous, with a period of 101 minutes. I logged my first instance of simultaneous transmissions on February 17 when Resurs rose above my horizon during the Meteor 3-5 pass at 1310 UTC, causing about one minute of interference.

During following days the problem rapidly worsened, for a few days my software produced half of one image merging into half of the other — with the associated synchronization difficulties.

Picture quality differs; Meteor 3-5 is an old satellite, and detailed examination of its imagery shows line faults. Resurs provides a much higher quality image, as expected of a new satellite. Close examination of the edge adjacent to the black-and-white bars (not shown here) reveals an image anomaly along the length of the frame.

As on March 8, here in Plymouth reception of the signal from Meteor 3-5 is being severely affected by some other transmission — unless the satellite itself has a problem.

![FIG 1: Resurs 01-4 1032UTC March 6](image)

Figure 1 shows the southbound pass over Britain and western Europe on March 6. The lower section shows north Africa and southern Spain under clear skies. This image has been enhanced because, like Meteor images, Resurs images show good detail in clouds — but land remains dark.

The Okean-4 and Sich-1 oceanographic satellites make rare, short transmissions, usually over western Europe. If any reader monitors transmissions from either satellite while over continental USA I would be most interested to receive details (and preferably a copy of the image via e-mail). I logged several Okean transmissions during February, but none so far during March.

**GOES Launch scheduled for May**

The latest in the series of GOES weather satellites, GOES-L, is now scheduled for launch on May 15. When in orbit it will be renamed GOES-11. After having been assembled and tested during 1997-98, GOES-L will be launched on-orbit storage and will replace GOES-8 as GOES-EAST in 2000 AD.

The next GOES spacecraft (following GOES-L) is GOES-M, currently being assembled and tested. Launch is planned for October 2000, and this will avoid on-earth storage costs and additional post-storage testing. GOES-M is expected to replace GOES-11 in 2004.

If GOES-M had to be called out of on-earth storage to replace an on-orbit failure, there would be nine to 12 months of preparation between call-up and launch, followed by three months of post-launch deployment and testing before GOES-M could become operational.

It is normal practice for each GOES spacecraft to have a “letter” designation until it reaches successful orbit, when it is given a numerical designation. GOES-1 became GOES-8, GOES-J became GOES-9, GOES-K became GOES-10. GOES-L will become GOES-11 when in orbit, and similarly GOES-M will become GOES-12; GOES-N will become GOES-13; GOES-O will become GOES-14.

**The Platform**

The advanced GOES I-M spacecraft series incorporate modifications designed to increase the operational lives of the satellites, based on the experience gained from previous spacecraft. GOES-L is a three-axis, body-stabilized design that enables the sensors to view the earth and image clouds more frequently.

The I-M series monitor the earth’s surface temperature and water vapor, and sound the atmosphere. This should help to follow the evolution of atmospheric phenomena, ensuring real-time coverage of short-lived, dynamic events, especially severe local storms and tropical cyclones. These meteorological events directly affect public safety, protection of property, and, ultimately, economic health and development.

Some innovative features incorporated in the GOES I-M spacecraft enable high volume, high quality data to be generated for the weather community. My thanks to NOAA for providing comprehensive information about the GOES series.

For further, detailed information about the hardware and ground station operations.
that form the GOES system, the NOAA web sites can be viewed:
http://psbgs1.nesdis.noaa.gov:8080/EBB/ml/gensat1.html
http://rsd.gsfc.nasa.gov/goes/text/goesnew.html

Correspondence

Some readers have e-mailed queries concerned with GOES weather satellite reception. It is worth finding out more about the GOES satellites, possibly using the Internet sites listed above. The field is wide open for receiving a variety of GOES transmissions, limited only by what equipment you can afford and accommodate!

Most of us set up a weather facsimile (WEFAX) receiving station because we can receive virtually continuous images from GOES-8 and GOES-10. You can purchase a WEFAX system from advertisers in Monitoring Times, or other options can also be considered.

To receive weather facsimile transmissions you require an antenna for 1691 MHz, a suitable receiver, a decoder and a computer. The antenna can be a dish or yagi. In Plymouth, UK, I can receive GOES signals using a 40-element yagi and preamp, and pointing the antenna just three degrees above my western horizon!

The receiver must be a weather satellite receiver for 1691 MHz, because this is optimally designed for extracting the unusual signal modulation. By "unusual," I refer to the unique method in which weather satellite image data is modulated on to the 2.4 kHz sub-carrier, requiring a relatively wide receiver IF (intermediate frequency).

Assuming a computer is available, the remaining essential item is some form of decoder to convert the extracted picture modulation into a recognizable image.

DMSP images

Hank Brandli sent another unusual but fascinating image from the DMSP (Defense Meteorological Satellite Program), to which he has direct access. The picture shows the nighttime visual channel over the East Coast on February 19 at 0100 UTC, with the added bonus of the Aurora Borealis visible near the upper right of the image.

Aurorae are caused by the effects of enhanced solar activity interacting with the upper atmosphere. The approach to solar maximum means that we can expect to see more aurorae during the next couple of years.

New products

One of the purposes of this column is to publish brief information about new products from weather satellite systems manufacturers, so I welcome news from all suppliers of such products. Timestep Weather Systems products are distributed by Spectrum International, Inc, and Swagur Enterprises. They are currently releasing some new products, with more planned for later this year. I had an early opportunity to test their new Windows LC external interface – a decoder for weather satellite data.

The unit (PROsat for Windows LC external interface and software) is a complete weather satellite decoder / serial interface in itself. It takes the audio signal from a weather satellite receiver, and outputs RS-232 serial data in exactly the same way as previous interfaces (such as the PROsat for Windows internal card).

This new interface goes a stage further than some decoding systems by allowing the software adjustment of individual satellite signal modulation. This overcomes the problem experienced when monitoring Meteor, NOAA and Okean-type weather satellites – each of which provides different levels.

If your current system is correctly set for NOAA weather satellite decoding, you may notice that Meteor images have the white levels bleached, with Okean images lacking contrast. Conversely, setting the levels to be optimized for Meteor images may leave NOAA images "flat" (that is, lacking contrast). The LC permits individual settings to be made for each weather satellite. The unit is priced at $199; further details can be obtained from Timestep’s new web site:
http://www.time-step.com/

The American distributors are:
(1) Swagur Enterprises, Box 620035, Middleton, WI 53562, Phone/Fax (608) 592-7409. Email swagur@execpc.com Web Site http://www.swagur.com
(2) Spectrum International Inc. PO Box 1084, Concord, MA 01742. Tel. (978) 263-2145 Fax. (978) 263-7008.

FREQUENCIES

| NOAA-14 transmits APT on 137.62 MHz |
| NOAA-12 and -15 transmit APT on 137.50 MHz |
| NOAA transmits beacon data on 137.77 or 136.77 MHz |
| Meteor 3-5 and Resurs 01#4 transmit APT on 137.85 MHz |
| Okean-4 and Sich-1 sometimes transmit APT briefly on 137.40 MHz |
| GOES-8 and GOES-10 use 1691 MHz for weather facsimile from 75 and 135 degrees longitude respectively |

FIG 2: GOES system – courtesy NOAA

FIG 3: A sample weather facsimile GOES-8 visible-light image March 8 at 1800 UTC

FIG 4: Aurora as imaged by DMSP satellite on February 19 at 0100 UTC from Hank Brandli. Image courtesy USAF.
The Hidden Military Aircraft Band

If you took a poll of radio enthusiasts and asked them what frequency ranges they should monitor to hear military aircraft communications on their scanner, 138-151 MHz might not be a range that would pull very high numbers. But the truth is, this frequency range is rich with air-to-air and air-to-ground military aircraft communications.

When I first got into Naval Aviation in the late 1970s, there was no VHF high band capability in any of the tactical aircraft with which I was familiar. In fact, most of the 225-4000 MHz UHF radios we used still carried 0.1 MHz spacing capability. But that has all changed now. We see a definite increase in usage of the .025 MHz channels in the UHF milair spectrum and increased usage of the 138-151 MHz range for tactical and air-to-air communications.

Table 1 is a list of recently reported VHF air-to-air channels. All these communications will be in the AM mode (just like the civilian and military airband frequencies). The prime spacing found in this band is now .025 MHz just like the civilian and military airbands. Most of the communications that have been monitored on these frequencies appear to be used by U.S. Air Force units.

If you are looking for some U.S. Army air-to-air VHF frequencies, check out our list of 40 possible nationwide frequency assignments below.

So the next time you’re doing a search of the 138-144 and 148-150.775 MHz ranges, flip over to the AM mode and see what new adventures you can find in the VHF Hidden Military Aircraft Band.

TABLE 1: REPORTED VHF MILITARY AIR TO AIR FREQUENCIES

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<th>Frequency</th>
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<td>139.025</td>
<td>139.050</td>
<td>139.075</td>
<td>139.100</td>
<td>139.125</td>
</tr>
</tbody>
</table>

What’s on 138.925?

Several years ago, while I was visiting my hometown of San Antonio, I was driving around one of the local Air Force bases and noticed an occasional digital signal on 138.925 MHz. I also noticed that this digital signal would appear to transmit right before the base fire trucks rolled out on a call.

Adding up the evidence and checking with some friends in the know confirmed that this frequency is used as a nationwide primary frequency for digital fire alarm systems at selected U.S. Air Force bases. These systems are fairly low power and you probably won’t hear them unless you’re on the base and a fire alarm box has been activated.

So, if you see an allocation on this frequency for your favorite Air Force base and never hear anything, it might be a base fire alarm system you’re trying to monitor.

Midwest Report

Regular Milcom reporter Paul Bunyan sent along the following to share with our Milcom readership.

The Iowa Air National Guard operations (Hawkeye Ops) for the 132 Fighter Wing in Des Moines has changed their VHF frequency from 138.900 to 138.150 MHz (AM).

The US Navy E-6A/B UHF AM operations have been noted on the following frequencies:

- 233.700 Offutt AFB, NE
- 310.150 NAS Patuxent River, MD
- 312.100 Tinker AFB, OK

Here are some air-to-air frequencies that Paul has monitored recently:

- 142.750 US Air Force SAM (Special Air Mission) 60403 working Nightwatch in the AM mode
- 263.350 US Navy Blue Angels flight demonstration team (four ship formation)
- 272.100 Canadian Forces Snowbirds flight
The world famous Air Force Thunderbird flight demonstration team are heavy users of the 138-151 MHz “hidden military aircraft band.”

demonstration team (also air-to-ground)
333.550  US Air Force F-15s from Eglin AFB, FL (tentative)
384.550  US Air Force F-15s from Eglin AFB, FL (Calais Demo #4)

Also according to Paul the F-16C/D model aircraft have radio gear installed that can operate on the following frequency ranges:

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Mode/Steps</th>
<th>Transmit/Receive</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.000-87.975 MHz</td>
<td>FM mode (25 kHz steps)</td>
<td>Transmit/Receive</td>
</tr>
<tr>
<td>108.000-115.975 MHz</td>
<td>AM mode (25 kHz steps)</td>
<td>Receive only</td>
</tr>
<tr>
<td>116.000-151.975 MHz</td>
<td>AM mode (25 kHz steps)</td>
<td>Transmit/Receive</td>
</tr>
<tr>
<td>225.000-399.975 MHz</td>
<td>AM mode (25 kHz steps)</td>
<td>Transmit/Receive</td>
</tr>
<tr>
<td>30.000-87.975 MHz</td>
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<td>AM mode (25 kHz steps)</td>
<td>Transmit/Receive</td>
</tr>
<tr>
<td>225.000-399.975 MHz</td>
<td>AM mode (25 kHz steps)</td>
<td>Transmit/Receive</td>
</tr>
</tbody>
</table>

That is an amazing total of 11,080 frequencies/channels/steps. Thanks, Paul; we always look forward to hearing from you.

Air Refueling, Part Deux

Right after the March issue of Monitoring Times hit the newsstands, I received a comprehensive list of Coronet air refueling frequencies from two anonymous sources. Thanks to you both for passing along these interesting UHF milair allocations.

<table>
<thead>
<tr>
<th>Callign</th>
<th>Designator</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Alpha</td>
<td>396.200</td>
<td>394.600</td>
</tr>
<tr>
<td>21</td>
<td>Bravo</td>
<td>391.000</td>
<td>388.400</td>
</tr>
<tr>
<td>31</td>
<td>Charlie</td>
<td>378.200</td>
<td>375.700</td>
</tr>
<tr>
<td>41</td>
<td>Delta</td>
<td>372.300</td>
<td>370.400</td>
</tr>
<tr>
<td>51</td>
<td>Echo</td>
<td>314.500</td>
<td>297.300</td>
</tr>
<tr>
<td>61</td>
<td>Kilo</td>
<td>343.100</td>
<td>322.800</td>
</tr>
<tr>
<td>71</td>
<td>India</td>
<td>254.600</td>
<td>255.750</td>
</tr>
<tr>
<td>81</td>
<td>Juliet</td>
<td>238.750</td>
<td>228.550</td>
</tr>
<tr>
<td>91</td>
<td>Fox Trot</td>
<td>293.000</td>
<td>289.700</td>
</tr>
</tbody>
</table>

And just so you shortwave folks don’t feel left out in the cold, here are a few HF frequencies associated with air refueling missions (frequencies here are in kHz and mode is upper sideband).

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Callsign</th>
<th>Designator</th>
<th>Frequency Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>6751</td>
<td>Nebraska Air National Guard (155ARW)</td>
<td>286.400</td>
<td>Fort Stewart, Georgia (I show Wright AAF Tower-LVH)</td>
</tr>
<tr>
<td>6761</td>
<td>U.S. Air Force Air Refueling Common (Worldwide)</td>
<td>297.600</td>
<td>FACSFAC Jacksonville, Florida “Sealord” (Primary-LVH)</td>
</tr>
<tr>
<td>9018</td>
<td>Refueling coordination frequency</td>
<td>300.800</td>
<td>FACSFAC Jacksonville, Florida “Bristol” (Ground Control Intercept-LVH)</td>
</tr>
<tr>
<td>9022</td>
<td>Nebraska Air National Guard (155ARW)</td>
<td>319.900</td>
<td>NAS Jacksonville, Florida (Probably another Jacksonville FACSFAC frequency-LVH)</td>
</tr>
<tr>
<td>11217</td>
<td>Alabama Air National Guard (117ARW)/22 ARN McConnell AFB</td>
<td>344.000</td>
<td>FACSFAC Jacksonville, Florida “Okegrove” (probably using the Whitehouse remote-LVH)</td>
</tr>
<tr>
<td>11234.5</td>
<td>Alabama Air National Guard (117ARW)</td>
<td>380.800</td>
<td>Pinecastle Bombing Range, Florida (Range Operations-LVH)</td>
</tr>
</tbody>
</table>

FACSFAC, Jack-LVH)

Thanks, Jack, for sending us this list of active frequencies in the northern Florida area. And that about does it for this edition of Milcom. Remember, we want to hear from you. Send in your frequency reports to Milcom, P.O. Box 98, Brasstown, NC or you can e-mail them to: larry@grove-ent.com. See you in two months and good hunting.

Note to U.S. consumers only: It is unlawful to import, manufacture, or market cellular-capable or cellular-restorable scanners into the U.S.

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May 1999  MONITORING TIMES  73
Enhanced Traffic Management

Welcome aboard to the modern-day air traffic management system! The acquisition and sharing of information within the air traffic control system has been changing with advances in technology and in response to today's increased air traffic. The Houston Intercontinental Air Traffic Control Tower and Tracon gives a description of how the system works on their website, and they were happy to let us share it with you, so let's get started.

**Air Traffic Control System Command Center**

The Air Traffic Control System Command Center (ATCSCC) is an Air Traffic Operations Service facility consisting of four operational units:

1. Central Flow Control Function (CFCF) - Responsible for coordination and approval of all major center flows in control in order to obtain maximum utilization of airspace.
2. Central Altitude Reservation Function (CARF) - Responsible for coordinating, planning, and approving special user requirements.
3. Airport Reservation Office (ARO) - Responsible for approving Instrument Flight Rule (IFR) flights at high-density-airports John F. Kennedy, La Guardia, O'Hare, and Washington National during specified hours.
4. ATC Contingency Command Post - A facility which enables the Federal Aviation Administration (FAA) to manage the ATC system when significant portions of it have been lost or are threatened.

**Enhanced Traffic Management System**

Did you ever wonder what happens to the information and data that goes into and out of the air traffic control facilities across the country? The FAA's Enhanced Traffic Management System (ETMS) makes use of it all in the performance of air traffic management. The central processing unit for this system is located in Cambridge, Massachussetts. The traffic management units (TMUs) at the air route traffic control centers (ARTCCs) and terminal radar control facilities (TRACONs), along with the air traffic control system command centers (ATCSCCs), function as a team, making up the nationwide Enhanced Traffic Management System.

The Aircraft Situation Display (ASD) is a computer system that receives radar track data from all 20 ARTCCs located within the continental United States, organizes this data into a mosaic display, and presents it on a computer screen.

The display allows the traffic management coordinator (TMC) multiple methods of selection and highlighting of individual aircraft or groups of aircraft. The user has the option of superimposing these aircraft positions over any number of background displays. These background options include ARTCC boundaries, stratum of en-route sector boundaries, fixes, airways, military and other special use airspace, airports, and geopolitical boundaries. By using the ASD, a traffic management coordinator can monitor any number of traffic situations, or the entire systemwide flow.

The ETMS relies on two types of data for operation: static and dynamic. Each data type has its individual characteristics, and each is used differently within the system. Additionally, the two types of data are provided by entirely different sources:

**Static Data:** The ETMS uses five types of static data: geographical, scheduled, aircraft dynamics, capacities, and General Aviation (GA) estimates. The static data is provided by various sources and contains information describing National Air Space (NAS) facilities, airspace structure, airport differences, and aircraft differences.

Geographical and aircraft dynamics data updates are sent to the ETMS field sites through the ETMS communications network. Capacities, schedule data, and GA estimates are updated by air traffic management specialists through the ASD.

**Dynamic Data:** Dynamic data is up-to-the-minute and includes NAS and weather data, Estimated Departure Clearance Time (EDCT) files, fuel advisory (FA) tables, and airline substitution requests from the air traffic control system that the ETMS processes use. Additionally, the ETMS generates airline substitution replies and control time messages.

Dynamic data differs from static data in that it is continuously updated; that is, the information is received at the Cambridge center in a continuous stream, literally hundreds of messages per minute, and the display of this information to the ASD is updated every three minutes.

**The Airport Surveillance Radar**

One of the most fascinating aspects of air traffic control is the radar system they use. The ASR-9 System is an undeniably complex surveillance radar that possesses seemingly amazing capabilities.

It is a medium range (60 nautical miles) airport surveillance radar that operates at S band (2.7 GHz) under crystal control, with a pulse width of 1.03 microseconds, a 1.3- to 1.6-degree azimuth beam width, an antenna rotation rate of 12.5 revolutions per minute, a typical pulse repetition frequency (PRF) of 1200 Hz, and an average power of 1188 to 1462 watts.

The ASR-9 in Houston is also equipped with the Mode Select (Mode S) Beacon System which is a combined secondary surveillance radar (beacon) and ground-air-ground data link system. That means it is capable of providing automated aircraft surveillance and communications to support Air Traffic Control when it's really busy.

What does this mean to you and me? Here's an oversimplified explanation: Computer equipment on the ground communicates with airborne computer equipment located within the aircraft and translates this data into the alpha-numeric and or primary and or secondary radar returns that the air traffic controllers see on the radar scope.

This data is translated by the controllers, and the information gained is then used to determine the best and most efficient use of separation standards to get the job accomplished safely.

Other important features of this type of radar equipment include: a weather receiver, antenna, and redundant (back-up) channels, a surveillance and communications interface processor, waveguide systems, moving target detection system (formerly known as MTI), weather channels and remote monitoring subsystems.

As you can see, there are many variables to be considered in the application of radar procedures. The bottom line is that the United States still maintains the most efficient means of keeping airplanes safely separated.

Our thanks to Houston Intercontinental Air Traffic Control Tower and Tracon (http://www.neosoft.com/~iah-atct/) for the foregoing information.

See you in June with more aero news and views.
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Domestic DXers Abroad

In February, I wrote about DXing on the road while traveling within one's own country. This month, I have some loggings from three American DXers who are really DXing on the road. These should give you some feel for what the DX hobby is like in other countries.

Michael Muehlbauer, N6TWX, wrote from Aachen in western Germany, near the border with Belgium and Holland. Using a Grundig YB400, his regular AM reception includes 47 stations in 17 countries. Some more distant stations include Radio Telefis Eirclean (RTE) from Ireland, several Radio Nacional de España (RNE) stations from Spain, a Portuguese station on 594 kHz, Luxembourg on 1440, Russia on 1386 and 1494, and the Vatican on 1530 and 1611.

Michael writes, "During Friday and Saturday nights, you should hear all the soccer games. It is really fun to hear the enthusiasm in Spain, Italy, and France of the announcers!"

Note the strange frequencies. Of course, there are no stations on 594, 1386, 1494, or 1611 kHz in North America; almost all stations here operate on exact multiples of 10 kHz. This is the case throughout the Western Hemisphere.

In Europe, Africa, and Asia, 9 kHz channels are used. They start at 540 kHz (actually there are now a few stations on 531) and go up from there — 549, 558, 567, 576, etc. When conditions to Europe are good, sometimes these "off-channel" European signals will mix with American signals on the nearby 10 kHz channels and generate "hets" (heterodynes), continuous high-pitched tones. For example, the 2,000,000 watt Saudi station on 1521 kHz will often mix with WWKB-1520 Buffalo to yield a 1 kHz tone. Once in late 1997, I heard this "het" on my car radio near Springfield, Tennessee. If you hear something like this, it's a good time to put on the headphones and listen closely; you may be rewarded with some extreme DX!

There is also a longwave broadcast band in Europe, 150-300 kHz. Michael regularly hears 10 longwave stations from Germany, France, Russia, England, Luxembourg, Denmark, and Ireland. Because there is less interference in this band, these stations are easier to hear in North America. The loudest of the bunch is probably the Irish station "Atlantic 252" on 252 kHz. This is a pop music station, and really sounds a lot like a top-40 FM station in the States.

Oaxaca in southern Mexico is a little closer to home. Stephen Tulley writes from there with a list of US stations heard on a GE SupeRadio and dipole antenna. His log includes KWKH-1130 Shreveport, Louisiana, KOA Denver ("very faint"), and five stations in Texas. Stephen's best catch is KWED-1580 Seguin, Texas, which uses only 252 watts of power. Four of his loggings use directional antennas at night, all of which favor the south.

Stations you never hear in the inland US may be very strong overseas! Many of them beam their power across the city they're trying to cover, and then right out to sea at the nearest beach...

Long-time contributor John Ebeling of Minneapolis makes an annual trip to Barbados. He uses a Sangean ATS-818 on the island's south coast. Absolutely nothing was heard on the expanded band down there. The only mainland US stations John could identify were KYW-1060, WSB-750, and WFAN-660. He also received English-language WOSO-1030 from San Juan, Puerto Rico. There is currently a station operating on 790 on Barbados, but it's being simulcast on a new FM transmitter on 92.9, and the 790 frequency is to be phased out.

The Caribbean is also home to several stations on 5 kHz splits — frequencies midway between the regular AM frequencies used by most stations. Grenada has a station on 535 kHz; ZIZ on St. Kitts is on 555 kHz; and there is a station on 705 in St. Vincent. John asks, "Wonder how these are tuned with digital car radios?" I have no idea!

Expanded Band News

The "mystery station" on 1650 kHz has finally begun regular programming. As most DXers assumed, it was WHKT Portsmouth, Virginia, and it's relaying WPMH-1010. Also new to the expanded band are KSMH-1620 Sacramento, California (Catholic religion), and WTTM-1680 Princeton, NJ (which relays WHH-1350 with business news).

KWY-1630 Cheyenne, Wyoming, has been reported with an improved signal; this rare state may now be DXable in more locations. Finally, unlicensed "W-807" has been widely heard on 1710 kHz. This station airs rock music, and is believed to be in the Peoria, Illinois area.

Bits and Pieces

Stephen has DXed on the road in the US, too, and has a very interesting logging. A few years ago, he heard KFI-640 Los Angeles on 1280 kHz. 1280 is exactly twice KFI's frequency — its "second harmonic." I would normally expect to hear this harmonic (especially of a powerful 50,000 watt station like KFI) on a car radio near the KFI transmitter. But Stephen was on Interstate 80 in Wyoming at the time!

It is not unusual for AM stations' harmonics to be audible over considerable distances. If you have a shortwave receiver, tune the spectrum between 2000 and 3500 kHz, and you're likely to hear at least one broadcast station on a multiple of its real frequency. However, the only reason you're hearing these low-powered signals is that there is very little interference in this band.

Stephen's logging is particularly unusual in that it wasn't buried under interference from other stations on 1280 kHz.

What's coming in this spring? Write me at Box 98, Brassstown NC 28902-0098, or by email to w9wi@bellsouth.net.

Good DX!
Jimmy the Weasel Busted by FCC

Multiple sources in the pirate radio community confirm that WRX, operated by pirate gallantly Jimmy the Weasel, was closed down by the FCC in mid-February. Jimmy’s unusual programming generated mixed reviews from listeners, but it certainly was distinctive. When not yelling “Y2K” or “Your Stinkin’ Mama” into his microphone, Jimmy produced “concerts” consisting of profane a capella singing. Some veteran pirate DXers noted some similarity between Jimmy's shows and another ill-fated pirate of the 1990s, Ira of WPIG.

As of the deadline for this month’s column, the FCC had not yet released formal comments on this enforcement action. However, they have continued to close down a steady stream of unlicensed FM pirates, including Canyon Lake Radio on 105.7 MHz in Canyon Lake, TX, Vibes 89.1 FM in Oakland Park, Florida, and WFLR on 89.7 MHz in Howell, MI.

Jimmy’s broadcasts were frequent on consecutive weekends for at least two months. Occasionally he announced telephone numbers and a Maine transmitter location over the air. Predictable and frequent operating patterns, used by WRX and most FM pirates, obviously make it easy for the FCC to execute enforcement actions. Thus, most pirates that you see here this month operate with erratic and random schedules, so as to minimize the odds of a bust.

Radio World Endorses Low Power FM

Radio World, a leading trade publication in the radio broadcasting industry, has endorsed the concept of licensed low power FM stations in the United States. Various proposals that would authorize this new broadcasting service are currently pending before the FCC. The magazine editorialized in its March 3 issue that, “The FCC should simply be a traffic cop... And a traffic cop is not supposed to prevent new traffic from coming onto the road.”

Some broadcasting industry representatives have been throwing cold water on the proposals, citing potential for interference to existing licensed broadcasting and potential economic damage to the current broadcasters from new low powered stations.

Many in the pirate radio community have criticized opponents of the plans such as the National Association of Broadcasters, suggesting that licensed stations oppose competition so as to retain their current monopoly on over-the-air radio programming. The FCC has not yet taken action on the proposals.

Regular contributor Harold Frodge says that he regularly hears W807 on 1710 kHz, apparently from Glassford, IL. Pop and rock music are normally featured. Is anybody else hearing this operation, which has moved above the New North American mediumwave AM expanded band?

Europirates Still There

We received numerous loggings of Europirates broadcasting this month, including stations such as SWSR on 3053, 7590, and 11470 kHz, as well as a host of less well heard broadcasters within 40 kHz of 6260 kHz. If you live in eastern North America, the period around your local sunset and European sunrise are the best times to chase European pirates.

Shortwave Pirate Activity

North American pirate radio stations heard by our readers last month all used frequencies within 500 kHz of 6955 kHz, typically from two or three hours before sunset until at least 0500 UTC. Morning and afternoon broadcasts increase on the weekends. Programming formats and contact maildrops (when known) are listed.

Blind Faith Radio- Psychedelic rock oldies dominate Dr. Napalm’s shows (Merlin)
CHU- This one isn’t a time signal; it’s a rock music pirate. (None)
Indira Calling- Sanjay with a parody of shortwave station All India Radio. (Providence)
Jerry Rigged Radio- Rock and discussion with Simon Bar Sinister. (Providence)
K-Mart Radio- Rock music, not “Attention Shoppers,” is heard here (None, uses Stonecold8955@hotmail.com)
Radio Atlantica- We’re looking for more information on Dr. Fish Head’s rocker. (None)
Radio Azteca- Bram Stoker’s long-running parody station mothers DXers and DXing. (Belgium)
Radio Bingo- The result is always the same on this pirate radio bingo game. (Uses e-mail at radiobingo@cheek.com)
Radio Chad- Rock and country music are mixed here. (None, try the Free Radio Grapevine)
Roochet Radio- Rock, the radio hobby, and dogs are discussed here. (Pittsburgh)
Scorch- An active new punk rocker, their announcer’s voice has an echo effect. (None, asks for reports on the Free Radio Grapevine at http://www.fm.net/)
Scream of the Butterfly- Johnny Rockin’ says he has recovered from a severe bout of the flu, so he’s back on the air. (Providence)
The Radio- Little is known about this new rock music station. (None)
Voice of Pzoza- Rock with male and female announcers is their format. (Pittsburgh)
WACK- Their professionally produced rock shows include instant listener feedback from a 800 toll free number. (None, try wackradio@comcast.net)
WKND Radio- Animal’s rock and canine advocacy uses mad laughter as an interval signal. (Blue Ridge Summit)
WWVR- Their dance party music is still mysterious, as they do not contact listeners. Rainer heard them in Germany! (None)
WPN- They are back, this time with ancient oldies from the 1930’s. (Huntsville)
WPOE- A new one with rock music and sketches; traditional pirate fare. (Huntsville)
WRX- We’ll now have to worry about Y2K without Jimmy’s reminders. (Manomet)
WRVF- There’s another rock music station; obviously this is common on the pirate band. (Bellevue)
WWRX- Jimmy the Weasel’s parody station survived longer than the real thing. (None, uses wwwm4@hotmail.com)

Receipt reports to pirate stations require 3 first class stamps for USA maildrops or $2 US to foreign addresses. Send your letters to PO Box 1, Belfast, NY 14711, PO Box 28413, Providence, RI 02908; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 25302, Pittsburgh, PA 15242; PO Box 11522, Huntsville, AL 35814; PO Box 1464, Manomet, MA 02345; and PO Box 293, Merlin, Ontario N0P 1W0.

Thanks!

Your input is always welcome via PO Box 98, Brasstown, NC 28902, or via the e-mail address atop the column. We appreciate material sent in this month by Shawn Axelrod, Winnipeg, Manitoba; Ranier Brandt, Hoefer, Germany; Michael Clark; Jerry Coatsworth, Merlin, Ontario; Ross Comeau, Andover, MA; Ullis Fleming, Glen Burnie, MD; Harold Frodge, Midland, MI; Paul Griffin, San Francisco, CA; William Hassig, Mt. Prospect, IL; Zacharias Llangas, Italy; Chris Lobdell, Stoneham, MA; Greg Majewski, Oakdale, CT; Garfield Morris; Dick Pearse, Brattleboro, VT; Mike Prindle, New Suffolk, NY; Al Quagliieri, Albany, NY; Martin Schoech, Merseburg, Germany; Lee Silvi, Mentor, OH; DJ Stevie, Basel, Switzerland; and Neil Wolfish, Toronto, Ontario.
Longwave Online

Send your intercepts to me c/o Monitoring Times, P.O. Box 98, Brasstown, NC 28902.

I don’t believe in setting lots of rules for loggings, but if catches are listed in the general order shown below, it will go a long way toward helping me prepare the column. This applies to e-mail as well as regular postal submittals. I look forward to hearing from you.

### TABLE 1. SELECTED LOGGINGS

| 117 | -- | Russia (Alpha sys.) | J.D. (ON) |
| 178 | KRV | Chardon, OH | J.D. (ON) |
| 191 | OYV | Donora, PA | J.D. (ON) |
| 194 | TUK | Nantucket, MA | J.D. (ON) |
| 205 | XZ | Wawa, ON | J.D. (ON) |
| 206 | QI | Yarmouth, NS | J.D. (ON) |
| 206 | GRS | Galveston, TX | J.D. (ON) |
| 212 | BAZ | New Braunfels, TX | J.D. (ON) |
| 213 | VIR | St. Norbert, QC | J.D. (ON) |
| 218 | RL | Red Lake, ON | J.D. (ON) |
| 219 | OQ | Indianapolis, IN | J.D. (ON) |
| 220 | BX | Black Sablon, QC | J.D. (ON) |
| 221 | YWW | Armstrong, ON | J.D. (ON) |
| 222 | X | Montreal, QC | J.D. (ON) |
| 224 | IL | Sturgeon Falls, WI | J.D. (ON) |
| 225 | EZE | Cleveland, OH | J.D. (ON) |
| 230 | BU | Columbus, OH | J.D. (ON) |
| 230 | QB | Quebec, QC | J.D. (ON) |
| 231 | BN | Napina, ON | J.D. (ON) |
| 232 | ON | Ottawa, ON | J.D. (ON) |
| 236 | GNI | Grand Isle, LA | J.D. (ON) |
| 239 | VO | Vail de Or, QC | J.D. (ON) |
| 243 | OZV | Howell, MI | J.D. (ON) |
| 243 | YVB | Bouvarenelle, QC | J.D. (ON) |
| 246 | DFI | Defiance, OH | J.D. (ON) |
| 251 | MNZ | Hamilton, TX | J.D. (ON) |
| 255 | BS | Austin, TX | J.D. (ON) |
| 258 | ORJ | Cory, PA | J.D. (ON) |
| 260 | PLY | Penn Yan, NY | J.D. (ON) |
| 260 | AVZ | Terrel, TX | J.D. (ON) |
| 261 | GD | Goderich, ON | J.D. (ON) |
| 266 | B | Hamilton, ON | J.D. (ON) |
| 275 | HPY | Baytown, TX | A.S. (TX) |
| 275 | PEZ | Pleasanton, TX | A.S. (TX) |
| 280 | GZV | Graford, TX | A.S. (TX) |
| 281 | UVA | Uvalde, TX | A.S. (TX) |
| 285 | EYQ | Houston, TX | A.S. (TX) |
| 285 | BEA | Beeville, TX | A.S. (TX) |
| 286 | EYQ | Houston, TX | A.S. (TX) |

In addition to his loggings, Alan Sifford passed along a web site with instructions for deactivating the “chuffing mute” that occurs while tuning a Realistic DX398 (or Sangean ATS909). You’ll find these instructions at: [http://members.aol.com/rickw999/san.htm](http://members.aol.com/rickw999/san.htm)

See you next month.
Marine Radio Monitoring

Looking for frequencies you can plug right into your scanner? “Service Search” is a column we offer to MT readers which will provide frequencies of general interest throughout the U.S. If there’s a service you’d like to know more about, send your request to the Editor at Monitoring Times or email mteditor@grove-ent.com.

U.S. VHF MARINE RADIO CHANNELS AND FREQUENCIES

<table>
<thead>
<tr>
<th>Chnl</th>
<th>Ship Transmit (MHz)</th>
<th>Ship Receive (MHz)</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>01A</td>
<td>156.050</td>
<td>156.050</td>
<td>Port Operations and Commercial. VTS in selected areas.</td>
</tr>
<tr>
<td>02A</td>
<td>156.250</td>
<td>156.250</td>
<td>Port Operations. VTS in Seattle</td>
</tr>
<tr>
<td>03A</td>
<td>156.300</td>
<td>156.300</td>
<td>Intership Safety</td>
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<tr>
<td>07A</td>
<td>156.350</td>
<td>156.350</td>
<td>Commercial</td>
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<tr>
<td>08A</td>
<td>156.400</td>
<td>156.400</td>
<td>Commercial (Intership only)</td>
</tr>
<tr>
<td>09A</td>
<td>156.450</td>
<td>156.450</td>
<td>Boater Calling. Commercial. Non-Commercial.</td>
</tr>
<tr>
<td>10A</td>
<td>156.500</td>
<td>156.500</td>
<td>Commercial</td>
</tr>
<tr>
<td>11A</td>
<td>156.550</td>
<td>156.550</td>
<td>Commercial. VTS in selected areas.</td>
</tr>
<tr>
<td>12A</td>
<td>156.600</td>
<td>156.600</td>
<td>Port Operations. VTS in selected areas.</td>
</tr>
<tr>
<td>13A</td>
<td>156.650</td>
<td>156.650</td>
<td>Intership Navigation Safety (Bridge-to-bridge). Ships &gt;20m length maintain a listening watch on this channel in US waters.</td>
</tr>
<tr>
<td>14A</td>
<td>156.700</td>
<td>156.700</td>
<td>Environmental (Receive only). Used by Class C EPIRBs.</td>
</tr>
<tr>
<td>15A</td>
<td>156.800</td>
<td>156.800</td>
<td>International Distress, Safety and Calling. Ships required to carry radio, USCG, and must coast stations maintain a listening watch on this channel. State Control</td>
</tr>
<tr>
<td>17A</td>
<td>156.850</td>
<td>156.850</td>
<td>Commercial</td>
</tr>
<tr>
<td>19A</td>
<td>156.900</td>
<td>156.900</td>
<td>Commercial</td>
</tr>
<tr>
<td>20A</td>
<td>157.000</td>
<td>161.600</td>
<td>Port Operations (duplex)</td>
</tr>
<tr>
<td>22A</td>
<td>157.100</td>
<td>157.100</td>
<td>U.S. Coast Guard only</td>
</tr>
<tr>
<td>23A</td>
<td>157.150</td>
<td>157.150</td>
<td>U.S. Coast Guard only</td>
</tr>
<tr>
<td>24A</td>
<td>157.200</td>
<td>161.800</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>25A</td>
<td>157.250</td>
<td>161.850</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>26A</td>
<td>157.300</td>
<td>161.900</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>27A</td>
<td>157.350</td>
<td>161.950</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>28A</td>
<td>157.400</td>
<td>162.000</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>63A</td>
<td>156.175</td>
<td>156.175</td>
<td>Coast Guard Liaison and Maritime Safety Information Broadcasts. Announced on channel 16.</td>
</tr>
<tr>
<td>65A</td>
<td>156.275</td>
<td>156.275</td>
<td>Port Operations (Marine Operator)</td>
</tr>
<tr>
<td>66A</td>
<td>156.325</td>
<td>156.325</td>
<td>Commercial</td>
</tr>
<tr>
<td>67A</td>
<td>156.375</td>
<td>156.375</td>
<td>Commercial. Used for Bridge-to-bridge communications in lower Mississippi River. Intership only.</td>
</tr>
<tr>
<td>68A</td>
<td>156.425</td>
<td>156.425</td>
<td>Non-Commercial</td>
</tr>
<tr>
<td>69A</td>
<td>156.475</td>
<td>156.475</td>
<td>Non-Commercial</td>
</tr>
<tr>
<td>70A</td>
<td>156.525</td>
<td>156.525</td>
<td>Digital Selective Calling (voice communications not allowed)</td>
</tr>
</tbody>
</table>

More scanner frequencies and information can now be found on the MT web site as well. You’ll find spectrum allocation charts, the new FCC Service code chart (useful if you purchased the 1998 FCC database), and we’ve resurrected the “Frequency Exchange” as an online version. Check it out and see who has posted their favorite list; then submit your own!

NOAA WEATHER RADIO FREQUENCIES (MHz)

<table>
<thead>
<tr>
<th>Chnl</th>
<th>Ship Transmit (MHz)</th>
<th>Ship Receive (MHz)</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>156.575</td>
<td>156.575</td>
<td>Non-Commercial</td>
</tr>
<tr>
<td>72</td>
<td>156.625</td>
<td>156.625</td>
<td>Non-Commercial (Marine only)</td>
</tr>
<tr>
<td>73</td>
<td>156.675</td>
<td>156.675</td>
<td>Port Operations</td>
</tr>
<tr>
<td>74</td>
<td>156.725</td>
<td>156.725</td>
<td>Port Operations</td>
</tr>
<tr>
<td>77</td>
<td>156.875</td>
<td>156.875</td>
<td>Port Operations (Marine only)</td>
</tr>
<tr>
<td>78A</td>
<td>156.925</td>
<td>156.925</td>
<td>Non-Commercial</td>
</tr>
<tr>
<td>79A</td>
<td>156.975</td>
<td>156.975</td>
<td>Commercial</td>
</tr>
<tr>
<td>80A</td>
<td>157.025</td>
<td>157.025</td>
<td>Commercial</td>
</tr>
<tr>
<td>81A</td>
<td>157.075</td>
<td>157.075</td>
<td>U.S. Government only - Environmental protection operations</td>
</tr>
<tr>
<td>82A</td>
<td>157.125</td>
<td>157.125</td>
<td>U.S. Government only</td>
</tr>
<tr>
<td>83A</td>
<td>157.175</td>
<td>157.175</td>
<td>U.S. Coast Guard only</td>
</tr>
<tr>
<td>84</td>
<td>157.225</td>
<td>161.825</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>85</td>
<td>157.275</td>
<td>161.875</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>86</td>
<td>157.325</td>
<td>161.925</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>87</td>
<td>157.375</td>
<td>161.975</td>
<td>Public Correspondence (Marine Operator)</td>
</tr>
<tr>
<td>88</td>
<td>157.425</td>
<td>162.025</td>
<td>Public Correspondence only near Canadian border</td>
</tr>
<tr>
<td>88A</td>
<td>157.425</td>
<td>157.425</td>
<td>Commercial, Intership only</td>
</tr>
</tbody>
</table>

Frequencies are in MHz. Modulation is narrowband FM.

Note that the letter “A” indicates simplex use of the ship station transmit side of an international duplex channel, and that operations are different than international operations on that channel. Some VHF transceivers are equipped with an “International-US” switch for that purpose. “A” channels are generally only used in the United States, and use is normally not recognized or allowed outside the U.S. The letter “B” indicates simplex use of the coast station transmit side of an international duplex channel. The U.S. does not currently use “B” channels for simplex communications in this band.

Boaters should normally use channels listed as Non-Commercial. Channel 16 is used for calling other stations or for distress alerting. Channel 13 should be used to contact a ship when there is danger of collision. All ships of length 20m or greater are required to guard VHF channel 13, in addition to VHF channel 16, when operating within U.S. territorial waters. Users may be fined by the FCC for improper use of these channels.
More Mobile Station Solutions

May, June and July are great months to get out and see the sights from your automobile or camper. I know that our family can hardly wait to hitch up our camper and enjoy the great outdoors. Taking your radio hobby along on the road need not be a problem if you approach the task in a logical manner and employ the K.I.S. Radio philosophy.

As a ham radio operator I gladly accept the challenges associated with putting a small, low power (QRP) station on the air from my truck or campsite. I also pack along a small Sony ICF-7600W shortwave receiver and a current copy of the World Radio TV Handbook. Being away from major cities and their associated noise sources allows me to DX the SW bands and log some semi-rare stations.

For all you scanner-oriented folks out there, traveling and camping can yield some great VHF/UHF catches — the State Game Commission, State Police, US Forest Service and rural volunteer fire companies. Commercial campsites often use VHF/UHF itinerant frequencies.

Planning for a camping trip or vacation is much like planning for a communications emergency. The idea is to be as self-sufficient and flexible as possible in your radio equipment and antennas. Since both my Subaru Outback and my Ford F-150 truck carry 2 meter radio gear, CB equipment and scanners, there is little preparation I need to do for the action bands. HF is a different matter entirely.

The Skyhook Dilemma

By its nature, HF portable/mobile operation takes a lot more planning. The first thing you are sure to notice is the size of the antennas. Except for 10 meters, all HF mobile/portable antennas are a compromise, because of the physical lengths involved. The lower in the HF spectrum you operate, the longer your antennas have to be. Below 10 meters, your antennas will be some form of electrically shortened radiator. This normally takes the form of a coil of wire either at the base or midway up the antenna mast.

Over the years I have used the Hustler mobile whip system, which is a classic coil loaded antenna. I switched to the monoband Hamstick™ design several years ago and have had much better results using these helically wound antennas on 40 and 20 meters.

Last year I obtained an Outbacker Outreach™ multiband mobile whip for the Subaru Outback. This nine foot monster is a very nice antenna which works amazingly well on 80 through 10 meters, although you will need an antenna tuner in order to reach the low end of the bands. Band changes take less than a minute.

The Outbacker Outreach is imported from Australia where the initial design has been in use for many years. In order to survive in that hostile environment, antennas must be rugged. One look at the Outreach and you know instantly that this one is! (Fig. 1)

The helically wound portion of the antenna is a whopping six feet long! Add the three foot adjustable whip ("stinger") and you end up with a nine foot long multiband HF mobile antenna that plays extremely well. But, this is one antenna you are not going to put on a wimpy antenna mount and expect it to stay put. Outbacker sells a very rugged mount for their beast, but I decided to go with a custom mount since I had the local talent available. A friend of mine who is a commercial welder by trade custom fabricated the mounts on both my vehicles (Fig #2).

You're Gonna Hang It Where?

HF antennas for use at the campsite can take on various forms. I prefer dipole antennas, since they are low profile, simple to construct and erect as inverted vees. Some friends of mine use multiband verticals on their campers. These are fine, provided you use radial counterpoise wires.

Don’t forget the old standby: the end fed wire. These are simple and require only one counterpoise wire attached to the tuner to make them play as a multiband antenna. End fed wires are the antenna of choice by back
packers and hikers, where ounces count!

Unfortunately, modern pickup trucks (and cars, too) offer little in the way of spaces to mount equipment and antennas. In the instance of the F-150, double wall construction is a deterrent to mounting antenna hardware anywhere on the body. The Antenna Specialists Mosaic™ 2 meter VHF antenna (Fig#3) mounted in the center of the cab roof, required about an hour of "fishing" in order to get the coaxial cable down the side of the cab between the double walls.

![Image of Mosaic antenna mounted in Ford F-150](image)

**FIG 3 - The Antenna Specialists "Mosaic" VHF (2 meter) 5/8 wave mobile whip on the roof of my Ford F-150 pick-up truck. This VHF gain antenna enables me to cover all the local 2 meter repeaters in this area using only 5 watts. The rugged Mosaic mounts in a 3/4 inch hole. The lower portion of this antenna is made of a rubberized material that covers a spring to enable the antenna to survive being smacked by branches and low overhangs.**

Thankfully, George Ganis, WB3FKQ, has a good sense of humor and a lot of experience in mobile radio installation; otherwise, I would have mounted the 2 meter antenna on a lip mount along the side of the hood! As it sits now, this VHF antenna works unbelievably well, providing maximum coverage of the local area repeaters using only 5 watts from the ICOM IC-28H.

Speaking of mounting rigs, I swear that somebody sits up late at night thinking of ways to deter hams and scanner buffs from mounting our gear in vehicles! Full size pickup trucks have lots of room in the cab, right? Therefore, I should have plenty of room to mount radio gear, right? Wrong! Actually, the F-150 proved to be a lot more challenging from an equipment mounting standpoint than the Subaru.

**HO, HO, HO! Merry Christmas!**

Enter the "Christmas Tree." Several of the local hams had similar problems, and their collective solution was to get a pedestal mount system that consisted of a central mast and one or more horizontal pieces that were height adjustable up and down the pedestal, where gear could be secured for easy use.

Bob Reynolds, WB3DYE, kindly allowed me to eyeball the "Christmas Tree" mount in his Geo Tracker. Since Bob works as a reporter for WNEP-TV, he also mounts a lot of scanning gear in his mobile rig along with a 10 meter multimode transceiver and, of course, 2 meters.

Armed with information about Bob's installation, I was able to sketch out what I needed and a retired machinist neighbor of mine fabricated my "Christmas Tree" mount from T-6061 aluminum bar stock. This equipment stand is mounted in the cab of the F-150 (Fig #4) by bolting it to the transmission hump, slightly off center. The radio gear is hung on the side mounting support bar. A second horizontal support bar can be added for more gear.

Eventually, I plan on adding HF single side band (SSB) capabilities in the form of an SGC-2020 CW/SSB HF transceiver along with a 6 meter GE Ranger-II. These two rigs will fill the second support bar and make for a tidy equipment installation.

**What Price Stealth?**

In a previous column, I stressed the need for concealment and stealth with regard to mobile installations. Unfortunately, this is not possible with a pick-up truck — in my case, anyway. Therefore, rig insurance is a must. There are several companies specializing in insuring radio gear (less antennas, towers and rotors) and the premium is not all that outrageous, considering the alternatives. Check out the ARRL's radio insurance program, and the back of QST and CQ magazines for other companies that offer insurance protection for your radio gear.

**Power, Power and More Power**

Power is a major concern, especially when going mobile or portable. If at all possible, go directly to the vehicle battery with the radio power cords. This will greatly reduce the amount of interference and noise pickup from various automotive subsystems inside the vehicle. Also, by going directly to the battery, the chances of RF energy being coupled into the wiring harness of the vehicle is greatly reduced.

Power for my portable gear while in the camper is provided by a deep cycle marine battery on the trailer hitch of the camper. For tent camping or operations from a hotel/motel I use a portable "Power Station" gel-cell power unit. These normally sell for about $50, but Tech America had them on sale a few months ago for $25.

These portable power sources have a 7 amp hour gel-cell battery and charging circuitry enclosed in a high impact plastic carrying case. There are two 12 volt dc cigarette lighter jack outputs on the front along with a dc voltmeter to monitor battery condition. Each jack has a separate switch for power on/off.

The back of the Power Station has a high current 12 volt dc output that is not switched. An external charger plugs into the wall to recharge the Power Station at home, or you can recharge it from your vehicle via a handy cigarette lighter plug adapter, while on the go. In all, the Power Station is a great little accessory to insure that you have power when and where you need it for portable operation.

That's a wrap for now. Remember, when you take it on the road, Keep It Simple!
Build a Four-Level FSK Data Decoder Interface

In this issue we present the promised Four-Level FSK Data Decoder Interface (4LFSDKDDI) that, with a freeware program, can decode a few of those elusive and mysterious signals out there on the airwaves. The 4LFSDKDDI can be built by most hobbyists, and the software is a no-brainer. Readers are cautioned that decoding certain Four-Level FSK signals could be illegal, depending on where you reside. Get informed before proceeding.

See my column last month for the necessary dual polarity power supply. Since then, I learned that power requirements aren't so critical, but ±15V is the max. Greater than ±11V should be regulated, but lower can be unregulated so long as it is reasonably stable. ±5V is an absolute minimum.

A pair of 9V DC adapters or 9V batteries can be perfect for the 4LFSDKDDI. The important thing is to measure your intended power supplies before connecting them to the circuit. See my May-97, Jul-98, Aug-98, and Feb-99 MT columns for important (but not essential) background information, particularly on the simpler 2-Level FSK data decoder interfaces and processes.

You will need an 800-940 MHz scanner (cellular not required) with the NFM discriminator/baseband audio mod installed and known to be functional. See my Jul-98 column to do this modification to most any scanner. My Web site at: http://ourworld.compuserve.com/homepages/bcheek/scandata.txt always offers the latest on this baseband audio mod. See Table 1 for the Parts List.

**Getting Started**

Cut a piece of perfboard 18 complete holes long by 15 complete holes wide. This size supports the circuit perfectly and fits either of the suggested enclosures. If you choose the #270-283 project box, don't use the circuit board that comes with it. Save that board for another project.

Follow Figures 1 and 2 for the broad details of constructing the circuit. Begin by removing Pin 13 of the IC socket that will be used for U2. You can even cut Pin 13 away from the LM339 chip, too. It's not needed, but the empty space for it on the wiring side of the board comes in handy.

Install the IC sockets first, then solder bare 22-24 ga wire "traces" among the appropriate IC pins, for example: U1 pins 5, 10, 13 & 14; U2 pins 5, 7, & 9; U2 pins 10-11; and U1 Pin 5 to U2 pin 7. This secures the sockets to the board to keep them from falling out.

Install and solder jumpers JU1 and JU2. One end of JU1 has to be left open until later in the construction. JU3 and JU4 can be added later.

Now begin in earnest by installing and soldering R2, C1, R1, C2, C6, R5 and D2, in that order. First, bend the leads of resistors and diodes at right angles, as close to their bodies as possible. Use a flat-blade jeweler's screwdriver to bend component leads on the wiring side of the board.

Use protruding component leads as "traces" where possible (most of the time.) After a component is installed flush with the board, sharply bend its protruding leads on the wiring side in the general direction of the "trace" it should follow. Solder at least one end in place to hold the component before installing another one.
Starting with R2, C1, C2, C6, R5 and D2 as instructed above, install components, one at a time, working in and completing one area at a time. Work in a clockwise direction around the board. Where possible, tightly bend the leads on the solder side and route them as traces, instead of clipping them.

Follow the wiring and parts-placement patterns shown in Figure 2. Shorter traces will “rigidize” after soldering. Don’t make anything permanent until after the board is tested and proved up. Observe polarity of diodes and electrolytic capacitors. Ensure IC’s are correctly installed, per Pin 1 references.

Preset the adjustments of the two trim pots (VR1 & VR2) to midway between the ends. NOTE: The trim pots aren’t absolutely essential. They can be replaced with 4.7k fixed resistors. (See Notes 2 and 3 in Fig-2.) VR1 sets the gain of U1a while VR2 is a Low Pass Filter adjustment for U1d.

**Connect the 4LFSKDDI**

Wire the outputs of the 4LFSKDDI to a female DB9 jack. Wire an RCA jack to feed the input to the 4LFSKDDI. Connect an ordinary shielded audio patch cable from the RCA jack to the NFM baseband audio output on your scanner. If needed, add a plug or adapter on this end of the cable to mate with the scanner’s baseband audio jack.

Connect a shielded straight-thru serial cable with a male DB9 plug to the 4LFSKDDI’s female DB-9 jack. The other end of this serial cable should have a female DB9 (or DB25) plug (or adapter) to mate to the desired COMPort on the PC.

The ± power supply can be connected in any number of ways, from the old fashioned hard-wired method to perhaps a stereo jack and plug with the shell grounded; -V on the ring and +V on the tip. A pair of monaural jacks with common grounds will work; +V on one center and -V on the other. Just don’t reverse the +/- power polarities; the IC’s will blow. Figure 3 illustrates the necessary connections.

**Wrap-up and Loose Ends**

The circuit has been extensively field-tested and proved, so be patient. Use a bright light and a strong magnifier to examine your work as you go! Common errors include missing traces and jumpers, reverse polarity of capacitors and diodes; cold solder joints; and solder-blobs or short-circuits in tight places. Despite the high-density design, cramped quarters are few, largely in the vicinity of U2 pins 3-5, U1 pin 12, C1, R2, and some of the area between U1 and U2.

Most “traces” are rigid once soldered at each end, but a few might be “wiggly” unless anchored in some manner. Pay special attention to traces E14-12, F12-Q11, E13-P1, and H9-Q14. Anchoring can be with super-glue, hot glue, or even loops of wire passed through holes on either side of a trace, for instance at holes B12 and A13 to anchor the corner of trace E13-P1.

For detailed information on hobby circuit building, including PCB-making, see my four-part series, “Cool Ways to Design Circuits,” Apr-96 through Jul-96. MT offers low-cost reprints if you don’t have those issues.

**Test the 4LFSKDDI**

Download POCFLex.ZIP from the following site:
http://www.geocities.com/CapeCanaveral/Launchpad/4039/PINFO.HTM

Does and insider information at this site make this program an excellent test platform for the 4LFSKDDI, if legal in your area. Unzip the POCFLex.ZIP archive into a new directory, say: 4LFSK.

Review the contents, especially the *.INI files, which are the docs for this program. For a quick-start, follow the next five steps exactly:

1. Set the scanner to the 928.0-932.0 MHz band segment.
   A. Connect the baseband audio output of the scanner to the RCA jack on the 4LFSKDDI.
   B. Don’t power up the 4LFSKDDI at this time.
2. Edit the POCFLex.INI file in the 4LFSKDDI directory as follows:
   *TWOLEVELINT = 0
   *SPORT = 2 (See NOTE 1 below)
   *RCVPOLARITY = 0
   *SHOWNUMERIC = 1
   *SHOWMISC = 1
   *TIMESTAMP = 1
   *KILL_LF = 0
   *pmt_echo = 0
   *lpt_port = 0
   *screenmode = 2

   NOTE 1: Make all settings exactly as shown above except for the SPORT = 2 line. Change the “2” to match the COMPort (1-4) used by your 4LFSKDDI.

3. Edit the file called FILTER.INI as follows:
   *textscan = 1
   *scannumeric = 1
   *scannaddr = 1
   *filtfile = 1
   *WINFSIZE = 50
   *beepfreq = 11000
   *beepplen = 3

   NOTE 2: Make all settings exactly as shown above.

   NOTE 3: The POCFLex.INI and FILTER.INI files are the configuration settings for the POCFLex program. If you don’t understand config files or don’t know how to edit this type of file, you’ll need to seek outside help. Make sure each of these two files contains the settings exactly as shown or discussed above. You can change them later to suit.

4. Power up the 4LFSKDDI.

5. Run pocflex.exe from a DOS command prompt, or from Win95/98 in a DOS window.

Make sure the scanner has stopped on an appropriate data signal (the 928-932 MHz band is loaded with appropriate data signals). If all is well, data should appear on the screen in a few seconds. If not, don’t panic. Is the scanner on a data signal, and is the signal carrying data? Sometimes, these signals are “silent” between data bursts with clear tones. You can tell when data is present; check to be sure.

If all is well with the signal, but no data appears, then check the settings of the *.INI configuration files. Check all electrical connections and check for errors in the wiring of the connections, especially the DB9 wiring and the ± power polarity. Obviously, check the 4LFSKDDI board, too.

Support for this and all my columns is freely available by e-mail. If you’re not computerized, please include an SASE with postal requests.

E-mail: bcheek@cts.com
WWW: http://ourworld.compuserve.com/homepages/bcheek
FAX: (619) 578-9247 anytime
Postal: PO Box 262478; San Diego, CA 92196-2478

May 1999 MONITORING TIMES 83
The field of radio direction finding (RDF) is actually almost as old as wireless or radio itself. And in this electronic age where global-positioning technology can easily tell us our location anywhere on earth with great accuracy, it is easy to overlook the tremendous service which RDF, even in its simpler forms, has rendered to mankind over the years.

Its applications range from locating distressed ships at sea, to helping pilots return their plane safely home, to finding sources of radio interference, to locating pirate radio stations, and even to zeroing-in on enemy transmitters. RDF, even to itself, is a very interesting field with much to offer the radio enthusiast.

**A Brief History of Radio Direction Finding**

Directional antennas have been around ever since the late 1800s when Hertz, who first demonstrated electromagnetic waves, used the dielectric lens and the parabolic-dish reflector antenna. (What? You thought the dish antenna was recent technology?!) Later in the 1800s, Marconi also utilized parabolic reflectors for some of his wireless systems. In 1900 Zenneck, the “German Marconi,” experimented with directional antenna designs but, for some reason, discontinued what looked like promising work in this area.

Dunlap, in his *Radio’s 100 Men of Science*, says “Many are mentioned as the ‘inventor’ of the radio compass, among them Fessenden, Pickard, John Stone Stone, Capt. H. J. Rounds, Francis W. Dunmore, Percival D. Lowell, R. L. Rose-Smith, and Bellini-Tosi, but generally Kolster is credited with having built a practical device; that others had observed and realized the directional properties of wireless is conceded.”

Unfortunately, early receivers were so insensitive that RDF techniques were effective only up to a few miles. However, once the triode vacuum tube was discovered, much more sensitive receivers were possible. Subsequent to this improvement the systems of Bellini and Tosi, and of Pickard, were heavily utilized in early RDF work.

Bellini and Tosi, following up on work by Artom, had developed an RDF system (fig. 1A) utilizing two crossed, fixed-position loops connected to a “radio-frequency transformer with a rotatable secondary winding.” This transformer, called a “goniometer,” coupled the signals from the antenna loops to the receiver.

The goniometer had a rotatable secondary winding which, when rotated for the loudest signal, indicated the direction of a line which intersected the location of the transmitting antenna. However, it was impossible to say in which direction along this line (toward which of the line’s ends) the transmitting antenna

**FIG. 1. Three antennas which have been important in radio direction-finding. The Bellini-Tosi (A), the loop-plus-sense-antenna (B), and the Adcock (C).**
likely find that the signal fades to a low level at two points in a complete rotation. These points are called "nulls," and they are quite narrow (i.e., you must position the radio precisely to null the signal). If the signal is strong you may not be able to get a good null due to the automatic gain control in the receiver. In this case try a weaker signal.

The nulls should occur along a line through the long dimension of the antenna's ferrite rod. Take a directional reading on one station at two widely separated locations. Plot these two directional lines on a local map, and the point where the lines cross will indicate the position of the transmitting antenna.

If you have a handheld transceiver or scanner operating on the VHF band or higher, you can RDF using just your body as the RDF accessory! Tune in the station you want to RDF, and hold the transceiver or scanner up to your chest. Standing upright, slowly turn in a complete circle. The signal will most likely fade as you face in the direction away from the transmitting antenna, and return to full volume as you face that direction.

On VHF and UHF many beam antennas are small enough to carry and manipulate easily by hand. With the typical beam you will rotate the antenna over your head while looking at your receiver's signal-strength meter for a maximum reading. Most beams have a fairly wide beamwidth, but they can give you a general idea of the transmitting antenna's direction.

### Radio Riddles

**Last Month:**

I said: "Antennas have been called by various names including 'skywires,' 'antlers,' 'signal grabbers,' and 'wings.'" Heinrich Hertz called them 'conductors.' The British often use a different term for 'antenna.' What is that term? What is its origin?

You probably guessed it correctly; the term is "aerial." This term originated from the fact that, for good reception, early wireless antennas had to be elevated high above the earth. "Aerial" means "high above the earth," thus the antenna was an "aerial wire." In time this was shortened to "aerial."

**This Month:**

Could RDF be used to track thunderstorms?

You'll find an answer for this month's riddle, and much more, in next month's issue of Monitoring Times. 'Til then, Peace, DX, 73

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**TrunkTrac**

**New Version 5.2**

TrunkTrac, the first, and one of the most sophisticated trunk tracking technologies available, is now even better. New pricing and additional features make TrunkTrac your best choice if you're serious about tracking Motorola Type I, II, Hi, and Hybrid systems. TrunkTrac now supports the BC89XLT, PCR1000, R7000, R7100, R8500, R9000, and the RS Pro 20xx series with an OS456/535 board installed.

Competing products cost more, don't decode the control channel, can't deal with Type I 11 maps, and won't properly decode many Type II talk groups. TrunkTrac's patented technology lets you do all that and much more. TrunkTrac consists of easy to use menu driven software, an FCC Class B approved signal processing board you plug into an ISA slot in your PC, a serial interface, and a discriminator buffer for your scanner. Everything you need, including cables, is supplied. With TrunkTrac you'll have access to Private Call and Interconnect activity and can follow up to four systems at once. Any combination of VHF/UHF/800/900 MHz systems, including FED-SMR trunking, is supported. TrunkTrac lets you assign a 35 character alpha tag (up to 1000/system) to all IDs. You can set Lockouts, Personality Files, Scan Lists, and much more. TrunkTrac lets you log system activity to an ASCII file for database import and traffic analysis. We think you'll like TrunkTrac so much it comes with a 30 day money back guarantee. And for a limited time, when you purchase TrunkTrac, we will install the discriminator mod in your scanner for free.

**TrunkTrac ver 5.2...$297.95**

Scanner Master PO Box 428, Newton Highlands, MA 02161 1-800-722-6701 www.scannermaster.com
M any years ago, I became interested in listening in on the shortwave bands. It did not matter much what was on the bands; it was the mystery and adventure available that intrigued me. Listening to the friendly chatting on the HF ham bands attracted me to that hobby, but even after my ham ticket was hanging on the wall, listening still was fun and continues to be today.

My listening interests today are a bit different from those early days, in that I have developed a fairly ordered way of using the receiver. After many years of avidly operating on the air every minute I could manage, I became apparent that I was missing out on a lot of things. Shifting gears, I began engaging on a wider variety of interests and spending less time on the air or even listening.

Then I acquired a truly decent portable shortwave receiver (Sony 2010) that enabled me to listen almost anywhere. Using the Sony I was able to tune in on SW whenever I wanted to, and check out the action. If there was something interesting on the ham bands, I could go to the shack and join in, or just listen to what was going on. In addition to tuning the ham bands, the maritime and air frequencies provide a lot of listening adventures, and the old SW broadcast stations still are regular visitors in my home.

The second tool in my listening arsenal is a Radio Shack PRO 2040 scanner (though for many years I used a simple ten-channel handheld Uniden scanner). The scanner is used to monitor the VHF frequencies of a local ham intercom channel, local repeaters, and to monitor band openings on 10, 6 and 2 meters. I also check in on Fish and Game frequencies, local emergency, and weather.

Antennas

Most of the time, I use the built-in whip on the 2010 for listening and when I’m not in the electronics room; however, I do have a good shortwave antenna outside when I want to get serious with weak signals. When the scanner is not in the electronics room the screw-in whip antenna provides adequate coverage for most local signals, but a six meter discone antenna on the roof allows superb coverage from 10 to 2 meters with the 2040. A vertical log periodic array was used for many years to allow receiving distant VHF stations under any conditions. This antenna has since been replaced with four-element cubical quad antennas for 6 and 2 meters (the quads are superior on their given bands, but leave a lot to be desired when tuning outside of their respective bands).

One last piece of equipment that I use for my wandering SWLing is a pair of Radio Shack communications headphones, RS # 20-282. These headphones are excellent for the SWLing or hamming, as they are quite light, incorporate a volume control built into one of the phones, and use foam-filled ear cushions to reduce external noise.

A side bonus to SWLing is the interest my three sons show in the hobby. My boys are all interested in sitting in the shack when possible and listening to Dad hamming, and they like to talk to my contacts on phone. Two-year old Lars has been chatting on the air since just after his second birthday. When I am in the shack he will actually grab the mike and call CQ. He may only say “Hi, my name is Lars, I’m two years old and like candy,” but he sure enjoys hearing the voices talk to him from those boxes on Dad’s table. See photo (Lars is the one wearing the Radio Shack headphones).

Flight of the Bumblebees

Some time back, I mentioned in this column that it would be fun to have a given day or days (i.e., first day of spring, summer, fall or winter) as a time when everyone with a portable rig would go to some place of natural beauty and operate from it and send out photo QSLs (verifications).

Well, the Amateur Radio Adventure Society has organized an event that is something like what I described. It is called the Flight of the Bumblebees and takes place on the last Sunday of July.

Stations called Bumblebees go to remote locations using QRP (low power) and work as many stations as possible during a four hour period. Everyone is invited to join in on this activity; but if you are interested in becoming a Bumblebee you must contact the amateur Radio Adventure Society and let them know of your interest and tell them where you will operate from. They will assign a Bumblebee number which is used in the exchange during the event. Send requests to Russ Carpenter, AA7QU; his e-mail address is russ@natworld.com. Keep the last Sunday in July open for this event; full details next month.

Speaking of e-mail, I have two e-mail addresses, n3ik@hotbot.com or n3ik@planet direct.com. My old Zdial address is no longer valid (it was changed to the planet direct address). Keep the e-mail, cards and letters coming.

73 de Ike, N3IK
Cherokee’s FR-465plusVW FRS Transceiver

Okay, I’ll admit it. I’m a radio junkie. I love ‘em. It’s a pure joy to dive into all the packing materials and see what comes out. But I’m also a connoisseur . . . I particularly like radios that do everything well.

A case in point: the Cherokee FR-465plusVW. Regular readers of this column will remember that about a year ago, I tested the Cherokee FR-465 and found it to be an excellent Family Radio Service transceiver, offering superb range and a wealth of features that make it arguably the most sophisticated FRS rig on the market. The FR-465plusVW is an advanced version of the same radio, tricked out with a number of new features and capabilities.

The plusVW is less than 4” tall (excluding antenna), less than 2-1/2” wide and less than 1” thick. Except for its color, the plusVW looks identical to the standard FR-465. The pair tested were bright yellow in color (white and blue are also available). There are seven buttons on the front plus a liquid crystal display that provides vital operating information. On the top, you’ll find an on-off/volume knob, a port for plugging in a speaker-microphone and the antenna. On the left side, there is a push-to-talk button and a "function" button.

On the right side, there is only a port for plugging in a battery charger or optional cigarette lighter adapter. This radio comes standard with a rechargeable NiMH battery and wall wart-style charging unit, but it also comes with a tray that can hold five AAA alkaline batteries. On the back of this radio is a sturdy belt clip and a hatch for getting at the battery compartment, and on the bottom panel is a lock for the battery compartment and contacts for using this radio with one of Cherokee’s excellent drop-in chargers.

Like any FRS unit, you can just switch on the plusVW and use it. All you have to do is select a channel and the auto-squelch function takes care of the noise. And, like many other FRS radios, you can set Continuous Tone Coded Squelch System (CTCSS) tones. Some manufacturers call these “privacy” codes, but that is really a misnomer. When you set CTCSS tones, all transmissions except those on the same channel and using the same tone are blocked. CTCSS is a way of making sure you only hear the transmissions intended for your group. The plusVW can set a CTCSS tone for one channel and not for another, can set different tones for different channels, and offers the ability to turn tones on or off for a particular channel with just a couple of button pokes.

Features Apart from the Crowd

A special note: the plusVW and other Cherokee radios offer 47 CTCSS tones. Most FRS units that have CTCSS tones offer only 38. This can create some confusion if you are trying to use tones with other FRS units. The chart below outlines the differences. Stick a photocopy of the chart in your wallet or keep a copy with your FRS radio. You never know when it will come in handy.

Like the FR-465, the plusVW allows dual watch monitoring of two different channels, and there are other scanning and memory features. But unique to the plusVW is highly water-resistant construction. While it’s not designed to be totally immersed underwater, a special gasket makes it able to handle steady precipitation and splashing. That makes it a good design for folks—like Scout groups, backpackers, and bike trippers—who need to use their radios outside under adverse conditions.

A couple of other features make the plusVW particularly useful for outdoor adventurers or others who might find themselves in potentially risky situations. An automatic polling function (called Vitalink™) that works with a pair of plusVWs allows a master unit to send out a 1-second polling transmission. The “slave” unit receives the signal and automatically transmits a silent response if it is within range. If not, an out-of-range indication is displayed on the master unit with an alert tone.

In addition, the user of the slave unit can activate a “panic” button, which sounds an alarm tone at the master unit and displays HELP on the LCD. At the same time, the slave unit is automatically put into voice-operated transmission mode. Another neat feature is that this radio can be set to vibrate silently when someone is trying to reach you.

As with the FR-465, the performance of the FR-465plusVW is excellent on both transmit and receive. This radio gets my highest recommendation for anyone who wants a highly weatherproof FRS unit with a wealth of advanced features. Suggested retail prices is $199.95 including rechargeable battery and charger. For more information, contact Wireless Marketing, 1-800-259-0959, Monday-Friday, 8 AM-5 PM, Central Time or visit www.wirelessmarketing.com.

[Table of 47 CTCSS TONES]
Prospects for Software Radio and a Look at "SkySpy"

In 1970, if someone told you about a book-sized device that had more computing power than the latest room-filling IBM 360 mainframe, stored as much data and displayed color pictures and video, what would you have thought? Perhaps you would have considered them plain crazy or at least a crackpot. However, if they gave you a demonstration, it might have stunned you into believing that you were in the presence of an alien from a civilization thousands of years more advanced that ours. I know I would have.

Yet, less than thirty years later, we take notebook computers, which have all of these attributes, for granted as commonplace. In the past thirty years technological developments have moved at an unprecedented pace.

The miniaturization of low power active devices (transistors) on silicon, which started in the 1960s, enabled a higher number of devices to be put into a small volume space. Manufacturing developments then allowed whole circuits, not just simple devices, to be put on a tiny chip of silicon. Say hello to the integrated circuit.

More shrinking made it possible to construct many fast running circuits on the same, small silicon real estate. The hand-held calculator was born. These calculator chips brought four-bit, multi-capable (input, storage, data manipulation and display) chips. Witness the birth of the microprocessor. And the pace of shrinking has continued to accelerate since the 1980s.

Faster than a Speeding Electron

Device density (number of transistors per area) is not the only benefit of shrinking feature size. The speed at which the circuit can operate has also been dramatically affected. Today, data switching rates, which twenty years ago were difficult to generate in the radio oscillators, are available to the consumer. And now we have a combination of high integrated circuit complexity (millions of transistors on a chip) and very high data clock speeds (300 MHz+).

The result is high speed, complex, software controlled circuit elements. These circuits have the ability to exhibit different electrical characteristics, depending on their software program. With high computing speeds, the software configuring of these circuits is now so fast the electrical result appears as real-time. Poo! ... DSP, Digital signal processing.

So what about the software radio? Is it hardware? Umm ... yes. Is it software? Yes. So, exactly what is this new animal?

Reconfigurable Software Radio

Led by Sofware four years ago, a number of companies have produced computer controller receivers; some with DSP. Now, let’s get a few terms straight. Computer controlled does not always equal DSP. The computer control refers to how the user interfaces and uses (tunes) the receiver. The DSP part refers to how the receiver circuits are taking the off-air signal and transforming it into speech.

A total DSP receiver would take the off-air signal and turn it into a stream of digital data. This data can then be manipulated in a digital form, and finally reconstituted as audio. Think of the difference between your old vinyl music records and CDs. The record used features on the walls of the grooves which made a needle vibrate to reproduce the sound. The CD is digital and reads "1"s and "0"s of the digitized sound. The clarity and noise differences are obvious (but I still keep an LP collection as well as CDs).

Add to this the fact that low cost chips now enable the sender to "modulate" speech in a digital format (the new breed of cellular telephones), and all the elements for next generation radio are in place.

We can glimpse the future in some of the products that are now being introduced. Micrel Inc. has announced the MICF01 which is a single chip receiver/data demodulator. It's capable of operation between 300 and 450 MHz and includes all RF, IF and demodulation on chip — "antenna-in-through-data-out." Must be pricey, right? Wrong! It's $3 in 1000 piece quantities. Check out www.micrel.com for more information.

Even more advanced is Quicksilver Technology Inc. They are using adaptive computing and are designing a single controller which will be capable of being used by all cellphone handset manufacturers. It will automatically reconfigure itself, both in frequency range covered and digital "modulation" form (TDMA, CDMA and Global Systems for Mobiles), depending on which cellular network it is being used on. In order for this to be possible, DSP techniques have to be taken right to the antenna input!

One of their targeted customers requires a frequency range of 800 MHz to 2.1 GHz. This will take some pretty fancy technology, which is more than even today's DSP can provide. Throw away that soldering iron. Soon you won’t need to tinker with that hardware to make operational modifications. Just re-program it.

Could this be the end of people writing endless boring articles on narrow, limited hardware modifications? Radio hardware hackers may soon be going the way of sparkgap engineers. The software radio may be closer than we realize. Hmm, I think that old alien from the 70s may be back.

SkySpy - The Latest ACARS Package

We have talked about ACARS — the digital transmissions which commercial airliners use for in-flight aircraft situational reporting — in this column over the years, reviewing decoders from AEA, Lowe and others. Now comes another ACARS software/hardware package from the United Kingdom. (Come to think of it, most ACARS programs seem to originate in the UK or Europe; I wonder why?)

SkySpy is the first ACARS program I have used which requires Windows 95 or 98. This is due to the very nice use of database windows which can simultaneously display near-real-time data. The SkySpy package includes a hardware decoder and two 3.5 inch, high density, floppy drive. The decoder is housed in a 25 pin serial port connector housing and requires no additional power. A cable with a mini-phone plug, which connects to the speaker/headphone jack of your aircraft radio, is the only connection required.

This decoder is quite versatile and can be used with other decoder programs such as HamComm, PC HF FAX, PTKMON12, POCSAG and DL4SAW's SSTV.

Loading of SkySpy version 1.5 was quick and simple. On the initial running of the program the Key and Serial number (provided on the disk) is required as a form of copyright protection.

We'll use a Pentium 233MMX, with 64M...
RAM and a Tandy Pro-2004 attached to a simple discone antenna with SkySpy. A 9 pin to 25 Pin Converter (not supplied) is required for my computer to interface with the decoder.

With the audio cable plugged into the headphone jack of the Pro-2004 and the volume set to halfway, the Lists screen of SkySpy jumps to life with activity. See Figure 1. A box lights green on the tool bar when the program is "hearing" the receiver. In order to capture ACARS the squelch must be turned off. The resulting white noise illuminates the box. It doesn’t indicate a signal, but it is useful in checking that everything is connected to SkySpy, and it is "listening."

The Lists screen is one of five basic screens: Lists displays all the decoded information on a single line; Monitor displays all the raw data stream decoded by the program and any receive errors; Flight provides flight numbers of aircraft received and the first and last date of intercept; Registration is an alphabetical listing of received aircraft tail numbers and first and last date of intercept; and finally, the Message window breaks the single line data of the List screen into easily read information.

We’ll look at the functions of the Lists screen and the Message window, since the rest are self-explanatory. A nice help feature, which is activated by clicking on the help title, is very useful in explaining functionality and screen usage.

Lists Screen - Enjoy Your Flight

This is my favorite screen, since all real time data is decoded and displayed right here. The screen is eleven columns, each of which can be expanded or collapsed, depending on your personal interests. The first column shows intercept date/time information. (More about Time settings later.) The last column shows a number which indicates the chronological order of reception. The decoded data, such as flight number, aircraft registration, mode and acknowledgment is the sandwich meat of the screen.

A very convenient feature of SkySpy is the way this screen data can be sorted, or ordered, by any one of the columns. Figure 1 was sorted by time of intercept, the program’s default. But if we want to see an intercept list sorted on aircraft registration, all we need do is to click on that heading (Reg #) and the program does the rest. A double click sorts in the reverse order. Very user friendly!

The ABCs of Reading ACARS

Now, suppose you are as lazy as I am, and have better things to fill your brain with than ACARS decoding formats. The writers of SkySpy have helped out a bit by including the Message Window screen. If we click on an intercept line from the Lists screen, the Message Windows opens up and explains some of the data. See Figure 2 (the message says “07KEWR REQUEST GATE ASSIGNMENT ETA 1901.”)

Hey, let’s get a gate for this guy! Unfortunately, the message content window does not perform any further deciphering of ACARS formats. So you’re on your own from here.

Tops Down View of SkySpy

SkySpy is a very user friendly ACARS program which takes advantage of the features of Windows 95/98. The one problem I did have was setting the time of the program to reflect my actual local (or UTC) time. The time displayed was not the actual time of intercept. Perhaps the program requires me to set my computer’s time to UTC. That’s not going to happen. I found nothing concerning time setting in the instructions or their Website. I’ve e-mailed SkySpy my time setting question.

With SkySpy’s extensive database features and operations, operator-less monitoring works very well. I suggest you let SkySpy monitor all day while you are at work (or out shopping with your better half). You may see some interesting message patterns develop. I think you’ll be surprised at all the activity on the commercial airways.

SkySpy, version 1.5, is available from Pervisell Ltd, 8 Temple End, High Wycombe, Bucks, UK HP13 5DR for 24.99 pounds sterling. The basic hardware decoder is available for 16.99 pounds sterling. Call them at 01494 443033, or email them for shipping costs. Their Website, which contains some very nice free downloadable radio programs, is www.pervisell.com and email is ham@pervisell.com.

Other aircraft database products can be used with SkySpy. If we are able to obtain them we’ll bring you their details in a future column. My thanks to Dick Milligan for bringing SkySpy to our attention. Till next time, remember what our aircraft monitoring brethren already know ... keep looking up.

FIGURE 1 - SkySpy Lists Screen Where It All Happens

FIGURE 2 - Message Window: A Plain Language Screen
Mention “shortwave” to a powwow of broadcasting chiefs, and you can expect a collective sigh. “It’s too unreliable,” they’ll say. Not to mention that it sounds poor and listeners can’t keep track of schedules.

Sony founder Akio Morita had a personal as well as financial interest in shortwave. About 15 years before he retired, he began putting Sony on the path to producing the best-engineered world band portables in the world. Early efforts included the classic ICF-5900W and ICF-6800W, but the pattern was really set with the pioneering ICF-2001 with true digitally synthesized tuning. The 2001 had its share of problems, which were remedied in the similar ICF-2010 that incorporated several selectable sideband circuitry for portables. This day, the ‘2010, which was then way ahead of its time, continues to be the best world band portable on the market, according to the 1999 Passport to World Band Radio.

But the ‘2010 is about half the size of a laptop, so bit by bit Sony began introducing high-tech models which were handled for traveling. The high water point for this came with the ICF-SW07 compact portable, about the size of an audio cassette’s jewel box.

All these advanced technology models performed well enough to diminish the criticisms that shortwave is unreliable and poor-sounding. The keys to Sony’s success lay in their radios’ good sensitivity to weak signals, decent bandwidth filtering, and especially the world’s first practically performing synchronous selectable sideband circuitry for portables. To this day, no other portable manufacturer has been able to match Sony’s technology in sync performance.

All this says something about Sony’s corporate culture. Competitor Matsushita declared some years back that its family of companies, including Panasonic, should not make major efforts in areas of mature technology. Sony, however, decided to use advanced technology to bring new life into mature markets, including world band radio, and the benefits of this decision keep rolling in.

**Replaceable ROM tuning factory-set for four stations**

With that in mind, this April Sony introduced the new ICF-SW07 compact portable, roughly $420 on the street. In a nutshell, it is an enlarged and upgraded version of the smaller ICF-SW100S (which it doesn’t replace), with one major change: the ‘SW07 comes with a replaceable ROM which stores selected world band frequency information. With this new feature, you can use four dedicated buttons to select a suitable channel of the BBC, VOA, Deutsche Welle and other major stations (RFI, Radio Nederland, Radio Japan, Radio Exterior de España or China Radio International, as you prefer). There is also a similarly performing fifth button you can self-program from printed and other independent schedule sources. None of the station information is tied into the time of day, however.

In principle, this feature should help cope with the criticism that world band radio schedules are too arcane and fluid for most folks. How it will pan out in practice remains to be seen.

Here’s how it works. There are five buttons, labeled MY, DW, VOA, BBC and OTH. (No, “MY” isn’t for Myanmar, but rather for whatever station’s frequency you have entered manually; “OTH” is for whichever of the “other” stations on the ROM, see above, you have chosen.) Double-press the dedicated button for the station you want and, working from the lowest stored frequency upward, the radio’s ROM scanner stops at the first occupied channel, displaying the station’s name. Of course, you have to use your ears to ascertain whether the station you’re hearing is actually the one you want, as frequency sharing is commonplace on world band.

If you don’t like the result, press the button again and the radio continues scanning upward. Schedule data for all but the MY button is stored on the ROM, which can be replaced (for $20) from the F Corporation in Japan, which has a longstanding working relationship with Sony; access is via a slider on the back of the set.

Unfortunately, the ROM setup’s stored frequencies are not tied into the times when they are scheduled to be used by the broadcaster you’re trying to hear. This means you may have to wade through 15 or so frequencies, often occupied by other broadcasters at that given hour, to find one usable channel.

Although the ‘SW07 also has a global time clock which can display either local time or UTC, as you choose. However, unlike with the ‘2010 the time display is shared with the frequency display, so you can see one or the other, but not both at the same time. Local time corresponds to a world time zone which you select, and in turn that zone determines whether the shown increment for the AM band is to be 9 kHz or 10 kHz. Oddly, the radio defines the AM (“MW”) band as stopping at 1620 kHz, so above that its coarse shifting increments to 5 kHz increments; better would have been to have had the AM band to 1602 kHz for 9 kHz channel spacing, 1700 kHz for 10 kHz channel spacing.

This world time zone concept is also important for the ROM-frequencies feature, as the only frequencies selected are those which are nominally beamed to those parts of the world within that time zone. That’s fine for the evening, when much is beamed your way. But at other times, you can get “off-beam” reception by traditional tuning or by fooling the radio’s “smart” circuitry by selecting another time zone for your receiving location. Thus, for example, if you wish to try to hear the BBC’s European channels while listening from Eastern North America, you shift the clock’s setting for your local time zone from UTC -5 to UTC +1, thus fooling the radio into “thinking” you are listening from a European location.

**Global time clock regulates tuning characteristics**

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**Small, with handy clamshell design**

The radio is truly lightweight, weighing only 10 ounces, including two AA batteries. It measures 5-5/16 by 3-5/8 by 1-1/4 inches, and the top two-thirds of the case is covered by a
laptop-type clamshell containing the liquid crystal display (LCD). It comes standard with a worldwide ac adaptor and an AN-LP2 outboard active antenna.

Early versions of the ICF-SW100S and ICF-SW100E suffered from failures of the cable connecting the upper and lower halves of the clamshell. Sony learned its lesson and redesigned later production units of the 'SW100, so it is unlikely the 'SW07 will have a problem in this regard.

## Numerous features, including selectable synchronous sideband

The 'SW07 covers the Japanese and regular FM bands from 76-108 MHz. Longwave, mediumwave AM and shortwave is tuned continuously from 150-29999 kHz in 1 kHz increments above 1630 kHz, plus single sideband tunes in 0.1 kHz increments below 30 MHz. However, unlike the '2010, whose frequency readout is nominally to the nearest 0.1 kHz, that of the 'SW07 is only to the nearest whole kHz.

There is no tuning knob, but there are two levels of frequency slewing (typically 5 kHz and 1 kHz increments), an alphanumeric keypad, ten conventional FM presets plus ten more for longwave/AM/shortwave, frequency "signal-seek" scanning, and scanning of the selected station frequencies stored in the ROM. The ROM scanning function works as it should, although the frequency scan tends to stop only at powerful signals, and even then sometimes stops one channel (5 kHz) shy of the intended signal.

Other features include a single but effective bandwidth and synchronous selectable sideband, which together pretty much kill selective-fading distortion that bothers some AM stations around twilight. (Note that the accessory 'LP2 antenna has to be disconnected for proper AM-band reception.)

World band reception is surprisingly good, especially when the AN-LP2 outboard antenna is used — on this radio, that outboard antenna makes a real difference! By the way, the 'LP2 is the exact same critter as the AN-LP1 reviewed in the 1999 Passport to World Band Radio, except that because it was made to mate with the 'SW07 bandswitching is done automatically and electronically, instead of by hand.

With the 'LP2, the 'SW07 is actually more sensitive to weak signals in some parts of the shortwave spectrum than is the top-rated ICF-2010 "bareback." Although the '2010 paired with an AN-LP1 — a fairer match, to be sure — more than elevens the score, this is an indication of just how well this little radio can perform. Adjacent-channel rejection is nearly tops for a portable, although the sync doesn't hold lock quite so consistently as it does on the '2010. Except on FM below 87 MHz, spurious signals are rare throughout the tuned spectrum.

Single-sideband reception is stable and generally good, but like many other portables suffers from a lack of tuning in less-than-100 Hz increments. It's a pity that a radio in this price class couldn't include an auto-turnoff /-80 Hz analog fine-tuning clarifier to get reception spot-on between 100 Hz increments, especially with such stations as WGTG and the will-o'-the-wisp AFRTS now being audible only via single-sideband transmissions.

Since the demise of the ICF-6800W in 1987, Sony's world band radios have offered precious little in the way of audio quality. The 'SW07 is no exception. Its audio leaves much to be desired, thanks to a tiny speaker and measly "news-music" treble-cut tone switch. But even with headphones, the lack of a wide bandwidth greatly limits the opportunity to hear at least some AM or world band stations with genuine fidelity. The second bandwidth found on the '2010 and the ICF-SW77 is a major plus, especially with the sync in use, and it is sorely missed on the 'SW07, which after all sells for $70 more than the grandmaster '2010.

## Pricey, but hard to beat

Is this new radio worth it? After all, for sheer value it's hard to ignore Sony's similarly sized ICF-SW7600G at less than half the price of the 'SW07, and for smallness the tiny ICF-SW100S gets the Kewpie doll — both have the same synchronous selectable sideband circuit as the 'SW07. Neither these nor the 'SW07 fully equals the larger ICF-2010 for sheer performance or audio quality. Yet, except for audio quality, the new ICF-SW07 is the ultimate radio for the road warrior who doesn't want to go second class. And it's got pizzazz and performance aplenty to endanger it to PC cogniscentsi who can't plug in for a Web radio fix.

The Sony ICF-SW07, although pricey, is a top-notch entry among compact portables. If you're a serious radio enthusiast who can't find space in your carry-on for a '2010, you'll be hard pressed to come up with a travel-sized radio to equal the 'SW07 in performance.

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**The Beacon Finder**

A new directory of VLF/LF/MF Stations commonly logged in North America.

In addition to beacons, this guide lists dozens of utility and experimental stations operating outside the 190-535 kHz range. Comes ready for 3-ring binding.

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---

RADIO DATABASE INTERNATIONAL WHITE PAPER* reports contain virtually everything found during exhaustive tests of premium shortwave receivers and outdoor antennas. For a complete list, please send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA; or go to www.passport.com.
Remote Scanner Monitoring

It's nice to have a spouse who supports my hobbies. My wife often brings home interesting electronics parts and gadgets she finds at flea markets and garage sales. A few years ago, she brought home three steel boxes, each being about the size of a microwave oven and filled with several 117 VAC electromechanical relays in plug-in sockets. The boxes appeared to be industrial controllers used for factory process control.

What could I do with a pile of relays in a steel box? I used them to build a controller so I could listen to my home scanner remotely via telephone. My home was already equipped with a second telephone line which I used primarily for making outgoing calls. This controller connected the phone line to the speaker leads of an old Electra Bearcat BC-300.

Whenever someone would call my home on this phone line, the controller seized the line, started an internal timer, and fed the audio output of the BC-300 out onto the phone line. The caller could hear whatever the BC-300 heard. After a few minutes, the controller would hang up the phone line and rearm itself.

How it Works

As shown in the schematic, when a telephone call is received, the ac ringing voltage on the phone line passes through the 4 μF capacitor and energizes relay RL1. RL1 momentarily energizes RL2, RL3, and time delay relay RL4. RL3 is wired as a latch and its contacts apply 117 VAC to its coil so it stays energized and keeps RL2 energized.

RL2 connects the scanner audio through an impedance matching transformer to the telephone line. A 600 ohm resistor placed across the phone line makes it appear to the central office that someone has picked up a telephone, i.e., it is "off hook."

Any audio present on the scanner's speaker leads is transmitted down the telephone line, so the caller can listen to the scanner from miles away. The varistor clamps any high voltage spikes which may be present on the phone line so they won't damage the scanner.

A few minutes later, time delay relay RL4 "times out," opening its contacts and disconnecting ac power from the other relays. The turn-on delay in the stock RL4 was controlled by an internal capacitor and an external resistor. Its 0.1 - 10 second delay was too short, so I swapped the internal capacitor with one of a larger value. For the timing resistor, I used a rheostat mounted through a hole in the cabinet equipped with a room monitor feature. Older style electromechanical relays have been replaced by solid state devices in many applications. But, relays are less apt to be damaged or falsely triggered by nearby lightning storms, and my controller has worked reliably for years.

Longer MX-4000 / MX-4200 Battery Life

The old Regency MX-4000 and MX-4200 are battery-operated, 20-channel scanners manufactured in Japan by AOR. Both scanners contain a low battery warning circuit which disables the scanner when the battery voltage falls below a preset level.

A freshly charged battery pack should last at least 5 hours before needing a recharge. Ron Smithberg, of Joliet, Illinois, complained of getting only 2 hours use from a set of freshly charged NiCd batteries in his MX-4200. This note describes how we increased his usage to over 7 hours between charges.

Both MX models are powered by a pack of four AA-sized NiCd batteries. The battery pack is nominally 4.8 volts and has a rated capacity of about 500 mAh. The scanner draws about 100 mA when squelched. A good rule of thumb is that a NiCd should be recharged when its voltage falls below 1.0 volts per cell. Using this heuristic, the MX-4200 battery pack should be recharged when it falls

FIG 1
A handful of salvaged Potter & Brumfield plug-in relays were used to make a remote scanner controller.

so I could adjust the length of the timeout.

Switch S1 is the main power switch used to arm the controller. Push-to-test switch S2 lets me connect the scanner to the phone line without an incoming call.

I used Potter & Brumfield KRP11AM for relays RL1, RL2, and RL3 and a Potter & Brumfield CLF-41-70010 for RL4. They are expensive DPDT (double pole double throw) plug-in relays, but the "price was right." I won't provide step-by-step construction details, but you can study the schematic and substitute less expensive relays from Radio Shack or another source. The abbreviation NC means "normally closed" and NO means "normally open" contacts.

There are more modern ways to perform the same task, like using an answering machine

FIG 2 - Controller answers calls on telephone line and connects scanner audio to line. Relay RL4 disconnects scanner and hangs up after a few minutes.
WINRADIO

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Computer based communications receivers designed for a wide range of professional and amateur applications.

- Sophisticated virtual control panel
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- Powerful tuning and scanning options
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- Rich variety of innovative features
- Complete multichannel systems available
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Creating New Standards

The award-winning and immensely popular WinRADIO WR-1000i is the world's first commercially available PC-based wide-band communications receiver. Integrating advanced radio receiver technology and the computing power of a PC, it sets a new standard in radio communications.

The synergy of radio and computing technology provides all WinRADIO receivers with many unique features which are hard to find on conventional communications receivers. These include a rich variety of tuning and scanning options, versatile memory and database facilities, and innovative user interfaces designed for flexibility and ease of use.

WinRADIO 1000/1500 series

The 1000/1500 series products offer cost-effective solutions for a wide variety of applications. The products come in two forms: internal ISA-bus cards, and compact external units with an RS-232 interface (PCMCIA interface optional).

Internal model (WR-1500i)

The advantages of an internal card model are in its neatness — there are no external cables required, no external interface ports are occupied, no external power supplies or extra desk space are needed. And if you wish, nobody needs to know that you have a scanning receiver hidden inside your PC!

Multichannel operation is simple to achieve, as up to eight WinRADIO internal receivers can be used simultaneously in one PC.

External model (WR-1500e)

The advantage of an external model is in its portability — the optional PC card interface (PCMCIA) allows very fast and simple installation for any portable PC. Serial RS-232 interface is also available as standard.

WinRADIO Software

The 1000/1500 Series software works on Windows 3.11, 95, 98 and NT. Impressive high-resolution graphics combine with a variety of useful features, all logically and intuitively laid out.

Click on a peak and you are instantly tuned. Alternatively, keep the left button down and drag your mouse across a scanned spectrum — you will see the frequency cursor moving, the frequency display updating accordingly and the receiver will be tuned following your hand movements!

Optional Portable Power Source

Many external radio receivers neglect user convenience with respect to the availability of a suitable portable power supply. WinRADIO provides a suitable external power source, to meet the most demanding standards.

The WinRADIO Portable Power Source is based on high-capacity, long-life nickel-metal-hydride rechargeable batteries, coupled with intelligent, fast-charging circuitry which saves the battery life and guarantees maximum charging capacity. (Suitable for external models WR-1000e, WR-1500e and WR-3100e).

Optional PC Card Interface

The PC Card interface (PCMCIA Type II) makes connecting a WinRADIO receiver to a laptop or a notebook computer especially easy. The Plug-n-Play facility automatically registers the card, and the installation is very simple indeed. (Suitable for external models WR-1000e, WR-1500e and WR-3100e).

The external models also feature a discriminator output.

Both models are very well shielded from PC interference. We use specially developed shielding materials and innovative design methods to prevent any interference directly entering the receiver.
Optional Digital Suite Software

The optional WINRADiO Digital Suite is a collection of digital signal processing modules. Together, they represent a breakthrough in reception of digitally coded radio communications - never before has such a comprehensive collection been made available at such low cost and so elegantly integrated with a PC-based radio receiver.

The WINRADiO Digital Suite expands the power of a WINRADiO receiver with numerous digital processing facilities, including:

- WEFAX (Satellite Weather Fax)
- HF Fax
- Packet Radio
- Aircraft Addressing and Reporting System (ACARS)
- Digital Tone Multi-Frequency Signalling (DTMF)
- Continuous Tone Coded Squelch System (CTCSS)
- Signal Classifier
- Audio Oscilloscope and Spectrum Analyzer
- Squelch-controlled Audio Recorder and Playback

Optional Frequency Database Manager Software

The optional World Station Database Manager greatly simplifies the maintenance of frequency databases. It is fully integrated with the receiver software, and allows for instantaneous or simultaneous search or searching within a database. Similarly, an unknown frequency can be readily identified by invoking the Database Manager.

The user can add, delete or edit database records as well as import data from other databases. The software comes with a ready to use database of over 300,000 stations worldwide.

WINRADiO 3100 series

Designed for government, military, security, surveillance and industrial applications, the WINRADiO 3100 series puts advanced radio receiver technology directly on a personal computer platform to create a complete spectrum surveillance and monitoring system.

The WINRADiO 3100 series receivers come in two forms: internal ISA-bus cards, and compact external units with an RS-232 interface (PCMCIA interface is optional). A dedicated Digital Signal Processor (available on the internal model only), is used for real-time audio recording and playback. Recording can be controlled manually or automatically using time presets or signal level thresholds.

WINRADiO 3100 series receivers feature a practically unlimited number of memories, sophisticated search facilities, group allocations, automatic memory writing, exclusion list, frequency logging and much more. The in-built Task Manager makes it possible to program the receiver to perform many tasks automatically, and make decisions based on user-specified conditions. Up to eight independently operating receivers can be controlled by a single PC. The WINRADiO 3100 series receivers represent an ideal solution for high-performance automatic monitoring systems.

Complete Multichannel Systems

Until recently, the task of multichannel radio frequency surveillance and monitoring involved a number of separate radio receivers, audio recorders and other discrete components interconnected into bulky and expensive systems.

WINRADiO Multichannel Systems provide an elegant, fully integrated solution, specifically designed for computer-controlled automatic monitoring of frequencies ranging from below the AM broadcast band up to low microwave, in all major modulation modes.

Available in several configurations to suit specific requirements for radio frequency monitoring, the systems are designed to monitor radio frequencies on multiple channels simultaneously, record digitized signals on the hard disk for easy later retrieval, and perform automatic decisions based on received signals.

WINRADiO Multichannel Systems can be operated either manually or autonomously in unmanned remote locations. Remote operation and networking facilities are also available.

MS-8006 (six channel) Surveillance System

User-selectable audio compression methods make it possible to store weeks or months of continuous, simultaneous recording of all channels on the in-built hard disk.

WINRADiO Multichannel Monitoring System software allows the user to observe the status of all received channels on a single screen using virtual "micropanels" for each channel, each one of them fully expandable to a full size panel.

Each expanded control panel allows for independent operation of a high-performance scanning receiver with sophisticated functions such as automatic task scheduler, spectrum scope, DSP signal conditioner, signal strength recorder, programmable audio recorder, and many other features.
### Specifications

<table>
<thead>
<tr>
<th>Model Numbers</th>
<th>WR-1000i/WR-1000e</th>
<th>WR-1500i/WR-1500e</th>
<th>WR-3100i-DSP/WR-3100e</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Triple superheterodyne</td>
<td>Triple superheterodyne</td>
<td>Triple superheterodyne</td>
</tr>
<tr>
<td><strong>Frequency range</strong></td>
<td>0.5-1300MHz*</td>
<td>0.15-1500MHz*</td>
<td>0.15-1500MHz*</td>
</tr>
<tr>
<td><strong>Tuning steps</strong></td>
<td>100Hz (5Hz BFO)</td>
<td>100 Hz (1Hz USB/LSB/CW)</td>
<td>+/- 2kHz</td>
</tr>
<tr>
<td><strong>IF shift</strong></td>
<td>-</td>
<td>200MHz into 8 ohm load</td>
<td>200MHz into 8 ohm load</td>
</tr>
<tr>
<td><strong>Audio output</strong></td>
<td>200mW into 8 ohm load</td>
<td>200mW into 8 ohm load</td>
<td>200mW into 8 ohm load</td>
</tr>
<tr>
<td><strong>Antenna connection</strong></td>
<td>50 ohm BNC</td>
<td>50 ohm BNC</td>
<td>50 ohm BNC</td>
</tr>
<tr>
<td><strong>Dynamic range</strong></td>
<td>65 dB</td>
<td>65 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td><strong>Selectivity</strong></td>
<td>6kHz/6dB</td>
<td>2.5 kHz/-6dB</td>
<td>2.5 kHz/-6dB</td>
</tr>
<tr>
<td><strong>SSB,CW</strong></td>
<td>6kHz/6dB</td>
<td>6 kHz/-6dB</td>
<td>6 kHz/-6dB</td>
</tr>
<tr>
<td><strong>AM</strong></td>
<td>17kHz/-6dB</td>
<td>17kHz/-6dB</td>
<td>17kHz/-6dB</td>
</tr>
<tr>
<td><strong>FM-W</strong></td>
<td>230kHz/-6dB</td>
<td>230kHz/-6dB</td>
<td>230kHz/-6dB</td>
</tr>
</tbody>
</table>

* In some countries, certain frequencies may be omitted to comply with local government regulations.

### Typical Sensitivity for WR-1000i/WR-1000e receivers

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>AM</th>
<th>CW/SSB</th>
<th>FM-N</th>
<th>FM-W</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 - 1.5MHz</td>
<td>5.0μV</td>
<td>2.5μV</td>
<td>1.0μV</td>
<td>-</td>
</tr>
<tr>
<td>1.5MHz - 30MHz</td>
<td>1.0μV</td>
<td>0.5μV</td>
<td>0.5μV</td>
<td>2.0μV</td>
</tr>
<tr>
<td>30 - 1000MHz</td>
<td>1.5μV</td>
<td>0.7μV</td>
<td>0.5μV</td>
<td>1.8μV</td>
</tr>
<tr>
<td>1.0 - 1.3GHz</td>
<td>5.0μV</td>
<td>2.5μV</td>
<td>2.0μV</td>
<td>4.0μV</td>
</tr>
</tbody>
</table>

### Typical Sensitivity for WR-1500i/WR-1500e receivers

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>AM</th>
<th>CW/SSB</th>
<th>FM-N</th>
<th>FM-W</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15 - 0.5MHz</td>
<td>5.0μV</td>
<td>0.9μV</td>
<td>1.0μV</td>
<td>-</td>
</tr>
<tr>
<td>0.5 - 1.8MHz</td>
<td>1.0μV</td>
<td>0.3μV</td>
<td>0.5μV</td>
<td>-</td>
</tr>
<tr>
<td>1.8 - 30MHz</td>
<td>1.5μV</td>
<td>0.3μV</td>
<td>0.3μV</td>
<td>1.8μV</td>
</tr>
<tr>
<td>30 - 1000MHz</td>
<td>1.9μV</td>
<td>0.35μV</td>
<td>0.4μV</td>
<td>3.5μV</td>
</tr>
<tr>
<td>1.0 - 1.5GHz</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Typical Sensitivity for WR-3100i-DSP/WR-3100e receivers

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>AM</th>
<th>CW/SSB</th>
<th>FM-N</th>
<th>FM-W</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15 - 0.499MHz</td>
<td>5.0μV</td>
<td>0.9μV</td>
<td>0.9μV</td>
<td>-</td>
</tr>
<tr>
<td>0.5 - 1.7999MHz</td>
<td>1.0μV</td>
<td>0.3μV</td>
<td>0.35μV</td>
<td>-</td>
</tr>
<tr>
<td>1.8 - 29.9999MHz</td>
<td>1.0μV</td>
<td>0.3μV</td>
<td>0.35μV</td>
<td>1.0μV</td>
</tr>
<tr>
<td>30 - 999.9999MHz</td>
<td>1.5μV</td>
<td>0.35μV</td>
<td>0.4μV</td>
<td>2.0μV</td>
</tr>
<tr>
<td>1.0 - 1.5GHz</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Ordering codes

- WR-1000i: WINRADIO WR-1000i receiver (internal)
- WR-1000e: WINRADIO WR-1000e receiver (external)
- WR-1500i: WINRADIO WR-1500i receiver (internal)
- WR-1500e: WINRADIO WR-1500e receiver (external)
- WR-3100i-DSP: WINRADIO WR-3100i-DSP (internal)
- WR-3100e: WINRADIO WR-3100e (external)
- WR-DBM: WINRADIO Database Manager Option
- WR-DS: WINRADIO Digital Suite Option
- WR-PCA: WINRADIO PC Card Adaptor Option
- WR-PPS: WINRADIO Portable Power Source
- MS-8003: Multichannel Monitoring System (3 channel)
- MS-8006: Multichannel Monitoring System (6 channel)

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below 4.0 volts under load.

The low battery circuit on Ron's MX-4200 was misadjusted to shut down the scanner prematurely when the battery voltage fell below 4.7 volts. I readjusted the low battery threshold to 4.0 volts.

You can use the same procedure, but you will need an adjustable, regulated DC power supply, capable of furnishing between 3 and 5 volts at 500 mA or more, and accurate means of measuring voltage from the power supply. A digital voltmeter with an accuracy of 5 percent or better is best. You will also need a #1 Phillips screwdriver and a small, slotted screwdriver or alignment tool.

The low battery sensor threshold is controlled by a potentiometer. Here's how to readjust the sensor to 4.0 volts:
1. Turn the scanner off.
2. Connect a digital voltmeter to a well-regulated DC power supply and adjust the supply to 5.0 volts.
3. Connect the power supply to the snap terminals on the scanner that would normally connect to the battery pack. Be sure to observe proper polarity. Connect the positive lead of the supply to the female snap, and the negative lead to the male snap.
4. Turn the scanner on.
5. As you watch the scanner's LCD display, gradually reduce the power supply voltage until the scanner's low voltage warning begins to flash.
6. Read the digital voltmeter. If it reads between 3.9 and 4.0 volts, no further adjustment is required. Just disconnect the supply and reconnect the battery pack.
7. Otherwise, turn off and disconnect the power supply, and continue.
8. Turn the scanner upside down, and place it on a soft cloth so as not to scratch the case.
9. Remove the bottom tilt foot from the scanner.
10. Remove the battery pack.
11. Remove the four Phillips screws holding the case bottom, then remove the case bottom.
12. Reconnect the power supply to the scanner and set it to 4.0 volts.
13. Turn the scanner on.
14. Locate a small gray potentiometer on the printed circuit board. The potentiometer looks something like a gray plastic Phillips screw head. If the scanner front panel is facing you, the pot will be just behind the keyboard on the left side. (Don't confuse this pot with the three pots along the right edge of the board. The battery voltage sensor pot is not near any other pot.)
15. Slowly adjust the potentiometer to the threshold at which the low battery indicator begins to flash.

This procedure worked with great success on an MX-4200, and its battery life was increased from 2 to 7.5 hours. Thanks to Rick Meyer, WB9UFL, for finding the potentiometer in his MX-4000, and Ron Smithberg for letting me experiment with his MX-4200.

**PRO-7A Repair**

The Radio Shack PRO-7A is a 1970's vintage VHF-high band, eight-channel crystal model. A PRO-7A owner wrote that his scanner no longer worked on channels 5 to 8 and the lamps for those channels would not light.

The PRO-7A uses one 7408A (IC6) and two 7400A integrated circuits (IC4, IC5) to switch among the 8 channels. His scanner is now scanning all channels after replacing one of the 7400A ICs.

---

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Q. If my AC wall adaptor is plugged into the wall, but not operating an appliance, is it drawing any current? Do I need to remove it? (Yukon Cornelius, E-mail)

A. An AC adaptor is a transformer, so its primary winding can be thought of as a resistor connected across the AC line; as such, it draws current whether or not it is operating an accessory. The small amount of power drawn by one of these little power cubes is probably not even measured by your residential power meter.

While it is possible for any electrical product to be defective, under normal circumstances you don’t need to remove a wall cube unless it is getting hot (warm is okay).

Q. In scanner reviews, I’ve often noticed your magazine has a graph of the scanner’s actual sensitivity. How can I measure sensitivity (other than listening to distant repeaters) in order to compare my radios to their published specifications? (Hurst Matthew, E-mail)

A. Absolute sensitivity can only be measured by instruments, generally a calibrated signal generator and a voltmeter. You can make comparative checks, however, by simply switching between a scanner of known sensitivity, and the unit under test. As you would suspect, this would have to be done with very weak signals so you can hear background hiss; the less hiss and more intelligible the sound, the better the sensitivity.

As a rule of thumb, if you can hear the tiniest difference between the two signals, this is equivalent to 1 or 2 dB (decibels). If the difference is close, but undeniable, it is probably 5-10 dB.

Signal strength meters, when perfectly calibrated, indicate a 50 microvolt (very strong) signal as S9. There are 6 dB between S units. As you can see, it is impossible to establish a meaningful graph or scale on sound alone; instrumentation is necessary.

Q. Can an antenna switch be used “backwards” so that one antenna could be sent to any of three radios? (Mike Elcisins, Philadelphia, NY)

A. Absolutely; there is nothing directional about a mechanical switch; it merely provides a path for the signal. Whether that path is from one antenna to any of three radios, or from any of three antennas to one radio, is of no consequence.

Q. Can I hook up my scanner to my satellite dish? (David Pemberton, E-mail)

A. Yes, but you will only hear the 4 or 12 GHz TV satellites as you tune through the 950-1450 MHz range, since that’s what is coming down the coax after it’s been down-converted at the dish from the original C or Ku-band satellite frequencies.

And you would need to put a dc voltage-blocking device between your scanner and the coax splitter to remove control voltages on the coax provided by the TVRO receiver, which would have to remain on.

Q. Is it true that you should not store a car battery on a cement floor? (Lon Palmer, Murphy, NC)

A. Not for the reason you might suspect. It is an urban myth that a battery on a cement floor will discharge faster than one on a wood shelf, or in a vehicle. What could be different about a cement floor that would cause the discharge? The temperature? Humidity? Conductivity?

A battery mounted on its metal support in a car sitting outside on a cold, rainy day experiences far more of these influences than one on an indoor cement floor.

Apparently this myth originated with the observation that, if you took a battery out of a vehicle for storage, you weren’t going to be using it. You’d likely set it in the corner, on the floor. After a few weeks — or months — it would self-discharge no matter where it was stored. Since it is heavy and often acid coated, leaving it on a garage floor is often the best choice.

The only difference you will note will be that the battery acid may trickle down on the floor and react with the lime in the cement, bubbling if wet, or at least bleaching the spot if slight. But none of this has anything whatsoever to do with the electrical discharge of the battery.

It’s a myth. Just don’t get acid on the floor, if you do spill some, neutralize it with a paste of baking soda (sodium bicarbonate) and water until it stops fizzing. And don’t get the acid on your clothes (as I did with a nice, new jacket)!

Q. What kind of portable emergency power supply should I use with various radios requiring different voltages? (Stanley Barnett, Booneville, MS)

A. If it must be portable, then it should be a...
Memory Keep-Alive When Changing Radio Batteries

Paul discovered that simply soldering a 4700 microfarad, 16 volt, capacitor across the terminal lugs held memory contents for at least a half minute as he changed the AA cells. He found the capacitor at Radio Shack (part no. RSU 11935095, $1.49).

Carefully remove the seven Philips head screws (including one in the battery compartment) from the back, lifting the back off carefully. Paul mounted his capacitor near the top of the speaker, holding it with Velcro tape. Extending the leads, and observing the polarity, he soldered the leads to the lugs on the AA holder.

Paul notes that although there is a cloth tape to expedite the removal of the forward AA cell, it takes time to pry the other one out. He solved the problem by wrapping a piece of tape around the second cell, allowing enough excess to tape the ends together as a pull tab.

Nice suggestions, Paul, but don’t forget — this modification could void your warranty.

Q. I have been scanning and shortwave listening for years, and now, MT’s column, “The Launching Pad,” has piqued my interest into satellite reception as well. I have been house hunting, but real estate agents don’t have antenna restrictions on their databases, so they show me homes way out in the country where they see dishes and antennas. Have you any advice?

A. My preference would be to move out into the country regardless of the antenna issue! But to answer your question more directly, there has been a great deal of successful action against restrictive covenants prohibiting the erection of antennas by property owners.

The Federal Communications Commission cites the Telecommunications Act of 1996 which protects dish owners from such restrictive covenants, and reaffirms its (the FCC’s) empowerment to see that the electronic transfer of information is not impared by punitive rules.

I would recommend that you look for antennas and dishes in the yards of prospective neighbors; spotting one — or not spotting any — ask a property owner if there is a policy.

Next, you may wish to contact that town council or its attorney, or the commissioners, or the city/town manager, or neighborhood association. This should get you started.

Finally, the American Radio Relay League (ARRL) in Newington, Connecticut, has a great deal of information regarding antenna restrictions and the rights of the radio amateur.

Good luck.
Some months ago, Larry Magne exposed our readers to the high-end NRD545 communications receiver from Japan Radio Company (JRC). For a basic description of this attractive receiver and its performance, we would refer our readers to that review in our August 1998 issue.

Now JRC has released an internal VHF/UHF converter, extending the receiver's frequency range to 2000 MHz (less cellular). So how does the 30-2000 MHz range of this receiver compare to its lower-cost, competitors, the ICOM R8500 and AOR AR5000 Plus? We confined our tests to 30-1000 MHz, the busiest part of the VHF/UHF spectrum.

Sensitivity is roughly equivalent, but selectivity choices would go to AOR first, ICOM next, and JRC third with only one narrow and one wide FM filter. The skirt selectivity characteristics of the narrow FM filter leaves a great deal to be desired; strong signals cause a dramatic elevation of the noise floor for approximately 200 kHz above and below the center carrier frequency, interfering with near-frequency reception.

There are quite a few spurious signals ("birdies") generated by the JRC, some severe. Several spurs between 40-50 MHz averaged S3 to S5 on the signal strength meter, but there was a 40 dB-over-S9 signal at 144.1 MHz, and even meter-pegging 70 dB-over-S9 spurs in the FM broadcast band and UHF military aircraft band.

Tuning dial speed may be selected from 1000, 500, or 250 steps per dial revolution; 250 seemed plenty fast enough, and I would have opted for even slower tuning as found on the competitor's receivers.

Step sizes for wide FM are approximately 50 or 100 kHz. For narrow FM, while it would appear that the user may select from 5, 6.25, 9, 10, 12.5, 20, 25, 30, 50, or 100 kHz, these steps are factory-assigned to specific bands which don’t necessarily match the American band plan. It is possible to mistune or miss entirely some frequencies unless the smallest step size (5 kHz) is selected. In some cases, as the tuning dial passed an arbitrary, factory-selected band edge, the step size would change, yet tuning back past that point wouldn’t necessarily restore the former step size.

Background hiss and signal strengths decrease or increase noticeably as the dial is tuned over a band and, as the receiver automatically selects a different front-end filter, there is an abrupt change in attendant sensitivity.

Finally, there is no IF output jack on the rear panel, preventing the use of a spectrum display, video demodulator, or many other useful accessories without modifying the receiver, a serious oversight in a wide-frequency-coverage receiver that otherwise could be used by military, government, and commercial organizations.

The Bottom Line

Is the converter useful with its host receiver? Absolutely. Sensitivity is comparable with its competitors, and the pushbutton selection of functions is easier than the AOR, and only slightly more cumbersome than the easy ICOM. But with its cost higher than that of either competitor, the performance should better match the appearance.

The NRD545 with converter is available for $2149.90 plus shipping from Grove Enterprises (800-438-8155), and is also available from other MT advertisers.

---

By Bob Grove
Utility Frequency Bonanza

If you enjoy monitoring communications (utilities) on shortwave radio, or if you have wondered who is talking, beeping, or buzzing in the bands between international broadcasters, there is a compact disc (CD) you shouldn't be without. The World Utility Network (WUN) Frequency Guide is a CD packed with 30,000 frequencies which have all been logged between 1995-1999. The disk also includes past issues of WUN and Speedx newsletters, and lots of pictures. "It's a utility listener's delight," says Larry Van Horn, former "Utility World" editor.

Quickly searchable by several different keys, it can help you narrow down who you may be hearing on the basis of who has been heard (and identified) working that frequency in the past. Other tools are also available to help you, including WAV files with samples of digital modes.

The information-packed CD, which works with Windows or can be read with an Internet browser, is a "steal" at $28.95 from Grove Enterprises (800-438-8155 or visit www.grove-ent.com)

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in MT, takes the reader on a pictorial guided tour of various antenna sites, with easy-to-understand chapters explaining propagation, feedpoint design, directional patterning, FCC regulations and station classes, and even a handy glossary of terms.

$15.95 plus shipping from the National Radio Club (PO Box 5711, Topeka, KS 66605-0711), Universal Radio (1280 Aida Dr., Reynoldsburg, OH 43068), and the author (via his Web page: www.angelfire.com/co/antenna).

South Florida Trunking Guide

South Florida boasts one of the busiest two-way radio concentrations in the nation, and much of it is conducted by trunked communications. Keeping up with public safety and business trunking assignments is a difficult task, but Brian Cathcart, KE4PMJ, has been doing it well. More than two dozen locales on the lower southeast Florida coast are detailed in this Third Edition, and listings include not only Motorola, but Johnson LTR and GE/Ericsson EDACS systems. This book is particularly useful for the new generation scanning receivers with trunk-tracking capability, like the Optocom reviewed this month. Listening and identification tips are provided, along with general suggestions about scanners and settings for trunking reception. More information is available from Brian’s Web site: scannerdude@juno.com.

South Florida Trunking Guide is $14.95 plus $2.50 shipping from the author (Brian Cathcart, 4050 Edgewood Dr., Coconut Creek, FL 33066-1835).

NEW ELECTRONICS BOOKS FROM MCGRAW-HILL

Encyclopedia of Electronic Circuits, Volume 7, by Rudolf F. Graf and William Sheets

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Handbook of Radio and Wireless Technology by Stan Gibilisco

Radio professionals and amateurs alike have learned that SINCLAIR’s Handbook of Radio & Wireless Technology has appeared. Its author, Sinclair module for broadcast, has gathered his many books, for some two decades. His new book is an excellent tutorial for radio professionals and amateurs. His Handbook evolves from basic electronics, including components theory, through electromagnetic and wave propagation, into the technology of design. Receivers, transmitters, antennas, power supplies, television, digital communications, optical systems, computers and networking, space communications, navigational satellites, test equipment security systems, noise and filtering.

This is a fine introductory book for the technically interested, and an excellent tutorial for the experienced technician as well. ISBN 0-07-023024-2, $449.95 plus shipping from McGraw-Hill, (800) 262-4729.

How Radio Signals Work by Jim Sinclair

For those listening hobbyists who want to learn more about radio communications and the behavior of signals, but without the math, Sinclair’s book is an excellent choice. Written by an Australian, there are a few regional flavorings (or is that “flavourings?”) in spelling and terminology, but since it’s all in English, it’s easy to translate!


Business News

- R.L. Drake has put his manuals online for download at www.rldrake.com/products
- Agrelo Engineering of Pattersonville, New York, manufacturer of the DF Jr direction-finding unit, says it has appointed SWS Security of Street, Maryland, as exclusive distributor for Agrelo’s DF and transmitter products. Agrelo President Joe Agrelo, N200C, apologized for problems with delivery and support of Agrelo Engineering amateur products and says his company in the future will concentrate on the commercial market and “divest ourselves of sales and support” for its amateur line.

All inquiries should go to SWS, 1300 Boyd Rd, Street, MD 21154-1836; tel 410 879-4035; e-mail sales@swssec.com; http://www.swssec.com. Agrelo said SWS would be releasing upgrades, options, and enhancements to the DF Jr as well as new accessories and complete DF systems.

Free Stuff

- Sheldon Harvey, owner of Radio H.F. in Quebec, Canada, has launched a free monthly email newsletter whose intent is to help subscribers zero in on sites of use and fun in a number of categories, but especially relevant to radio. I found several interesting sites in the very first issue, such as a real-time web-cam on the Panama Canal at http://www.pancanal.com/photo/camera-java.html and Strategy Magazine’s worldwide military information in English at http://www.strategy.gr/english/mil-en1.htm.

The distribution list will be private: to subscribe or unsubscribe, send your email to Sheldon at ve2shw@yahoo.com. Radio H.F., as the sponsor, includes their monthly specials and other radio activities in the Publicity Zone.
- George Murphy, VE3ERP, is always coming out with new versions of his HamCalc disk crammed with free software of interest to radio hobbyists. Although you may find versions on the internet, to be sure you get the most recent release (ver 38 as of Mar 99), send US$5 worldwide to George Murphy VE3ERP, 77 McKenzie Street, Orillia, ON L3V 6A6, Canada. ($6 with required GWBASIC.EXE included).

- Interested in metal detectors? Fisher Research Laboratory publishes World Treasure News, a free newsletter packed with titillating topics to whet your appetite. The sample issue discussed hunting for meteorites, metal detector competitions, legal issues in treasure hunting, archaeological expeditions using metal detectors, discovery of a buried coin hoarde, locating round wires at a Coast Guard radio station, location of fired cartridges as crime scene evidence, diving for treasure trove, Civil War artifact locating, and much more.

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Books and equipment for announcement or review should be sent to “What’s New?” c/o Monitoring Times, P.O. Box 98, 7540 Hwy 64 West, Brasstown, NC 28902. Press releases may be faxed to 828-837-2216 or e-mailed to mteditor@grove-ent.com.
Letters to the Editor

Surveys a Success!

Over the month of February, Grove Enterprises received more than 1700 completed surveys from the form which was enclosed in Grove’s spring catalog. The information and comments will be tremendously useful to the company and to our magazine to help us serve you better — although by your comments, you are already well pleased! As soon as the responses are tabulated, we’ll let you in on the results.

As promised, on March 1st we threw all the surveys into a huge box, and Sue Hamby, Tech Support Manager, drew the winning name. Elbert Jones of Houston, Texas, was the lucky winner of a Sony ICF-SW30. Congratulations! And our thanks to all of you for investing the time to answer that long list of questions.

RFI DFing: a lost art?

Vern Modeland says “I’ve just finished my latest visit to your grove-ent.com pages and enjoyed it as always. Well-written and thought-provoking articles and commentary brought to mind something else to wonder and ponder about.”

Modeland says when he first moved to Flippin, Arkansas, about two years ago, the noise level was about an S-2 and S-3 noise level on the lower amateur bands, but suddenly it was measuring S-7 and S-8, particularly on 40 meters.

“I checked my wiring and grounds and did a little driving around with the MFJ shortwave converter on the pickup’s radio going and determined the local service utility grid was the culprit.

“I called, got the toll-free run-around, but persisted until I got someone to talk to. They promised to ‘look into it,’ and nothing happened. I called the PSC and spoke with its last employee designated to handle such consumer complaints. He lost his job in a force reduction but managed to jingle someone’s bell at the utility’s headquarters.

“Soon, I heard from an engineer who told me he had custody of the only radio frequency interference (RFI) snoop gear they had in the northern half of the state! He did come, arriving with three local utility employees and a service truck. They assured themselves they could find no way to blame my home or installation for the problem, and heard it themselves on the Kenwood.

“They went to the field, spent a day driv-

The Right to listen

“Regarding Bob Grove’s Closing Comments in the March issue, I would say that citizens have absolutely no right to listen to private communications. The difference is, I don’t believe any communication on the radio waves is private.

“The government only has a legitimate power to regulate our actions when we violate the equal rights of others. My equal right to monitor a frequency in no way diminishes your right to transmit on that frequency. Rather than granting the government a power to create a right of privacy where none exists naturally, I would prefer to support your right to encrypt your transmission. That would be your responsibility to protect your privacy, not the government’s.

“I believe this position is consistent with the Jeffersonian/Libertarian principles that our Constitutional concept of rights is based on — Liberty is the freedom to do whatever we want to do that does not violate the equal rights of others. Justice is the obligation to respect the rights of others.”

— Jay Steinel, Lincoln, Arkansas

Feedback on Y2K

“The year 2000 problem is as Mr. Grove explained in his Closing Comments — more of an inconvenience than a disaster. But one should check to make sure it is not a disaster,” says Greg Majewski, who sent us a program called Y2Kdiag.zip, a PC-based program that checks the hardware portion (mother board BIOS and real time clock) and the operating system portion of the problem.

He says, “The reason most ‘experts’ are not thrilled with these types of programs is that they do not address the applications. For example, I use Quicken Version 4.0 for my

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check book and savings. This is a old MSDOS program, but it does not have the year 2000 problem; the first release of Excel for Windows does.

"But it is also useful to ensure your computer will at least start up and work. Running the program on my system here at home shows if I run my system through 00:00 1 Jan. 2000, then I may have a problem. If I leave it off, which I have checked, then there is no problem. I run either Windows 95 or Windows NT; both have a Y2K fix applied."

— Greg Majewski, via email

Then there’s the secretary who said to her boss .... "To be honest, this 'Y to K' thing doesn’t make much sense to me. Anyway, I have finished converting the months on all the company calendars, so that the year 2000 now has Januark, Februark, Mak, and Julk.....!" (Blame Assistant Editor Larry Van Horn for that one!)

We hope you have enjoyed this issue, loosely organized around direction finding and FCC issues. Stay tuned for more good stuff in June!

— Rachel Baughn, mteditor@grove-ent.com

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The FCC on the Hot Seat

In 1934 the United States Congress created the Federal Communications Commission, outlining its specific responsibilities. Since then the FCC has assumed more and more responsibilities, and has grown correspondingly larger to handle the meteoric growth of our telecommunications age.

Over the past few years, and more intensely recently, the Commission has drawn constant fire from Congress, charged with being oversized, unwieldy, inefficient, bureaucratic, politically influenced—in other words, much like Congress.

Punished continuously by Congress by having its budget reduced and its work load increased, and even threatened with complete extinction, the FCC has now been directed by Congress to endure a total overhaul, either from within or from without.

Why has the Commission been the target for such punitively-directed assaults? After all, isn’t the FCC just another government agency? Yes, but as an independent agency like the Postal Service and the National Security Agency, its members are appointed by the (currently Democratic) White House, not the (currently Republican) Congress which has oversight authority only.

The more one learns about the way our nation’s capitol is really run, the more one doesn’t like it. Is this another example of partisan power play rather than good government? We’ve seen a lot of that lately.

The specific Congressional conclave authorized to taunt the FCC is the now-too-familiar House Subcommittee on Telecommunications, Trade, and Consumer Protection, chaired by Louisiana’s Billy Tauzin. Yes, this is the same group that brought us the ill-founded and poorly-written anti-scanner Bill, HR2369, which, though totally rewritten, was mercilessly defeated by a perceptive Senate subcommittee last year. Hopefully, the Senate subcommittee will exhibit the same sensibility this year toward the identical bill, HR514.

In the meantime, however, the new Bill’s sponsor, Rep. Heather Wilson, parrots Tauzin’s obsolete and erroneous statement: “Off-the-shelf scanners can be easily modified to turn them into electronic stalking devices.” No they can’t, and they haven’t been for a long time. That rattling sword is showing considerable rust.

Tauzin knows how to work a crowd. At a recent meeting of the National Association of Broadcasters (a major sponsor of his), he lashed out at the FCC for proposing a low-powered FM broadcasting service for small communities, openly admitting that it would cut into the revenues of big-bucks broadcasters. He accused the Commission of “coercion and extortion” in their reviews of proposed mergers in the telecommunications industry.

Recently appointed FCC Chairman William Kennard is bucking up well, perhaps stoically. He has promised to “dramatically transform” his Commission on several fronts, with three specific focus areas: consumer protection (and universal service), enforcement, and spectrum management. He also warned that this transitional period must not be used “as a back-door way to re-open the Telecommunications Act.”

Kennard’s caveat follows Tauzin’s published intent to drastically emasculate the FCC—abolish rules that seem unnecessary, turn many present FCC empowerments over to the private sector, combining bureaus which have similar duties.

Neither Tauzin nor Kennard has a substantive plan in place yet, but both hope to within the next few months. Kennard’s goal is to structure the agency along functional rather than technological lines, now that the distinction between wire, wireless, satellite, broadcast, and cable communications have become blurred. According to his announcement last fall, the first step in this process is to take place in October 1999, when all enforcement functions (as featured in this month’s cover story) will be consolidated into a new Enforcement Bureau. The public information functions of the current Compliance and Information Bureau and the Office of Public Affairs will be consolidated into a new Public Information Bureau.

In the meantime, Tauzin and his subcommittee continue to be the regular recipients of cash contributions from the very industries he has been appointed to regulate. Am I the only one who sees something wrong in this? Does the phrase “conflict of interest” come to mind? And when do influential financial donations to a politician who regulates the interests of the contributor cease being a “campaign contribution” and become bribery?

What became of statesmanship? Where have the heroes and role models gone? Regardless of the outcome of this sorry debacle, the retirement of the 106th Congress will leave a disgraceful legacy of special interest corruption. Abuse of power, hypocrisy, self interest, petty partisan politics, vacuous and sanctimonious oratory, and abdication of public trust—Or is this just business as usual?
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