Hear Counterterrorism, Wartime Radio Signals

Also in this issue:
• DXing Shortwave's 60-Meter Band
• Decode Digital ACARS Signals From Planes
• Checked Out: MFJ-8100 World Band Receiver
• FCC Seeks Help Against Illegal CBers
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AR2700
WIDEBAND SCANNER

The new AR 2700 from AOR is another break-through for general coverage scanners at an affordable price. It combines wide frequency coverage with many advanced features and options, including computer interface and voice recorder. With this small marvel, you will never miss important calls and conversations through the use of the optional digital voice recorder.

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Wartime Radio
Journalists see the reality of Salvadoran stations.  
By Jeremy Bigwood

Monitor the Terrorist Threat!
HF/VHF/UHF lets you hear the action from a safe distance.  
By Tom Kneitel, K2AES, Senior Editor

DXing 60 Meters
Take the shortwave 5 MHz challenge.  
By Gerry L. Dexter

Tuning In On Yesterday
Sneak a peek at some more forgotten firsts.
By Alice Brannigan

Books You'll Like
Technical Writing, Applied Cryptography and Tuning In On Telephone Calls.  
By R.L. Slattery

Checked Out
POP'COMM reviews products of interest.  
By W.W. Smith

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This month's cover: A U.S. Army Special Forces A-Team during a jungle training operation utilizes AN/PRC-77 secure communications equipment to report back recon intelligence. Photographed with cooperation of Counter Group Police Academy, Poughkeepsie, N.Y. Photograph by Larry Mulvehill, WB2ZPI.
Universal Radio carries an excellent selection of new and used communications receivers. JRC NRD-535D shown.

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  All shortwave broadcast stations organized by country with schedules, addresses, power, etc. $24.95 (+$2)
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- Comprehensive Guide to Military Mon. By Douglass
  Covers equipment, SW and VHF/UFH frequencies, identifiers, playbook, bases and black projects. $19.95 (+$2)
- Discover DXing! By J. Zondlo
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Universal offers an informative catalog covering everything for the shortwave, amateur and scanner enthusiasts. With prices, photos and full descriptions. It's FREE by bookrate, or for $2 by first class mail. Request it today!
If searching out RF signals is your thing, then the R10 Interceptor is the answer. The R10 searches out nearfield signals and locks on in 8ms. It provides a shield of protection that no RF signal can penetrate without being detected. Unlike scanners and receivers that must be tuned to a specific frequency or scanned through a fixed frequency range, the INTERCEPTOR will provide an exciting new dimension in recreational monitoring with near instant response to strong signals. Communications monitoring hobbyists will be able to take the R10 on cruise ships, to military bases, theme parks, zoos, airports, to space shuttle launches, parades, sporting events, car races and anywhere two way FM communications is used. • Check Deviation with 10K or 100K range • Check Relative signal strength • Continuous 30MHz-2GHz coverage in less than 1 second • Built in Speaker • Thumb wheel volume and squelch control • Supplied with telescoping whip antenna, Internal NiCad battery pack, and an AC charger.

The R20 is a compact RF signal strength detector with a 10 segment bargraph display. There is also an audio output from the detector for monitoring AM communications. The audio output is useful for room sweeps where in close proximity to a transmitter a quieting effect can be heard due to detector saturation. • The 10 segment LED bargraph responds to all RF signals with nominal 3dB increments • Pocket sized with built in telescoping whip antenna • 9 volt battery operation • Monitor Aircraft, CB, AM Broadcast transmissions • Check Microwave oven leakage • Wide 5MHz-2.5GHz range

R10 INTERCEPTOR
R10 $299.00

R20 INTERCEPTOR
R20 $119.00
AS I prepared this month's editorial, some very disturbing news was filtering over the news wires and the Internet. By the time you read this, you probably will have heard whether it actually transpired.

You see, the coffers that kept Radio Canada International on the air dried up. The Canadian Broadcasting Corp. announced late last year that it no longer could afford to spend $12.2 million (U.S. dollars) to keep the external voice of Canada on the air. That meant the shortwave station had to pack its bags and put 125 employees out of work. All of this is to happen March 31, 51 years after the station first went on the air.

Radio Canada International is woven into the listening of almost every North American SWL. We've all listened to the station and it very well may have been your first "foreign" SW catch. I know I loved listening to RCI as a kid in junior high school just getting my feet wet in SWLing. I always was fascinated by the neighbor to the north and delighted in tuning in RCI's programs when I got my first SW receiver.

As many around the world did, I became a member of the Radio Canada Shortwave Club. I still have the certificate hanging in my shack and I always have remembered my membership number (12852). RCI went far for the SWLs with the information and assistance it provided to hobbyists. I bet most of those wrote from the United States. too.

When I attended a few ANARC conventions in the 1970s, one of the treats that went with attendance was being in the company of Ian MacFarland, then the host of Radio Canada's ever-popular DX program. Ian is a SW celebrity in his own right, and his appearance and remote broadcasts at events such as those brought home shortwave radio, as global as it is.

However, unless those who fund RCI find new sources of money, the beloved station will be off the air come March 31. It would be sad not only for RCI, but also because RCI's Sackville, New Brunswick, transmitter site relays programming to North America from England, Germany, Austria, Portugal, Korea, Japan and China. POP'COMM took our readers on a tour of the nine-transmitter facility in the January issue.

Many Canadians—both home and abroad—as well as SWLs are rallying to keep Radio Canada on the air from its studios in Montreal, Quebec. But unless the Canadian government sees the error of its ways in keeping its largest ambassador on the air, RCI will fade off into the sunspot cycle come the end of the month.

RCI currently broadcasts at least 232 hours a week in eight languages (English, French, Ukrainian, Russian, Arabic, Spanish, Chinese and Creole) to North America, South America, the Caribbean, Africa, Europe, Asia, Russia and the other successor states to the USSR. RCI also provides 24-hour daily satellite radio service for Canadian Forces in Bosnia, the Golan Heights, Rwanda and Haiti, and NATO bases in Germany, Belgium and the Netherlands.

Radio Canada has an estimated shortwave audience of more than five million, plus an estimated 10 million or more listening to RCI programs on local stations or via satellite.

I personally hope that Canadian government can find the funding to keep RCI on the air in some form. It will be sadly missed if it leaves the air.

**New Column**

This month, we welcome W.W. Smith as a contributing editor to the pages of POP'COMM. W.W. is a long-time, well-rounded radio hobbyist who knows equipment. On that note, I asked W.W. to start a new product review column for us.

This month, you will see a column entitled Checked Out, where you will be able to read our expanded product reviews. If you have a product you'd like to see W.W. check out in this column, write to him in care of the magazine!

**Web Page**

No sooner did we advertise our new homepage on the Internet's World Wide Web in January, that the page crashed and left us without anything on the web. A quick tempory web page was added back to the site (http://home.aol.com/popcomm) and we are working to get the new site up soon. A link will be added from the old site.

73, Chuck
Mailbag

LETTERS TO THE EDITOR

Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons and to edit to conform to style. All letters submitted must be signed and show a return mailing address or valid e-mail address. Upon request, we will withhold a sender's name if the letter is used in Mailbag. Address letters to: Chuck Gysi, N2DUP, Editor, Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2909, or send e-mail via the Internet to POPCOMM@aol.com.

Back In the Old Days

Reading your first Thoughtwaves column reminded me of my early days DXing in Philadelphia. I was 8 years old in 1967 when I got a nine-transistor radio. At that time, my friend and I thought that the more transistors you had in the radio the better it was. I had a "nine" and he had an "eight." DXing back in those days was fun. You could get KFI in Los Angeles beginning around 8 p.m. in the wintertime and they stayed in all night! Later on I would listen to Herb Jepko on KSL with the Nightcap Show. You can't get KFI anymore because of WWJZ in Mount Holly, N.J., on 640 and KSL, well forget that, too.

Philly had some great air personalities back then on WFIL, WIBG and WIP. Remember George Michael, Joe Niagara, Hy Litt, Ken Garland, Joe McCauley, WEE Willie Webber, Dick Clayton, and on and on and on? I still have a tape of Joe McCauley saying happy birthday to me on my ninth birthday.

A little about me: I am 36 years old, married with three children, and a licensed ham (N4TKR), I work for AT&T, and I am totally blind and have been all my life. I read POPCOMM in Braille and look forward to it every month. Good luck in your role as editor. I'm sure you will do a great job!

Roy McCutcheon
(via the Internet)

It never ceases to amaze me that several of the broadcasters of that era still are on the air in the Philly market! There's always a station with a format that can use them. Don't forget that WEE Willie Webber was one of the few that also was in television, with his afternoon kiddie show on WPHL, Channel 17, for several years. Also, if you recall the Cruisin' series of rock 'n' roll radio albums that were produced in the 1980s... if you can find the Cruisin' 1957 album, you'll hear Joe Niagara of WIBG with songs of the era, plus commercials for local establishments.—Editor

Reaching For the Switch

I have been a subscriber to POPCOMM for the last eight years or so and find that it is one of the best—if not the best—magazines in conjunction with the scanner and SWL hobbies.

However, in all that time I have not seen one of the oldest CB sets that I can recall. It was my first one: It was made by Philmore, was super-regenerative, had three transmit frequencies inside with a socket for additional crystals on the outside. The push-to-talk button was on the front of the set instead of the mic. It was no mean feat driving down the street and talking at the same time.

What was even more fun was that when you keyed up, it clobbered two channels in either direction! Needless to say, it was replaced by the superheterodyne that worked much better. I owned it back in the early 1960s. I graduated to better, including a build-it-yourself Heathkit, and one of the first solid-state models, the Cadre 505. When I saw the article about it in the magazine, it sure brought back fond memories.

I finally got a ham ticket and now I can play with the big kids. Keep up the good work with your magazine, and don't forget the little guy who may just have a shortwave radio that he uses to listen to the BBC, the Voice of the Andes or just a ham on the other end of the country. This person has the potential to become a good ham; all we have to do is cultivate them. I know that what's happened to me.

Ed Cifelli, KC7MWP
Tempe, Ariz.
(via America Online)

Ed, those first CB rigs were a lot like the ham rigs of the time with the key-to-talk switches on the front of the radio instead of on the mic. I probably wasn't until the 1970s when CB radios really became more unique and didn't look like the clunky HF rigs that hams used. I remember the box of transmit crystals I had for my first rig, a Lafayette Comstat 19. I didn't spend my hard-earned paper route money on receive crystals because the rig had a tunable receiver and I just kept spinning the dial until I heard my friends!—Editor
Remote Computer Scanning System

The RCSS, Windows '95 compatible Software significantly enhances the AOR AR8000 receiver's capabilities by providing automatic Personal Computer control over the receiver's scanning, logging and memory functions! These features and many more make this software a great choice for Windows use:

- Auto detection and storage of active frequencies and add1 into while scanning
- Scan user specified tuning steps from 10Hz - 100 MHz
- Scan by mode, class of service, or type of unit
- True signal detection allows scanning upon loss of carrier with user supplied delay
- Max scan rate, user adjustable
- Scan by radio or computer
- Unattended frequency monitoring by time and date
- Lockout unwanted signals
- Rearrange all freq. in any combination by click/drag or entry

SCANCAT GOLD

SCANCAT presently supports:
- AOR 3000/3000(A) & AOR2500, AR3030 HF receiver, AR8000 (Newest handheld)
- Drake R-8
- MOST Icon Radios
- Kenwoods including TS-440, TS-450, TS850 & R5000
- MOST Yaesu's including FRG-8800 & FRG-9600 Yaesu, PLUS FRG-100, FT-840 and more!
- The NRD-525 & 535 JRC
- LOWE HF-1500
- Watkins Johnson HF-1000
- Opto Electronics add-on boards for PRO series Radio Shack Radios.

Our software allows complete control of all functions supported by these radios through the standard manufacturer's interface.

SCANCAT allows you to:
1. Enter any one frequency and increment up-down from that point.
2. Enter any two frequencies and scan between them with ANY increment, time delay or pause.
3. Scan a file of frequencies, search by description or wildcards
4. Create Databases of frequencies files. Sort by any field, and save to disk and/or send to printer.
5. Create 30 personal "Preset" frequency BANDS for SW, aircraft etc. including increment and mode. The most popular presets are included in the program.

- Multiple Scanning Banks
- Multiple Scanning Diskfile Banks
- Dual Radio Simultaneous Scanning
- Comma Delimited Conversion
- D-Base Support, Scanport-Gold
- Direct Import of TTS
- Macro Control per Record
- Command Line Control
- Automatic Birdie Lockout
- Top Hits Table

WINDOwSTM Control for Scanners

ScannerWEARTM SoftControl 2.0-
WINDOwSTM 95' compatible now supports:
- OptoScan 456 with Radio Shack PRO 2005/2006
- AOR 3000/3000A/8000 with Radio Shack PRO 2035
- ICOM R7000/R7100/R9000

- Memory banks include 100 channels per bank, with frequency, description and mode.
- Search ranges include frequency, step, mode and description.
- New database search by service codes.
- Data logging to the file includes date and time stamp, signal strength, tone and number of hits, location (requires PerCon Database).
- Spectra analysis uses search ranges or displays logged data.
- New High Speed CTCSS & DCS controlled scanning with the IIC-2006 and OptoScan with 456/535.
- CTCSS & DCS controlled scanning on R7000/7010 and AOR 3000/3000A/8000 with optional IC-122 Tone Interface Box.
- Scan multiple groups, banks, or search ranges in the same session.
- Birdie control file.
- Unlimited file size.
- Import PerCon Database and comma-delimited ASCII.
- Special Eurobin support for the AOR 8000 including up and downloading of hex values, plus MODPLAN to enable file 800-900 mhz.
- NEW database scan by service code, create memory banks from service codes.
- NEW memory bank up and downloads for ICOM R7000/R7100/R9000 and AOR 3000A/8000.
- NEW easy window with support for extra ports 1-8, IRQ calls on all ports, user modifiable dwell setting for all radios.
- NEW slave-maste scanning with CIV protocol, scan on your receiver and all hits are transferred to the slave receiver for monitoring.
- NEW minimize window allows a viewing of f requency while in any other WINDOWS or DOS application.

Computer Interface for the AR8000 & AR2700

Unlike some of the European devices sold today, this unit is smaller, lighter, and makes no power demands on your receiver. With the extra shielding and smaller size there is less chance of additional interference leaking into your radio. The AR8000/INF is also the only interface that is upgradeable for use with the optional Tape recorder controller due first quarter '95.

\[ \Delta \] Low Power, powered by your serial port
\[ \Delta \] No Drain on the batteries in the radio
\[ \Delta \] Light weight, perfect for Laptop use
\[ \Delta \] Hi-Tech Surface mount design for reliability
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BY JEREMY BIGWOOD

“Hello, Commander Two-Zero.”
“Go ahead, over.”
“Listen in—it’s hitting the fan pretty bad out here. ... I’m ... I’m bailing out of here. ... Got to get out of here. (It’s) hitting the fan, over? ... I’m telling you, I do not want anybody to call on me tonight. ... Just come out for me tomorrow, over.”

“Commander Two-Zero, this is Retelo. Go ahead, over.”

Muffled explosions and unscrambled voices emanated from my scanner, a RadioShack Pro-2004. Looking over at it from my bed through sleepy eyes, I could see its familiar green light showing scanned frequencies. Above it, laying over the speaker, was a Sony Pearlcorder, set to “vox,” still in its leather sheath. The backlit face of a travel-alarm clock glowed 0400 Salvadoran time. The scanner was playing out an attack on a Salvadoran army base by leftist FMLN guerrillas—blow by blow. “Commander Two-Zero” had to be the code name for a U.S. military adviser, and “Retelo” the on-duty U.S. officer at the U.S. military group’s headquarters in San Salvador.

It was February 1989, and I was working as a photojournalist covering the wars in Central America for a New York photo agency. I had bought the scanner on a recent trip to the United States and smuggled it into El Salvador, where scanners were considered illegal and subject to confiscation by the military government.

During a rushed visit by then-Vice President Dan Quayle, I had started to search the airwaves for police, Army and embassy frequencies, and also those of the FMLN guerrillas. After hours and sometimes days of monitoring frequencies, the scanner locked onto various Salvadoran police frequencies at about 179 MHz, and later vectored in on U.S. Embassy traffic, and even better—the clear, unscrambled frequencies of the U.S. military advisers attached to the military bases throughout the country.

The scanner switched to other frequencies, then, suddenly Two-Zero was back: “As you know, we are being probed... we also are receiving rampas, over. ... At this time, it’s just probing fire. ... They fired a couple of RPG-7s, but that’s about it, over.”

He clearly was under intense fire from both small arms, rocket-propelled grenades (RPG-7s) and guerrilla-homemade rampas—explosives catapulted by smaller charges from a wooden crate. I could imagine guerrillas, some of them almost naked, covered in black mud probing the base, illuminated by parachute flares in a tracer-sliced nightscape.

“How many people are doing the probe? Over.”

“Right now, I estimate four to five. They might be the...they may be the... uh...front element of a bigger unit with rampas, but I’m not sure right now. ...They’re coming in again. We are getting rampas, over.”

And then static:

“Hello, this is Commander Two-Zero.”

“Commander Two-Zero, Retelo. Go ahead, over.”

“Yeah, the probe has turned into an... attack from the northeast. We got, ah... three wounded already, we have one blindado in ambush... And we got one kid—he’s in pretty bad shape. He’s probably going to go away. And we have two other wounded, over.”

Now it was getting more serious. The guerrillas had taken out a blindado—an armored personnel carrier. I needed to know where this action was taking place, for I still didn’t know from which base Two-
AR5000 CYBERSCAN...
The Ultimate Receiver
Join the AOR Revolution with high tech, state of the art receivers
Never before has there been so much in such a small package. Hear naval submarine command and control at 21.4kHz, push a button and copy GOES WX Satellite 1691MHz.

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Leading Edge Technology has now become affordable.

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- Switchable attenuator for high RF environments.
- Power 13.8VDC at <1amp, AC Adapter included
- Small, lightweight (approx. 8.5"W x 3.5"H x 10"Deep)
- SDU5000 compatible

AR5000 Specifications
Frequency Range: 10kHz - 2.6000MHz
Receiving Mode: FM, AM, LSB, USB, CW, Special
I.F. Bandwidth: 3kHz, 6kHz, 15kHz, 40kHz, 10kHz, 20kHz, 0.5kHz (Opt.)
Triple Conversion: 1.F.
622.2, 10.7 & .455MHz
Frequency Stability: ±1ppm (0 to 50C) ext OSC jack
Antenna Impedance: 50-Ohms (N, BNC)
Programmable Step: 1kHz to 999.99kHz
Search/Scan Speed: 50 steps/second (less than 10kHz steps)
Power Supply: DC 12V, (±1A) 120VAC adapter incl.

AR3000A
Compact, professional quality, wide range monitor receiver

AR8000 shocks the market. AOR made every effort to incorporate the latest technology in to this new scanner.

- SPECIFICATIONS -
  - Range: .5 - 1900MHz* usable to 100kHz
  - Modes: AM/NFM/WFM/USB/LSB/CW
  - Stepsize: 50Hz to 999.995kHz
  - Sensitivity(µV): 30 to 1000MHz
  - SSB .2 AM 1.0 NFM .35 WFM 1.0
  - Filters: (kHz) SSB 4 AM/NFM 12 WFM 180
  - Memories: 50 ch. x 20 banks= 1000 total
  - Size/Wt: 6.1 x 2.8 x 1.6 inch. 20 oz. baff. incl.
  - Cell blocked for all, but Approved agencies.
  - Ferrite Rod antenna below 2MHz
  - Only portable scanner on U.S. market to have true SSB, both LSB & USB.
  - Others attempt SSB using a BFO, but are difficult to tune and produce poor SSB audio.
  - 4 level alpha numeric LCD read out frequency, mode, signal strength, band scope spectral display, battery low, remote and more.
  - Computer control up/down load data, will add a new dimension to the world of scanning.
  - Clone your memory bank with a friend, load 1000 memory channels in seconds

"The New Star" AR 2700...Out of this world Wideband Scanner
The new AR 2700 from AOR is another break-through for general coverage scanners at an affordable price.

- FEATURES -
  - Wide frequency range: 50kHz to 1,300MHz with various step size, 5, 6, 25, 9, 30, 125, 20, 25, 30, 50, & 100kHz (wide FM only).
  - Auto Mode tuning: Comprehensive band plan has been pre-programmed to simplify the operation. The AR 2700 will automatically select the appropriate mode and channel step.
  - Great flexibility in programming: for Scan and Search mode. Delay, Pause and Priority intervals can be set to a specific value. Program search, Manual search, Bank link, Delay, Pause, Pass, Scan, Bank delete, Priority are provided.
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Charlie Cobra yelled: “You imbecile, you’ve mixed up the coordinates! Call them back right now!” As members of the PRAL huddled the ground, the nervous radioman called and changed the mixed-up coordinates, and the next shell flew clear of us. Unlike the army, who used the old, heavy PRC-77 radio packs, the guerrillas used narrowband FM for most of their internal communications within a specific zone, or front—as they were called. Typically, the battery pack was cut out of a flashlight, and a coiled telephone wire was attached to the poles within, which in turn was attached to a homemade battery pack containing easily obtainable C flashlight batteries. The homemade battery pack usually was placed in a pouch and attached to the belt of their ALICE harness, and the actual handheld clipped to a shoulder D-ring on the harness.

Besides being incredibly lightweight in comparison to the army’s radios, this setup held the radio between the chest and the shoulder, a good position for monitoring or communicating. The guerrillas also used the large PRC-77 radios on shortwave frequencies—known to them as radio verdes (green radios)—for communications between zones. The guerrillas most often used numbered codes, those famous Spanish number stations of DX lore, humidly deciphering them with the latest code book.

The two guerrilla shortwave stations, Radio Venceremos and Radio Farabundo Martí, had the extremely difficult job of operating daily under wartime conditions in a country the size of Massachusetts. Because of the propaganda value to the

Rebel Radio Venceremos of the leftist FMLN is shown broadcasting from Piquet in northeastern El Salvador in February 1988. (Photo by Jeremy Bigwood)
rebel cause, both radio stations were considered targets of the highest priority by the Salvadoran government and the U.S. counterinsurgency program. The Salvadoran Air Force, under direct control of the U.S. military’s Southern Command, had the ability to deliver air strikes at any time to any location. Salvadoran army howitzers and mortars could deliver shells—on demand—to most quadrants in the country. In spite of overwhelming odds against them, Radio Venceremos broadcast twice daily during the 12-year-old war, missing only one day. As an excuse for their inability to destroy these stations, Salvadoran army and U.S. State Department spokesmen claimed that guerrilla broadcasts originated from Managua, Nicaragua.

This also presented the press and public a spurious mirror image of the CIA-operated Contra radio stations aimed at Nicaragua, which everyone knew to be operating out of safe, fixed radio stations in Honduras and Costa Rica. Many journalists had bought the government line. The only way for Radio Venceremos to prove to the public that they were operating out of El Salvador was to allow the press occasional access to them, a very dangerous proposition under their circumstances (at that time, the photo agency that hired me was allowing the U.S. government access to all of my images, although I wasn’t aware of it).

Taking advantage of a UNICEF child inoculation trip to guerrilla country in northern Morazán, I was able to visit Radio Venceremos for the first time in February 1988. As the three men and two women members of Radio Venceremos set up in the living room of a house, one of the three other journalists who were present walked across the street and sat on the rubble of a bombed-out house—from where he could see, but not hear the broadcasters speaking. He turned on his small shortwave receiver, tuning it in to the low end of 6 MHz.

During live parts of the program, the announcers’ voices synched with the words emanating from his receiver—proving to him, a doubter, that he was observing the real thing. Inside, I photographed the scene. Then, as the others left on the five-hour trip back to San Salvador, I stayed on to document life in this guerrilla zone. I didn’t see Radio Venceremos for another month, but I heard them clearly throughout the whole zone where government jamming was more muted. I was to learn later that both radio stations, moving frequently to avoid detection, often used barbed-wire fences as their antennas. Radio Venceremos and its sister Radio Farabundo Marti continued to broadcast daily for the next four years from their mountain redoubts until the war ended in 1992 through U.N.-sponsored peace negotiations.

Since the signing of the Salvadoran peace accords, Radio Venceremos and Radio Farabundo Marti have moved to the capital city of San Salvador and now broadcast only on the FM band. Radio Venceremos is a popular commercial station, albeit with a decent news program. For news and analysis purposes, Radio Farabundo Marti is better. It is a shame that these two stations are not available on shortwave.

In this age of CNN and the Internet, scanning and shortwave DXing are given the short-shrift, but in reality they are still a hidden, but essential part of news gathering. Scanners usually are prohibited by governments with something to hide, but carefully taking the risk of using one can reveal stark realities. For journalists who cover wars where both sides have radio stations, and where access to actual events is difficult, the search for the truth about the conflict is greatly facilitated by DXing.

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Monitor the Terrorist Threat!

Hear the Action From a Safe Distance, via HF/VHF/UHF

BY TOM KNEITEL, K2AES, SENIOR EDITOR

The Oklahoma City Federal Building, Pan Am Flight 103, Amtrak’s Sunset Limited, the World Trade Center; Ulster, Israel and Saudi Arabia; subway systems in Japan and France. All conjure images of recent acts of terrorism. The motives behind each attack have differed, but terrorism continues to emerge as the preferred lethal way extremists press their sundry hostile agendas.

Terrorism may be motivated by revenge, religious fanaticism, political or many other reasons. It can be done by international organizations, or groups native to our own country. Regardless of the motive or nationality, acts of mass terrorism have several things in common: loss of life and destruction of property.

Terrorists aim to cause fear, panic and despair among the public; to disrupt the social structure, impact negatively upon the financial markets and break down governmental functions.

Terrorism in the United States has increased at an alarming rate within the past few years. Several hostile governments and groups are sneaking terrorists across our borders. Also, there are domestic groups directing their activities against our government or some element of our society.

The arsenal of terrorists includes weapons, bombs and explosive charges, as well as chemical and biological agents. U.S. Sen. Richard G. Lugar (R-Ind.) recently stated: “Americans have every reason to expect terrorist attacks by means of chemical and biological means before this decade is out.”

Acquiring plutonium within the United States is virtually impossible. But with the breakup and denuding of the Soviet Union, an international black market in nuclear materials is developing with possibly ominous results here at home. As chilling as the specter of conventional terrorist bombs have been, authorities fear that they may just be a preamble to the ultimate horror, nuclear materials in the hands of terrorists capable of building a bomb and using it.

Iran, a nation that exports terrorism, is developing nuclear weapons that could be operational within three to five years. Potential terrorist targets include federal property and buildings, airlines and airports, railroads, ports and harbors, mass transit systems, office complexes, hospitals, public utilities, reservoirs, shopping areas, industrial sites, schools, refineries and the nation’s infrastructure.

Counterterrorism Efforts

Many governments maintain anti-terrorist counterintelligence operations that exchange information internationally via Interpol and other means. Terrorist organizations and suspects are monitored as closely as possible in order to keep abreast of their plans, in the hopes of foiling mass terrorist acts. On the whole, these efforts have proven effective.

Nevertheless, as history has shown, there remain instances when terrorists manage to do their worst, despite the pains being made to hunt them down and put them on trial. In the United States, at such
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times, the government swings into action to do whatever it takes to aid in the disaster, as well as investigate the crime scene.

**Monitoring**

That’s when scanner (and even some shortwave) frequencies buzz with activity not normally heard. That means you could be in on what’s happening, while wisely staying safely far from the scene. To aid you in doing this, there are frequencies you’ll want to keep programmed, or at least on hand. These frequencies also would be used during simulated practice drills.

This is not intended to be an exhaustive compilation of every frequency used by each agency shown, but a representative sampling of frequencies most likely to display activity. These frequencies have been previously published, though not in the form presented here. Unless otherwise noted, all are FM mode. Some communications can be expected to be scrambled by digital means.

**Frequencies**

In 1984 and 1986, Congress passed legislation that provided for extraterritorial jurisdiction in terrorist-related incidents involved in hostage-taking and assaults against U.S. nationals traveling abroad. This legislation also authorized the Federal Bureau of Investigation to conduct appropriate investigations. The FBI is the lead law enforcement agency in the fight against domestic and international terrorism.

Presently, FBI communications appear to be widely spread out over frequencies across the entire 163 to 173 MHz range. The specific channels used differ for each local area and, therefore, are best determined by individual local searching. Many FBI transmissions are digitally scrambled, sounding like white noise.

Another important agency is the Bureau of Alcohol, Tobacco and Firearms, which is part of the Department of the Treasury. One of BATF’s primary missions includes investigating violations of federal explosives laws. The agency’s federal jurisdiction includes the following laws: 1968 Gun Control Act; 1970 Title XI of The Organized Crime Control Act; 1982 Anti-Arson Act (amended Title XI); and 1984 Comprehensive Crime Control Act (amended Gun Control Act).

Check for BATF agents on 165.2875, 165.4625, 166.5275, 165.9125, 166.4625, 418.175, and 418.725 MHz.

The Federal Emergency Management Agency ensures the continuity of government and coordinates mobilization of resources during national security emergencies. As such, FEMA supports state and local governments in a wide range of disaster planning, preparedness, mitigation, response and recovery efforts. Among FEMA’s many scanner band frequencies, any or all of the following might be locally active in the immediate aftermath of an act of terrorism: 138.225, 138.575, 139.450, 139.775, 139.825, 139.950, 140.025, 141.725, 142.350, 142.425, 142.975, 143.000, 168.075, 168.100, 168.400, 168.700, 169.600 and 169.875 MHz.

In conjunction with the U.S. Air Force, FEMA participates in the Joint Emergency Evacuation Plan, or JEEP. JEEP’s intention is to evacuate and safely relocate top government officials in the event the government comes under attack. Monitor 268.000, 287.600 and 293.500 MHz for JEEP’s operations.

FEMA’s Urban Search and Rescue Task Forces use the following frequencies: 408.5125, 409.4875, 410.4875, 410.5125, 413.2125, 416.0375, 416.8125, 419.9375, 417.5875 and 417.6625 MHz.

On the HF bands, FEMA uses USB mode. Its primary daytime calling frequency is 10494 kHz, while at night it is 5212 kHz. Numerous working frequencies are utilized, but it’s worth keeping an ear peeled to nationwide point-to-point channels, like: 6109, 7349, 14451, 14777, 14837, 14886, 14900, 14909 and 20028 kHz. Other agencies also participate in these HF nets, including the De-

Airlines have been forced to take extraordinary security precautions because of the spreading terrorism threat.

Scanner monitoring allows hearing the action from a safe distance. Also, it keeps the casually curious out of the way of busy on-site emergency and investigative personnel.
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Specialized U.S. Army units are trained in toxic gas and explosive ordnance disposal. (Army photo)

departments of Energy and the Nuclear Regulatory Commission. FEMA’s HF stations can be picked out by their distinctive call letters, consisting of WGY9 and two more digits (i.e., WGY935, WGY997, etc.).

To counter the threat of nuclear terrorism, the Department of Energy created the Nuclear Emergency Search Team, or NEST. NEST is our nation’s nuclear bomb squad, comprised of a highly mobile team consisting of weapons designers, engineers and physicists. These experts are NEST’s volunteers. Its primary mission is searching for and locating nuclear bombs planted by terrorists. When such a device is located, the U.S. Army’s Explosive Ordnance Disposal (EOD) unit is brought in to render the device harmless.

NEST is headquartered in Alamogordo, N.M., but it can be made ready in short order to be flown to any city. Realistic practice drills are regularly held in various cities to keep NEST members well trained.

NEST communications can be on: 150.450, 163.000, 164.025, 164.100, 164.225, 164.2375, 164.775, 166.225, 167.825, 167.850, 167.950, 169.600, 169.675, 172.300 and 410.800 MHz. U.S. Army EOD units are reported using the following: 49.70, 49.80, 139.000 and 139.175 MHz.

The General Services Administration’s Public Buildings Service maintains its own large police force. This unified force provides physical security at many federal buildings and other U.S. Government facil-

Comms relating to the detection, containment, neutralization, and/or removal of hazardous or pollutant substances from the environment may be monitored on: 36.25, 36.71, 36.89, 41.71, 122.925, 150.980, 154.585, 156.750, 157.075, 158.445, 162.025, 162.125, 162.175 and 164.450 MHz.

Ambulances and medical communications are best monitored on the following: 155.340, 462.950 to 463.175, and 467.950 to 468.175 MHz. The American Red Cross uses 47.42 MHz as its primary nationwide channel.

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ities. As such, the frequencies of GSA's Special Police are worthy of monitoring in connection with counterterrorist activities.

Monitor the GSA's Special Police on: 412.400, 415.200, 417.200 and 417.425 MHz.

National Transportation Safety Board investigators use handheld units. They are reported on 165.7625 and 166.175 MHz.

Also of interest are those channels shared by numerous federal agencies. These include the federal agency itinerant frequencies 163.100, 418.050 and 418.575 MHz; the federal interagency common frequencies 168.350, 408.400 and 418.075 MHz; the National Radio System on 164.8625 and 165.6625, the Federal Disaster Network frequency, 170.200; plus the National Interagency Incident Management System frequencies of 168.550 and 168.650 MHz.

Various area civil public safety agencies often communicate with one another on 39.48, 45.86, 45.88, 154.265, 154.280, 154.295, 866.0125, 866.5125, 867.0125, 867.5125 and 868.0125 MHz.

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March 1996 / POPULAR COMMUNICATIONS / 17
DXing 60 Meters
These Shortwave Stations Around 5 MHz Offer a Challenge

BY GERRY L. DEXTER

Shortwave's 49-, 31-, 25-, 22-, 19- and 16-meter bands, dominated by the high-power international broadcasters, are areas where many SWLs spend most of their listening and DXing time. Many rarely, if ever, venture much above (or below, frequencywise) the 49-meter band. Sixty meters, for example, is a land of generally weaker signals, where less English is spoken, and where some really challenging DX targets await. It's understandable that beginning SWLs would want to avoid this more treacherous area. For many veteran listeners, however, this is the place they most enjoy tuning.

Besides being a prime DX hunting ground, 60 meters is attractive because it still retains much of the romance of shortwave—an undefinable feeling that many international broadcasters seem to have lost in their effort to sound more and more like "regular" broadcasters.

Our hope is to get you to give 60 meters a try, or spend more time there if you presently try that range only occasionally. What we're going to do is take an alphabetical, country-by-country tour of this frequency range.

Technically, the 60-meter band extends from 4700 to 5100 kHz but we're going to cover stations on frequencies down to 4000 kHz, which, actually, is the upper end of the 75-meter band. We'll also cover up to a 100 kHz or above the top end of 60 meters. Most shortwave broadcast DXers look at this frequency range as a single entity, particularly because it reacts similarly to propagation conditions, and there's no really obvious break point.

Seeking signals in this range is somewhat different from, say, the 9-MHz band because, by and large, you can forget about spending very many daytime hours here. The band is open mostly from the late afternoon, through the hours of darkness (which, perhaps, lends it part of its mystique) and goes "out" an hour or so after local sunrise. SWLs who live in the eastern part of North America will (especially in the winter months) find many signals from Africa showing as early as 1900. If you live on the West Coast you'll have to wait several hours beyond that before the band begins to open and, by that time the Africans will have signed off. You'll have to catch them at sign-on, generally between 0300 and 0600. West Coasters will have better shots at Asian and Pacific signals, though.

Asia, Africa and Latin American stations are all over the place, while Europe is barely represented. Eastern and Midwestern listeners, particularly during the winter months, often can hear African stations signing on late at night, then signing off late in the afternoon. The same is true with Latin American stations: We hear sign-offs late in our local evenings and later catch their early morning sign-ons.

Reception quality can vary from day to day and season to season even more than it does on the higher bands. You'll generally find the best reception from local Indonesian stations in the spring and fall and from the subcontinent in late fall and winter. Latins are reliable year 'round, although summertime means contending with more static (QRN).

Some countries can be heard quite easily, requiring more than just tuning to the right frequency at the right time. Other stations are a lot chancier, a few are as close as you can get to being impossible. Doing serious DXing, especially on lower frequency bands like this, requires a great deal of patience. A lot of time must be spent tuning and searching through evening and early morning hours in all seasons in order to get a feel for how the band performs in your area over a year's time. Seeking a particular station may require frequent checks for a period of weeks or months—occasionally even years!

It's a very good idea to keep a log by frequency, including time heard, sign-on or sign-offs noted and the like. As you identify more and more stations, you'll find such a log makes it much easier to spot signals you haven't yet heard.

We've tried, in a very general way, to indicate the reception possibilities for each country: one star (easiest), two (fairly or
quite difficult) or, three (extremely difficult or nearly impossible to hear). Obviously, these are subjective indicators and your location may increase or lessen your chance of hearing a particular country, so keep in mind that these are intended only as a general guide.

ANGOLA (*) There was a time when there were several Angolan regional stations active on 60 meters. Now it’s down to one or two and, even at that, operation tends to be irregular. Try Radio Nacional from Luanda on variable 4950 around 0300 (in Portuguese). Emissora Provincial de Benguela on 5043 sometimes is heard from 0500 sign-on.

ARMENIA (*) Armenian Radio almost is never reported, (at least in North America) on its 60-meter, 4810 channel, scheduled for an 0200 sign-on with its 50-kW domestic service.

AUSTRALIA (**) Commonly heard on the higher bands, Australia has become difficult DX down here, especially since 4920 went silent. You’ll have to chase the stations of the Northern Territory Shortwave Service: VL8A (Alice Springs) on 4835, VL8T (Tennant Creek) on 4910 and VL8K (Katherine) on 5025. All three run until 0830, normally a bit early for reception from the Pacific, though it’s a different story for West Coast DXers.

AZERBAIJAN (**) Azerbaijan Radio TV from the capital, Baku, has two shortwave transmitters using 60 meters—4785 and 4957.5. Neither is an easy catch, but they sometimes can be picked up during local early mornings.

BANGLADESH (**) Combine a frosty winter morning with the right propagation conditions and you may locate a signal from Radio Bangladesh on 4880. It signs on about 1145, goes off an hour later, then returns briefly at 1300.

BENIN (*) Radio Benin (the long version is Office de Radiodiffusion et Télévision du Benin) from Cotonou, often is well heard during good African conditions, signing on at 0458 on 4870. A bigger challenge is the regional station at Parakou on 5025, signing on at 0500.

BOLIVIA (*) 60 meters has a heavy Bolivian station population and most of them are at about the same level as far as "hearability" goes. A couple of the more-often reported are Radio Santa Ana, 4649 variable; Radio Abaroa, 4712 variable; and La Cruz del Sur, 4875. Try during the evening or at sign-on which, depending on the station, may be 0900, 1000 or 1030. Sign-on times can vary from day to day.

BOTSWANA (**) Radio Botswana on 4820 is famous for its barnyard sound effects interval signal (the cow effects were human-made) aired before their 0300 sign-on. Unfortunately, La Voz Evangélica in Honduras is still in operation at that hour, so we don’t hear Botswana on this frequency as often as in the past.

BRAZIL (*) 60 is a gold mine for Brazilians. Here are some of the easier ones: 4755. Radio Educacao Rural; 4805. Radio Difusoras Amazonas; 4875. Super Radio Roraima; 4885. Radio Clube do Para; 4985. Radio Brazil Central; and 5045. Radio Cultura do Para. Note that some frequencies are used by two or even three Brazilian stations simultaneously, so beware. Try tuning in evenings or early mornings at 0800 and 0900 sign-ons.

BURKINA FASO (**) Radiodiffusion Nationale du Burkina operates a 50-kW transmitter on 4815 and signs on at 0530. Broadcasts are in French.

BHUTAN (**) Radio Bhutan is a prime DX target on 5030 (sometimes 5025). The most likely shot is around local dawn (during its 1100-1600 broadcast period).

CAMEROON (*) For years you could hear a half-dozen Cameroon stations in this range, but lately Cameroon shortwave has been suffering though difficult times. At present, it’s believed that only the regional station at Garoua on 5010 is active (and perhaps only intermittently; at that). Sign-on is at 0530 in French.

CENTRAL AFRICAN REPUBLIC (**) Radiodiffusion Television Centrafricaine opens its daily broadcasts in French at 0430 on 5034. Its 100-kW signal can be received quite well during good openings to Africa.

CHAD (*) (or Tchad if you prefer) The main government station at N’Djamena signs on at 0425 on 4904.5. Radio Moundou, a regional station from the town of the same name, operates on 5287 from 0500.

CHINA (*) China has several stations making use of the 4- and 5-MHz range, which are best heard during the local early morning, up to a half-hour or so after sunrise. Check 4220, 4330 and 4500 (all from Urumqi), 4760 (Kunming), 4975 (Fuzhou), 4990 (Changsha), 5010 (Nanning), 5020 (Nanchang), all CPBS stations. Also the Voice of Puijiang from Shanghai on 4950.

COLOMBIA (*) There are a number of Colombians broadcasting in this range: Ondas del Meta, 4885; Radio Nacional, 4955, and the inescapable Caracol Colombia, 5075.

CONGO (**) Radiodiffusion Television Congolaise at Zaire is one of those onagain, off-again operations (more the latter). When they have the transmitter operating, they sign on at 0400 on 4765 carrying the national network in French.

COSTA RICA (*) One of the oldest Costa Rican shortwave stations, Radio Reloj, still holds forth on 4832 variable with announcements and time checks every minute. Evenings. In Spanish.

CUBA (*) Radio Rebelde, 5025, in
Spanish during the evenings.

DJIBOUTI (**) Radiodiffusion-Television de Djibouti always has one of the toughest 60-meter Africans, usually buried under another broadcaster or a FEMA transmission, or both. At the moment, it’s inactive, which makes it an even tougher log! One day it may return so you might pay to check for the French language sign-on at 0300. You never know.

DOMINICAN REPUBLIC (*) You have a couple of opportunities here. Try evenings for Onda Musical on variable 4780; La N 103 (relaying a local FM station) on 4800 variable; Radio Barahona, 4930; and Radio Cima, 4960.

ECUADOR (*) There are lots of Ecuadorian opportunities. Best are: Centinela del Sur, 4770; Radio Popular (Independiente), 4800; and Radio Quito, 4920.

EQUATORIAL GUINEA (**) Radio Nacional at Bata operates on either 4925.5 or 5004 from 0430 sign-on in Spanish. Incidentally, some country lists (that of the North American Shortwave Association, in particular) count this as Rio Muni and the station at Malabo on 6250 as Fernando Poo, which were separate entities before they became Equatorial Guinea.

FRENCH GUIANA (**) RFO Guyane uses 5055 24 hours a day. Sometimes evening or early morning reception can be quite good.

GABON (*) Radio France International’s Gabon relay is the easiest of two possibilities, operating on 4890 at 0400. Try also the Gabon government station at Libreville on 4777 from 0455.

GHANA (*) Ghana Broadcasting Corp. signs on at 0340 on 4915, carrying the Radio One service, which includes some English.

GEORGIA (**) Georgian Radio— from Tbilisi—uses 5040 for its domestic service for most of the day and night. Logs of this one are very rare. Sign-on is at 0200; the channel is usually occupied by one or more (*) stations.

GUINEA (**) Radiodiffusion Television Guinienne from Conakry normally operates on 4900 with sign-on in French at 0555, but it may be inactive at the moment.

GUATEMALA (**) Several religious/cultural stations are active from Guatemala. The easiest to hear surely is Radio Tezulutlan from Coban on 4835, aired evenings (to around 0330) and mornings (to 1400 or fadeout).

HAWAII (*) The voice of the lady announcer giving the time signals under WWV, 5000, comes from WWVH, Hawaii, 24 hours a day.

HONDURAS (**) La Voz de Evangelica, 4820, can be heard in the evenings. Second choice: Radio Internacional, 4930v.

INDIA (**) All India Radio has several outlets in the 60-meter band, all of which are most likely to be heard during the winter months around your local dawn: AIR-Hyderabad, 4800; AIR-Calcutta, 4820; Bombay, 4840; Kohima, 4850; Delhi, 4860 (one of the more common shows), and several others.

INDONESIA (**) Having been divided into several “radio countries,” this country adds interest to the DX challenge. These Radio Republik Indonesia regions will be heard mostly around dawn, especially in the spring and fall: 4719 (alternately 4753), Ujung Pandang (Sulawesi), 4777, Jakarta (Java); 4805, RRI Kupang (very low power, Timur); 4835, Ambon (Moluku); 4855, Palembrang (Sumatera), and 4875, Sorong (Irian Jawa). Ujung Pandang, 4719 or 4753, will be the easiest to hear.

IRAQ (**) Republic of Iraq Radio uses 4615 from 0300 sign-on in Arabic. The broadcasts are jammed.

IVORY COAST (**) (Cote D’Ivoire) Radiodiffusion Television Ivoirienne used to be one of the old reliable 60-meter Africans (you could rely on them not to verify, too!). They still are scheduled on 4940 carrying the first program (Chaine 1) from 0455, but reception (and perhaps operation) is spottier than it used to be.

KAZAKHSTAN (**) Kazakh Radio uses several 60-meter frequencies between 0000 and 2000: 4545, 4800, 4820 and 5035 for its local services. None are easily heard in North America. Try around local dawn.

KENYA (**) Kenya Broadcasting Corp. is anything but a regular visitor for most SWLs, but every now and then the propagation gods smile and we enjoy reception from this East African station. It signs on at 0200 on 4885 and 4935. East Coast residents probably will be able to hear this up to its 2100 sign-off as well.

LESOTHO (*) Radio Lesotho, Maseru, often can be picked up at its 0300 sign-on, on 4600. Most of the broadcast is in the national language SeSotho. English news is scheduled at 0600.

LIBERIA (**) Religious station ELWA operates from Monrovia on 4760 from 0600 sign-on.

MADAGASCAR (**) Radio Television Malagasy currently is being heard on 5009 variable from 0300 sign-on in Portuguese. This is one of those stations that is heard well for a time and then becomes a nearly impossible catch, depending on conditions and the time of year.

MALI (*) Radiodiffusion Television Malienne signs on in French at 0555. Try 4783 and 4835, both slightly variable. During the winter, listeners in the eastern and central time zones should be able to receive this until its 0000 sign-off.

MAURITANIA (*) Radio Mauritanie, Nouakchott, signs on at 0630 on 4845.
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CIRCLE 28 ON READER SERVICE CARD
The 0100 sign-off also is heard in the east and central time zones during the winter. RTM uses both French and Arabic.

**MONGOLIA** Radio Ulaan Baatar uses 4081, 4650-4750, 4830, 4850, 4865 and 4895 from various sites but most of these almost are never heard in North America. Your best chance would be around local dawn on 4850, the most powerful of these outlets.

**MOZAMBIQUE** Radio Moam- bique usually is a pretty tough one on any band, including 60 meters. 4855 carries the external and interprovincial program, variable 4865 carries the national network and 4910 has the interprovincial network. All three sign on at 0250 in Portuguese.

**MYANMAR** Radio Myanmar (Burma in the good old days) usually shows up quite a few times over a winter season on 4725 around local dawn.

**NAMIBIA** Namibian Broadcasting Corp. is currently being logged on 4965 from sign-on at 0600. Programs are in English, German and Afrikaans over a 100-kW transmitter.

**NEPAL** Radio Nepal uses 5005 with 100 kW. Try it around local dawn.

**NICARAGUA** Radio Coro, Limas, on 4920, although it seems to have been inactive for some time.

**NIGER** The government station, La Voz du Sahel, operates on 5020 from 0430 sign-on in French.

**NIGERIA** This country's radio facilities have deteriorated badly in recent years (one story has it that one of the stations was destroyed by termites!). Still active is Radio Nigeria at Kaduna, which signs on at 0430 on 4770 with English, Hausa and other local languages. Lagos on 4990 may now be inactive.

**NORTH KOREA** Radio Pyongyang uses 4780 from 1200-1245 to East Asia. It's not often heard in North America. The Korean clandestine station, the Voice of National Salvation, based in the North, sometimes can be heard on variable 4120, also in the morning.

**PAKISTAN** Radio Pakistan airs a high-power transmission from Islamabad on 4815 from 0045-0310 and 4915 at 0045-0215 and from Quetta on 5025 between 0405-0440. It requires highly unusual propagation conditions to hear these in North America.

**PAPUA NEW GUINEA** NBC Port Moresby usually can be heard in the mornings on 4890. Reception of Port Moresby counts as Papua on country lists, which count this and New Guinea separately.

**PERU** 60 meters is thick with Peruvians, many of them unlicensed stations operating with low power and sometimes erratic schedules. Licensed broadcasters include Radio Atlantida, Iquitos, on 4790; Radio Coro, Lima, 4915; Radio Tropical, Tarapoto, 4935; and Radio Ancash, 4991, are the most likely to be heard, either in the evening or at their early morning sign-ons.

**SURINAM** Radio Apinte, Paramaribo, is currently heard on 4991 until 0400 sign-off, signing on again at 0725.

**RUSSIA** Russia always has made extensive use of 60-meter frequencies for use by transmitters serving regional audiences.

Quite a few of those are currently inactive and the status of several others is uncertain. One of the more heard was Petropavlovsk on 4485. If it's active, you might want it during the early morning hours at your location.

**SENEGAL** Radiodiffusion Television Senegalaise and its 0600 sign-on used to be one of the most reliable African signals on the 60-meter band. But currently its 4890 frequency isn't in use at that hour. Try to catch the tail end of its broadcast day, which runs to 0005.

**SOLOMON ISLANDS** Solomon Islands Broadcasting Corp., also identifying as Radio Happy Isles, uses 5020 until 1130. Try during the summer months around 0700 or 0800.

**SOUTH AFRICA** South African Broadcasting Corp. can be heard on 4810, carrying the Africa 2000 service from 2300-0300, then the Afrikaans Stereo service to 0600.

**SWAZILAND** Trans World Radio's Swaziland station uses 4760 Monday through Friday for programming to East Africa. The frequency is in use only from 0300 to 0330. There's an even briefer broadcast Saturdays, from 0330-0345.

**TAJIKISTAN** Radio Dushambe, is on 4635 (from Yangi-Yul) between 0100 and 1900. On occasion this can be heard during our local evenings, as well as around local dawn. It's real DX, though.

**THAILAND** Radio Thailand has an outlet on 4830 scheduled for operation during the 1100-1300 period but, for some reason, it is rarely heard in North America.

**TIBET** Although Tibet is part of China, some country lists (including NASWA's) count it separately. Lhasa is one of the China People's Broadcasting Station outlets on 4035 and 4750, heard occasionally at the same hours other Chinese outlets are most likely.

**TOGO** Radiodiffusion Togolaise, also known as Radio Togo or Radio Lome, is one of the more easily heard 60-meter Africans, opening at 0500 (in French) on 5047.

**TURKMEN** The Voice of Turkmen uses 4825 from 1200-1300 for programs
in Turkmen on Mondays, Wednesdays and Fridays. It is rarely, if ever, reported.

UGANDA (**) Reception of Radio Uganda is similar to Kenya (if one’s in, the other’s also likely). The 50-kW transmitter on 4976, which carries the regional service, opens at 0300. 5026 (20 kW) carries the national program and signs on at 0300.

UKRAINE (**) Radio Ukraine operates on 4820 during our evening hours (up to 0700). The channel will be blocked by Latins until 0400 or later.

UZBEKISTAN (**) Given a large dose of luck, you may be able to pick up Radio Tashkent with its domestic service on 4850 around local dawn.

VENEZUELA (*) Despite attrition through the years, there still are several “VVs” to be heard here: Radio Tachira on 4830; Radio Valera, 4840; Radio Rumbos, 4970; Ecos del Torbes, 4980, are the most reliable.

VIETNAM (**) The several Vietnam regional 60-meter frequencies virtually never are heard by North American DXers. Check these spots around local dawn: 4000, 4500, 4762, 4767, 4800, 4820, 4880, 4960, 4965 and 5035. Most of these channels also are occupied by other Asian signals at this time.

ZAIRE (**) Radio Candip, an education station in the town of Bunia, makes for a nice catch with its 0330 sign-on on 5066. Programs are in French and local dialects.

ZAMBIAS (*) Radio Zambia, Zambia National Broadcasting Corp., uses 4910 from 0245, carrying the Radio One service in English and local lingos.

ZIMBABWE (*) Zimbabwe Broadcast-
Tuning In On Yesterday

Let’s Look at Several Forgotten Firsts

BY ALICE BRANNIGAN

We love hearing from readers who are radio historians unearthing wonderful gems. Reno’s John Faulkner is one of these intrepid souls. He’s a volunteer at the Nevada Historical Society, and that’s where he found a rather interesting tidbit he wants to share.

John tells us that Reno’s KOH, on 630 kHz, calls itself Nevada’s first radio station. It’s more than 67 years old, having commenced operations on Oct. 25, 1928. However, John rooted out a lost-long reference that made him ask Lou Costello’s famous question, “Who’s on first?”

In an issue of the Nevada State Journal newspaper dated April 14, 1923, there was a report about how the night before that, KDZK, the paper’s radio station, put on a “joint radio program” with station KFFR, the Sparks Radiophone in the Sparks high school.

The newspaper termed the joint program “a huge success” with radio audiences in Reno and Sparks. Reports had not yet come in from outlying towns. According to the account, the two stations kept taking turns greeting one another, exchanging signal reports and broadcasting live music. KDZK offered selections played by the Royal String Quartet, while KFFR responded with “stirring jazz music” from Tony Pesetti and his orchestra.

A large crowd filled the Sparks school auditorium during the broadcast, though they couldn’t see the performers. The broadcasters had to be sequestered in an anteroom “to deaden echoes.”

The opening broadcast was from KFFR alone, going from 3:30 until 4 p.m. This consisted of announcements about the joint broadcast later in the evening. There also were musical interludes from the Sparks school orchestra. Then the station signed off.

The newspaper suggested that from 6 to 7 p.m., Reno and Sparks radio owners should continue to stay tuned to the 360-meter wavelength to listen for distant stations. They listed stations in Los Angeles, San Francisco, Salt Lake City, Denver, Dallas, St. Louis, Kansas City, Portland, Medford and Minneapolis among cities that might be heard. Then KDZK and KFFR both came on the air from 7 to 8 p.m. for their gala two-station joint broadcast.

As hokey and quaint as this may appear from a vantage point 73 years afterward, these stations nevertheless were Nevada’s earliest radio broadcasters. Moreover, their novel joint program may well have never been done before in radio broadcasting!

The April 13 broadcast was not the first time KDZK had operated, according to other Nevada State Journal clippings John sent. The April 4 edition of the newspaper told KDZK’s fans to note that it had a new time, and henceforth would present its nightly “phonograph concert” from 7 to 8 p.m. Obviously KDZK had been operating prior to April 4, 1923.

John Faulkner’s news clippings confirm that these two Nevada broadcasters were on the air at least five and a half years prior to KOH opening. We checked the records and found that in 1923, KDZK and KFFR both were licensed to operate with 10 watts, though not on 833 kHz. In those carefree days, low-power stations in remote areas tended to regard their official federal frequency assignments as mere suggestions. KDZK was supposed to be on 790 kHz, per its license issued to Nevada.

This KOH QSL card was sent out only a month after the station went on the air in 1928. (Collection of the late Fred J. Eplin, courtesy Joseph Brewer, Hollywood, Calif.)

Here’s the item in the Nevada State Journal of April 14, 1923, confirming the operation of two Nevada broadcasters. It was more than five years ahead of the station generally conceded to be the state’s first station. (Courtesy John Faulkner, Nevada.)

CHANGE IN

THE MONITORING MAGAZINE
Neither station lasted very long. By 1924, KDZK no longer showed up in official Department of Commerce license listings. That year saw Sparks’ KFFR licensed to the Nevada State Journal, but by mid-1925 it also had gone dark.

KDZK and KFFR may have been mere passing fancies. Even so, in 1923 they were fully licensed and more-or-less active broadcasters, albeit briefly. From a chronological viewpoint, that puts them ahead of KOH. When KOH went on the air late in 1928, it ran 100 watts on 1370 kHz, and was located in the Elks Club Building, 38 W. First St., Reno. It was owned by Jay Peters Inc.

Whence came KOH’s claim of being first in Nevada? Our guess is because KDZK and KFFR had been low power, obscure and short-lived. In 1928, when KOH appeared, KDZK/KFFR may have either been forgotten, or else deemed too insignificant to warrant recognition.

By 1931, thriving KOH had gone up to 500 watts and a decade later to 1 kW. For 12 years, KOH remained Nevada’s only radio station. That was until Las Vegas’ 250-watt KENO opened in 1940. After that, in 1946, 250-watt KBNE started in Boulder City, and 250-watt KELN in Ely was getting ready to begin. Still, KOH was Reno’s only radio station for 18 years. It wasn’t until 1946 that Reno got its next station, 250-watt KATO. That year also saw Reno’s 1-KW KOLO begin construction. Little wonder that KOH considered itself first.

Presently, KOH still is on 630 kHz, but now runs 5 kW days, and 1 kW at night.

We like examining things such as which station deserves the title of Nevada’s first station. And just think, a dozen stations claim the title of broadcasting’s first radio station. But don’t forget, the word “first” has more than one meaning. Ask someone to name the “first lady.” The first lady is Hillary Clinton; but what about Eve? A title is a title is a title.

Thanks to John Faulkner for locating and restoring this valuable piece of lost radio history to a heritage we all share.

A Corny Claim

On March 17, 1921, listeners around Tuscola, Ill., first heard experimental radio transmissions started by James L. Bush. He owned a local grain brokerage and hoped to use the new technology to send market information to grain elevators.

According to Becky Mabry’s feature in a recent issue of the Champaign-Urbana News-Gazette, the 10-watt station was issued a commercial broadcasting license on April 5, 1922, for 1080 kHz with the call letters WDZ. WDZ then was being used only for sending the opening, noon and
This 1931 WDZ veri letter to a listener in Pennsylvania is signed by Edith Bush, who managed her husband’s station. The letter confirms that it’s the first DX verification the daytimer ever issued. WDZ had been operating since the dawn of broadcasting! (Collection of the late Joe Hueter, in the POP’COMM archives.)
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closing market reports.

It occurred to Bush that radio was attracting a lot of public attention, so he swung into action. He became the local distributor for Westinghouse and RCA receivers, then he had WDZ play recorded music in the periods between market reports that otherwise had been dead air time. This was a good idea.

The studio was located in The Star Store Building, 101-1/2 N. Main St., Tuscola. It was on the second story of a building that's the present location of The Pharmacy. After WDZ moved out, the second story burned. The transmitter was at the intersection of U.S. Highways 36 and 45.

By 1929 (on its new frequency of 1070 kHz), WDZ had attracted a large enough audience to begin programming live talent. Calling itself "The Buckle of the Corn Belt," WDZ was a magnet for amateur radio entertainers from throughout Kentucky, Tennessee and southern Illinois. WDZ then was a 100-watt daytime station. Edith Bush, James' wife, managed the entire operation.

WDZ claimed to be the nation's pioneer grain and livestock market station. Those who weren't interested in market information could pass the hours listening to WDZ's pleasurable blend of farm news, hometown gossip, corny humor, and what then was popularly called "hillbilly music."

Tuscola listeners tuned in the big Chicago stations to hear network programs, but for many years WDZ was the only commercial radio station in their local area. Everywhere the WDZ signal could be heard, it was welcomed as a friendly neighbor, and loved by all. WDZ was an original. It laid the groundwork for rural, farm-oriented radio in the Midwest.

Exposure over WDZ made stars out of many of its amateur talent discoveries. One of these was "Smiley" Burnette, who later became Gene Autry's movie sidekick. Becky Mabry relates how Burnette was delivering furniture to the Bush home when he casually mentioned that he could play the accordion. Next thing he knew, he was urgently summoned to perform over WDZ when the harmonica player failed to appear at time for his sponsored program. As they say, the rest is history.

WDZ's air personalities toured the Midwest doing concerts and signing autographs. The station received 9,000 letters a week from fans of their entertainers.

Despite the poor national economy, WDZ was successful enough in 1937 to increase its power to 1 kW, requiring a shift of frequency to 1050 kHz. In the mid-1930s, the Bush family sold controlling interest to Edgar Bill of Peoria, Ill.

Times were changing. In 1945, WDZ ended its market reports. The next big change occurred in 1949, when the owners relocated the station to Decatur, Ill. It has been there ever since, experiencing several ownership changes.

In 1962, when WDZ was owned by Mid-States Broadcasting, the licensee applied to increase power to 5 kW. The request did not receive FCC approval.

Today, WDZ still operates with 1 kW on 1050 kHz, but presently runs an adult contemporary music format. Since 1964, WDZ has been owned by Prairieland Broadcasters Inc.

WDZ's grain market prices are long gone, along with the hillbilly music and corny rural humor. Older Tuscola residents still fondly remember when WDZ was there, and how it inspired many other broadcasters throughout the Midwest.

Our appreciation to John File, KG9AG, of Tolono, Ill., for sending along a copy of Becky Mabry's feature. In preparing the foregoing, we combined some of the information from that piece with material from our own archives.

**Modest Beginnings**

Television station WTTG, Channel 5, in Washington, D.C., celebrates its 51st birthday in May, which means it's a certified pioneer. According to Patricia Brennan's story about WTTG that appeared in *The Washington Post's* TV magazine, the station got off to a tenuous start.

During the last days of World War II, the station's transmitter and other components were driven from New Jersey to Washington by engineer Thomas G. Goldsmith Jr. and three associates. They managed to transfer all of the equipment to a room on the 12th floor of the Harrington Hotel, then employed unused elevator cables to feed power up to the equipment from the hotel's basement.

On May 19, 1945, the FCC issued the construction permit. Only nine days later, an experimental license was issued because station W3XWT was ready to begin televising. This station was being put on the air under the auspices of Allen B. DuMont Laboratories of Passaic, N.J., where Goldsmith was the director of research.

DuMont Labs manufactured expensive upscale TV receivers. Because there were few TV stations in operation, DuMont was anxious to get more stations on the air in order to spur receiver sales. Goldsmith had previously put DuMont's New York station on the air (WABD, Channel 5), and Pittsburgh was scheduled after Washington was up and running.

DuMont's New York station had a few hours per week of local programming. That didn't help W3XWT, which hadn't gotten around to doing more than getting a signal on the air. The station ran a test pattern,
and a repeating audio message asking view-
er’s to call the station at the hotel. It took
three months before they got any re-
response, and that was in August when the
war in the Pacific ended.

That day, crowds of celebrating people
were surging through the streets. Gold-
smith, therefore, decided to take his pen
and write “War Is Over” across a blank
video slide. That’s when the Navy called
the station. They had been monitoring the
radio spectrum for clandestine activity,
and became curious about the signals.
This was the station’s first “program,”
and its first viewer reaction! Certainly this
must be the most inauspicious beginning
ever to a 50-year career in television
broadcasting.

In November 1946, the FCC licensed
W3XWT as commercial station WTTG. The
call letters incorporated Thomas T.
Goldsmith’s initials. Washington, New
York and Pittsburgh eventually became
the nucleus of the DuMont Network.
DuMont later sold an interest in the net-
work to Paramount Pictures. This proved
counterproductive and resulted in pro-
gramming cutbacks, forced the sale of the
profitable Pittsburgh station, as well as cre-
ating FCC inquiries.

DuMont changed its name to Metropoli-
tan Broadcasting in 1958, and by 1959
Paramount was bought out by John Kluge.
The company then became known as
Metromedia Inc. Fox Television purchased
Metromedia in 1986.

This excellent information about
W3XWT/WTTG was sent in by Brian
Bohall, Leesburg, Va.

Museum News

The Museum of Television and Radio in
New York City has done excellent work
restoring historic broadcast programming.
They have an extensive library of old radio
and TV broadcasts that the public can use
for research or enjoyment. They have been
somewhat low-key, but now have a World
Wide Web site on the Internet (http://
www.mtr.org) as their online calling card.

Thought you’d like to know.

Thanks to readers who send us tapes of
air checks and programs. They are won-
derful, and I have written directly to those
who have sent them in. One great air check
was big band music by Larry Clinton, Hal
Kemp and Henry Jerome. You know,
“From high atop the Grand View Hotel, in
beautiful Lake Placid, N.Y., dance to the
music of Larry Clinton and his Orchestra.”

My kind of tunes.

Please pass along any old time radio or
wireless QSLs (originals or good copies),
station lists, anecdotes, memories, news
clippings, station photos, picture post-
cards, ideas or questions. It’s all appreciat-
ed, and used in the preparation of this col-
umn. Let’s meet here again next month on
the road to Radioville.

THE MONITORING MAGAZINE

How I Got Started

Popular Communications invites
readers to submit in about 150
words how they got started in the
communications hobby. They preferably
should be typewritten, or otherwise eas-
ily readable. If possible, your photo
should be included.

Each month we will select one entry
and publish it here. You need submit your
entry only once; we’ll keep it on file. All
submissions become the property of
Popular Communications, and none
can be acknowledged or returned.
Entries will be selected for use taking into
consideration if the story they relate is
especially interesting, unusual, or even
humorous. We reserve the right to edit
all material for length and grammar, and
to improve style.

The person whose entry is selected
will receive a one-year gift subscription
(or one-year subscription extension) to
Popular Communications.

Address all entries to: How I Got
Started, Popular Communications,
76 North Broadway, Hicksville, New
York 11801-2909, or e-mail to POP-
COMM@aol.com.

Our March Winner

This month our winner writes in from
the Cornhusker State. Meet Steve
Larison from Holdrege, Neb.:

“I began listening to shortwave and
DXing AM as a child. My father, also an
SWL, collected QSL cards from all over
the world and mounted them in an
album. I loved looking at them, imagin-
ing what life was like in those countries.
He used to receive a newspaper from
Radio Free Europe, I learned about the
Iron Curtain looking through those RFE
newspapers.

“I remember driving my mother nuts
when the old Philco made those strange
noises. When I finally did find a station
with a foreign voice speaking, I thought it
sounded so exotic. I learned a lot by fum-
bbling around with the dial, and discov-
ering a new country every now and then.

“With the advent of digital tuning, I
enjoy the hobby a lot more now. It is so
much easier to tune where I want to lis-
ten right away, but there remains a spe-
cial pleasure in tuning on one of the old
analgos as you never know what you’ll
come up with!”

Steve Larison and the radios that allow him to explore new worlds.

March 1996 / POPULAR COMMUNICATIONS / 31
The Written Word

Warren R. Freeman has put together an informative book about how to transfer existing technical expertise into written form. He notes this ability could open up career possibilities or advancements, thereby providing increased earning power.

Freeman's 168-page illustrated book is a well-done treatise on how to work up acceptable technical manuscripts that could be suitable for use as military, aerospace or commercial manuals or engineering documents.

In his book, Technical Writing for Technicians, there is information that explains virtually everything, including deadlines, outlines, depth of complexity, style, preferred words and phrases, punctuation, charts, tables, illustrations and drafts.

Ipso Crypto

According to a recent survey of 320 companies, 39 percent connected to the Internet have no firewall security; 20 percent have experienced some type of break-in during the past year; and 83 percent give e-mail access to all employees.

Misuse of the Internet is rampant. That's put personal information, business data, insurance, school, legal and medical records; and banking and other financial information at the fingertips of determined vandals who can freely change, steal, vandalize or destroy files.

In the 784-page second edition of Applied Cryptography: Protocols, Algorithms and Source Code in C, Bruce Schneier presents practical information on using the latest protocols and algorithms to implement a variety of impenetrable ciphers. Here's the book that explains how to build a career as a hardware technical writer.

The reference material culminates in an excellent sample tech manual, as the reader ultimately is put to the test of creating such a document. By the time this portion of the book is reached, undoubtedly a reader who paid attention shouldn't have any trouble fulfilling the author's premise, using their existing technical knowledge to move up to technical writing.

Freeman knows his topic and does a fine job explaining technical manuscript preparation from start to finish. This apparently was everything the book set out to do.

We wish it went further with pointers, leads and ideas for shifting tech writing careers into first gear. Instead, Freeman states, "knowledge of this information cannot guarantee a position as a technical writer."
transmissions contain many business and for monitoring and dialed, as pushbuttons. Those play enjoyment accessories used to increase the scope and frequencies are provided, as well as new info on air-ground phone monitoring.

There's information on specialized accessories used to increase the scope and enjoyment of recreational eavesdropping. For instance, DTMF tone decoders can display the digits callers enter using phone pushbuttons. Those include numbers being dialed, as well as credit card, bank account, loan, remote answering machine, voice mail control and other numbers.

The book also tells of specialized 46- and 800-MHz band eavesdropping antennas. Also mentioned is the scanner accessory for monitoring non-voice digital alphanumeric beeper paging traffic. These transmissions contain many business and often spicy personal text messages.

This is the updated 1996 edition of the original source of all necessary vital information, techniques, frequencies, stations, legalities and opinions relating to recreational eavesdropping. According to the national media, it is a hobby that continues to grow. Here's the one reference candidly explaining what all the fuss is about, and how folks are listening in from coast to coast.

Tune In On Telephone Calls!, Third Edition, is available from many leading communications dealers. It also may be ordered for $16.95, plus $5 shipping and handling ($6 to Canada). Residents of New York state should add $1.81 tax. Order from CRB Research Books Inc., P.O. Box 36, Commack, NY 11725-0056. VISA/MC accepted. Phone orders: (800) 656-0056; Canadian orders: (516) 543-9169.

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THE MONITORING MAGAZINE
I think I reached my frustration tolerance with modern radio equipment when I first saw a friend's new 2-meter mobile rig. This particular transceiver had something on the order of 30 control functions built into the microphone case. All those tiny buttons must have given the design ergonomacist nightmares for a year.

Watching my buddy try to maneuver his car and manage his newest toy was an exercise in both humor and terror for me as a passenger. Certainly it made me long for simpler days. After kissing the ground when my pal dropped me off, I decided to see whether uncomplicated radio listening still could be found in this day and age when bells and whistles rule. This exercise in radio regression lead me back to the world of radio regeneration.

The MFJ-8100 is a giant step backward to the early days of radio listening. The basic concepts behind this receiver design have their roots in the very beginnings of radio although the engineers at MFJ have taken full advantage of modern components to get the job done. This provides a design that is both inexpensive and can—with some practice—produce excellent results for any listener.

Regenerative receivers hold an interesting place in radio history. They were the essential improvement over simple crystal detectors that made radio practical for most people in those early days of the medium. To some degree, the design was overshadowed by the "superheterodyne" circuit. Still, simple, inexpensive regenerative receivers remained popular with hobbists and experimenters well into the 1960s. MFJ revives this design for a new generation and it remains as much fun to use as it must have been for people in the early days of radio.

**Build It Yourself**

Available as either a kit or in its fully wired-and-tested form, the MFJ-8100 gives you the option of building your own shortwave receiver. The design consists of less than 50 parts and components and can be easily assembled in an evening or two by anyone with basic skills in soldering and assembly techniques. The instruction manual is informative and the majority of the components mount on a single, well-marked printed circuit board. This is a far cry from the "wood and fahnestock clip" construction techniques of the early days of radio. Also, this receiver comes with a sturdy all-metal case, cover and front panel, which is more than can be said for many modern receivers.

If you run into trouble with either construction or use, MFJ offers technical help by way of an 800 number. I didn't find a need to give the line a call during this project, but I did feel good knowing that it was there if I needed it.

If you are new to the radio hobby, you can learn a great deal about how receivers work by digging in and building this simple circuit. The most basic concepts of radio receiver design that you will encounter during this project will serve as a great foundation of knowledge for further receiver purchases. If you have been around the hobby for a few years or if you are an old-timer who remembers the joys of earlier regenerative receiver designs, you may want to use the MFJ-8100 as bait to get a child or grandchild unglued from the television set. There is a lot of fun packed into building and using this basic receiver.

**What Bands?**

The receiver tunes the major portions of the shortwave spectrum in five bands. Range A covers 3.5 to 4.3 MHz. Most evenings this band will let the user listen in to 80-meter amateur radio communications in both the CW and SSB modes. You also should be able to catch shortwave broadcasters in the 90- and 75-meter bands.

Range B covers 5.85 to 7.4 MHz. Throughout the afternoon and evening, this range will produce dozens of strong shortwave broadcasts in the 49-meter band. This also covers the currently popular "pirate radio" frequency of 6955 kHz. You also will be able to tune up through many utility maritime and aircraft frequencies into the 40-meter ham band and the 41-meter shortwave broadcast band.

Range C covers 9.5 to 12 MHz. This covers the very active 31-meter shortwave broadcast band, WWV at 10 MHz and the 30-meter ham band as well as some military and utility activity. Range D covers 13.2 to 16.4 MHz. This gives you access to the 20-meter ham band, which often is very active as well as the 21-meter shortwave broadcast band. It further takes you through many utility frequencies, including the 15-MHz signal for WWV and on into the 19-meter shortwave broadcast band.

Range E covers 17.5 to 22 MHz, which covers the 16-meter shortwave broadcast band, the 17-meter ham bands, WWV on 20 MHz and the 15-meter ham band. These five frequency ranges are on par with many analog portable receivers currently being produced with additional coverage of many amateur radio frequency ranges left out by these other receivers. Regardless of the time of day, you certainly won't want for signals to add to your log.

Panel layout is the epitome of simplicity: five-position bandswitch, main tuning

---

**MFJ-8100 World Band Receiver**

The MFJ-8100 World Band Receiver can take you back to the days of past receivers.
What Is Regeneration?

The regenerative receiver circuit was developed by radio pioneer Edwin Armstrong. It represented a significant improvement over crystal or diode detectors by allowing a feedback process to occur. By making it possible for the detector circuit to feed back a portion of its signal repeatedly into the input in a controlled fashion, weak signals are boosted to readable levels. This design allowed early radio hobbyists to hear stations that would have been impossible with previous technology.

Further, it was the early regenerative receiver design that made shortwave listening and what we know now as amateur radio possible. Its tremendous gain and selectivity at very low cost made long-distance radio listening a hobby almost anyone could enjoy.

Edwin Armstrong would go on to invent the superheterodyne circuit as well as develop practical applications for frequency modulation (FM).

**MFJ-8100 World Band Receiver**

Kit price: $59.96  
Wired-and-tested price: $79.95  
Available from: MFJ Enterprises Inc.,  
P.O. Box 494, Mississippi State, MS 39762, phone (800) 647-1800.

control, regeneration control, power switch and volume control. That's a far cry from my comrade's multiple-control 2-meter unit. The receiver is powered by a standard 9-volt alkaline battery and the circuit design includes an LED power light to prevent you from forgetting to turn off the receiver when not in use. Still, current consumption of this design is very low and you should get hours of listening out of one battery in keeping with the overall low-cost nature of this project.

Up And Running

Setting up the unit for use also is a simple process. All you need to add to the project is the above-mentioned 9-volt battery, any inexpensive "personal stereo" headphones you happen to have around your house, a simple longwire antenna and a connection to a good earth ground. Most of my listening was conducted using a 40-foot outside longwire antenna, but good results also were obtained with as little as 10 feet of wire strung indoors. An interesting feature of this receiver is its dual headphone jacks. This allows you to share in the listening experience with someone else making it the perfect receiver for teaching a newcomer about shortwave broadcast or amateur radio.

Once I was set up, I found many of my old friends on the air BBC, Deutsche Welle, Radio Canada International, Voice of Russia, Voice of America and Radio Netherlands all were there, as were dozens of other signals.

The hardest thing for most folks to get used to when using a regenerative receiver is the "two-fisted" nature of the tuning process. Once you locate a signal, you then must adjust the regeneration control for best listening. Not providing enough regeneration leaves the signal unreadable. Feeding in too much regeneration will result in oscillation, which produces a whistling sound in your headphones. At first, the whistling is a bit of an annoyance, but as you begin to develop your touch with the regeneration control, those whistles become just another tuning tool. You simply adjust them away and get on with the business of logging the stations.

Once you've got the hang of tuning in standard AM shortwave broadcast signals, the next challenge is to turn your regenerative tuning skills to listening in on CW and SSB signals. When listening to CW signals, the regeneration control behaves much like a fine tuning control. You can use it to adjust the CW note to a comfortable tone and copy away. SSB tuning is similar, you adjust the tuning control slightly above or below the signal (depending on if it is USB or LSB) and then fine tune the "duck" sound into a human voice by way of the regeneration control.

Like flying and stout ale, regenerative tuning is a learned experience. But with mastery of the skill comes a great deal of satisfaction and fun. It is a totally different experience from the modern world of push-button tuned receivers operated by a digital readout. With this receiver, you will have to go back to the days of hunting for your signals. In the process of listening, you will be sure to turn up many things you never would have heard otherwise. You also will develop listening skills that will improve your abilities when you turn your attention to more feature-laden receivers.

What's It All About?

OK, so what sets this design apart from your grandfather's "Genny"? Well for starters, you will not be able to enjoy the warm glow of that old 200-series triode tube that was the centerpiece of so many fine old receivers. The classic glass vacuum tube is replaced with a pair of modern field-effect transistors (FETs). Another FET serves as an RF amplifier that helps to dig out many weaker signals that an older regenerative design might miss completely. Further, the use of an RF stage helps to reduce RFI coming back through the antenna. Also, reasonable audio for the headphones is provided by way of an LM386 integrated circuit amplifier.

These modern components provide a level of stability and overall performance that Grandpa would have sold the farm for. This stability eliminates much of the difficulty associated with regenerative tuning. Tuning is further augmented by the excellent vernier reduction drive on the main tuning control. This feature smoothes out the tuning to make adjustment of the regeneration less twitchy as you span the short-wave spectrum in search of signals. The engineers at MFJ have updated the regeneration control circuit to allow for smooth adjustment that can be tuned up to the point of oscillation without the annoying popping sounds that old-fashioned regenerative circuits were famous (or infamous) for.

Ham Companion

An intriguing possibility for this receiver is low-budget amateur radio. It would not be too difficult to use this receiver in conjunction with a simple "junk box" QRP CW transmitter circuit. Such a ham station would be both challenging and rewarding to use.

Essentially, you would be taking yourself back to the days when all radio was amateur radio. I found the receiver's performance in the CW portions of the 80-, 40-, 30-, 20-, 17- and 15-meter bands to be sufficient for good single signal copy, again, with careful adjustment. I've used this receiver on several nights to copy the CW bulletins off W1AW. It made me feel like a real "old-timer."

If you're the kind of person who can't leave things alone, the receiver's large case and well-thought-out circuit design lends itself to any one of several modifications. For example, it would not be too difficult to add a simple audio amplifier and speaker to the case to allow listening without the need for headphones. Also, several alternative power resources could be considered. The receiver's low power consumption might make for some interesting experiments with solar power.

All too often, the high price of radio hobby equipment forces us to take things far too seriously. The MFJ-8100's low cost, simple design and relatively easy-to-use control system brings back a lot of fun to the radio listening hobby. If you are looking to try something a bit different or to return to those early days of the radio art, this receiver will take you to all the right places. Personally, I plan to spend some time with this receiver on a regular basis, logging and QSLing stations the "old-fashioned" way.
There are about a zillion antennas in the textbooks, and every now and then antennas from the deep, dark past come to the forefront again and regain some popularity. In this installment of Antennas 'n' Things, we are going to take a look at a pair of antennas that are sometimes called "Six-Shooters" (although "why" escapes me at the moment).

The Six-Shooters (Figs. 1 and 2) are variations of what are called "broadside arrays." The version shown in Fig. 1 basically is a small "Sterba curtain" array, larger versions often used by high-power international shortwave broadcasters. Both antennas can be fed with either 300-ohm twinlead, or with 75-ohm coaxial cable if a 4:1 balun transformer is provided at the feedpoint.

These antennas can be built of wire or aluminum tubing, although the wire option probably is the most popular. An advantage of these antennas is that they can be built for frequencies in the 6- to 7-MHz range (where wire construction is preferred), if you have enough room, and also well into the VHF region (in which case aluminum tubing construction is preferred).

One advantage of these antennas is that they have rather considerable gain; 6 dB in the case of Fig. 1 and 7.5 dB in the case of Fig. 2. The signal is bidirectional, and is broadside to the array (in and out of the page as you view Figs. 1 and 2). There are two uses for gain antennas.

First, antenna gain makes weak signals stronger by their own gain factor, without the extra added noise that a preamplifier introduces. If you can only afford either an antenna or a preamplifier, go for the antenna nine times out of 10. On most receivers, these antennas cause a signal to be about one S-unit stronger than the same signal received on a dipole (plus or minus a little bit). While one S-unit is not much to write home about at S9, it can be critical at S1.

Second, the gain is achieved by refocusing the pattern so that the maxima are broadside to the array, and there are nulls off the ends. These nulls can be positioned to reduce the signal level of an offending interfering signal on the same, or adjacent, channel. This may be the most important aspect to a directional gain antenna. The problem is one of signal-to-noise ratio, indeed, one of my college professors said that everything about receiving a signal is...
a matter of managing SNR). The nulls are sharper and deeper than the peaks, so it’s possible to null the interfering signal more than the desired signal. So even if the maxima is not aimed directly at the desired signal, the overall performance is enhanced if the null is dead on the interfering signal.

The Six-Shooter in Fig. 1 (our micro-Sterba) uses elements of three different lengths, labeled A, B and C. These lengths (in feet) can be calculated from: 

\[ A_{\text{feet}} = \frac{490}{F \text{MHz}}; \]
\[ B_{\text{feet}} = \frac{A}{2}; \]
\[ C_{\text{feet}} = \frac{477}{F \text{MHz}}. \]

At 16 MHz, these lengths work out to be 
\[ A = 30.6 \text{ feet}, \]
\[ B = 15.3 \text{ feet} \]
and 
\[ C = 29.8 \text{ feet}. \]

At 162 MHz, these lengths are 
\[ A = 3 \text{ feet}, \]
\[ B = 1.5 \text{ feet} \]
and 
\[ C = 2.9 \text{ feet}. \]

The distance between horizontal elements should be 4 to 6 inches. In wire antennas, an ordinary end insulator placed between two elements usually will suffice.

The lengths of the elements in Fig. 2 are calculated as shown in the figure. The horizontal element each is calculated from: 

\[ L_{\text{feet}} = \frac{1475}{F \text{MHz}}. \]

Meanwhile, the vertical separation between the two rows of horizontal elements is calculated from: 

\[ \text{Vertical separation} = \frac{485}{F \text{MHz}}. \]

These two antennas are relatively easy to construct of either wire or tubing, and should be considered whenever you want gain on the cheap.

Safety First!

Sometimes someone will contact me at my e-mail address (carji@comcast.net) and ask something about antennas. One fellow (not a POPCOMM reader!) very carefully gave me details of his plan to erect a wire "top hat T" antenna for the high-frequency shortwave bands. In his description, he mentioned how he was going to use a wrench as a weight to toss a rope over the AC power lines coming into his home, and then pull the antenna wire over using insulated gloves.

I flamed him with my reply: Don’t do it! It will kill you. Always keep well away from power lines. They may look insulated, but power line insulation can be cut by the antenna wire even when it’s new. You have to be dumbar than a box of rocks to try any variant of this often fatal maneuver!

Plan Yes, But DO IT!

A lot of people I talk to tell me that they want to erect that absolutely most perfect antenna possible, and they plan, and plan and plan. Some of their arguments sound like those I heard against buying the (then new-fangled) calculators that came on the market when I was in college. My approach was to survey what was available in scientific calculators within my price range, and then go buy the thing.

A friend of mine sneered that I’d paid too much for my TI SR-50 because “... next year they’re coming out with something that’ll do more and cost less.” Yes, that’s the way the electronics industry worked. But when we were seniors, he still was looking for the magical, cheaper calculator in the sky and solving problems on a clumsy slipstick (“slide rule” to the non-cognizenti or young’er readers); I had spent the last three years solving the same problems on a nice little calculator.

The point of this little analogy is that sometimes one has to “fish or cut bait.” While you’re planning, an awful lot of good listening is going by the wayside.

What was so odd about the planner I told you about above is that his receiver did not warrant a whole lot of antenna. Once you get past a certain quality level, and start listening to weaker and harder-to-detect signals, then one can worry about fine differences between antennas. Until then, put something up and start listening. There’s plenty of time to upgrade later on.
The Cloning Conundrum

Some clarification probably is needed here. In the October 1995 Mailbag column, Allan, K1UCY, objected to what he termed "misleading" photo captions in POP'COMM's June issue feature about cloned cellphones. Those captions stated that when you talk on a cellphone, the unit is susceptible to being cloned. Allan wrote, "The truth is that if you have the phone turned on (to receive calls) but actually not talking on it, it still can be cloned."

While Allan's claim often is the case, the June issue captions were nevertheless factual. Allan's comment didn't prove them misleading. Allan's information represents good practice and has become the general rule of thumb, it is not a universal truth. For instance, it doesn't relate to my portable cellphone, and certainly not to many others. Try this on for size: My phone, for one, cannot be cloned while it's in standby/receive mode. Surely, the service provider I use can't be the only one programming this fraud protection into subscribers' cellphones.

As soon as my cellphone is turned on to receive calls, it automatically transmits a distinctive coded fraud protection signal. This allows the unit to ring if any calls are sent to it. All the while it remains electronically invisible to would-be number counterfeiters. Incoming calls may be answered normally.

Unless I cause a certain fraud protection unlock code sequence to be transmitted before a call is placed, service providers will reject outgoing calls from my cellphone, despite its valid mobile identification (phone) number (the MIN) and electronic serial number (ESN). The only outgoing calls that may be dialed when the phone is in fraud protection mode are to 911 and the service provider's offices.

Yes, any time a call is in progress, the phone is susceptible to being cloned. When a call is over, the phone can be manually reset into fraud protection-receive mode. Should I forget to do this, the fraud protection mode will automatically reset within 20 minutes.

This feature isn't inconvenient to use, and protects the cellphone from being cloned while standing by. If your cellphone doesn't have fraud protection programming, ask your provider about the no-cost service. If you can't get this service, the only way to achieve some degree of cloning protection is by keeping your cellphone turned off except when making calls. At such times, your cellphone can't receive any calls.

Cordless Monitoring

An unsigned letter from a reader in Waterloo, Iowa, questions why this column has never made a big thing of about the fact that cordless phone monitoring recently has become illegal, as per the Electronic
Communications Privacy Act. He wrote that when the ECPA was created, cordless phones were specifically excluded from whatever protections the ECPA supposedly offers. However, our reader notes that Public Law 103-414 eliminated that portion of the ECPA stating, "transmissions between a cordless phone and a base unit are not covered by the act." Yet, he notes, this column has strangely ignored mention of Public Law 103-414.

Our anonymous reader observes that inasmuch as 49-MHz cordless handset frequencies are adjacent to the 50-MHz (6-meter) amateur band, 6-meter band hams should be warned they are at risk of violating the ECPA. He's concerned about this impact on cordless monitoring in general, and asks our opinion.

Public Law 103-414 probably will have no direct effect on cordless monitoring, especially if worded as strangely as our reader reports it to be. That's because it seems to relate only to the 49-MHz handset transmissions from the handset to the base, and not vice versa. Cordless phone monitoring normally involves tuning in only the frequency band used by base units.

Can you spot something that did not occur to the geniuses who approved this new exclusion? It turns out that 49.6 to 50 MHz is allocated for federal station use, and fed stations are OK to monitor. Also, part of the "off-limits" 49-MHz cordless handset band is shared with other communications devices that are legal to monitor! That includes 49-MHz FM baby monitors, hands-free FM transceivers and Part 15 walkie-talkies.

Think about it: Let's say it is illegal to eavesdrop on cordless handset frequencies. But what are the ramifications of the event the cordless base frequencies also happen to be off-limits to monitoring by uninhibited ears? Let me point out that all 15 newly added 43 and 44 MHz cordless base channels coincidently are active frequencies in various land mobile radio services. Those services are legal to monitor. Also note the older 46-MHz base channels lie between 46.6 and 47 MHz, which is another band allocated for federal station use. You are allowed to monitor fed comms. So, unless they advise how scammers are supposed to weed out cordless base signals from legal signals, it nullifies a cordless monitoring restriction.

Next, think about how cordless base unit signals often inadvertently jam and interfere with other nearby cordless phones. Even cordless phone owners who accidentally overhear their neighbors' calls coming through on their own phone’s channel would become instant lawbreakers.

So, as a realistic privacy issue, this cordless phone frequency exclusion is bogus. If any agency plans on trying to routinely collect evidence of violations, then press charges, we wish them luck.

You know that guy in your neighborhood who wears the Blue Oyster Cult 1982 Tour T-shirt? Right, the one who phones his girlfriend on the cordless every time his wife goes to the store. Will this public law cause you to stop listening to him? Do you think anyone else is going to suddenly divert their attention away from listening to popular frequencies tunable on practically every scanner manufactured during the last 28 years?

That's why Public Law 103-414 has been ignored here so far. I have no intention of suggesting to my intelligent readers that they seriously entertain the preposterous notion that, at this point, it has become a violation of a federal law to monitor cordless phone frequencies. Mind you, I am not suggesting that anyone break a law. But upon being asked, I am pointing out the absurdity of this one. Incidentally, also note that some states have anti-wiretap laws that specifically consider cordless phone monitoring illegal.

The federal cordless exclusion may be hilarious, but don't start laughing yet. There is an ominous factor lurking in the shadows of this circus of stupidity. It's that this is yet one more in the continuing parade of frequency encroachments. The feds appear to see a bountiful supply of frequency bands available for serving up on a silver platter to satisfy the desires of each and every commercial interest with big bucks and/or political clout.

In a news release issued in September 1995, the FCC described the electromagnetic spectrum as a "scarce public property," but complained that for years it was being "given away for free." The agency observed, however, that Congress gave them the authority in 1993 to start auctions, which generated more than $9 billion in just over a year.

Auctions have included, for instance, 33 frequency channels in the 2150-2162 and 2500-2686 MHz bands. These are dedicated to the Multipoint Distribution Service (MDS), popularly referred to as "wireless cable TV." These channels are used to provide multichannel TV programming similar to cable TV, but using microwave instead of hardware. Licensees in 493 areas where MDS bids will be awarded are granted a protected 35-mile radius around their operations.

The FCC also is auctioning off 20 10-channel blocks in the 896-901 and 935-940 MHz bands. This is for trunked and conventional Specialized Mobile Radio Service (SMR) systems operating in 51 geographic areas. SMR includes dispatch, voice, data and fax services that have various business and specialized uses for hire to the public. Some systems are connected to the landline telephone network, and handle mobile phone calls.

The 1850-1990 MHz band, the location in the spectrum for the Broadband Per...
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How About a Hand?

RadioShack's CT-352 handheld cell-phone combines a lot of features into a small, easy-to-use package.

Some of the features packed into the CT-352 include any-key answering, dual NAM capability to allow registration with two different service suppliers, 98 speed-dial memories, four one-touch dial-up memories for emergency or priority numbers, and versatile call timer. Dial persons by their name if you want, and scan the memory locations to look up numbers and names. You can shut off the ringer and get silent reception of incoming calls.

The rechargeable battery provides 10 hours of standby and nearly an hour of talk time. It's a rather good-looking set, too. You can see this at any RadioShack store.
Clansclatine Communique

WHAT'S NEW WITH THE CLANDESTINES

Iranian Clandestine Shuts Down

One of the better known Iranian clandestine stations, the Voice of Human Rights and Freedom for Iran, has closed down. The station, long believed to be an operation backed by the U.S. government, discontinued operations at the end of September—the day its funding ran out and, coincidentally, the close of the U.S. government’s fiscal year, according to a source within the Iranian opposition.

The loss of financial support meant it no longer could pay rent on the Egyptian government transmitters it was using. The station was fairly easily heard in North America, using frequencies such as 9255, 9270 and 11470 kHz. Thanks to George Zeller in Ohio for sending along this info.

Voice of the Communist Party of Iran—or Seda-ye Hezb-e Komunist-e Iran—operates in Farsi from 1430-1510, 1630-1715 and 0230-0330 on 4190. A related station is run by the Kurdish communists. Operates in Kurdish from 0300-0400, 1430-1530 and 1630-1730 on 3888 kH.

The Voice of Iranian Kurdistan is operating on 4195 between 0230 and 0315 and 4180 from 1350-1425. This station’s transmitters are in northern Iraq. This station has an address of: KDPI, c/o AFK, B.P. 102, F75623 Paris, Cedex, France. These low-frequency Middle East stations are quite difficult to hear in North America, but can be picked up once in awhile. Folks in the eastern time zone have the best chance. Try for those transmissions that occur in our local evening hours.

The Voice of Eritrea, which appears to be one of the several clandestine "stations" aired by the Iraqi government over its own transmitters, is being heard on 17740 between 1700 and 1800 with programming in Tigrena and Arabic, but suffering from some jamming.

What seems to be a new anti-Iraq station is the Voice of the People of Iraq—Voice of Democracy, coming on the air sometime between 1728 and 1735 on a frequency varying between 5825 and 5835. It’s thought that this operation is based in Syria.

The Voice of Abkhazia speaks for those who want independence for the Abkhazia area of the former Soviet state of Georgia. It is operating 0330-0445 on 9495, or a hair below.

Zeller has been following the story of La Voz de Chiapas Libre, which claims to operate from the Mexican state of Chiapas and other areas in southern Mexico and northern Guatemala. Spokesman Jay Murley of California says the station took a direct mortar hit during a skirmish with Mexican Federal troops last summer and needs to be fully re-equipped. He claims that eight people have reported reception of the station’s intermittent broadcasts that contain both propaganda and military traffic.

Murley claims the most distant of the reports was Key West, Fla. He says that, most recently, the station has been using the 39-meter band—a low end of the 7 MHz area, though it has tried the “fringes of the ham 80- and 160-meter bands.” Zeller still has strong doubts that this station ever really existed, as does your editor. Neither of us have seen any loggings reported and we both have access to the work of some of the top shortwave monitors in the world.

American Dissident Voices, the neo-fascist broadcast of the National Alliance that airs on WRNO, now has a site on the Internet’s World Wide Web at http://www.natvan.com. An alternate is ftp.net.com and use the path: pub/NA/NA.

Here’s a survey of the quasi-clandestine programming currently aired on WHRI: Anti-Castro Alpha 66, Monday through Friday at 0700-0800 and 2200-2300 on 9495 and 15105; La Voz de Fundacion (also anti-Castro), Monday-Saturday at 2300-0100 on 9495 and 15105, Radio Marti, Monday-Saturday, 0100-0400, on 9495 and 15105; Cuba 21, 0000-0300 Sundays on 9495 and 15105. All of these are in Spanish, of course. Also, The Voice of Democracy (in Vietnamese) airs at 1300, Monday to Friday, on 9930 (KWHR-Hawaii). Another Vietnamese program is Forum for Democracy, which airs Saturdays and Sundays at 1400-1430 on 9930. The times and frequencies for all these tend to change rather frequently so if you’re interested in hearing these you might want to get on the mailing list for the WHRI schedule. Write to P.O. Box 12, South Bend, IN 46224.

Radio Rutemorangingo is a new station reported active, broadcasting in opposition to the current government of Burundi and believed to be operating from Zaire. Its 90-meter band frequency wasn’t specified, nor was the schedule.

That covers things this time. Remember, your input on clandestine broadcasting always is greatly appreciated. This includes station loggings and operating schedules, addresses, QSL news and copies of QSLs or literature from stations or their backing organizations, new station news and so on. Your help always is very much appreciated.

Until next month, good hunting!
The subject of data communications has long been my primary interest. Radiotele-type, or RTTY as it is known on the amateur radio bands, was responsible for getting me into ham radio. Today, there are so many different modes of data communications that it is almost impossible to keep up. One of the most interesting, and the most rapidly expanding, is ACARS, officially known as the Aircraft Communications Addressing and Reporting System.

ACARS can be monitored in most all geographic areas. In the United States, although there are some backup channels, 131.550 MHz is the primary channel used for most transmissions. This is a common channel found on most scanners. Remember, all aircraft transmissions are in AM. If you have doubt about being able to monitor ACARS, enter 131.550 MHz in your scanner and spend a few minutes listening. The buzzing sounds that you’ll soon hear are the data transmissions from planes in flight. If you are close to a ground ACARS transmitter, you will also be hearing the ground station transmissions.

ACARS is much like amateur packet in that a part of each sending and receiving station actually is a computer. The computers monitor the frequency and make sure it is clear before sending a message. Mixed transmissions on ACARS do not take place very often.

The commercial airlines and other commercial users have been using ACARS for many years. Initially, it was just a way to send printed data to aircraft in flight. After a successful test, the airlines expanded their use of the system. For example, ACARS-equipped aircraft now send the OUT, OFF, ON and IN times automatically. As you may or may not know, most airplane crews are paid by the minute. A minute added here and there can cost an airline payroll considerable money. Keeping track of the OUT (the time the plane actually is pushed off the gate) and the IN (the time the plane is parked at the gate) times can save a company considerable money. Also, by knowing when the plane is OFF the ground and ON the ground, the hourly costs on airframe and engines can be better controlled.

Before we expand on what is happening to ACARS, let me explain how the system computer knows what the plane is doing on the ground. Each airplane seems to have a slightly different way of telling the ACARS computer what is going on. For example, the OUT time can be detected by the ACARS computer when the passenger door is closed and the parking brakes are released. Other airplanes use two other actions such as the red rotating beacon being turned on and the last access door to the plane being closed. The reverse of the same two items activate the IN time to be sent by ACARS. Switches on the landing gear extension struts activate the OFF and ON time programs in the ACARS computer.

Once the airplanes were aware of how much they could program into the ACARS computer, they started adding more uses. If you are an avid aviation band listener, you have probably heard airliners holding for takeoff, waiting for their “numbers” from the company. In years past, operations agents either handed the pilots their last-minute weight-and-balance figures on paper or voiced them over the local company frequency. Today, weight and balance figures, passenger totals and fuel-release information is transmitted to the pilots after pushback via ACARS. American Airlines has an exceptionally good “numbers” ACARS program. The takeoff speeds also are computed and added to this report, making the pilots’ jobs easier and cutting the risks of possible mistakes.

The door for fast data information exchange between the ground and aircraft in flight has just started to open. Today, ACARS is a primary instrument in most advanced cockpits. The once single-line display screen has changed into a small computer screen with vast multiple functions and a touch screen. A printer has been added also. But, even this advancement tells little about what is happening to and with ACARS.

Pilots can finger touch the menus on the current DataLink computer screens and send messages to the company flight dispatcher, the maintenance coordinator, the passenger service agents, and much more. Current weather reports, forecasts, field conditions and arrival gate assignments can be quickly called up by just the touch of a menu. The “predeparture clearance,” or PDC, also is requested and received via ACARS. Pilots also can send typed messages and reports to many company departments, advising of weather turbulence or passenger problems by touching the computer and dumping all data to the appropriate computer or terminal.

When an engine is becoming worn or has a problem, ACARS can be used to send an alert message to the repair shop. Today’s advanced ACARS-equipped aircraft can transmit information on the aircraft’s position, weight, balance, fuel, and many other items.

Also, ACARS have been expanded to handle special flights such as the transatlantic jet. ACARS is used to keep track of flight data such as distance flown, fuel used, and other important items.

As the system is being expanded, ACARS is being assigned information collection tasks that don’t involve the flight crew members. One of the latest non-pilot-activated tasks involves the reading of cockpit engine information, with automatic transmission to the company maintenance computer. Ground engineers and maintenance personnel can tell when an engine is becoming worn or has a problem.

The very latest task assigned to ACARS is the automatic sending of the aircraft position to the company every two minutes! Flight-following computers in the dispatch headquarters automatically enter this information. On large display screens in the flight dispatch headquarters, each ACARS-equipped plane is displayed clearly, and the position is updated every two minutes until the plane is on the ground. Company arrival information, weather deviations and FAA requirements can be met with ease when automatic ACARS position reading is used.

It is truly an impressive display. If you ever take the airline company tour, ask to see the large, command post-type plane location display.

How do you copy ACARS and how do you read the information that is displayed? This can be a bit of a problem for the novice, however, with the proper manuals and a little help, it can be easy and fun. Several of the radio hobby dealers manufacture and sell the data terminal units and books on the subject. Because each airline generally treats their ACARS information format a little differently, you do need a book on the subject. Universal Radio, a POP’COMM advertiser, offers a good book and a nice terminal unit. Others are appearing on the market as the interest in ACARS grows.

When I first monitored ACARS, I was a bit disturbed when some of the solid soundly copied data bursts did not print on my ACARS decoder or on my computer.

(Continued on page 77)
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This POP'COMM feature is designed to help you hear more shortwave stations. Each month this handy, pullout guide shows you when and where to tune to hear a wide variety of local and international broadcasters on the shortwave bands. The list includes broadcasts in languages other than English. Most of the transmissions are not beamed to North America. Keep in mind that stations make frequent changes in their broadcasting times and frequencies.

Changes in propagation conditions may make some stations difficult or impossible to receive. Your equipment and receiving location also will have a bearing on what you are able to hear.

Note: EE, FF, PP, etc., are abbreviations for English, French, Portuguese, and so on. Some frequencies may vary slightly. All times are in UTC, which is five hours ahead of Eastern Standard Time (i.e., 0000 UTC equals 7 p.m. EST).

### POP'COMM's World Band Tuning Tips

**March 1996**

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A second step toward a new international space station recently was taken as the world's two greatest space-faring nations participated in another joint manned space mission. The United States' Atlantis (STS-74) and Russian MIR space stations docked for the second of seven joint space missions scheduled through 1997.

The STS-74 crew was commanded by Kenneth Cameron; this was his third shuttle flight to date. James Halsell served as pilot; it was his second flight. Mission specialists included Jerry Ross, William McArthur and Canadian Chris Hadfield. This was the first mission to include astronauts from Canada, the European Space Agency, Russia and the United States. This will be a typical crew on the proposed international space station "Alpha." The docking and crew transfers with space station MIR will pave the way for the assembly of Alpha beginning in 1997.

Alpha was the interim name given to the redesigned U.S. space station after the Freedom design was abandoned. It is an appropriate name to keep, however, with the truly internationalization of space exploration we have witnessed in recent years.

Atlantis carried the Russian-built docking module, which has multimission docking mechanisms at the top and bottom. During the flight to MIR, the crew used the Orbiter's Remote Manipulator System robot arm to hoist the docking module from the payload and attach it to the shuttle's docking unit, also located in the cargo bay.

Atlantis docked with the Kristall lab of the MIR complex, where it remained for three days. The docking module became a permanent part of the Kristall module; it will provide needed clearance between the shuttle and MIR's solar panels during subsequent dockings.

The international space station will be the pre-eminent, permanent orbiting science lab in space. It is being developed in three phases, each designed to maximize the mission experiments of 13 participating nations.

Phase I saw Americans and Russians working together onboard MIR and the shuttle, including missions STS-60, 63 and 71. Phase II, beginning in 1997, will utilize a new core space station with a U.S. lab as the first working module. Phase III will add modules from various participating countries, scheduled to be complete by 2002.

At present, Phase I establishes a working relationship between the United States, Russia and other international partners.
Shuttle Amateur Radio Experiment—II (SAREX-II)

Students in the United States had a chance to speak via amateur radio with astronauts aboard the space shuttle Atlantis during STS-74. Ground-based amateur radio operators contacted the shuttle astronauts through direct voice ham radio links.

Shuttle Commander Ken Cameron, KB5AOW, and mission specialists Jerry Ross, N5SCW, William McArthur, KC5ACR, Chris Hadfield (license pending) and Jim Halsell (license pending) talked to students gathered at five schools in the United States using ham radio. Students from eight schools in Idaho, Connecticut, Indiana, Illinois, and California, had the opportunity to talk directly to orbiting astronauts for four to eight minutes.

The radio contacts were part of the SAREX project, a joint effort by NASA, the American Radio Relay League and the Radio Amateur Satellite Corp. (AMSAT). The project, which has flown on 19 previous shuttle missions since 1983, is designed to encourage public participation in the space program and support educational initiatives by demonstrating the effectiveness of communications between the shuttle and low-cost ground stations using amateur radio voice and digital techniques.

STS-74 SAREX Frequencies

Because the flight was a shuttle-MIR docking mission, and SAREX and MIR amateur radio stations usually share the same downlink frequency (145.550 MHz), the SAREX Working Group made the following SAREX frequency change for the STS-74 mission: SAREX transmissions from the shuttle were on a worldwide downlink frequency of 145.840 MHz. The voice uplink frequencies were 144.450 and 144.470 MHz.

The crew used separate receive and transmit frequencies. Amateurs always are cautioned not to transmit on the shuttle’s downlink frequency. The uplink is the transmitting frequency for hams. Also, the astronauts do not favor any one of the above frequencies. Therefore, the ability to talk to an astronaut depends on selecting the frequency chosen by the astronaut.

Additional Information

Several audio and digital communication services have been developed to disseminate shuttle and SAREX-specific information during flights. The ARRL’s ham station, W1AW, includes SAREX information in its regular voice and teletype bulletins.

The amateur station at the Goddard Space Flight Center, WA3NAN, operates around the clock during missions, providing SAREX information, retransmitting live shuttle air-to-ground audio and retransmitting many SAREX school group contacts.

Shuttle Tracking

Information about orbital elements, contact times, frequencies and crew operating schedules are available during missions. Keplerian elements to track the shuttle are available from the following sources:

- NASA Spacelink computer information system
  - BBS: (205) 895-0028
  - Internet, Telnet, FTP, Gopher: spacelink.msfc.nasa.gov
- World Wide Web: http://spacelink.msfc.nasa.gov
- NASA SAREX World Wide Web Home Page:
  - http://www.nasa.gov/sarex/sarex_mainpage.html
- American Radio Relay League
  - Telephone: (860) 594-0301
  - BBS: (860) 594-0306
  - W1AW news bulletins (“for further information”)
- World Wide Web: http://www.arrl.org
- AMSAT
  - World Wide Web: http://www.arrl.org
- NASA Johnson Space Center Amateur Radio Club
  - BBS: (713) 244-5625
  - Goddard Amateur Radio Club
  - BBS: (301) 286-4137
  - Packet: WA3NAN on 145.090 MHz in the Washington, D.C., area
- The Goddard Space Flight Center Amateur Radio Club uses the following HF frequencies: 3860, 7185, 14295, 21395 and 28650 kHz

Upcoming Shuttle Missions

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<th>Major Payloads</th>
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<tr>
<td>STS-79</td>
<td>Atlantis</td>
<td>LMS</td>
<td>August 1996</td>
<td>9+1 Days</td>
</tr>
<tr>
<td>STS-80</td>
<td>Columbia</td>
<td>Shuttle-Mir Mission-4</td>
<td>November 1996</td>
<td>16 Days</td>
</tr>
<tr>
<td>STS-81</td>
<td>Atlantis</td>
<td>Orleus-Spas WSF</td>
<td>December 1996</td>
<td>9+1 Days</td>
</tr>
</tbody>
</table>

Based on 1995 Manifest
Americans and Russians are working together to integrate long-term American and Russian hardware, systems and goals in science and research. Perhaps the most important work done in this phase is in the area of risk reduction. Safety is a major concern to keep surprises in operations, spacecraft environment, spacewalks or hardware integrity to a minimum.

Phase I of the joint U.S.-Russian space agreement also will impact the MIR space station. This year, MIR will add two additional modules, both built and launched by the United States. MIR, launched in 1986, has four modules attached. Kvant, launched in 1987, has a telescope and altitude controls onboard. Kvant 2, launched in 1989, carries an EVA airlock, solar arrays and scientific equipment. Kristall joined the space complex in 1990. It also carries solar arrays and scientific equipment, though its main purpose was to allow Buran, the Russian shuttle, to dock on the station. Atlantis used this port for the first two MIR missions. A fourth module, Spektr, was added in 1995. It carries solar panels and scientific equipment supplied by the United States. A fifth module to be added this year, the U.S.-equipped Priroda, brings the number of modules in the MIR space complex to seven. When complete, it will have been in orbit for 10 years.

The cooperation and experience accumulated during the MIR completion will be the stepping stone to Phase II and the construction of Alpha base.
Digital Audio Broadcasting Under Way in Europe

Digital audio broadcasting and the chief rival to the U.S. DAB system of choice took a major step forward in Europe with the debut of services in Germany and the United Kingdom. Using the Eureka-147 system, a handful of stations in Bavaria and the five national BBC Radio networks began using DAB in the fall of 1995. Both events are expected to encourage receiver manufacturers to expand production of digital receivers and educate the general public about DAB—and strengthen Eureka-147's position as the worldwide DAB standard.

The Bavarian services—the result of a joint effort between the government of Bavaria, radio stations Antenne Bayern and Bayerischer Rundfunk, receiver manufacturers Grundig and Bosch/Blaupunkt and research and industry groups—include regional programming for Munich and Nürnberg and Antenne Bayern's new rock station.

As the BBC launched its DAB service on Radio 1, 2, 3, 4 and 5, it was looking ahead to the 1996 debut of BBC Now, a continuously updated package of news and information. The BBC hopes that receiver manufacturers will be able to develop radios that can download the information, storing it for use on demand by listeners.

Talk 3, Music 0

Boston talk-radio veteran Gene Burns is the cornerstone of a new, caller-friendly talk format at Framingham, Mass.'s WKOX AM. "WKOX intends to provide a breath of fresh air in Boston talk radio," program director Scott Gibbons said in a Middlesex News article sent to us by WKOX news director Gene Molter. "There will be no more yelling and screaming like at the other stations. We are going to talk to people—not yell at them."

Burns, a DJ on WRKO from 1986 through 1992, "is a talk show host around whom you can build a great talk radio station," Gibbons said. Callers to his 10 a.m. to 2 p.m. show "will be treated with respect, whether he agrees with them or not."

Other hosts who have been signed up since the station dropped country music in October 1995 include Dr. Laura Schlessinger, Bob Brinker and David Brenner. Red Sox, Celtics, Bruins and Northeastern University games will be carried, as well as football from CBS Radio Sports. Molter notes that WKOX has applied to boost its power from its present 10 kW.

Meanwhile, St. Louis' KATZ-AM has dropped its format of R&B music in favor of talk, giving the city its first and only station with an information format aimed at blacks. Officials at Noble Broadcasting Group, KATZ's owner, are hoping to achieve the success they've had with their other St. Louis holdings, FMers KMJM and KNJZ, by gearing programming toward a...
black audience. "We corner the urban contemporary music market in St. Louis, and to draw listeners we have to look at the community and 'super-serve' them, not only with music and entertainment, but with news," general manager Steve Mosier told the St. Louis Post-Dispatch.

Although the switch taps an underserved niche, the switch from music to talk at the 5-kw, 24-hour station is in keeping with a trend in AM. As Mosier told the Post-Dispatch, one of the reasons the station changed its format was because music on AM is dead. While a talk format is itself no guarantee of success, Noble officials insist that KATZ won't be at the mercy of ratings, thanks to its sister stations. "We are not going to get rich off of a 50,000-watt (sic) station with fair reception. We operate the only urban contemporary station (KMJM) in St. Louis, and with the advertising base it has established along with KNJZ, we will be able to steadily operate KATZ." Still, station officials are optimistic about the new programming, pointing to the success of similar formats at Washington, D.C.'s WOL-AM and New York City's WLIB-AM.

Finally, Beverly Hills, Calif.'s KJQI-AM has dropped adult standards and KJQI for all-news and KNNS, according to a Los Angeles Daily News article sent by Michael Carland of Valencia, Calif. Programming includes local newscasts and syndicated news from The Associated Press and Bloomberg.

Payback?

Howard Stern's snipes at the owners of his former Chicago affiliate, and a subsequent advertiser boycott allegedly orchestrated by them, apparently have caused the shock jock to be bounced from WCKG-FM. Stern had been dropped from Evergreen Media's WLUP-FM in 1993 for what company officials said were poor ratings, and he apparently returned the favor in March 1995 from the safety of competitor and new affiliate WCKG by making remarks about two Evergreen executives and their families. But according to a report in Broadcasting & Cable, Evergreen wasn't about to turn the other cheek—their Chicagoland stations allegedly organized an advertiser boycott, which may have contributed to WCKG's decision to drop his show in early October. Stern wasn't without a home for long, however—WJJD-AM, owned by his syndicator, Infinity Broadcasting, picked up the show the next day.

Stern also drew fire last year from the National Hispanic Media Coalition for his remarks about the late pop singer Selena. His comments, which the group describes as going "far beyond the boundaries of contemporary community standards," caused the group to file and convince the FCC to revoke the license of Stern's Los Angeles affiliate, KLSX. Using his show as an exam-
Loops are especially useful to mediumwave DXers because they’re highly directional and thus allow you to “null out” offending stations—for example, a strong semi-local station that’s blocking the distant, lower-powered station you want to hear.

50 or so feet of wire still will do nicely, even when it’s indoors, tacked around the edges of your ceiling.

Much more compact—but very sensitive, nonetheless—is the loop antenna, which comes in various sizes and designs.
### Applied to Modify AM Facilities

<table>
<thead>
<tr>
<th>Call Letters</th>
<th>City, State</th>
<th>Frequency</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>KFIA</td>
<td>Carmichael, CA</td>
<td>710 kHz</td>
<td>Seeks 25/1 kW power.</td>
</tr>
<tr>
<td>KGME</td>
<td>Glendale, AZ</td>
<td>1360 kHz</td>
<td>Seeks increase to 50 kW.</td>
</tr>
<tr>
<td>KOKO</td>
<td>Giddings, TX</td>
<td>1600 kHz</td>
<td>Seeks move to Pflugerville, 5 kW/500 watts.</td>
</tr>
<tr>
<td>WJIM</td>
<td>Lansing, MI</td>
<td>1240 kHz</td>
<td>Seeks drop to 890 watts.</td>
</tr>
<tr>
<td>WMWO</td>
<td>Eden, NC</td>
<td>830 kHz</td>
<td>Seeks move to Kernersville; 10 kW nights.</td>
</tr>
<tr>
<td>WXLX</td>
<td>Newark, NJ</td>
<td>620 kHz</td>
<td>Seeks move to Jersey City instead of Rutherford.</td>
</tr>
</tbody>
</table>

### Changed AM Facilities

<table>
<thead>
<tr>
<th>Call Letters</th>
<th>City, State</th>
<th>Frequency</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>KARS</td>
<td>Belen, NM</td>
<td>860 kHz</td>
<td>Increased days to 1 kW.</td>
</tr>
<tr>
<td>KENM</td>
<td>Saipan, CM</td>
<td>1053 kHz</td>
<td>Moved to 1080 kHz, 5 kW.</td>
</tr>
<tr>
<td>KJJK</td>
<td>Fergus Falls, MN</td>
<td>1090 kHz</td>
<td>Moved to 1020 kHz, 2/1 kW.</td>
</tr>
<tr>
<td>WJYJ</td>
<td>Elmhurst, IL</td>
<td>1530 kHz</td>
<td>Increased to 760 watts.</td>
</tr>
<tr>
<td>WMTY</td>
<td>Greenwood, SC</td>
<td>1090 kHz</td>
<td>Increased days to 5 kW.</td>
</tr>
<tr>
<td>WNDZ</td>
<td>Portage, IN</td>
<td>750 kHz</td>
<td>Increased days to 17 kW.</td>
</tr>
</tbody>
</table>

### Applied to Change FM Frequency

<table>
<thead>
<tr>
<th>Call Letters</th>
<th>City, State</th>
<th>Frequency</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WGGM</td>
<td>Lyndon, VT</td>
<td>98.3 MHz</td>
<td>Seeks 98.9 MHz.</td>
</tr>
</tbody>
</table>

### Changed FM Frequencies

<table>
<thead>
<tr>
<th>Call Letters</th>
<th>City, State</th>
<th>Frequency</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDUV</td>
<td>Bradenton, FL</td>
<td>103.3 MHz</td>
<td>Moved to 103.5 MHz, 99 kW.</td>
</tr>
<tr>
<td>WGMX</td>
<td>Dayton, OH</td>
<td>98.1 MHz</td>
<td>Moved to 98.9 MHz.</td>
</tr>
</tbody>
</table>

### Changed AM Call Letters

<table>
<thead>
<tr>
<th>New</th>
<th>Was</th>
</tr>
</thead>
<tbody>
<tr>
<td>KAYD</td>
<td>KAYC</td>
</tr>
<tr>
<td>KNRR</td>
<td>KZK</td>
</tr>
<tr>
<td>KNWX</td>
<td>KRPC</td>
</tr>
<tr>
<td>KPRM</td>
<td>KNWX</td>
</tr>
<tr>
<td>KWFT</td>
<td>KNON</td>
</tr>
<tr>
<td>KWSL</td>
<td>KKSC</td>
</tr>
<tr>
<td>WAUX</td>
<td>WMIR</td>
</tr>
<tr>
<td>WCYK</td>
<td>WCNF</td>
</tr>
<tr>
<td>WDCD</td>
<td>WPTR</td>
</tr>
<tr>
<td>WISZ</td>
<td>WBYY</td>
</tr>
<tr>
<td>WKJK</td>
<td>WSMR</td>
</tr>
<tr>
<td>WKPP</td>
<td>WITM</td>
</tr>
<tr>
<td>WMFN</td>
<td>WISZ</td>
</tr>
<tr>
<td>WNNN</td>
<td>WHEZ</td>
</tr>
<tr>
<td>WZQZ</td>
<td>WBFX</td>
</tr>
</tbody>
</table>

Beginning FM DXers shouldn’t overlook the antennas they already may have in place—if you’re a scanner buff, you can achieve great results on FM by using an omnidirectional, wide-spectrum discone. Another option is an outdoor TV antenna because most manufacturers optimize the antenna for both TV and FM—and using a remote-controlled antenna rotator to position the antenna for optimum reception.

As with AM, having the antenna indoors doesn’t necessarily doom you to the DX doldrums. Something as simple as putting the antenna near a window or in an attic can make a difference. In both AM and FM, active antennas are useful if an outdoor installation isn’t possible, but bear in mind that they can amplify noise and unwanted interference along with the signal. And no matter what antenna you use, always keep it and yourself away from power lines. Not only can electricity kill, it also can introduce unwanted noise.

For many DXers, the next step after hearing a station is obtaining proof of their feat. “QSL”—a term adopted from amateur radio—means to acknowledge or confirm reception. What constitutes a QSL depends on who you ask—a diehard might say that it must formally state that you did indeed hear the station, while other hobbyists are satisfied with having their original reception report returned with “Thanks for your letter” and a signature scrawled at the bottom. A QSL can take the form of a card or letter, or sometimes both.

How do you get a QSL? Half the battle is writing an accurate, detailed report. For example, don’t describe the programming simply as “country music, ads and DJ chatter.” When possible, include the names of the announcer(s), businesses advertised and maybe a song or show title, along with the time when you heard them aired. Doing so makes it much easier for station personnel to recognize immediately that it’s their station being described. Accuracy counts, which is why next month we’ll take a look at a trick you can use to write a correct, detailed report. Most DXers also include the reception conditions and type of receiver and antenna used. Finally, always include return postage or a self-addressed, stamped envelope.

Sadly, no matter how accurate and courteous you are, there’s no guarantee that you’ll get a response of any kind. Some stations simply don’t verify, even after repeated requests, usually because of a lack of time or a dim view of DXers as annoying eccentrics. On the other hand, some stations will reward you not only with a QSL, but also bumper stickers, key chains, T-shirts and hats.

**In Brief**

Canada has imported some classic American radio shows for CBC Radio’s Saturday evening series, “The Mystery
New FM Call Letters Issued

KBAL-FM San Saba, TX
KCGX Broken Bow, OK
KMLW Moses Lake, WI
KRMK Bisbee, AZ
KULU Seaside OR
WAAE Fisher, WV
WJRC Lewistown, PA
WOMX Oregon, IL
WSTF Andalusia, AL.

Pending FM Call Letter Change

New Was
WNCE-FM WCTX Palmyra, PA

Changed FM Call Letters

New Old
KAMX KPTY Luling, TX
KAVD-FM KAYD Beaumont, TX
KCBZ KAME Canyon Beach, OR
KGCJ KWKK Dardenella, AR
KDAA KQMX Rolla, MO

KGEN-FM KAFN Hanford, CA
KGFH KJET-FM Hoquiam, WA
KNQX-FM KZZK-FM Creswell, OR
KNWB KFSH Hilo, HI
KRNB KSTV-FM Decatur, TX
KRXZ KRD Mardmore, OK
KSKZ KWKR Elope, WA
KTAC KTB1-FM Sand Springs, OK
KVEZ KMDX Parker, AZ
KWKK KOJC Russellville, AR
WCVI WMY Solana, FL
WEZY WHKQ Racine, WI
WICJ WUFQ Newberry, MI
WIZZ WAAN Blackville, SC
WNQR WXRB Pittsburgh, PA
WNWN FM WNWN Coldwater, MI
WOFX WPPT Cincinnati, OH
WSOL-FM WHJX-FM Brunswick, GA
WVAE WOFX Fairfield, OH
WWSE WXCR Andalusia, AL
WXEG WRVF Beaver Creek, OH
WZZQ-FM \(WZQQ\) Terre Haute, IN

Project: "Detective shows from the 1930s, '40s and '50s—among them Night Beat, The Saint, Suspense and The Adventures of Nero Wolfe—were featured last fall as The Mystery Classics. A major reason U.S. shows were chosen was that 20 episodes could be purchased for what it would cost to produce a single live program, executive producer Bill Howell said in a Saskatoon Star Phoenix article sent to us by Trevor Fletcher of Edmonton, Alberta.

*Reasoning that "automation is seen as affording more accurate and controlled operation than that performed by humans," the FCC has waived its rules to allow unattended operation of stations. The National Association of Broadcasters praised the move as a "real win-win for broadcasters. For a small-market, small-staff radio station, this is a big deal." The commission also eliminated the requirement that station operators hold a restricted radio-telephone operator's permit.

Demand for copper is suspected as the motive that led vandals to cut the guy wires to one of the antenna towers for Sacramento, Calif.'s KCTC-AM, sending it crashing into the adjacent tower that held the antenna for sister station KMYX-FM. Although KCTC emerged from the Sept. 6 incident unscathed, "Mix 96" was off the air for more than six hours before station personnel were able to rig up a temporary antenna reports Radio World. A station official estimated the total damage at $375,000, adding that "nothing was salvageable."

An ad spotted in the personals section of a couple of Chicago newspapers: "Established but aimless FMers seek proven format for long-term relationship. Must be music-oriented and financially stable. Serious replies only to 190 N. State St." No, not really, but the owners of WLS-FM might as well give it a try. CapCities/ABC execs reportedly are mulling over yet another format change for their Chicago holding—this time contemporary or country music. WLS-FM resumed simulcasting WLS-AM's talk format after a brief, unsuccessful flirtation with a younger talk audience last year, but Broadcasting & Cable reports that CapCities/ABC officials still are searching for a format of its own. No word at preствие as to when the change might be made.

Thanks

News clippings, station and shack photos, bumper stickers and QSLs always are welcome, as are questions and comments.
Several readers are asking for information on the Icom R71A modification mentioned in a past column. Donald Tomkinson, CA, had written explaining when he modified his R71A, the memory channels increased to 1088. Donald obtained the mod kit from Wilco Electronics, P.O. Box 788, New Lenox, IL 60451.

Tom Sevart, KS, reports P7X was heard every night from about 2300-0400 for two weeks on 5431.5 kHz. The standard 120 group messages were sent interspersed with data transmissions.

Bunky, IL, writes, "I recently began hearing a group of seemingly high power FSK stations in the LF aero beacon band. These stations are running 200-250 baud with an approximate 85 Hz shift and sound like the VLF naval stations (NAA, etc.). The frequencies are 297, 310, 311, 317, 319 and 322 kHz. Any idea what these are or why they are in this band?"

I haven't identified these transmissions. When I checked the frequencies only 297 and 322 kHz were active. Can anyone shed any light on these signals?

In answer to several queries, the following explains confusion regarding a FEMA station in Winchester, Va.

About five years ago, Perry Crabbil, Jr., Virginia, advised me that beacon XPZ on 265 kHz was incorrectly listed, with coordinates placing it at the old Post Office building in Winchester, Va. Following a lunch, Perry drove to the vicinity of Mt. Weather, Va., a federal relocation site commonly called the FEMA Special Facility. When Perry arrived opposite the site's heliport, he could hear the second harmonic (530 kHz) of the XPZ beacon on his car radio and could see the beacon station's vertical antenna inside the chain-link fence surrounding the federal property.

I have seen information indicating there is a FEMA backup command center located at Laytons, Md., near Olney, Md. Could this be the site assigned callsign WGY913?

I will continue checking this in, and will share any additional details. It is interesting how many responsibilities and functions other agencies and departments transferred to FEMA over the years. Note the following list:

From HUD—Federal Disaster Assis-

---

Sue Wilden, IN, copied this fax with her Sangean ATS-803A connected to a diele antenna. An u/l decoder was used.

Beacon reception PFC used by Allen Renner, PA.

PFC used by Steve McDonald, British Columbia, Canada for verification of his monitoring of comms from a B-52H aircraft. See accompanying letter.
Dear Steve,

Your information on Doom 81 was right on the money. After receiving your letter I went and researched the paper work from Doom 81's flight. They aborted entry into IR 174 because of bad weather. It is good to hear that the signal strength was extremely good, because we have very powerful transmitters on the B-52.

Unfortunately, we do not have any official stamping here at the 96th Bomb Squadron. Instead I am enclosing a squadron patch. I hope this is good enough for your verification.

Good luck with your hobby and best wishes from the 96th BS!

Sincerely,

Capt Erik K. Hayden
B-52 Pilot, USAF

---

201: Beacon DED, Deland, FL, at 0100. (WP)
206: Beacon GLS, Galveston, TX, at 0130. (WP)
208: Beacon JYN, Goldsboro, NC, at 2216. (DS)
216: Beacon CJB, Wilmington, NC, at 2217. (DS)
223: Beacon YYW, Armstrong, Ont., Canada, 1041m at 0654. (AH)
234: Beacon RYD, Green Cove Springs, FL at 0130. (WP)
235: Beacon RW, Rocky Mount/Wilson, NC, at 2218. (DS)
242: Beacon EFK, Newport, VT, at 242m, hrd at 0616. (AH)
245: Beacon NKT, Cherry Point MCAS, NC, at 2139. (DS). Beacon AN, NAS North Island, CA at 1815. (DT)
263: Beacon DA, Daytona Int Airport, FL at 0130. (WP)

---

QSL card from the collection of Ed Rausch, NJ.
### Abbreviations Used For Intercepts

<table>
<thead>
<tr>
<th>AM</th>
<th>BC</th>
<th>CW</th>
<th>EE</th>
<th>GG</th>
<th>ID</th>
<th>LSB</th>
<th>OM</th>
<th>PP</th>
<th>SS</th>
<th>Ts</th>
<th>w/</th>
<th>wx</th>
<th>YL</th>
<th>4F</th>
<th>5F</th>
<th>5L</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMplitude Modulation mode</td>
<td>Broadcast</td>
<td>Morse Code mode</td>
<td>English</td>
<td>German</td>
<td>Identification/ed/location</td>
<td>Lower Sideband mode</td>
<td>Male operator</td>
<td>Portuguese</td>
<td>Spanish</td>
<td>Traffic</td>
<td>Upper Sideband mode</td>
<td>with</td>
<td>Weather report/forecast</td>
<td>Female operator</td>
<td>4-figure coded groups (i.e. 5739)</td>
<td>5-figure coded groups</td>
</tr>
</tbody>
</table>

### FF Stations

<table>
<thead>
<tr>
<th>Station</th>
<th>Frequency (kHz)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>RFVIT</td>
<td>(to FN Reunion)</td>
<td></td>
</tr>
<tr>
<td>RFVIT</td>
<td>(to FN Toulon)</td>
<td></td>
</tr>
<tr>
<td>ZNR UUUU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FM UGECOMMIECE TOULON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFVIT/TA BOUDEUSE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFO RFFIA/MARINE TRANSIT LE BOUGET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFFIND/ALINDEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFVIC/MARINE LA REUNION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFQPMJN/JULES VERNE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFVITZ/COMSUP ST DENIS REUNION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFVICPL/CHAMPIL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFVIALB/ALBATROS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>then message text in FF &amp; Slggs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NNNN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** All FF stations within France have call signs beginning with RF while overseas stations begin with RFF. The basic call sign for Reunion is RFVIT but there are several combinations of additional letters as the following recent naval signal in ARQ E 96/428 shows:

- **RF:** RFVIT (to FN Reunion)
- **DE:** RFVIF (to FN Toulon)
- **ZNR:** UUUU
- **FM:** UGECOMMIECE TOULON
- **TO:** RFVIT/TA BOUDEUSE
- **INFO:** RFFIA/MARINE TRANSIT LE BOUGET
- **RFFIND:** ALINDEN
- **RFVIC:** MARINE LA REUNION
- **RFQPMJN/JULES VERNE:** (Jibouti - naval ship)
- **RFVITZ/COMSUP:** ST DENIS REUNION
- **RFVICPL/CHAMPIL:** (naval ship)
- **RFVIALB/ALBATROS:** (“”)

This fact sheet on Reunion Island was prepared by Robert Hall, South Africa. The island is located in the Indian Ocean about 500 miles to the East of Madagascar. It provides an excellent base for French military and naval forces. Some of the communications modes utilized by these forces include RTTY, ARQ-E, ARQ-E3, and ARQ-M2.

### Chart

- **CH:** 0 dB
- **UB:** 100 kHz
- **AT:** 2000 kHz

Kevin Tubbs, VT, prepared this analysis chart. It shows a VFT-f08b system in USB on 4083 kHz.
Radio Shack PRO-26
PortaBLE Scanner

- Continuous coverage from 25 MHz to 1.3 GHz (except cellular telephone frequencies)
- Triple-conversion receiver virtually eliminates unwanted interference
- Hyper-Scan TM aircraft scan at 50 channels/second
- NM/AF/MI/M/N mode-select permit tuning TV audio signals
- Automatic scan of 200 memory channels
- Directory for instantly, up-to-the-minute forecasts
- SCA format provides a signal strength reading (optional)
- Requires the PM 6 ft Cord or alkaline batteries or AC or DC adaptor

Risk-FREE TRIAL 30 DAYS

RISK FREE TRIAL 30 DAYS

Saves time and money by instantly
locating signals and aircraft in any location!

Includes:
- A3-AF with built-in microphone
- 1.3 GHz adapter (not included)
- Antenna mount
- See your local RadioShack store for
  details.

Call 1-800-343-3333 for store location
or nearest dealer.

U.S. Radio 373 Plaza, Granbury, TX 76048

UNBELIEVABLE RANGE WITH A 3 INCH ANTENNA!

New in 2007!

Model UX-50

- The most compact VHF scanner at 2 3/4 x 4 x 1 5/16 in!
- Only 4 3/4 lbs!
- Only $79.95
- Measures only 1 1/2 x 4 x 1 in!
- Runs for days on low battery!
- Single-sided board for easy custom mounting

WHY UX-50?
- Most "miniature" VHF transmitters require a 3 FOOT ANTENNA for any useful range. Our UX-50 transmits farther with a 3 INCH ANTENNA!

UX-50 is PRIVATE!
- Many VHF transmitters use a cheap computer chip to transmit on 143 MHz, receivable by everyone with a 2-meter amateur radio! Our UX-50 uses miniature transmitters crystals on a stock of 4 stacked frequencies away from public bands.

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THE MONITORING MAGAZINE
March 1996 / POPULAR COMMUNICATIONS / 57

www.americanradiohistory.com
WUG re wkg ck-in. msgs UACU, mark, wkg Hrd at 9219 50/170 1509, 0040-0045. 9226.1: 8533: 8414: 9936: ck-in. At 12497.5: 11491: TH Rovno notice. Scrambled speech CW stn KPH, TRIDENT NOJ, CommSta YL/SS U/i POSTULATE QTH?). w/Controle w/WIJE, Cincinnati, OH, WUJ312, (RB) 27000 YL/EE (mean meteo. rptng CA 2147. CW at 1996 ATU-A 96/404 13846.8: 13375: 12745.5: 16136.3: in VERIFYING LOCATION: in www.americanradiohistory.com Swedish. 2032 1545 w/RY's Lincolshire count & hullu/ID 1710. (JC) 96/428 in SITOR-A 1996/404 w/tx w/cw at 1250/400 w/tty & rsd msg at Cape 1996 at 1475-25 taking 5L grps & later into 5F grps. (RHI) 0357 FAX -ta JC-James on Sovship QSX mkr. CW at 1496.5: ZEN69, Hong Kong, in ARQ-M 194/233 at 1210 wkg WKT! Victoria I., Hong Kong, idling. (Ri) 15016. YL ri ng MIV2 at 1415. Mossad (SM) 1966.1 SAM, MFA Stockholm at 0820 in SWED ARQ 100/386 w/tc to Ambassador Lagos, Nigeria in Sweden. (Ri) 16136.3: CLPI, MFA, Havana, Cuba in RTTY 50/300 w/tx & rsd msg at 1994/858 w/tc & CW/FFS (Ri) 16136.2: CLPO, Cuban Embassy, Conadry in RTTY 75/480 at 1125 w/5L grps for CLPI, Havana, Cuba. (Ri) 16607. CBCA, M/V Capaon at 1744 in SITOR-A w/SS arrival report via CBV. Playa Ancha, Chile. (Ri) 16801.6: UNDB, Sovship TTH minalia at 1103 in RTTY 50/170 w/kg UL1, Odessa. (Ri) 16816.1: ZSC6, Capetown, RSA at 1215 in SITOR-B w/tc lists for ZSC, 25D and ZSQ (REII) 1695.15: FUV, Jeddah, Saudi Arabia. (Ri) 1695.8: FUM, Papeete, Tahiti in RTTY 75/850 at 1900 w/R/s (DT) 1697.5: JBVE, Port Louis Radio Mauritius in CW at 1210 w/tc list & beacon freq. Info-off freq! (Ri) 17026. KFS, Palo Alto, CA in CW at 1937 w/CQ QSK msg (JC) 17049. UUL, Odessa at 1600 in RTTY 50/170 w/Sovship Kapitan Kaminys (UFEA) (Ri) 17068.1. U/I in PACTOR at 1599, unob犹 decode. (Ri) 17090. KPH, San Francisco, CA in CW at 1813 w/CQ QSK msg. (MR) 17139.14: U/T RTTY 100/834 at 1556 in crypt (Ri) 17143.2. BCZ48, XNA Beijing, China at 1201 in RTTY 50/425 /mx in FF. (Ri) 17502.5: At 1200 YL/w/William Susan Peter 17521.9: HSN/61, Bangkok, Thailand at 1252 in RTTY 50/757/w/wc coded tfc. (Ri) 17800.8: Bld to be MFA Cairo, Egypt at 1650 in SITOR-A sending w/u/TAL later into 5L grps. (RB) 19148.7: RTFA, MoD, Paris, France at 1500 in ARQ-E 192/425 idling. (RB) 17479.5: UVU79, Dakar Metro, Senegal at 1542 in RTTY 50/425 w/R/s & CQ DEUV 6UVZ/73/79. (Ri) 23280 PCH75, Scheveningen, Netherlands at 1515 in SITOR-B w/tc lax. (RB) 23296 LSD836, Buenos Aires, Argentina at 1531 in SITOR-A sending Selcals. (RB)

Contributors this month included the following:
B—Bunky, IL; RB—Rick Baker, OH; JC—James Callaway, NV; GJ—Jim Grandstaff, OH; RG—Rody Grussling, ID; AF—Aaron Hemmelin, RI; RH—Robert Hall, South Africa; RH2—Russ Hill, MI; SM—Simon Mason, England; WP—Walt Petersen, FL; MR—Michael Regan, WI; DS—Don Schimmel, in NC; PS—Paul Scalzo, Quebec, Canada; TS—Tom Sevart, KS; DT—Donald Tomkinson, CA; SW—Sue Wilden, IN. Thanks to all!
Antenna Tuners: Who Needs 'Em?

There's a lot of hype surrounding antenna tuners, especially when it comes to what they can and can't do. Figuring out whether your station really needs one is half the battle. The other half is finding an antenna tuner with the right features (don't forget affordability!).

Because space is limited, we'll have to greatly simplify our discussion of antennas, transmission lines and transmitters. A full treatment takes volumes (see *The ARRL Handbook* or the American Radio Relay League's *New You're Talking* for an in-depth treatment of the topic. Both are available from your local dealer or directly from the ARRL).

Basically, your transmitter wants to see an antenna that's as close to an impedance of 50 ohms as possible. Connecting the antenna to your transmitter is a transmission line, probably 50-ohm coax or 300-ohm open-wire (ladder) line.

When the antenna is properly matched to your transmitter, most power sent up the transmission line reaches the antenna and is radiated into space (good!). If the antenna isn't properly matched, some energy in the transmission line bounces back and forth between the antenna and the transmitter instead of being radiated (not so good! Serious mismatches can greatly reduce your transmitted signal and destroy your transmitter! Also, the greater the mismatch, the less power your rig puts out).

The measuring of this match (or mismatch) is called SWR (standing wave ratio), and it's measured with an SWR meter (naturally!). Very simply, a ratio of 1:1 (or close to it) is best; 2:1 is usable; and 3:1 or greater probably signifies a serious mismatch.

Cutting a wire antenna (or tuning a beam antenna) so it presents a 50-ohm load to your transmitter is pretty easy—if you're interested in operating on a narrow range of frequencies on one band! If you want wider coverage from the same antenna you can insert an antenna tuner between your rig and your antenna.

By adjusting the tuner's controls, you can "trick" your radio into putting out full power (and be "happy" in the process). When properly adjusted, there's a perfect match between your rig and the tuner (1:1 SWR). There's still a mismatch between the tuner and the antenna, but if you're using a good quality transmission line, most of your precious radio energy makes it to the antenna and is radiated happily away into space.

**You Need a Tuner If...**

- You want to feed your antenna with open-wire line: Open-wire line (sometimes called ladder line) is almost lossless at HF (much better than coax). The problem is, open-wire line is balanced, while your rig (and your coax) is unbalanced. To bridge the gap, you need an antenna tuner with a built-in balun, a special balanced-to-unbalanced transformer.

- You want to use your antenna on frequencies for which it isn't designed. If you try, for example, to use your 40-meter dipole on 10 meters, the SWR will be very high, and poor performance will result. With an antenna tuner in-line, you'll probably be able to create a 1:1 SWR at your transmitter, permitting operation. (Some mismatches are too great for every [or any] tuner to handle.)

- Your antenna has a narrow SWR bandwidth on some bands: Some multi-band antennas don't offer low SWR from one end of a band to another. With your antenna tuner, you can operate anywhere in the band and still put out full power from a happy radio.

**You Don't Need a Tuner If...**

- Your SWR is 1.5:1 or less on the frequencies at which you operate: Most modern rigs tolerate an SWR of 1.5:1 or less with no difficulty and put out full power.

- You have a high SWR at VHF or UHF frequencies: Because feedline losses increase rapidly at these frequencies, antenna tuners generally are not useful. The only real remedy is to use a high-quality feedline and a properly matched antenna. No shortcuts here!

- You're interfering with TVs, telephones or other electronic equipment in the neighborhood: Despite what you may have heard, antenna tuners usually don't do a good job cleaning up these problems. Some designs reduce harmonic radiation, but most of the previously mentioned interference is caused by RF overload at the fundamental frequency. Tuners do not reduce this (and actually may make it worse!).

**Features and Power Ratings**

Useful antenna tuner features: A built-in SWR meter (otherwise you'll have to use an external meter); high-quality inductors, roller or tapped (your antenna tuner is not the place to skimp on component quality!); a built-in balun (for using open-wire line); a built-in antenna switch (your antenna farm likely will grow). Some tuners are automatic—just push a button (these usually are built into your rig) and you're at 1:1 SWR. The problem? They're expensive!

A tuner rated at 300 watts probably will serve your station of 100 watts or less just fine. At certain frequencies, and when trying to match certain transmission line impedances, RF voltage soars and even can cause sparks or arcing! This can destroy your tuner or your rig, so when it comes to buying antenna tuners, the greater the power rating the better!

Happy tuning! Send your photos, letters and column suggestions to me at ARRL, Department PCN, 225 Main St., Newington, CT 06111, or write via the Internet to kirk@uslink.net.
The good news about propagation and sunspots we mentioned last month has been confirmed. The current sunspot cycle indeed has bottomed out. This means we will start noticing changes over the next few years.

The 11-, 13-, 15- and 17-MHz ranges will support signals later into the evenings, even during the winter months. A few years from now, we should be able to hear signals on these bands 'round the world. 'Round the clock! Changes will come gradually, though; if you're into instant gratification, you will be disappointed.

**Country Cruisin’**

There's nothing earth-shaking to report in the way of shortwave broadcast news this month so we'll hopscotch the world, as John Cameron Swayze used to say, and touch on a few items.

**Honduras**

Radio Copan International is to increase its power from 1 kW to 3.5 kW, which should make it easier to hear. The 15675 kHz frequency currently in use is to be changed; to what, we don't know.

**Costa Rica**

Radio For Peace International's transmitter on 7385 has been given a power increase. RFPI is reported to be planning to put a station on the air in Hawaii.

**Nepal**

Bill Matthews, who does the DX news report on Radio Korea, recently visited Radio Nepal. Bill says the veri signer there, Director of Engineering Ram S. Karki, requests that dollar bills not be sent with reports as they usually are stolen at the post office, and the reports never reach the station. It is safer to send three IRCs. If you wish, you may use Karki's home address: P.O. Box 4946, Kathmandu, Nepal. Thanks for the info, Bill!

**Libya**

What may be a new Libyan government station, Sabha Local Radio, is being reported on 11835 with sign-on at 0745. Sabha is the town where Col. Qadafi’s revolution began. The broadcasts are entirely in Arabic. The full schedule isn't known yet, nor can we say whether these broadcasts are permanent or temporary.

**Yugoslavia**

Radio Yugoslavia is reported to be trying to arrange a swap of transmitter time with China Radio International and Radio Bulgaria. English from Radio Yugoslavia currently airs at 0100-0130 on 6195 and 7115 (except Sundays), 0200-0230 on 6100 and 7115, 1330-1400 on 11835, 1930 to 2000 on 6100 and 9720 and 2200-2230 on 6100 and 6185.

**Tanzania**

At this writing, Radio Tanzania was being relayed by the Meyerton facilities of Channel Africa, but it may well be a very temporary arrangement. It's currently...
being heard on 15435, scheduled from 0900-1100 and 1300-1525. 7290 also was in use from 0254 sign-on to close at 0455. Also 7280 from 1800-2115, all in Swahili.

**Switzerland**

Swiss Radio International has discontinued the use of the Brazil relay station.

**VOA**

Cuts in the Voice of America’s budget have brought a move to shortwave broadcasts to Europe where, the VOA says, it’s heard quite well on mediumwave anyway. Additionally, programming in Bulgarian, Latvian, Polish and Czech have been dropped. Radio Free Europe/Radio Liberty also is cutting back on its shortwave transmissions.

**Sidebanders**

These non-broadcast broadcasts always are interesting targets. Two Argentine mediumwave stations recently have been spotted being relayed on shortwave by “utility” transmitters. Radio Rivadavia and Radio America have been noted around 2000 on 20276 lower sideband. It’s believed this may be a relay for Argentine troops in Europe. Other frequencies sometimes in use, especially on weekends, are 13280, 15770 and 15780, which apparently are used to beam broadcasts to Argentine citizens in Antarctica.

Another such oddball noted recently consists mostly of music and a program called the Army Hour, which is a feature of Romanian government radio. Transmissions are very erratic and are heard any time from 0530 to 1400 on 14201 or 14814, both upper sideband.

**SWL Fest**

The 1996 Winter SWL Fest, held annually near Philadelphia at the Holiday Inn in Kulpsville, Pa., is set for the weekend of March 14-16.

The folks who organize this non-profit event present some top-notch speakers and programs on virtually every aspect of the radio monitoring hobby, including shortwave broadcast listening and DXing. There’s always a big room full of displays and goodies, as well as an excellent Saturday night banquet (with entertainment) and a lot of great people. If you can make the arrangements, try to attend.

For more information, send an SASE to Winter SWL Fest, P.O. Box 591, Colmar, PA 18915. Hope to see you there!

**Information Needed**

Your log reports (listed by country) are always wanted. The logs are cut up for sorting so please double space (at least) between each item and include your last name and state abbreviation after each. We also welcome spare (non-returnable) QSL cards, stickers, pennants, station photos, schedules and brochures, station news, news about QSL requirements and policies and anything else you think might be of interest. And we still welcome photos of you at your listening post, too!

Here are this month’s logs. All times are UTC, which is five hours ahead of EST, i.e., 0000 UTC = 7 p.m. EST, 6 p.m. CST, etc. The broadcast language is assumed to be English unless otherwise indicated (FF = French, AA = Arabic, GG = German, etc.).

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<tr>
<th>Service Area</th>
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<th>Frequency Details</th>
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<tbody>
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<td><strong>Commonwealth of Ind. States &amp; Poland</strong></td>
<td>1700-1900</td>
<td>3925 kHz</td>
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**Details on Programming**

The Voice of Greece, Swiss Radio International’s QSLs often feature views of the country. (Thanks Andy Johns, Mansfield, Texas)
11815 at 0113 in SS. (Miller, WA) 15110 in SS at 1638, 17715 at 1326 in SS, 17845 in SS at 1700 (Williams, TX)

SI LANKA - SLC, 9720 at 1525 in EE. (Miller, WA)

Radio Japan relay, 11930 at 1700 sign-on in EE. IS, ID, site ID at 1710, Japanese language lesson and media show. (Rausch, NJ)

SURINAM - Radio Aparite, 4990 at 0200 to 0304 with easy listening vocals, Dutch announcements, jazz flute, ID at 0301. Poor. (Paszkieviz, WI) 0330 with slow pops, man announce. Low het, presumed from Radio Anochi in Peru. (Zeller, OH)

SWEDEN - Radio Sweden, 6065 in EE at 0030. Blocked by WYFR sign-on at 0045. 11650 to 1430 to North America. (Conrad, IA) 0045. 11650 in Swedish. (Wilden, IN) 0400 with news. (Jeffery, NY)

SYRIA - Radio Damascus. 15095 at 1600 in AA. (Pellicciari, CT)

TAYWAN - Voice of Free China, 7130 at 1230 in CC. (Northrup, MO) 1219 with 1940s and 1950s style music. EE to Australia. Also 11740. via WYFR at 0200 in EE. (Williams, TX)

TUNISIA - RTV Tunisienne, 7475 at 2040 in AA. (Pellicciari, CT)

TURKEY - Voice of Turkey, 7190 at 2300 with news, ID, review of Turkish press, Outlook, and music. (Jeffery, NY) 9445 at 2338 with Midwest music. ballads in Turkish. (Williams, TX)

UKRAINE - Radio Ukraine, 17725 at 1658 in Ukrainian. (Williams, TX)

UNITED ARAB EMIRATES - UAE Radio, Dubai, 13675 at 1920 in AA. (Pellicciari, CT) 15395 at 1600, IS and talk in EE. (Williams, TX)

VATICAN - Vatican Radio, 11635 in EE to Africa at 1730 to 1800. (Conrad, IA) 11830 at 1547 with piano, 23rd Psalm chorus. (Williams, TX)

VENEZUELA - Radio Rumbos, 9659 at 0151 in SS. (Miller, WA) 9660 in SS at 2100. Runs past 0500. (Conrad, IA) 2205. (Williams, TX)

Radio Tachira, 4830 at 1004 in SS, national anthem at sign-on. (Williams, TX) 0020 in SS. (Pellicciari, CT)

Ecos del Torres, 4980 at 0140 in SS. (Pellicciari, CT)

VIETNAM - Voice of Vietnam, 7250 (via Russia) at 0103 with feature on the station's history and interview with "Hanoi Hannah." (Wilden, IN)

Yen Bai Broadcasting Station, 6398 at 0819 in VV. Marching songs and a "vibrant" political speaker. (Foss, AK)

Nice going folks! Three cheers to the following who came through for you: Adam C. Smith, Renton, WA; Marie Lamb, Brewerton, NY; Steve Williams, Corpus Christi, TX; Elmer Wallesen, LaGrange Park, IL; Dave Jeffery, Niagara Falls, NY; Marty Foss, Wasilla, AK; Mark Northrup, Gladstone, MO; Michael Miller, Issaquah, WA; Sue Wilden, Columbus, IN; Ed Rausch, Cedar Grove, NJ; Steve Pellicciari, Norwalk, CT; Sherly Paszkiewicz, Mariotowoc, WI; George Zeller, Cleveland, OH; Jim Conrad, Waterloo, IA; Michael DiOrio, Milwaukee, Wisconsin, and William Matthews, Columbus, OH. Thanks to each of you!

Until next month, good listening!
lots of reports this time, so let’s get right into the info! Radio Free Speech was heard by Robert Haas in Pennsylvania at 1257-1305 on 6955 with host “Bill O. Rights.” Heard was a Johnny Cash parody, a plug for the A*C*E bulletin and a parody on the national anthem. Bob also had this one with comedy programs at 2128 and 2150. (The Association of Clandestine Enthusiasts—A*C*E—is a club. Bob. Membership is $20 per year from P.O. Box 11201, Shawnee Mission, KS 66207.) Bob notes that amateur operators around Pennsylvania can find his loggings posted on packet BBSs. Comments to Bob at this packet address: N3PTS@NR3U. # EPA. PA, USA

Magic Carpet Radio was found by Donald L. Tomkinson in California at 0030 on 6955, playing music mostly from the 1970s, including Magic Carpet Ride, and some Cajun-style things at tune-in. Donald monitored the broadcast until 0200.

The address given was P.O. Box 109, Blue Ridge Summit, PA 17214. ID’s by a woman and child as “Magic Carpet Radio.”

KNCR was the first pirate log for S.A. Wayland in Arkansas, who heard this one at 0125 on 6955 with odd music and sound effects, and announcing the Blue Ridge address.

Voice of the Dead, heard by Haas at 1440-1507 on 6955 USB with “The Dead Guy” as host and the slogan “all dead people, all the time.” Included a comedy bit by Will Rogers and music by Jim Morrison.

The address given was 770 Sycamore Ave., Modesto, CA 95353. Christopher White in Massachusetts also had this at 1430-1450 with songs by The Doors and organ music.

Radio Titanic, relayed by NARPS, was heard by Haas on 6955 at 2000 with “Captain Smith from the wreck of the Titanic,” ending with a musical ID for NARPS. Reports go to P.O. Box 452, Wellsville, NY 14895.

KNBS Radio Cannabis, heard by Haas on 6955 USB at 1800 sign-on, with host Phil Music speaking for the “California Marijuana Cooperative.” Music, commercial parodies, editorials, “the station with your mind in mind.” QSL via Wellsville.

Haas had this one again, following the Radio Titanic broadcast, mentioned above, opening in USB mode then switching to LSB at 2037. Dick Pearce had them at 1733, playing various marijuana-related songs. Pat Murphy heard it from 1745 to 1800 sign-off featuring Phil Musik and Pot Seedy, with rock by the “Ganga Rebels from Elkhart, Ind.”

KTLA was found by Pat Murphy in Virginia on 6955 at 2100-2153 sign-off with the ID, “you’re listening to the second broadcast of KTLA, the oldies station.” “CJT” was the disc jockey. Dick Pearce in Vermont had this at 2135, but heard the announcer identify herself as “DJT.”

Radio USA, was heard by Pearce on 6955 at 2215 with hosts R.F. Watts and Joe King with a program theme of “real people are scarier than monsters.”

KOLD, 6955 at 2250 to 2322 close, was picked up by Murphy with 1930s and 1940s music, and a mention of the Stone-

(Continued on page 77)
"See" Digital Aero Communications

As you can read in Capt. William Mauldin's You Should Know column in this month's edition of POP'COMM, there is a lot of interest in being able to "view" digital aircraft communications occurring on dedicated frequencies on the VHF aircraft band. This system is known as ACARS, or Aircraft Communications Addressing and Reporting System.

In order to decode these transmissions from your scanner, you need a special decoder and software. Advanced Electronic Applications Inc. has come out with a new package that contains a small demodulator cable and DOS software that when hooked up to a scanner allows decoding of the digital information being transmitted by planes and ground stations. The information that can be monitored over these ACARS transmissions can be routine maintenance reports, landing/departure information or even emergency requests from pilots.

AEA offers three versions of its ACARS package:

- The entire AEA ACARS package, including demodulator, software and detailed manual.
- The AEA Fax ACARS upgrade: The demodulator used for AEA Fax (I, II and III) is the same as ACARS, so AEA Fax owners can get the software-only version of AEA ACARS to use with their current demodulator.
- The AEA ACARS 900 package: AEA PK-900 owners already have the hardware built into their data controllers. All they need is this special software-only version of ACARS designed to work with the PK-900.

In addition to having a scanner capable of receiving the signals, you also will need an IBM-compatible computer with a 386 or higher processor.

AEA ACARS is available from most amateur radio dealers. For more information, call AEA's literature request line at (800) 432-8873, fax requests to (206) 775-2340, or write to: Advanced Electronic Applications Inc., P.O. Box C2160, Lynnwood, WA 98036.

Antenna Gets You On 6 Meters

The 6-meter amateur band is an interesting place for hams. While extended range for local communications is possible, it also offers occasional chances to work skip when the band is open.

It's not too unusual to find hams talking on the 50-54 MHz band from faraway distances when the conditions are right. The national simplex calling frequency, 52.525 MHz, sure can become congested during openings.

Cushcraft's ARX-6 Ringo Ranger is an antenna that's easy to get set up and on the air on the 6-meter band. Cushcraft claims the antenna has twice the gain of its AR-6 antenna for 6 meters.

The ARX-6 antenna stands 24 feet high and has all stainless steel hardware. For gain and wide-area coverage, the Cushcraft ARX-6 antenna might be the ticket.

For more information, contact Cushcraft Corp., P.O. Box 4680, Manchester, NH 03108, phone (603) 627-7877; fax (603) 627-1764.

New Radiating Cable Comes From Andrew

Andrew Corp. announces a new 7/8-inch high-performance Radiax radiating cable that is optimized for frequencies from 900 to 2500 MHz. It is ideal for providing two-way voice, high-rate data and Code Division Multiple Access (CDMA) communications in buildings, tunnels and other enclosed areas.

This new cable can handle all current and proposed Personal Communications Services bands throughout the world.

Other features and benefits of Radiax high-performance cable include:

- Enhanced signal containment, as Radiax cable has no high, single-point peak power outputs. This is especially crucial for in-building systems.
- Low-power distribution of signal by Radiax cable minimizes near-far variations in power level.
- Continuous coverage along the length of Radiax cable minimizes shadowing and blocking from structures and people.

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For more information, contact the Andrew customer support center at (800) 255-1479, Ext. 102, and request bulletin 3723, or write Andrew Corp., 10500 W. 153rd St., Orland Park, IL 60462.
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FCC Seeks Help Vs. Illegal Operators

One great thing about writing this column is the mail that people send to CB Scene. I look forward to this mail for two reasons. First, there's all kinds of interesting stuff—shack photos, QSL cards, information requests or help from other readers, and letters with questions, comments and suggestions.

Second, the mail helps me stay in touch with the interests of other CBers, and it often gives me ideas for the column. There is another reason why I enjoy the mail: It is overwhelmingly positive. CB Scene readers definitely enjoy CB radio as a hobby and a means of communication.
Recently, however, mail of a different sort arrived from the Federal Communications Commission’s field office in the Philadelphia area:

The Federal Communications Commission is being inundated with complaints of interference to televisions, telephones, stereo systems and computer equipment caused by citizens band radio operators. Most CB operators are conscientious and, when informed that they are causing an interference problem, correct, or assist in the correction of the problem. In some cases, the difficulty is caused by audio rectification. That fact is acknowledged.

The downside, as in most things, is the “20 percent” who operate above the maximum allowable output power (by far the biggest problem), erect antenna structures in excess of permissible limits, or take it upon themselves to “broadcast” opinions, music or sound effects, preventing others from utilizing the airwaves.

Help is on the way from municipalities, which are now filing “nuisance complaints” against those operators who continue to cause these problems after being contacted by the FCC. Landlords of renters who operate illegal CB systems (where the landlords have been made aware of the situation by the FCC) are being warned that if a delay in 911 emergency services—resulting in an unnecessary death—is found to have been caused by phone interference from a CB, they also may be named in a lawsuit.

If this situation continues to worsen, and with the great demand for the limited airspace still available, we may see legislation introduced to reallocate 27 MHz for other purposes. Amateur operators police themselves to keep the very few among them who violate regulations off the air. It would be a welcome relief to those of us who deal with it on a day-to-day basis to have some help from those responsible operators who are also tired of these problems.

Our Philadelphia bureau welcomes comments on this matter.

(signed) John Santy
Public Affairs Agent

Well, it seemed pretty obvious that Santy had some things on his mind, so I gave him a call, and we had a long, friendly conversation. He told me that fully 80 percent of the interference complaints that the FCC receives “involve CB radio,” and he seemed clearly frustrated by that fact.

He was surprised, however, when I told him that most of the CBers I know are as anxious as he is to rid the air of overpowered operators. I pointed out that there are literally thousands of CBers who take the time to monitor Channel 9 to help people who need emergency services or require travelers assistance, and that there are millions of CBers who simply want to use 11 meters as a means of communications.

But that isn’t the end of the story...not by a long shot. At just about the same time that Santy’s letter arrived, a friend sent me a copy of a notice from the FCC that had been posted on the Internet.

It said in part: “The [FCC] alone receives approximately 30,000 complaints a year of interference to home electronic equipment. Since it is not feasible for the commission to attempt to resolve these complaints, it is our policy not to investigate interference to home electronic equipment.” Santy, however, told me that they do investigate interference complaints, particularly when they have been routed through a member of Congress...because Congress approves the FCC’s budget.

The FCC notice, from the Compliance and Information Bureau...
The FCC would solicit participation from local electronic repair service organizations.

Training would be provided for resolving these kinds of interference problems. Training could come from the FCC, manufacturers or industry associations, etc. Once a training course has been completed, the service shop then could be certified as qualified to provide interference protection to electronic equipment.

The FCC would include a list of qualified technicians with the self-help information they currently mail out in response to interference complaints.

As part of the program, if the service shop determined the interference could not be resolved by filtering and was caused by a violation of FCC rules and regulations, specific information would be provided to the FCC by the service shop. The FCC then would investigate the situation.

In some ways, this is not a bad idea, but it does have an inherent flaw. It says nothing specifically about protecting emergency frequencies such as CB Channel 9 and others. Surely it is more important to make sure that someone’s call for help can be heard than to make sure that someone can watch TV or listen to music.

A Modest Proposal

I’d like to propose an alternative solution—one that would help folks in trouble: CBers, the FCC and people with interference problems—the establishment of a national Citizens Radio Corps. The CRC would have two missions:

• To monitor and, when appropriate, respond to distress calls on frequencies that are available to the public. These are: CB Channel 9 (27.065 MHz), the marine distress frequency (VHF Channel 16, 156.800 MHz), the aircraft emergency frequency (121.50 MHz), and the General Mobile Radio Service travelers assistance frequency (462.675 MHz). CRC operators would be trained and licensed to provide appropriate emergency response communications on these frequencies.

• To detect and resolve interference problems on any of these frequencies. With proper training and licensing, CRC operators would be empowered to locate stations that may be causing interference, to inspect those stations and to issue notices of violation. CRC operators would be volunteers, although they probably should be protected by various forms of government-issued insurance in case they are injured or sued as a result of their participation in the Civilian Radio Corps. In addition, there would be stiff penalties for any CRC volunteer who violates his or her privileges.

The CRC would resolve a number of problems: it would put more people in the business of monitoring emergency frequencies, which would be of great benefit to the public, and it would empower those who monitor to protect those frequencies at a time when the FCC is shrinking in size. At the same time, it would likely rid the air of CBers and others who are operating their radios in such a way that it causes interference.


CB To The Rescue

I am indebted to News Briefs, the newsletter published by Tri-County Assistance, P.O. Box 111, Cohoes, NY 12047, for the following item that drives home the effectiveness of CB Channel 9:

"Imagine yourself, cruising along on your way home after a long day at work, on a sunny Thursday afternoon. Everything is fine so you start to relax and enjoy the warmth of the late-day sun shining through the car window. Suddenly you realize your vehicle is out of control and you are about to crash. Wham! There you are in the ditch and in pain. You want help. You need it and it can't get there too soon. Little do you know that several calls already have been placed by passing motorists to the state police on 911. Maybe it is best that you don't know, because they are being dispatched to the wrong location—twice!"

"This scenario is not as far fetched as it may seem. In fact, it happened on Interstate 87, the Northway, in Half Moon, N.Y. Fortunately, this is a very active area for CB Channel 9 and within seconds of the crash, several of the 'regulars' had stopped at the scene and established contact with a nearby base. 'Break 9, we've got a rollover in the ditch, 87 northbound south of Exit 8,' Larry Zuravin reported of and on the way to the scene—the right one this time."

'With state police still on the phone, Larry got back on the air with Empire Central REACT. 'Repeat the location,' replied the base. 'State is looking for it south of Exit 10 and south of the twin bridges.

"'We are right at the nine mile marker,' Larry insisted. 'South of Exit 8, the car is in the right-hand ditch, and I am getting out to check for injuries. Stand by.'"

"In the silence that followed, the base monitor contacted the state police and updated them on the correct location of the accident. The patrol cars soon were redirected by their dispatcher. "'Just the driver in the car,' Larry said, 'we need an ambulance!' It was dispatched before police got to the scene and arrived many minutes before it would have if it had not been for CB and the well-practiced local operators on Channel 9. Not only were we able to confirm the location and that there were injuries, which sped aid to the right scene, but during the backups that lasted more than an hour, CBers were able to inform motorists about the delays so that they could avoid them."

Next, time, we'll dip into the mailbag and see what other surprises are there. Until then, be sure to write me here at POPCOMM.
NRD-535D

"Best Communications Receiver"
World Radio TV Handbook 1992

"Unsurpassed DX Performance"
Passport to World Band Radio 1992

Setting the industry standard once again for shortwave receivers, the NRD-535D is the most advanced HF communications receiver ever designed for the serious DXer and shortwave listener. Its unparalleled performance in all modes makes it the ultimate receiver for diversified monitoring applications.

Designed for DXers by DXers! The NRD-535D (shown above with optical NVA-319 speaker) strikes the perfect balance between form and function with its professional-grade design and critically acclaimed ergonomics. The NRD-535D is the recipient of the prestigious World Radio TV Handbook Industry Award for "Best Communications Receiver."

- Phase-lock ECSS system for selectable-sideband AM reception.
- Maximum IF bandwidth flexibility! The Variable Bandwidth Control (BWC) adjusts the wide and intermediate IF filter bandwidths from 5.5 to 2.0 kHz and 2.0 to 0.5 kHz—continuously.
- Stock fixed-width IF filters include a 5.5 kHz (wide), a 2.0 kHz (intermediate), and a 1.0 kHz (narrow). Optional JRC filters include 2.4 kHz, 300 Hz, and 500 Hz crystal type.
- All mode 00 kHz - 30 MHz coverage. Tuning accuracy to 1 Hz, using JRC's advanced Direct Digital Synthesis (DDS) PLL system and a high-precision magnetic rotary encoder. The tuning is so smooth you will swear it's analog! An optional high-stability crystal oscillator kit is also available for ±0.5 ppm stability.
- A superior Front-end variable double tuning circuit is continuously controlled by the CPU to vary with the receive frequency automatically. The result: Outstanding 106 dB Dynamic Range and +20 dBm Third-Order Intercept Point.
- Memory capacity of 20C channels, each storing frequency, mode, filter, AGC and ATT settings. Scan and sweep functions built in. All memory channels are tunable, making "MEM to VFO" switching unnecessary.
- A state-of-the-art RS-232C computer interface is built into every NRD-535D receiver.
- Fully modular design, featuring plug-in circuit boards and high-quality surface-mount components. No other manufacturer can offer such professional-quality design and construction at so affordable a price.
New Experimental Stations

KQ2XYW, Radio Sound Inc., CB channels. Fixed and mobile in Louisville, Ky. Test and demonstration prior to export.


KQ2XYM, Rockwell International Corp., 123.425 MHz. Fixed and mobile in Richardson, Texas. Conduct experiments integrating GPS with traditional navigation systems and enhancing GPS systems to improve their accuracy and suitability for use in air traffic control.

KS2XCH, LoJack Corp., 173.075 MHz. Fixed and mobile in continental United States. Operate one temporary fixed unit and up to 10 mobile units to demonstrate the potential benefits of the LoJack stolen vehicle recovery system to state and local law enforcement agencies and to provide assistance during the system design.


KF2XDL, Princeton University, 460.500 MHz. Fixed and mobile in Palestine, Texas, and Princeton, N.J. Communications support of balloon-mounted telescope.


KS2XBV, Advanced Digital Technologies, 902-928, 2400-2483.3 and 5725-5850 MHz. Fixed and mobile nationwide. Perform field and laboratory testing of spread-spectrum equipment.

KS2XCA, Motorola Inc., 901-902, 930-931 and 940-941 MHz. Fixed and mobile in Fort Worth, Texas. Research and experimentation of time-division duplex high-speed data transmission.

KS2XCS, Lockheed Martin Corp., 902-928 and 2400-2483.5 MHz. Mobile in Middle River and Aberdeen, Md. Provide a video link from remote-controlled robots.

KS2XBX, Colorado Department of Transportation, 915 MHz. Mobile in Colorado. Testing to determine the usefulness of video imagery and 35mm photography of various types of highway engineering problems by using a radio-controlled model airplane as a camera platform.

KE2XPE, Mitre Corp., 966 MHz. Fixed and mobile in Bedford, Mass., Salt Lake City, Utah, Melbourne, Fla. Test and development in support of air-air and air-ground surveillance.

KS2XBO, State of Florida, 1626.5-1660 MHz. Operate five INMARSAT-M terminals.


KQ2XYG, PCS Primeco L.P., 1850-1990 MHz. Fixed and mobile in Fort Lauderdale, Tampa, Jacksonville and Orlando, Fla.; Milwaukee, Wis.; Chicago, Ill.; Kenner, La.; Irving, San Antonio, Houston and Austin, Texas; Honolulu, Hawaii, and Richmond, Va. PCS tests.

KS2XBW, AT&T Wireless PCS Inc., 1850-1990 MHz. Fixed and mobile nationwide. Determine propagation characteristics of frequencies in metropolitan trading areas (MTAs) where AT&T was successful bidder for broadband PCS licenses.

KS2XCD, Harris Corp., 1920-1930 MHz. Fixed and mobile in Redwood City, Calif. Test wireless PABX system at Farinon location.

KQ2XWO, CTA Space Systems, 2075 MHz. Fixed in McLean, Va. Utilize Payload Operation Control Center in Tyson's Corner, Va., to provide command, control and communications with the NASA-sponsored METEOR spacecraft.

KE2XNV, TCOM L.P., 2202.5, 2210.5, 2280.5, 4575, 4650 and 4725 MHz. Fixed and mobile in Elizabeth City, N.C. Communications supporting aerostat radar tests.

KC2XFM, Iotex Communications Inc., 2400-2483.5 MHz. Fixed and mobile in continental United States. Operate direct-sequence spread spectrum T1 links.

Deadline Set For Older Aero Radios

The Federal Communications Commission has received numerous inquiries from the general aviation community concerning the continued use of VHF aircraft radios with 50-kHz channel spacing (320-channel radios). As of Jan. 1, 1997, these radios no longer will be authorized for use in FCC-licensed aircraft stations. New or replacement VHF aircraft radios must utilize 25-kHz channel spacing (720-channel radios) and meet the required frequency tolerance.

Channel spacing and frequency tolerance specifications for a specific radio may be found by consulting the user's manual for the unit, by contacting the manufacturer or by consulting a local aircraft radio dealer or repair shop.

The FCC first authorized the use of spectrally efficient 25-kHz-channeled VHF aircraft radios in 1972. Nineteen years later, the commission amended its rules in 1991, to eliminate the use of 50-kHz-channeled VHF aircraft radios by 1997. Such radios usually are found in private, single-engine aircraft operating in rural areas. In that proceeding, the Federal Aviation Administration, Aeronautical Radio Inc., the Air Line Pilots Association, the Air Transport Association and the National Business Aircraft Association Inc. all strongly supported the elimination of the 50-kHz-channeled radios.

The commenters noted that users of the older radios would have limited access to FAA air traffic control channels, would experience flight delays in FAA-controlled air space and would be unable to utilize newly available aviation frequencies in the 136-137 MHz band.

Issues Raised Over EAS Replacing EBS

The FCC has addressed issues raised on reconsideration of the report and order concerning the replacement of the Emergency Broadcast System (EBS) with the new Emergency Alert System (EAS).

On Nov. 10, 1994, the commission adopted a report and order and further notice of proposed rulemaking that replaced the existing EBS with the new EAS. By that action, the commission required broadcast stations and cable television systems to install and operate new equipment for national alerts and relaxed requirements for non-commercial educational
As changing world events bring us all closer, it's exciting to get the news direct from a foreign station. So tune in and listen - even when you're 12 time zones away. The drama of survival efforts. Crisis monitoring when conventional communications break down. The uncertainty of economic trends. And colorful cultural activities.

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Class D FM stations and low-power television stations.

On reconsideration of the report and order, many petitioners requested changes to the rules regarding alternative use of Radio Broadcast Data System (RBDS) subcarriers for EAS alerts, cable television system override of broadcast signals during EAS alerts, or time extensions for the implementation of the EAS requirements.

Upon review, the commission declined to incorporate the RBDS in the EAS rules. The commission also declined to make modifications to the FM broadcast rules to accommodate RBDS. The commission rejected the petitioners' argument that requiring video interrupt and audio override of broadcast signals by a cable system on which they are transmitted violates the copyright law and the must-carry rules.

Therefore, the commission will not require cable systems to install more expensive selective override equipment.

Additionally, in light of the technical adjustments and clarifications being made and to allow implementation to occur in a later budget year, the commission delayed the implementation date of the EAS for broadcasters to Jan. 1, 1997. The commission, however, encourages all broadcasters and cable television systems to proceed with implementation of the EAS as expeditiously as possible.

Internet Access to Shortwave Schedules

The FCC's International Bureau announces that information about U.S. shortwave international broadcasting stations is now available on the Internet. The FCC oversees the frequency coordination process for private U.S. shortwave broadcasters, developing consolidated schedules that are coordinated internationally.

These schedules change on a seasonal basis at least twice a year—with additional refinements made intermittently. Because of the frequency and complexity of the updates, use of the Internet will make more efficient the FCC's distribution of current information to shortwave broadcasters and the general public. The process is now handled manually.

Available data includes station operating parameters, seasonal operational frequency schedules, international coordinated frequency schedules, current issues and announcements, and other related material.

The information is available in two ways. Using the World Wide Web: A new set of web pages has been added on the commission's Internet host that will provide access using commonly available WWW navigators such as Mosaic and Netscape. The pages then can be accessed by setting the location to: http://www.fcc.gov/Bureaus/International/WWW/HF_broadcasting/hf.html.

Alternatively, you can access the FCC welcome page at http://www.fcc.gov/Welcome.html and follow the links to the International Bureau—Hot Topics—HF broadcasting.

Using file transfer protocol, or FTP: If a WWW browser is not available, the files can be retrieved using FTP. The commission's FTP server is ftp.fcc.gov. Login as "anonymous" and use your e-mail address as a password. HF files can be downloaded from the /pub/Bureaus/International/WWW/HF_broadcasting directory.

HF schedules and station parameter files are located in this directory and have a "txt" file extension.

FCC Revises Tariff-Filing Rules

The commission amended its rules to require domestic, nondominant common carriers to file tariffs containing specific rates rather than rates expressed as a range of maximum and minimum charges. The action is in response to a decision by the U.S. Court of Appeals for the D.C. Circuit to vacate the commission's 1993 Nondominant Filing Order, which permitted domestic, nondominant common carriers to file tariffs containing rates expressed in a manner of the carrier's choosing, including a "reasonable range of rates."

The court stated that allowing carriers to express their rates as a range of charges violates the Communications Act of 1934, which requires every common carrier to file "schedules showing all charges."

Based on the extensive record developed in the rulemaking that preceded the order, the commission again concluded that the significantly streamlined tariffing requirements for nondominant common carriers continue to serve the public interest by affording these carriers increased flexibility to meet their tariff-filing obligations. The commission construed the court's decision as invalidating only the range of rates provision. Accordingly, the commission reinstated all other tariff-filing rules for domestic, nondominant common carriers adopted in the Nondominant Filing Order.

The commission also amended its rules to delete references to the FCC's forbearance policy that are inconsistent with earlier court decisions vacating that policy and to implement changes made by erratum to the Nondominant Filing Order, which had been erroneously omitted from the Code of Federal Regulations. Finally, the commission denied a petition for partial reconsideration of the Nondominant Filing Order and dismissed as moot an application for stay of that order.
THE MONITORING

WRV—Radio Virus, was picked up by Haas on 6955 at 2205 with rock ‘n’ roll and a comedy sketch by Feinstein Theater. Also an AIDS announcement. The host was Pete Pirate.

Friday Radio, “celebrating the weekend,” was another Pearce logging, on 6954.5 USB at 2345. A mix of music and comment, mostly about the joys of the weekend vs. the drudgery of the workplace. Lots of shouts of “Friday!” and “It’s the weekend!” “We’re going to drain your mind of the mental paralysis of the week-day grind.”

WMPR, heard by Pearce on 6955 at 1805, with what Dick describes as “an incredible roller coaster signal.” Many pretty instrumental tunes, none announced. Closed by saying “Greetings KNBS and all the other pirateers on the frequency. This is WMPR with a test transmission. Goodbye from WMPR.” No address given.

Would you guess that 6955 is the place to park your dial these days if you want to hear pirates? I think this is the first time that all the logs were on one frequency, give or take a few tenths. There were a lot of unidentifieds this month but no room to fit them in. Sorry.

Keep those great reports headed my way! QSL copies also are needed for use as illustrations. Thanks!

Synchronous AM!

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CIRCLE 67 ON READER SERVICE CARD

You Should Know (from page 42)

screen. I quickly found out that ACARS systems will often send data messages that aren’t always readable. Some of these are computer housekeeping and others just weren’t programmed into my reader for display. As the hobby of reading data bursts and ACARS expands, you can bet that the hobby market will demand and get better terminal units and improved data-reading capability.

You will be limited by your listening location and equipment. Remember, aircraft communications normally are considered “line-of-site” VHF transmissions. The ground station will not be readable unless you live near the ground transmitter site, probably located at the airport. Aircraft transmissions, especially if the plane is at high altitude, can be received from a distance of 200 miles away.

Monitoring data transmissions and the interest in this subject is expanding at a rapid pace. Before long, data readers will be a common item on the hobby catalog menu and on the listening equipment table of most serious hobbyist. This can be an exciting and interesting part of the communications hobby. You must do your homework to get full enjoyment from ACARS, but information is available. I hope I have given you just a bit of insight into what is out there on ACARS.

Pirates Den (from page 67)

Greatly improve reception with the time-proven High-Fidelity SE-3 Mk III product detector. Eliminates selective-late distortion and getting through phase locked synchronous detection. Can receive one sideband at a time to minimize interference.

All radios adaptable to SE-3 external detector/amplifier. Presently used with Collins, Drake, Icom, JRC, Kenwood, Racal, and Watkins-Johnson. SE-3s start at $449.00. New R-69000 6, 4, and 3 kHz AM filter modifications! For Racal & JRC filters 16, 8, 6, 3.5, 2, 1, 1.0, 0.25 kHz.

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All the CB transceivers, base, mobile and walkie-talkies, many with photos—ALL with suggested retail prices—AND dozens of miscellaneous accessories, from antennas to microphones to complete your CB installation!


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www.americanradiohistory.com
All emergency mobile communications vehicles should have a dedicated, inexpensive computer for weather facsimile reception. System requirements are minimal: IBM compatible (386 and up), 640 KB RAM; hard disk preferred; CGA, EGA, VGA or Hercules graphics; serial port (COM 1 to COM 4).

As you can see, almost any type of tabletop or laptop computer can serve as a weather facsimile receiver.

There are three ways to receive weather facsimile satellite imagery and weather forecaster charts over the air. Mariners prefer high-frequency weather facsimile reception because many weather officials draw out important ocean wind and weather forecasts found on weather charts by hand. You need a 3-30 MHz SSB receiver to capture these long-range broadcasts.

But for disaster communication teams going into areas of the United States decimated by a catastrophic storm or other type of disaster, direct satellite weather facsimile reception is preferred.

Polar orbiting satellites, called low earth orbit satellites, circle the earth from north to south up about 500 miles, giving incredible infrared and visible light images of the earth with resolution showing features as small as 1 kilometer! A typical pass will offer an image covering 2,500 by 1,500 miles, and you get between four and six shots a day on and around 137.5 MHz.

Your receiver is a modified wide-band scanner on 137.5 MHz, tied into a VHF antenna that offers gain up to the sky.

The antenna technically is called a quadrifilar helix, and is optimized for overhead polar satellite reception with an internal 8 dB GaAsFET preamplifier. Your total receiver-antenna cost is about $300, plus another $200 for the computer program and the tiny analog-to-digital COM port plug. The program also contains a map generator that will create a map of any scale centered anywhere on earth, so you can spot latitude and longitude lines for easy reference. Because this is real-time imagery, you can spot incoming weather systems that could be a threat to your ongo-
ing emergency operations program.

The third way to receive weather facsimile imagery is from geostationary satellites that transmit in the S-band microwave region at 1691 MHz. These satellites send a complete image every five minutes, and about every hour you get a couple shots of the visible weather plus infrared imagery over the United States. Five minutes later, you’re looking down at the Red Sea, then Japan, Asia, then the Sahara Desert, and about 50 minutes later, here come two more shots of the weather over the United States, along with superimposed geographic state borders.

Two geostationary weather satellites serve us: one parked at 75 degrees west and a new one, GOES 9, parked at 135 degrees west. The United States comes in from two different perspectives, and the resolution is so clear that if you spot a cloud on your screen, you can even see it when you step outside of your emergency communications command post.

At 1691 MHz, we use a loop Yagi that is easily aimed and fixed at either satellite. Critical positioning to tune in the geosynchronous satellite is not required, but the antenna must be aimed at the bird. The loop antenna is about $150, but the big expense is in the downconverter from Quorum that takes 1691 MHz and downconverts it to that wide-band scanner at 137.5 MHz. The scanner then outputs to the analog-to-digital plug that goes into your computer. You also may want to check into OFS WeatherFAX for capturing weather satellite imagery. Among much merchandise, look into the company’s PCMCIA-convertible capture board and full-function software. Call or fax (919) 847-4545 for more information.

Quorum Communications, 8304 Esters Blvd., Suite 850, Irving, Texas 75063, (800) 982-9614 is one of the biggest pro-
ducers of weather facsimile equipment for emergency communications centers. They even have a “big board” computer system where the receiver actually is built on the board that fits inside of larger computers. For laptops, the 137.5 MHz output is from a dedicated wide-band modified scanner to accept the wider bandwidth of a normal narrow-band FM signal.

Three of the most popular low-priced systems are available from Software Systems Consulting in San Clemente, Calif., at (714) 498-5784; AEA in Lynwood, Wash., at (800) 432-8873; and from MFJ in Mississippi, at (800) 647-1800. They have individual or combined programs that can work on high-frequen-
cy weather facsimile reception, VHF direct satellite polar-orbiting reception at 137.5 MHz, or geosynchronous 1691 MHz down-converted to 137.5 MHz satellite reception capabilities.

Forecasting the weather by observing in-
coming storm fronts is important to emerg-
ency personnel working a disaster area. Weather facsimile also can spot threaten-
ing conditions where cold and warm fronts might collide over your disaster-working area. If your computer has color, you even can determine storm level altitudes to judge whether or not the potential of tornadoes exists. Hurricanes stand out clearly and can be stored on the hard drive as a freeze-
frame progression of active weather updated every hour.

Your onboard computer—laptop or fixed—is the main part of your weather forecast station. Add a receiver and antenna, and you are ready to produce detailed weather imagery charts. The signals are out there on the airwaves right now, so take advantage of them.
As a Cessna Skyhawk driver, I particularly enjoyed receiving a letter from Donald R. Richmond, an MD-80 pilot for Alaska Airlines.

Don included a copy of the ARINC-1 chart from Jeppesen Sanderson Inc., the aviation chart company.

The ARINC-1 chart is a map of the United States showing the primary VHF airband frequencies used by Aeronautical Radio Inc. (ARINC) to communicate with commercial airliners flying from city to city.

Don also offered the following great explanation of why and when air crews use these frequencies: "Normally, upon reaching cruise altitude, a crew will switch from the local company frequency at the departure airport to an "appropriate" ARINC or company en route frequency.

"Federal regulations say this en route frequency must enable two-way communications between the aircraft and the company’s dispatch office.

"When scanning in your local area, the communications you normally hear on an airline company frequency are between the aircraft and the local station operations office, which is not the same as the company’s dispatch office.

"Each airline has one central dispatch office from which all flights for that airline actually are dispatched, in the sense that a certified dispatcher has completed all the necessary computations (fuel, weather information, etc.) and put the necessary info into a system (usually a company computer link) to get it to the local operations office, where it is reviewed and accepted by the pilot in command of that particular flight.

"Under Federal Aviation Regulation Part 121 (which covers all airline operators except for smaller commuter operators), two people—the pilot in command and the dispatcher—must agree on certain operating parameters for any particular flight.

"They must agree on minimum fuel, destination weather, alternate airport weather and a number of other factors.

"Normally, all this is 'canned' and only changes necessitated by daily events enter to change the dispatch, i.e., if the weather is really good you may be dispatched without an alternate airport and thus can go with less fuel; or, if the weather is really bad your alternate may be so far away that a substantial increase in fuel is required.

"The bottom line to all this is that both people are involved in the planning and execution of every flight, and both must agree to any changes that occur after takeoff.

"It is this dispatch office that also maintains the FAR-required flight following capabilities, to inform a flight that is en route of any significant changes to the original dispatch.

"It is primarily for this en route flight following that ARINC is used, however that does depend on the individual airline. Some maintain their own radio network that conforms to their particular route structure.

"Prior to working for Alaska Airlines, I flew for Eastern and they had their own en route network. Often the local frequency was the same as the en route frequency. As long as the central dispatch office can reach the aircraft while en route, the requirements are met.

"ARINC simplifies the operation in the sense that if the dispatch office needs to reach the aircraft, they call ARINC, give the wanted aircraft’s SELCAL code, and ARINC will get the flight on the radio and patch the radio communications over the phone line back to the dispatcher.

"Of course, this works just as well going from aircraft to dispatcher (or maintenance, if that is the case). The pilots call on the ARINC frequency and request a patch to their company dispatcher (or maintenance base) and in seconds they are talking with the people they need.

"If you recall the crash of the United Airlines DC-10 at Sioux City, Iowa, several years ago, that crew spent a good deal of time talking with in-flight maintenance through an en route patch via ARINC, trying to get help solving a problem that never was supposed to happen.

"Most communications en route are out of the ordinary, but certainly not like that. Weather problems, mechanical problems and medical emergencies make up most of it. The most unusual one I have heard was a Continental Airlines captain getting a patch to his crew scheduling, informing them that when he landed at Los Angeles International Airport he was going to retire right then and there and for them to get someone else for the return leg."
“Direct communications with the dispatch office via ARINC is not usually the case when the aircraft can talk to a local operations office for their airline.

"But if it were a difficult situation, one where direct communications from the aircraft to the dispatch office was needed to be able to deal with the situation, and not use a third party as a message relay, ARINC would have been used.

“A maintenance problem would be an example of such a situation. Use of a third party relay is not consonant with the technical details of the problem can be a problem all by itself.”

Don, this chart’s a real keeper, and I’m adding it to the reference material I keep handy next to my radios in a three-ring binder.

ARINC’s nationwide radio coverage is provided by a network of remote transmit-receive sites. Because the radio operators are located in ARINC’s San Francisco headquarters, air crews normally use the call “San Francisco Radio” when calling ARINC.

Here’s a list of the frequencies shown on the chart for Aeronautical Radio Inc.’s en route VHF frequencies (all in MHz, AM mode): 131.300, 131.650, 129.400, 129.850, 129.450, 130.200, 131.800, 130.400, 129.350, 128.900, 130.800, 130.700, 130.425, 131.950, 131.175 and 129.900.

Because these frequencies are in use by aircraft flying above 20,000 feet, communications often can be monitored from hundreds of miles away.

Rapid City Freqs, Fast!

Brian Mitchell of Rapid City, S.D., attended a summer air show at Ellsworth Air Force Base and was lucky enough to get a peek inside the Rapid City-Pennington County Mobile Command Post, which was on display.

Brian says the command post is equipped with VHF and UHF radios, and the VHF rig has more than 70 channels preprogrammed, including frequencies for the sheriff and fire departments for all the adjacent counties, for federal marshals, the U.S. Forest Service, some military installations and even a few channels from neighboring Wyoming.

A new frequency in use in the Rapid City area is the Sheriff’s Office mutual aid frequency of 155.670 MHz. According to Brian, this frequency is cross-banded to 453.900 MHz, which is used by Rapid City police.

Other Rapid City area frequencies include Rapid City police on 453.900, 453.100, 453.650, and 453.950; and the Sheriff’s Office on 155.670, 155.610, 155.550 (primary), 158.790, 155.670 and 155.310.

Brian must be a real aviation buff, since he also attended the Reno Air Races.

Brian, I’m jealous. I’ve been to a lot of air shows, but that’s one I’ve always wanted to see, and never have. Love those Mustangs!

But if I ever get the chance to go to Reno, you can bet that thanks to Brian my scanner will be loaded with the following frequencies: control tower, 126.400; ground control, 121.050; air-to-air, 123.450; PA system, 122.725, and automated weather on 135.175 MHz.

Yosemite Scan

“Big Bill” of Bakersfield, Calif., found himself in the middle of the action recently when during a vacation trip to Yosemite National Park he discovered that park rangers were searching for a fugitive who assaulted a female ranger. Bill says other rangers were fighting a 200-acre forest fire in the park at the same time as the search.

“My old Pro-37 scanner almost jumped off the table as frequencies opened up, one after another,” Bill wrote.

He sent along the following frequencies for Yosemite National Park: firefighters, 172.775, 172.650, 172.400, 172.200, 167.300, 166.850, 166.300, 166.350, 165.850, 165.100; law enforcement, 166.350, 166.300, 166.200, 166.100, 166.000, 165.900, 165.800, 165.700, 165.500; maintenance crews, 151.805; and housekeeping staff, 164.425, 164.525, 164.725 and 165.475.

According to a newspaper clipping Bill included with his letter, the fugitive finally was caught following a 12-day manhunt.

Untangled Web

I received e-mail this month from Mike Odon who reminded me there still are scanner listeners who haven’t discovered the Internet as a great place to find radio-related information.


Cary Calling

An interesting letter came from David Bench in Cary, N.C.

“I have been monitoring public safety frequencies since I was about 6 years old. In those days, the Syracuse, N.Y., Police Department operated on 1950 kHz in what is now the AM broadcast band. I would listen for my dad.

"Later, they upgraded to 39.98 MHz. In the early 1970s, they went to UHF in the 460-MHz area.

"I have long since moved away, first to Jamestown, N.Y., then to San Diego, and I’m now in Cary, N.C. I’ve kept up my hobby, now using a RadioShack Pro-39 and an AOR AR-1000. I also use a Regency HX1200 I got in San Diego. I’ve been buying POPCOMM on and off for about five years and I enjoy the information. I’ve been in the telecommunications business for over 30 years."

David asked about becoming a registered monitor. You can find out about becoming a registered monitor by writing to CRB Research Books Inc., P.O. Box 56, Commack, NY 11725-0056. The distinctive call-sign-looking identifier can be used in your correspondence with radio facilities. It doesn’t give you transmitting privileges, but it does acknowledge you are an active listener.

Unmobile Antenna

A question that comes up regularly is how to improve the reception of scanners (and shortwave radios, too, for that matter) used in mobile homes where outside antennas are restricted.

Twelve-year-old Christopher Riggs of Edwardsville, Kan., has rigged up a set of antennas he says is both unobtrusive and effective.

“For VHF/UHF work, I have a Kenwood RZ-1. This radio runs seven days a week, and is the definition of reliability,” Chris writes.

“For an outside antenna, I took a ProAM Valor SS-100MOT mirror mount and bolted this to the side of the mobile home as close to the roof as I could.

“"To this, I added an Austin Spectra 30-800 MHz mobile antenna. The Austin comes with a 14-inch whip, but I discarded this and added a 21-inch top whip that gives good reception from CB through 900 MHz,” he said.

For added stealth, Chris says he paints all of his antennas flat black. He said the paint doesn’t seem to affect the antenna’s performance.

Write In

Well, that about wraps it up for this month, folks. Keep those cards, letters and pictures coming, and please be sure to let me know your city and state, especially those of you who write via e-mail.

Send your letters to J.T. Ward, Scanning VHF/UHF Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2909. Genie online subscribers may contact me directly by addressing e-mail to JTWard@genie.com.

THE MONITORING MAGAZINE March 1996 / POPULAR COMMUNICATIONS / 81
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