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Radio Netherlands: PIONEERS IN SHORTWAVE BROADCASTING.

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Monitoring Times



Fire in the Mountains

8

by David Frederick

Fighting fires within a national forest, often in rugged and remote terrain, requires an orchestrated team assault. Radio communications are usually the only way for the aerial bombers, ground crews, and headquarters to work together. All you need to follow the action is your scanner and a set of maps.

Going Dutch with Radio Netherlands

14

by Jeff Chanowitz

The Dutch pioneered the way in international broadcasting, being the first to set up a broadcasting service that could be heard in every part of the world. Radio Netherlands continues that spirit of innovation today in technology and programming.



Mastering Military Monitoring

18

by Steve Douglass

Has your lack of success in military monitoring gotten the best of you? Don't give up just yet! Run your equipment and your approach through this check list and see if you've got what it takes.

COVER: A hotshot crew cuts a fire break and sets a backfire.
Photo courtesy of Jerome McDonald, Negrito Hotshots.

An Open Letter to David

by Gayle Van Horn

22

Gayle guides a new QSL enthusiast through the process and pitfalls of QSLing. Here is a basic, proven approach to logging, reporting to stations, and asking for station verification of your reception.

Notes from a Convention Convert

26

R.C.Watts had been DXing off and on for 50 years before he met another hobbyist face to face. After attending a *Monitoring Times* Convention, and then traveling to the European DX Council meeting, he wonders why he waited so long!

And More ...

Thinking about your vacation? Don't forget the radios and a couple of frequency lists when packing. But think ahead and be realistic in your planning; Uncle Skip will walk you through it on p.40. If military monitoring is your passion, Steve Douglass has some advice on how to include it into your vacation plans as well (p.42).

There's more than one way to go scanning at the beach. If you want to pick up a little cash on vacation, check out Bob Grove's review of the Cadillac of metal detectors (yes, they use radio waves, too)—the Fisher CZ-6 (p.92).

Are you into bicycling? Bob Kay has found mobile scanning on a bicycle to be a slick way to do some frequency-hunting on the sly. Check out the Scanning Report for more tips.

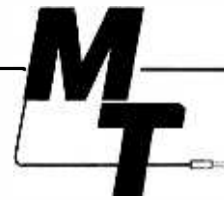
With Galaxy 5 now in place, other changes can be expected in a domino effect as older satellites are retired. As new technology is gradually incorporated, changes are also reflected in equipment and prices to the consumer (p.50), usually for the better.

You'll find the quarterly DX Program Listing on p.62; you may want to copy and keep it near your radio for future reference. The propagation charts on p.88 also include a new feature this month: paths are marked with a (P), which cross the auroral polar zone and are more subject to ionospheric disturbances.

June is the month to go portable, so grab your gear, grab the family and let's spend the summer soakin' up the rays and ridin' the waves—radiowaves, that is!

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LETTERS

On the Technical Side

This month we draw from letters from readers who share experiences, tips and hints on radios.

Barnaby O'Leary of Rohnert Park, CA, writes, "Today I received my April issue of *Monitoring Times* and naturally drank it all in. A story by reporter Bob Bair had the same problem I did on a PRO 2005." (Bair had said, "I could never get the tape out jack to work properly. For some reason, it always activated the tape machine whether anything was coming over or not.")

"The fix is as follows," says O'Leary. "On page 33 of the 2005 manual is the spec sheet which indicates the tape output level as 600 millivolts in 10K Ohms. This is very close to line level, 0dBm (were it 600 Ohms), but most recorders need mike level—40 to 60 dBm. Radio Shack again to the rescue. A 40 dB attenuator RS part #274-300. It has a female phono jack on one end and a 1/8 in. mono plug on the other end. The output jack of the 2005 is a phono jack. The cable needed to join these needs a phono plug on both ends, RS part #42-2365 for 1-1/2 ft. to RS part #42-2368 for 12 ft."

Barnaby, hundreds of PRO 2005 owners out there thank you—and so do their irritated families and the Radio Shack outlets who will get the parts business!

Arnal Cook of Clarksville, TN, took a look at the price of a static discharger (sold by Electron Processing) mentioned in the new products section last December, and said ouch! "The cost of \$40 for a hobbyist is very expensive. I confirmed a low cost (under \$5) nearly identical substitute for the static drain shown in your picture: a gun cleaning brush! Available at hardware stores, K-Marts, Sears, etc., they have many stiff copper bristles held tightly by a central metal twist for rigid support. A gun cleaning rod to give it extra length (if needed) is also available for a few dollars.

"Use large caliber (.38, .357, 45 pistol, 12 gauge or 10 ga shotgun) cleaning brushes to maximize surface area and hence, static discharge. They are designed to screw into the cleaning rod, which itself screws together. Hope this helps other hobbyists achieve professional protection at hobby prices!"

You may have come up with a winner there, Arnal, though you may not have noticed the \$40 charge was for a three-pack. Either way, static discharge is helpful in prevention of lightning strikes. We found a similar device spaced at regular intervals around this Navy

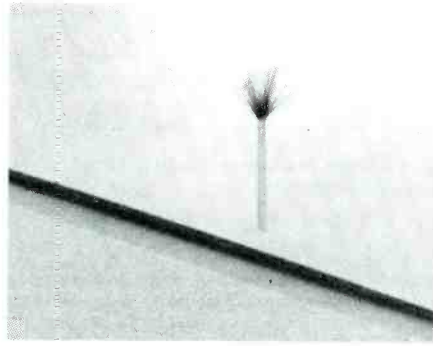


Photo by Harry Baughn

facility in Panama City, FL, only instead of resembling a bottle brush, this one looks like a brush for a snare drum.

Severe interference on all television and radios at his home drove **Stephen Hunter** of Drexel Hill, PA, to ask **Bob Grove's** advice. He followed Bob's first suggestion that he first determine whether the interference originated inside the house or out; and if inside, to isolate the specific circuit breaker.

Steve says, "I isolated the problem to circuit breaker #2; your advice was 'While you are experiencing the interference, connect and disconnect everything possible and wiggle and tap the wiring and accessories. You are bound to find it.'

"Well, I've been wiggling, tapping, plugging and unplugging everything on breaker #2. You were right, I did find it. I flipped a wall switch to the off position: Voila, the static stopped. The bad switch is part of a pair, but the right hand switch controls the overhead light and is not on breaker #2. The offending left hand switch was not, as far as I could tell, hooked up to anything. So I pulled the switch plate, disconnected one of the wires, wire nutted and taped it. What the cable company, the electric company, and my electrician couldn't figure out, you did."

No, Stephen, YOU did! Give yourself a hand!

Expressing the somewhat jaded opinion that the most amazing stories that appear in "Letters" tend to be from young (or new) hobbyists, **Reijo Siivonen** of Rauma, Finland, says he still finds "technically wrong or naive" articles to be interesting.

Apologizing for his English (which I have reworded as well as I could), Reijo could not help responding to **James Tunnell's** account in the February *MT* of the Archer Amplified VHF/UHF/FM portable antenna, which he used on his handheld scanner during the Oakland/Berkeley fire.

"I would never have bought such an antenna," says Reijo. "It is questionable practice. Many scanner receivers have, even without

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such an external antenna, many internal disturbances and it also depends on the scanner or portable technology how well it tolerates the amplified signal.

"There are many other reasons why it is rather useless to install such an active antenna. If you want to use the amplifier it is recommended to install an amplifier which is only for a certain MHz band (e.g. 30-50 MHz or equivalent) and see how bad the negative effects will be. The cheaper the receiver, the poorer it will tolerate the amplified signal. I have tested many of these active antennas and in most cases they are used only to amplify signal losses from long feeding cable. If the amplifier is for very broad band it is certain that strong stations will be heard on many points of the scale (images) or will cause lock-up."

If I understand him correctly, Reijo added he would like to see letters with more meaningful content, not just descriptions and opinions.

Eric Walton now of Vancouver, Canada, has depended upon radio throughout his travels in England, Australia, and New Zealand, but only recently settled down to serious shortwave listening. "After a lot of research I decided on a Sangean ATS803A, with an MFJ 956 tuner, and an end fed inverted L antenna." Eric had opportunities in his travels to experiment with a variety of home made antennas. His results with the simple inverted L have been impressive enough to prompt friends to ask for a diagram, which he has enclosed for your benefit as well.

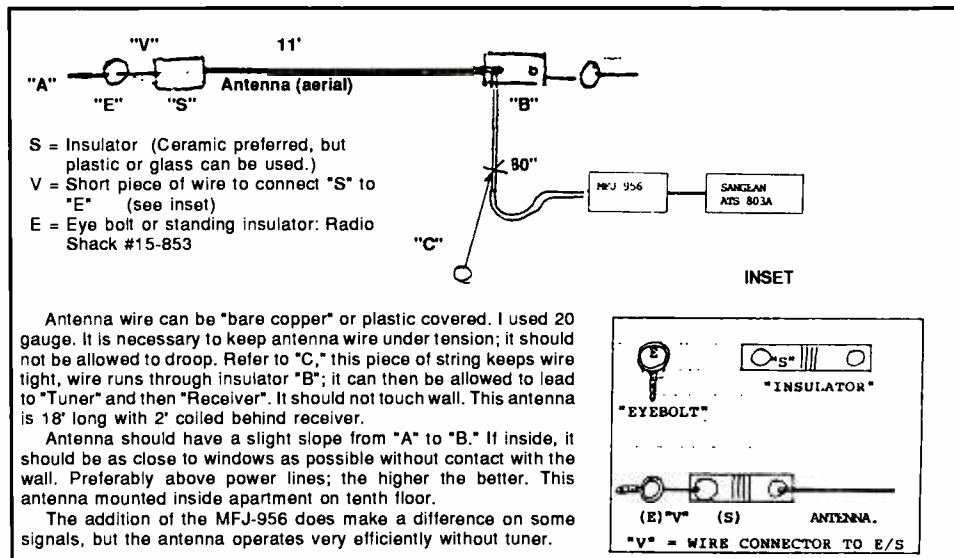
Eric adds, "For many years I had some difficulty passing by a camera store; now it is radio communications stores. Evidently I have been 'bitten by the bug.' However, it is a very worthwhile hobby, not only corresponding with radio stations around the world, but also a way to meet and make new friends."

Bitten indeed; Eric just finished purchasing a Kenwood R5000 and McKay Dymek DA100d Active Antenna. Well, the verdict should be in by now, Eric. How do homebrew and high-tech compare?

FAA Tower

Some details on the FAA tower picture in April's "Letters" arrived from Dale Rothert of Cadiz, Ohio. He says, "The tower is a radar site for the Cleveland Air Route Traffic Control Center located at Oberlin, OH. They have several radars which are fed by landline back to Oberlin and there they are combined by computer to form the radar display the controllers use while handling enroute traffic.

"One reason for the questions and escort of Mr. Walters is the fact that all FAA facilities require security clearance or escort for admittance. They are secured facilities, as damage to



Sketch of inverted "L" end fed antenna (aerial), total length 20'. It should be mounted close to a window, but not touching wall.

them could have impact on national safety and/or security. These folks rely on the equipment working without disruption for the safety of hundreds of thousands of passengers in addition to military flights, including Presidential flights.

"There may well be equipment in the building other than that used for air traffic control, but the ATC gear alone would bring about the security mentioned by Walters."

Radio At the Movies

Cathy Turner's question a few months back regarding movies in which radio played a part elicited these poignant memories from Harvey "Doc" Solomon of Atlanta, GA.

"My vote for the all time best would be *On the Beach*. The scene in the oil refinery where the mysterious transmissions are tracked to a key which is being closed by a Coke bottle lying across the cord of a window shade which is flapping in the breeze and sending a few identifiable characters mixed with gibberish is very dramatic. The actor who then communicates this to the submarine does so in Morse with an excellent fist and at better than 20 wpm. It is an authentic transmission in which he describes the source of the signal and announces he will be shutting down the station.

"Another film in which authentic CW is transmitted was called, I think, *Incredible Voyage*. In the scene where the submarine is miniaturized, the command to do so is in relatively low speed Morse code and is acknowledged by the radio operator with R in CW.

"As a kid I can remember the lead for RKO pictures which included a rotating globe of the Earth with a radio tower at the top from which lightning flashes issued and the sound track

spelled out RKO Pictures in Morse. Those were the days of the newsreel and one very common format included a Morse operator sending high speed CW with a bug. At least it seemed very high speed to me at the time."

Gus Stellweg of Orangeburg, NY, says two old films remain vividly in his mind. "In the 1945 film, *The House on 92nd Street*, William Eythe is an American undercover agent who is supposed to be sending messages via shortwave to Hamburg. He is caught by the Nazis using a transmitter with 2-1/2 meter coils, sufficient to reach only the FBI office in New York City. A National NC-200 receiver can clearly be seen in his radio shack.

"Ham radio also received a big play in *Love Finds Andy Hardy* (1938). A young friend of Andy Hardy (Mickey Rooney) is able to contact a 12 year old ham in Canada and relay a message to Andy's mother who is caring for Andy's seriously ill grandmother. The transmitter is a 'bread-board' affair and QSL cards are visible on the wall. Andy's father expresses continuous amazement at the technical expertise of the young ham. Considering the popularity of the Andy Hardy films, the scene was a great advertisement for amateur radio."

A Happy Ending for CB

It's appropriate that in an issue in which Bob Grove reviews a new walkie talkie transceiver, we publish a short letter from the man who is known as the "father of Citizens and Personal Radio." Al Gross, W8PAL of Chandler, AZ, wrote to express his appreciation for the story of Linda Myers, the handicapped young woman who used her CB powered by her wheel-chair

Continued on page 111

1993 PASSPORT TO WORLD BAND RADIO

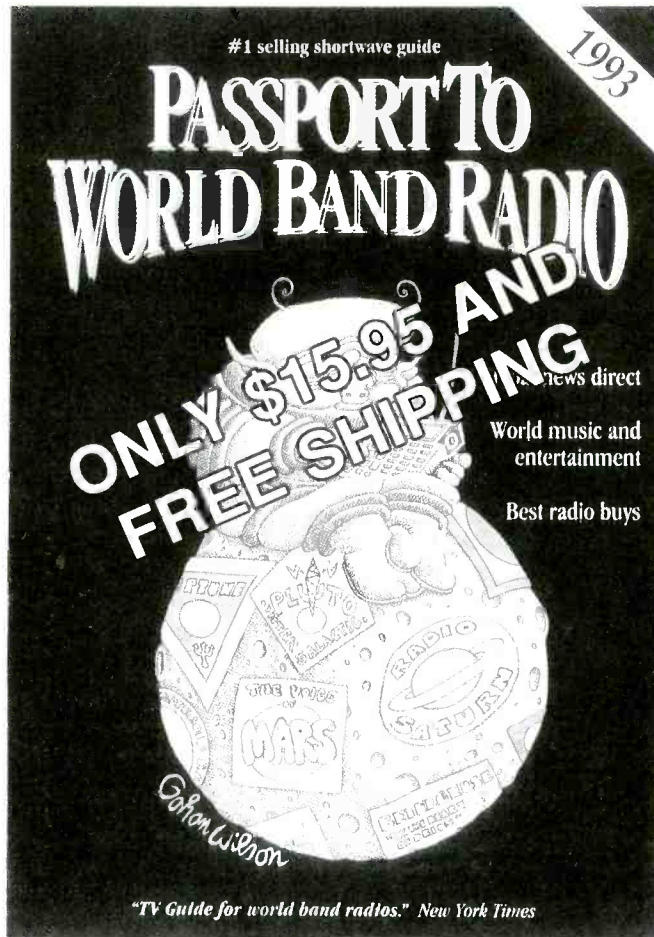
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Disclaimer: Cover picture is subject to change.

Some Dumb Cluck

A radio pirate who has been plaguing Windsor, Ontario, police with early morning chicken clucks, has raised the feathers of police officials. The culprit, dubbed "Chicken Man," usually comes in around 7:00 a.m. making chicken sounds on top of calls about break-ins and illegally parked cars.

Supt. Mike Dagley doesn't think the whole affair is very funny and has warned Chicken Man over the air that he is "playing with fire." According to Dagley, there is always the risk that the daily buck-buck-buckaws will interrupt an emergency call.

According to local newspapers, police say that the man likely has a stolen police radio and is cooped up somewhere in the city.

Balloons Decommissioned

"Fat Albert" is being laid off the job. Radar-equipped blimps used in south Florida to detect drug traffickers have lost their edge, according to an AP report. Customs spokesman Michael Sheehan was quoted as saying "The bad guys are putting much more time and energy into concealing drugs," making the radar sweeps useless.

Five such balloons were decommissioned recently by the Coast Guard and turned over to the Army. The ship-based balloons have been in service since the 1980s, when speedboats and low-flying planes smuggled illegal drugs under the cover of darkness.

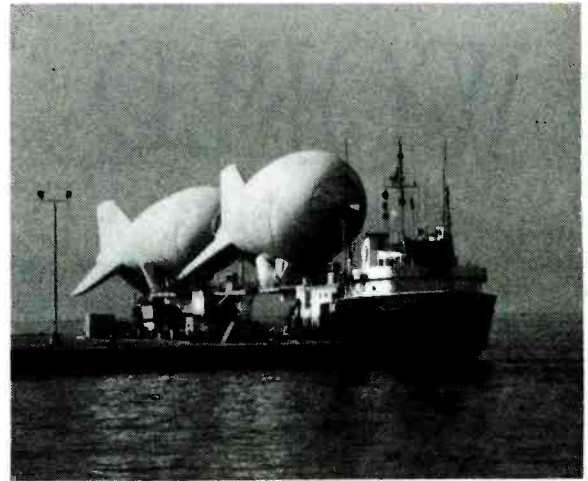
Balloons stationed along remote sections of the U.S.-Mexican border are still in active service.

Perilous Propagation Predictions

James Gray, W1XU, propagation forecaster for 73 magazine, reportedly uses a system pioneered by John Nelson and others, which takes into account planetary positions and conjunctions in addition to solar data. James was quoted in the newsletter *Geo-Monitor* as saying, "Compelling evidence to me is that quakes...and other major geo-physical events either occur simultaneously with or within two days of major alignments between the planets."

"I just finished the June 1992 forecast and I am horrified at what I see." Gray notes particularly conjunctions on or about June 6th, 10th, and 16th and 17th. "The worst is likely to be the 16-17th, which will be shortly after the half-moon."

Two blimps stationed off Key West, Florida, were captured on film by D. House of Lancaster, PA.



Cellphone Monitoring Charged Dismissed

A Fairfield county, Ohio, Common Pleas Court judge has dismissed wiretapping charges against a Lancaster, Ohio, man who used a scanner to monitor and tape cellular phone conversations. Judge Joseph Clark ruled that state law prohibits intercepting oral or wire communications but does not protect cellular phone conversations, which are electronic.

Clark acknowledged that federal law had recently been amended to prohibit interception of cellular phone conversations but that the Ohio legislature has not taken similar action.

Defense Attorney Charles Lantz concluded that "It isn't any more illegal to intercept an electronic communication than it is to monitor a radio broadcast."

Ham Operator Convicted of Fraud

Herb Schoenbohm, KV4FZ, has been found guilty of telephone fraud and faces a minimum of six months to ten years in federal prison. Sentencing will take place the end of June.

Schoenbohm used telephone access codes belonging to Caribbean Automated Long Line Service, Inc., to rack up long distance phone service valued at \$1000.

This case is of interest to radio monitors because of Schoenbohm's high profile as founder of the "Better Amateur Radio Federation" (BARF) and frequenter of the "ham war zone"—14.313 MHz, the International Maritime Mobile Service Net. He purportedly objects to amateur who use the net to avoid telephone toll calls!

Cancer-TV Transmitter Link?

A so-called "cancer cluster" near a British TV tower has led to a call for an inquiry into a possible link between cancer and non-ionizing

radiation. The move follows reports of several cases of leukemia, lymphomas and mental illness near the Sutton Coldfield tower in north Birmingham, England. Sutton Coldfield is listed as the most powerful civilian TV/FM transmitter in Britain.

By studying data from the records of a local doctor in the area, researchers were able to pinpoint seven existing cases of cancer among people living within 400 to 1,500 meters of the tower. Researchers also found a cluster of mental illnesses in the vicinity. According to the *Guardian* newspaper, research shows that mental illness can be linked to fluctuations in magnetic fields. Leukemia and lymphomas have been linked to ionizing radiation such as X-rays and atomic radiation.

The Polish government has decided to begin a study of people living near the collapsed tower of a high-powered longwave station at Konstanynow, near Gabin. "The point," say official reports, "is to establish the ultimate effect of ionizing electromagnetic radiation on the health of the people before rebuilding the tower."

In a related development, a radio engineer who said he was burned by an illegal microwave transmitter has sued a Utah communications company for \$5 million dollars plus damages. Keith Angstadt, the engineer, claims that a jury-rigged microwave transmitter owned by Multicom Telecommunications of Salt Lake City doused him with enough radiation to impair his eyesight and cause possible brain damage.

Five Billion Mile DX

On March 2, 1972, Pioneer 10 was launched into space atop an Atlas-Centaur rocket. The 570 pound craft was designed to operate for a few years, just long enough to fly by Jupiter and snap a few pictures. Today, some 20 years later, the nuclear powered

COMMUNICATIONS

spacecraft is now 5 billion miles away—farther, says Associated Press, than any other human-made object. And it is still beaming radio signals back to earth even as it hurtles deeper and deeper into space.

"The great technical miracle of the whole thing," says Iowa physicist James Van Allen, is that we can receive intelligible data from 5 billion miles away using only 8 watts of radio power."

Pioneer 10 left the solar system in 1983 at a speed of 28,900 miles per hour. Seven of the probe's 11 scientific instruments still work.

Pager Scam

A clever telephone scam is being directed at people who carry pagers. According to Herman Frisch of the Bay Area Scanner Enthusiast club, pager users get a page with the number 212 540 XXXX (where XXXX can be any four numbers). The 212 is the area code for New York City and the 540 exchange acts the same as a 900 number. As a result, when you return the page to the number on your pager, you are automatically billed for a \$55.00 call. Frisch says that the con artists are targeting pager users in the western states.

Revolutionary Elmer

An Australian man who helped set up a rebel radio station on the strife-torn island of Bougainville could face criminal charges when he returns home. Officials from Papua New Guinea lodged a complaint with the Australian government after Sydney amateur radio operator Sam Voron entered Papua New Guinea territory to help set up a radio station for the rebel Bougainville Revolutionary Army. Mr. Voron had told family and friends that he was on a humanitarian mission to Bougainville.

Broadcasters Reach Out

The point of all broadcasting is to entertain, influence or inform its targeted audience, and they constantly strive to further their reach. The BBC is reaching toward Latin America, seeking to establish 24-hour television coverage to that region. BBC World Service Television is looking for a broadcasting partner for the service which could begin by next year, says a report from Reuters.

Joe O'Connell, Director of the Office of External Affairs for the Voice of America, said he had just read Charles Sorrell's article in *Monitoring Times* which reported that the VOA lists no Kurdish broadcasts. Well, now they do, he says. On the 7th of April, in

response to a Congressional mandate, Kurdish became the VOA's 47th broadcast language.

The new Kurdish broadcast is a 15-minute program broadcast at 0300 UTC (11 pm Eastern). Check the Shortwave Guide for frequencies being used by the VOA at that time. The VOA hopes to increase the broadcasting to one hour in the coming months.

Radio Jordan is one of the easier Mid-East shortwave stations for North Americans to hear. In trying to present western-style programming, without compromising traditional Arab values, Radio Jordan is finding Country and Western music to be the least offensive, according to a feature from Reuters.

Station director Jawad Zada told Reuters, "I believe the repertoire of country music has norms and values which are closer to our own." Songs dealing with drugs, sex, or Israeli politics are out.

TV Marti has been reaching out to Cuba again. The broadcasts have nearly all been aired between 3:30 and 6 am in Cuba. The few Cubans who have reported setting clocks to catch the broadcasts found sound and picture both scrambled. Not to be daunted, TV Marti tried airing a half-hour documentary on the fall of communism in Eastern Europe during lunch time. That was jammed, too.

Meantime, Cuba reactivated the 830 and 1100 kHz "AM service to the United States" as "a response dictated by our sense of dignity to the repeated and hostile attempts by the US government to take over our broadcast frequencies." Reader David Shelby reported hearing it as far away as Arkansas, but said that after the first night, 830 was occupied by KTMO Radio in Kemet, Missouri, normally a daytime station only.

After a few days, a truce was apparently called: TV Marti suspended its daytime programming for further study, and Radio Havana has ceased the mediumwave English service broadcasts.

If you see newspaper clippings regarding any story involving the use of radio, send it to Communications, c/o Monitoring Times, P.O. Box 98, Brasstown, NC 28902-0098.

Thanks and credits to: Jim Acre, Steelton, PA; Dave Alpert, New York, NY; Michael Baranich, Warren, OH; BBC Monitoring Service; Don Bice, St. Petersburg, FL; Paul Casey, Kanata, Ontario; John Demmitt, Bellefonte, PA; Jaime E. Faucett, Dayton, OH; Steve Forest, Cincinnati, OH; Herman Frisch, San Francisco, CA; Sam Gillogly, OH; Scott Glick, Sunrise, FL; Ken Greenberg, Skokie, IL; Maryanne D. Kehoe, Atlanta, GA; Keith Lewis, Oldtown, ID; Danny McLaughlin, London, England; Bill Merrrell, Hallstead, PA; Ricardo Molinar, Fort Lee, NJ; Bill Ritz, OH; Even Rolek, Dayton, OH; Clem Small, VT; Keith Short, Columbus, OH; Nick Terrence, Huntington, NY; George Zeller, OH; and "Kevin" from West Linn, OR.

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Fire in the Mountains

By David W. Frederick
Photos by Jerome McDonald

Dawn came early as the ranger arrived at the base of the lookout tower.

She climbed the steps of the tower and thought of how good her first cup of coffee was going to taste that morning. As she began her duty as a lookout for the National Forest Service, she lit the stove to heat water for that first cup of coffee, and then checked the status of the battery system for the two-way radio. She said to herself, "Enough power to last 48 hours, nothing to worry about," and then looked at her watch. "6:45am and not a soul around. Santa Fe will be on the air at 7:00am. Someone to talk to!" as she turned the radio on.

The air was clear as she began to look out across the panoramic mountain vista. She was thinking of last night's thunderstorm, and how it had cleared the air of dust to bring the magnificent view beheld in front of her this morning. As she sipped her cup of coffee, she looked over her shoulder to the North. "Smoke! A fair sized plume at that!" she thought to herself. She scrambled around to the center of the lookout tower and quickly determined the smoke plume's position using the instruments available to her in the tower.

Picking up the radio's mike, she called to the lookout tower located 20 miles to the Northeast. "Red Top, Red Top, this is Cerro Pelado, do you copy?" "10-4 Cerro Pelado, this is Red Top, I copy over," a voice replied. The two lookouts triangulated a position, and the day's work began.

Six hours later, November One Five November Foxtrot began its turn above the 10,000 foot ridge line. Heavily loaded, the Forest Service



Tankers, like this one making a slurry drop, are guided by ground crews and by "Air Attack," a Forest Service official who directs the tankers from a small plane in the air.

bomber's pilot relies on the ground crew to guide him into the fire's hot spots, relaying wind speed and direction information over the radio. The pilot also relies on Albuquerque Center to keep other aircraft—from commercial airlines to civilian aircraft sightseers—out of the way of harm so the slurry bomber can do its job of helping to extinguish the fire.

Radiocommunications plays a critical role in the management of our natural resources, especially in life threatening or large resource loss situations. The above is a seasonal scene in many of the wooded or mountainous areas of the United States under the control of Federal and State Forestry Services, the Bureau of Land Management (BLM) or the National Park Service (NPS). Fires burn many thousands of valuable acres of timber annually, and these agencies are chartered to manage these natural resources.

The use of two-way radio by Federal and State Forestry Services, the BLM and the NPS

can be exciting to monitor for many reasons, but none so fascinating as when fire is involved. Tens of thousands of wild fires are recorded annually by these agencies.

Finding Frequencies

Where do you start looking for frequencies? The best place to start is with a local office of one of these agencies. If they don't know the actual frequencies, or won't give them to you, try a local scanner club. If one does not exist, obtain a new copy of *Police Call* from your local Radio Shack store. Towards the back of this guide there is a section on United States Government radio fre-

quencies. Look here under the name of any National Forests within a fifty to sixty mile radius of your location, and for BLM frequencies for your state.

If these methods don't turn up any frequencies, try searching the U.S. Government frequency ranges. Table 1 can be used as a guide for limiting your search ranges.

Another place to look for frequencies reported to be in use by these agencies is in the frequency exchange section of "The Scanning Report" column of this magazine. Frequencies logged by other readers may also be in use in your area.

Enter into your scanner all frequencies uncovered during your various searches, and listen for new frequencies to be mentioned during the various conversations you pick up. Many times all you will hear are a channel designator such as "F1." However, if they are coordinating with aircraft, they will request the frequency to contact or mention the frequency to which they are changing.

What You Can Expect to Hear

Weather and Manning Class Broadcasts

During the fire season in any national forest, the local weather report and 24 hour forecasts are broadcast to all units and ranger stations in that particular National Forest. The weather reports will include all the normal stuff you may see on your nightly TV news, but with special emphasis on the current wind, humidity and possible thunderstorm conditions as well as those expected for the next day.

The wind and the humidity conditions have a very large bearing on how dry the woods and grasses will be. Any possibility of dry thunderstorms will raise the fire danger to extremely high levels, as dry thunderstorms start a large number of the wild fires. A long range forecast may also be given.

Also, broadcasts of "manning classes" will take place on a daily basis during most of the non-winter season. Manning class is the current staffing that is required to be on call in case a fire happens to start. The manning class system starts at one and goes up to five, with five being the most severe. If you hear a manning class of four or five being broadcast, keep your ears open as the chances of a fire in that section of the forest are very high.

Listen for both the weather forecasts and the manning class transmissions between 4 and 6 o'clock in the afternoon.

Fire Reporting and Verification


At the beginning of this article, two lookouts triangulated a position of a fire. With the use of two-way radios, lookouts like these are able to accurately report fire locations within minutes of spotting them.

In many areas, however, there are no lookouts, and fires are reported to the forest service or other authorities with only a vague description of the fire's location. Forest Service personnel are then dispatched by radio to investigate.

In both cases, they are usually dispatched to an area of six square miles. In many cases where a report is reliable, units can be dispatched to a one square mile area. How is this accuracy achieved? By the use of the Public Lands Survey System, a.k.a. the Township and Range System.


The Township and Range System divided the land using selected north-south lines called principal meridians and east-west lines called base lines. The result of this system is a pattern of nearly square blocks called townships, which measure six miles on a side (36 square miles). Townships are labeled by their position north or south of the base line, and by their range, which

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	\$495	
	\$125	

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Table 1

<u>Forest Service:</u>		
VHF Lo -	36.6700 to 36.7700	5.0 kHz spacing
	38.3700 to 38.8100	" "
VHF Hi -	162.0250 to 162.6125	12.5 kHz spacing
	164.1000 to 164.9875	" "
	165.2625 to 165.5125	" "
	166.2000 to 166.7250	" "
	168.0250 to 173.0250	" "
UHF -	411.2250 to 411.5750	" "
	412.4000 to 412.8000	" "
	415.2250 to 415.5750	" "
<u>State and Forestry Conservation:</u>		
VHF Lo -	30.8600 to 30.9800	5.0 kHz spacing
	31.0200 to 31.9800	" "
	44.6400 to 45.0500	" "
VHF Hi -	151.1450 to 151.4750	5.0 kHz spacing
	159.2250 to 159.4650	12.5 kHz spacing
	170.4250 to 170.5750	" "
	171.4250 to 171.5750	" "
	172.2250 to 172.3750	" "
UHF -	453.0375 to 453.9625	" "

Note: These frequency bands are allocated to more than one government service. Monitor frequencies found, and listen for keys to the agency using the frequency.



Helicopter pilots making belly drops of water on fire spot have a hard time seeing the target and are guided via air/ground radio.



Hotshot crews, consisting of 20 individuals and five handheld radios per crew, await airlift.



A firefighter sets a backfire in Mississippi forest.

is its location east or west of the principal meridian. An example would be Township No. 4 North, Range No. 6 East (abbreviated on maps as T.4N., R.6 E.).

The Public Lands and Survey System further divides townships into 36 sections of 1 square mile each. These sections are numbered from 1 to 36 starting in the northeast corner and going horizontally back and forth across the township, ending in the southeast corner with 36.

So if you hear a broadcast of "Township No. 20 North, Range No. 2 East" (six square miles) followed by "Section 14" (accurate to 1 square mile), you can look on a Forest Service or United States Geological Survey (USGS) map and locate the fire.

Fighting The Fire

When a fire is first spotted and then verified by a trained individual, an assessment is made as to the personnel needed to extinguish the fire. The majority of the time a small two or four man crew is sent in to take care of the fire. You can hear this team working the fire as they communicate to each other and to headquarters using small handheld transceivers.

In locations where there are no roads to the fire, or the fire is expected to flare up at any time, a crew may be flown in by helicopter or dropped by plane. You can hear this equipment being called to service by the regional headquarters on the "zone" frequency.

If the fire is growing swiftly or cannot be contained because of steep terrain or changing weather conditions, a larger scale attack may

occur. When multiple crews totaling 50, 100 or more fire fighters are working a fire, the logistics of this are not unlike the army fighting a small war. They need support such as food and water, a place to sleep and rest, and a field headquarters to coordinate their efforts. This activity can be heard on the National Forest district and regional zone frequencies.

If the frequencies for a particular forest district become too congested with fire traffic, or if the terrain prevents good radio coverage, a local repeater may be set up for working the fire. These repeaters are portable and can be set up in less than a few hours. Be alert for this possibility, and keep an ear open for the new frequency that will be used as the frequency changeover is made.

If aerial bombers are needed, you will also hear them being called up to duty. Nationwide, the National Forest Service has prearranged use of airports within an hour or two flying time of its forests to refuel and reload planes and helicopters. Listen for a frequency that will be used by the "tanker base." On the tanker base frequency you can hear the pilots talk to ground personnel about maintenance of the plane, fuel needs, the hotel where they are going to spend the night or a good place to eat dinner.

Also listen for forest service planes, helicopters and slurry bombers on the FAA center frequencies as they fly to and from the fires. Approach, departure, tower and ground frequencies of the airport where the tanker base is located should also be monitored. You will also hear FAA air space restrictions being placed on the area of the fire and hear aircraft traffic whose routes would take them near the fire steered safely around it by the controllers.

Aids to Your Enjoyment

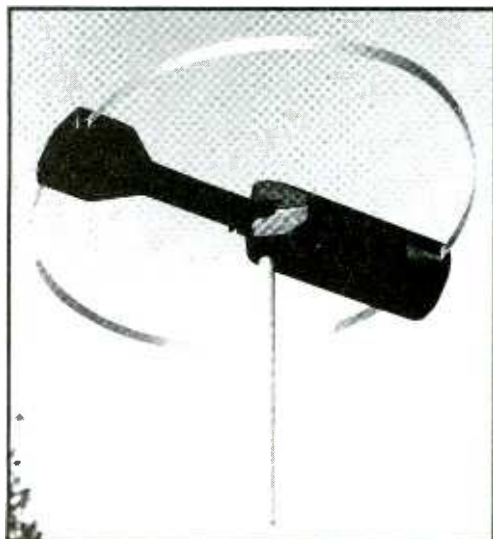
Maps can be a great enhancement to monitoring the radio communications of fire fighters, not only by locating the fire but also seeing the terrain and natural conditions in which the fire fighters are working.



Fire fighting support camp for 75 firefighters during a 1985 Idaho fire. The logistics involved in fighting a fire sometimes resemble those of a small war.

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If you get hooked on listening to your local forestry service district frequencies, you'll want to buy your local national forest district map (or maps) from a local ranger station or the regional headquarters. Ask for forest service map class A, and give the name of the National Forest District in which you are interested. These maps may also be obtained at backpacking or hunting outfitters and other stores that cater to the outdoorsman. The National Forest maps have the Public Lands Survey System markings on them as previously described.

To discover the terrain that the fire fighters are in, you can obtain a USGS topographic map for the area. These are available in different sizes, but I have found the 20x60 minute quadrangle to be the most convenient size to use. The maps are 1:100,000 scale metric, which means that 1 cm on the map represents 1 kilometer (a little over 6/10ths of a mile) on the actual ground. Contour intervals are 50 meters (164 feet), which means that every rise or fall in elevation of 50 meters is represented with a line. The terrain features can be derived from the contour lines drawn on the map. If the lines are very close together and there are many of them, this may represent a steep ridge line or canyon. Features of the area, such as woodlands, lakes and scrub are also shown by different symbols and coloring.

Topographical maps may be available from the sources listed above, or may be obtained from the U. S. Geological Survey (Denver, CO 80225 or Reston, VA 22092).

A State Public Lands Recreation Map is useful in determining where the federal, state, private and public lands are located. Remember, fire does not respect the boundaries that we humans have created, and many times fires will start in private or state land holdings and move into the national forests or vice versa. Public Lands Recreation Maps are available from your state department of tourism or from your state's BLM Office.

Helicopter making bucket drop over a 1988 Yellowstone fire.



Finally, an FAA Enroute Low Altitude map is also a useful tool to have on hand, as it will not only show airports in the vicinity of a fire, but also the FAA Center frequencies that you can listen to for aerial bombers, helicopters and airspace restrictions.

Something I highly recommend and use often is a voice activated (VOX) cassette tape recorder. With a VOX recorder, you can tape anytime you are away from your receiver for later playback. This not only condenses a few hours of listening time down to 45 or 50 minutes per side of tape, but can be a real help in catching those elusive new frequencies when mentioned by those you are monitoring.

Known Frequencies in Use

In the northern two-thirds of New Mexico, I have observed the following frequencies in use (all frequencies in megahertz):

169.1750	Carson National Forest
171.4500	"Central"/"Albuquerque Zone" - Cibola National Forest
172.2250	Cibola National Forest
172.3000	Santa Fe National Forest
168.6500	Albuquerque Tanker Base
168.7000	Fire Fighting Ground Contact
170.0000	" " " "
118.1500	Aerial Bombers/Helicopters
122.9250	" " " "
127.3000	" " " "
168.5500	Interior Department Aircraft
168.2250	BLM Firescene
168.5250	" Albuquerque
169.6500	" Socorro

Give listening to these protectors of our lands a try. You'll not only hone your scanner listening skills, but you'll open up a new world of intrigue. Lightning can strike anytime storm clouds are in the air, or a careless camper may leave a fire unattended, and before you know it, a hardy team of fire fighters may be waging a small war in the mountains near you.

M_T

Jerome McDonald, photographer, is based out of the Cibola National Forest office in Albuquerque, NM. He is also Supervisor of the Negrigo Hotshots out of Gila National Forest in southwestern New Mexico.



Negrigo Hotshots and other hotshot crews being trucked into fire. Rides can be up to an hour long and longer.

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Going Dutch with Radio Netherlands International:



Shortwave's True Pioneering Service

By Jeff Chanowitz

The old saying goes, "God may have created the world, but the Dutch created the Netherlands." With the same determination that allowed the country to be reclaimed from the sea, the Dutch pioneered the development of shortwave and became the first to set up a broadcasting service that could be heard in every part of the world. This pioneering spirit is reflected today in the creative and exciting programs of Radio Netherlands: the Dutch International Service.

From Witte Kruislaan, which is RNI's aircraft shaped headquarters in Hilversum, over 330 employees work hard to produce programming in nine different languages including Dutch, English, French, Spanish, Portuguese, Arabic, Indonesian, Spanish, and Sranon Tongo (the language of the former Dutch colony Surinam). In addition to its news bureau at Hilversum, Radio Netherlands also uses over 80 correspondents abroad to ensure full coverage of late breaking events throughout the world.

Historical Background

It might be surprising that the Netherlands, a tiny country on the northwestern edge of Europe, has an international service which rivals the likes of BBC and Radio Deutsche Welle. Yet, the colonial heritage of the Netherlands, which has played a key role in the country's outward looking philosophy, has also influenced the development of its shortwave service.

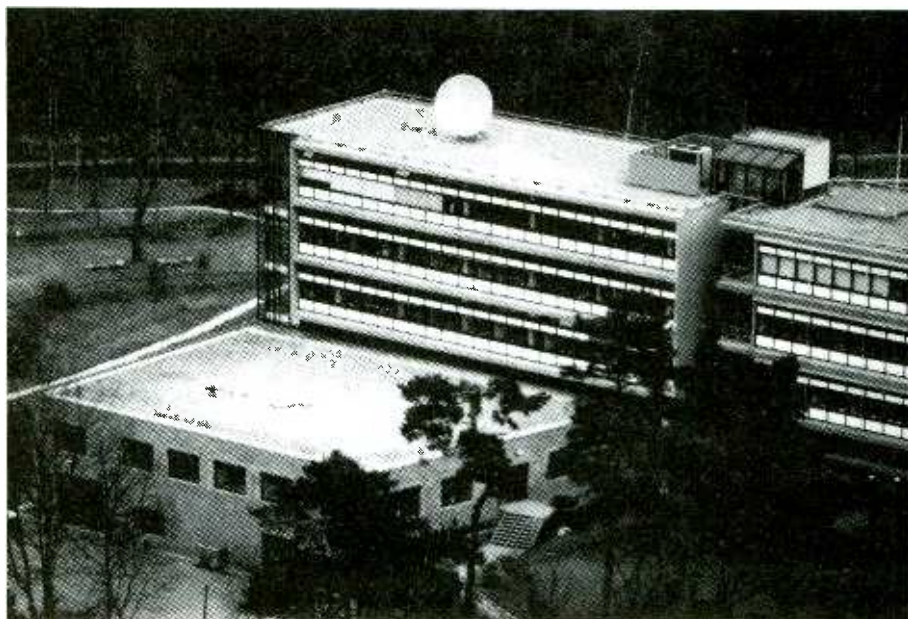
Formed in 1648, the United Provinces rebelled against Spain and established what is now the Netherlands. Being a land reclaimed from the sea, the Dutch had few natural resources and established fleets of ships which traded and established colonies around the globe. Wanting to communicate with these colonies in an expeditious manner, in March of 1927 the Philips Company laboratories established a 25-kilowatt experimental transmissions to the Dutch East Indies (today called Indonesia) on station PJCC.

For a while, the broadcasts received no confirmation. Then, while scanning the airwaves one evening, A.C. de Groot, a Dutch ham living on the island of Java, was surprised to hear a voice announcing, "Hello, Dutch East Indies. This is PJCC, the shortwave transmitter of the Philips Laboratories in Eindhoven, Holland." The next day Groot went to the telegraph office and sent a message to Eindhoven stating, "Radio telephone sounds great." PJCC had proved that shortwave was a viable means of providing expedient communications between the Netherlands and its colonies.

Acutely aware of the medium's potential, Philips continued developing new shortwave transmitters and receivers during the 20's and 30's. Yet, on May 10, 1940, the importance of shortwave became even more evident as German troops attacked and occupied the Netherlands. Forced into exile in England, the government set up "Radio Oranje," so named for the constitutional monarchy which has ruled the Netherlands since the 1600's. Using facilities of the BBC (located in London), the broadcasts of Radio Oranje were extremely successful in informing the public and helping to sustain underground resistance to the Nazi occupation.

In 1944, the former director of Radio Oranje, Henk Van Den Broek, returned from London bringing the influence of the BBC to the newly liberated Netherlands. He was determined to establish an international service. By 1946, transmitters in Huizen, Netherlands, and Bashoso, Indonesia, gave Radio Netherlands the first broadcast service which truly encompassed all parts of the globe.

In order to ensure that the service would not degenerate into a propaganda tool, the Dutch parliament set down a number of statutes mandating that Radio Netherlands should present the broadest and fairest possible picture of the Netherlands, maintain ties with Dutch nationals abroad, and promote peaceful international relations and cooperation. Additionally, the programming at RNI also aims to promote such concepts as "freedom of speech and respect for the rule of law and the individual regardless of nationality, creed, or color."



Courtesy Radio Netherland

Radio Netherlands' new link with the Caribbean: Panamsat uplink on top of broadcasting center in Hilversum.

Radio Netherlands' Unique Programming

Being close to England, it's not surprising that English is Radio Netherlands' largest foreign language service. Started in 1947 under the title "News from Netherlands," the English service provided broadcasts of news and commentaries on a daily basis. Over the years, the broadcasts have expanded to include news analysis and features beamed to all parts of the world, including 55 minute broadcasts beamed to North America daily.

Radio Netherlands' 16-member English language service is headed by British ex-patriate, Jonathan Marks. During a conversation from Hilversum, Marks described the service's unique programming strategy. Marks stated, "We have looked fundamentally at why people have listened to our programming... We think that our specialized programming attracts different audiences." To off-set RNI's limited funding, it has built its audience through airing targeted programming, thus providing a multitude of diverse features unrivaled by any service of its size.

On a daily basis, each broadcast starts with a news bulletin, followed by "Newslines"—a review and analysis of current events, features, commentaries, and breaking news presented by a team of correspondents. Newslines are then followed by a 30-minute feature program. One of Radio Netherlands' more popular features is "Happy Station." Hosted by Tom Meyer, the program presents a variety of music, announces birthdays and holds contests. Begun in 1928, the program is the longest running feature on shortwave.

Documentaries in June will focus on issues from Africa and Asia; then in July attention will shift to the Dutch athletes entering the Summer Olympics. "Let's Get to Business" is a new way of looking at business and trade: Instead of financial tallies, it focuses on the Dutch products and services which may already be a part of your daily life.

"East of Edam" is another new program presenting a mix of national and international stories, book reviews, music and interviews. A regular spot in the program, "On Safari in Holland," will explore unusual and hidden corners of the country.

In its third year, "Sounds Interesting" is hosted by Pete Meyers and profiles the sights and sounds of Holland. The program also responds to audience questions by calling listeners who have written or called in on the Radio Netherlands' answering machine.

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Media Network's Jonathan Marks

One of the most popular features and arguably the most successful DX/media program on shortwave is "Media Network." Jonathan Marks is the host/producer and describes the program as "the combined effort of a network of monitors abroad, active listeners in Holland, and the *Radio/TV Handbook* staff contributing to the

program." He adds, "I'm the jigsaw man in charge of piecing the puzzle together." With only 30 minutes of program time weekly and 50-minutes worth of material being received from over 180 monitors across the globe, Marks, who is the sole member of the "Media Network" staff, spends hours sifting through media information before bringing listeners the latest news on the air.

The key component to the program's success has been Marks' DX background. Starting at age 14, Marks was an avid shortwave listener who enjoyed QSLing and entering listener's contests. One of his memorable DX experiences involved receiving a package from Radio Baghdad after writing a letter requesting information about the station. The package had arrived at Heathrow airport in London and was held in customs with a 20 dollar duty attached and no information about the contents of the package. Marks, who at his young age had no money of his own, convinced his reluctant father to pay the customs duty. As it turned out, the package only contained Iraqi dates, which could have been bought for a lot less than 20 dollars in London. Understandably, his father was not happy.

Yet, Marks continued to write to shortwave stations, and his big break came when he won a free trip to Vienna in a contest sponsored by Radio Austria. After the trip, he decided to take a year off between high school and university

studies to move to Austria. There he helped out for 12 months on and off the air with RAI's DX program "Radio Panorama," which was and still is hosted by David Hermges. Following university studies, Marks went to work for BBC Monitoring and then was asked by Radio Netherlands to join their service as a producer and announcer.

Ironically, Marks was put in charge of closing down "DX Jukebox," which was Radio Netherlands listener's program at the time, and starting up a science program in its place. Upon examining the program, Marks discovered that the old format, which contained music, DX news and technical information, had become outdated. Instead of closing down "DX Jukebox," Marks says, "We changed from a pure hobbyist magazine to a program that interested hobbyist and professionals as well." May 7, 1981, saw the debut of "Media Network," a specialized format that included no music, but more information about international broadcasters, international broadcasting, and the communications world.

Covering topics that have included the examination of the former studios and staff of the now defunct Radio Berlin International and communications within breaking current events such as the Gulf War, the attempted Soviet coup, and the Yugoslavian Civil War, "Media Network" has continued to evolve and break new ground in its reporting on the media world. In addition to 30-minute broadcasts, "Media Network" also offers free pamphlets and publications to listeners on subjects ranging from buying receivers to information about shortwave propagation. Listeners can write to Radio Netherlands or call the "Media Network Line" at 011 (in the U.S.) 31-35-724-248. For PC owners, "Media Network" can also be electronically downloaded via ANARAC BBS at +19133451978.

Along with providing extensive media news, the service also wants to encourage audience feedback, which Radio Netherlands describes as "input to our output." Listeners can receive QSLs or the Radio Netherlands newsletter, which provides information on programming and scheduling, by writing to Radio Netherlands, P.O. Box 222, 1200 JG Hilversum, The Netherlands.

Experimenting with New Technologies and Distribution Systems

Radio Netherlands' sea-side location and high-powered transmitters provide excellent quality signals for most DXers located in North America. With new transmitters recently built in Flevoland Polder, Radio Netherlands broadcasts with four 500-kilowatt and one 100-kilowatt

Current Program Line-Up

<u>Name of Feature Program</u>	<u>Times of Transmission (UTC)</u>
Research File: Science	Monday: 0750, 0950, 1350, 1550, 1750, 1950 Tuesday: 0050, 0250, 0350 Thursday: 0850, 1450, 1850 Friday: 0150
Let's Get to Business/CD Dutch/Sports Digest:	Monday: 0850, 1450, 1850
Mirror Images: Arts & culture in Europe	Tuesday: 0750, 0950, 1450, 1850 Wednesday: 0050, 0250, 0350
No Boundaries: Development	Tuesday: 0150, 0850, 1350, 1550, 1750, 1950
Feature Documentary:	Wednesday: 0750, 0950, 1350, 1550, 1750, 1950 Thursday: 0050, 0250, 0350 Friday: 0850, 1450 Saturday: 0150
Music Documentary:	Wednesday: 0150, 0850, 1450, 1850
Media Network: Communications	Thursday: 0150, 0750, 0950, 1350, 1550, 1750, 1950 Friday: 0050, 0250, 0350
Rembrandt Express: European social affairs	Friday: 0750, 0950, 1350, 1550, 1750, 1950 Saturday: 0050, 0250, 0350
Airtime Africa:	Friday: 1850 Saturday: 0850, 1450, 1750, 1950
Sounds Interesting: Listener participation	Saturday: 0750, 0950, 1350, 1550, 1850 Sunday 0050
Happy Station:	Sunday: 0135, 0735, 0935, 1335, 1535, 1735, 1935 Monday: 0035, 0235, 0335
East of Edam: Potpourri	Sunday: 0235, 0335, 0835, 1435, 1835 Monday: 0135

backup transmitter. Additionally, Radio Netherlands also relays its signal via stations in Madagascar and in Bonaire, Netherlands Antilles.

Yet, despite the ability to reach most of the world with a signal of good quality, Radio Netherlands continues to expand its distribution system. Currently, the service is planning to market its Spanish and Dutch programming to local stations in the Caribbean and South America, and the development of DAB and satellite systems could become reality in the near future. However, the biggest changes for Radio Netherlands have come from a new experiment which began on March 29th.

Summarizing this new approach, Marks stated, "The future of Radio Netherlands will be different in different target areas." The new transmission policy includes scheduling two consecutive hours of programming to Asia instead of three different hours in order to minimize losing its audience when it switches the languages it broadcasts. In Latin America, where cable television is having an impact, additional distribution methods will be explored. Yet, Marks added, "Shortwave will continue to be very

important medium."

The importance of shortwave was demonstrated when Radio Netherlands cut its 10 am broadcast to Great Britain. Despite being at a very odd time, the service received 2,500 letters of complaint, and the Dutch embassy in London was swamped with angry calls. Stated Marks, "I was amazed at the response from English listeners and the enormous lengths to which people will go to listen, like buying a timer and taping the broadcast."

For the future, Radio Netherlands will continue to innovate in the face of increased competition for shortwave listeners. Marks commented, "Today, we are looking at how the media is changing, what the competition is doing, and what the domestic service is doing in the region to which we broadcast." Despite the fast-changing world of international broadcasting, shortwave listeners can be assured that, with the persistence and tenacity that is typical of the Dutch, Radio Netherlands will continue to provide programming that is indicative of a pioneering broadcaster.



Photos courtesy Radio Netherlands

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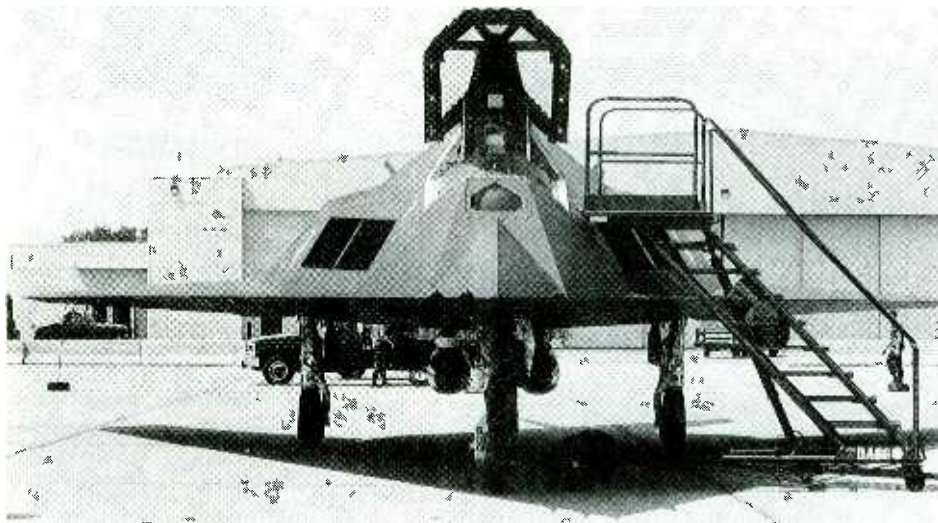
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Mastering Military Monitoring

Story
and photos
by Steve Douglass



Even stealth aircraft use radio to communicate. The serious monitor can hear them all.

It's June of 1992. Last Christmas you finally got that radio you wanted. It took a lot of heavy hints, like leaving a catalog out in plain view with that super-duper radio circled with a bold red marker, but it paid off. But not until this summer have you finally found the time to play with your new toy. Armed with a huge manual and the latest frequency listings, you set about programming the monster.

At last you sit back, turn up the volume and wait to hear all that great military action you have been reading about. Hours pass by and all you hear is an aerial refueling and a T-38 doing touch

and go's at the local airport. Some excitement.

Days and months begin to go by, and still the scanner is very quiet. Where is Tom Cruise shouting, "I got a bandit on my six!"? Where's Timberwolf (George Bush) making phone calls from Air Force One? While all your friends are bragging about bagging that FLTSATCOM catch, you're still having trouble logging the local airport's ATIS. You begin to think that you live in the only area in the world that doesn't have any military activity. Out of sheer boredom you start re-programming the scanner with the local police and fire emergency channels.



U.S. Army helicopters can be heard operating in the VHF low band (30-50 MHz) as well as on UHF military channels.

Tuning in to the communications of the military is both fascinating and fun, but takes a bit of work. It takes a little more knowledge than just punching in a set of frequencies. But with some know-how and a lot of patience, it can be done.

The Bands

The bulk of military communications take place on several bands: HF (1.6 to 30 MHz, long distance shortwave communications) VHF low (30-50 MHz military land mobile), VHF high (136-144 MHz, military point to point) and UHF (225-400 MHz military aviation/satellite).

The services do use other bands, such as VLF for submarine communications and EHF, SHF microwave satellite communications, but we will concentrate on only those bands that are relatively easy to receive.

Military on HF

For the beginning monitor, the HF frequencies are the best place to start. If you want to have immediate success at logging military aircraft and stations, buy a good shortwave receiver. The ideal, of course, is to have both a shortwave receiver *and* a UHF scanning receiver so you can listen in on the long distance and local military communications at the same time.

Many times you will hear military stations in your local area talking on the shortwave bands as well. Listening in on only one band only nets you half of the action. You'll get a better picture of what's going on by monitoring both bands at once.

On the Side (Band)

Keep in mind, your average cheapo-band shortwave receiver will not be able to receive military communications. Even if you punch in the right frequencies, all you will hear is garbled speech.

HF military communications take place in sideband mode (SSB). To receive sideband communications the receiver needs to have either a

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Antenna systems: Apartment
dwellers: Radio Shack Portable
Antenna # 278-1374 Outdoors:
home brew or Radio Shack SW
Antenna Kit # 278-758 and good
lead in coax.

Options: external speaker
antenna tuner, recorder

Authors Note: Above choices represent author's opinions on best beginners systems for the money and/or functions. They are not an endorsement of any one manufacturer's equipment.

BFO (Beat Frequency Oscillator) or an SSB switch marked USB (upper sideband) and LSB (lower sideband). The control for SSB might also be marked as a CW switch. Most HF military communications are in USB. Make sure the receiver you buy has SSB capability or it will be worthless as a military monitor.

When you are shopping for your shortwave receiver, look for these other all-important features:

Is it Digital?

A digital receiver is not only easier to tune, it will be more stable, having less tendency to drift off frequency. But remember, just because it is digital, that doesn't mean it has SSB capability.

Does it have external antenna capability?

Those small whip antennas provided with most sets just don't work well. An external antenna is a must if you want to pull in those weak military signals, buried deep in the static. Even if you live in an apartment, a piece of wire strung about the room is better than the set's antenna. If you are restricted by apartment living, consider purchasing an active indoor antenna—a self-contained, amplified antenna system that should favorably increase your reception.

Jacks, jacks, jacks

Look for jacks that let you add on accessories, like an external speaker (for improved audio),

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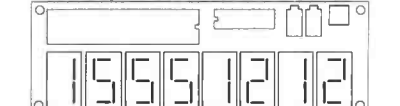
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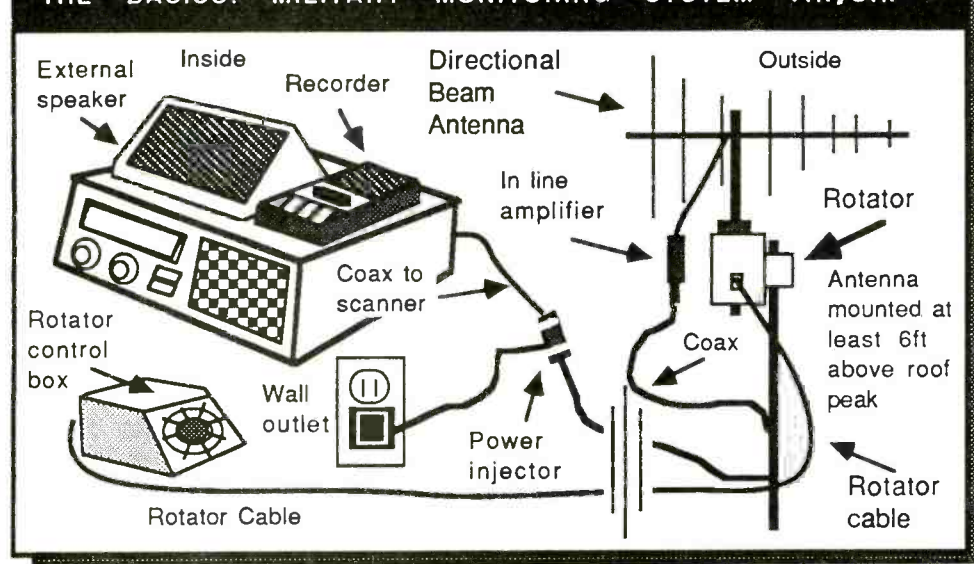
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Larry Van Horn's Monitoring the Strategic Air Command

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This F-14 Tomcat was caught refueling at the local airport by listening in on regular Air Traffic Control (ATC) channels on a scanner.

a record-out jack (most hobbyists like to record their best catches), and an external power jack (so you can power it on something other than batteries). Some of your higher priced premium communications receivers have jacks (or interfaces) so you can hook the radio up to a mode decoder or a computer.

Scanning The Military

Most scanning receivers are capable of receiving some but not all of the radio bands used by the military. Your standard VHF low/high, UHF police band scanners are capable of limited reception, but if you really want to get into military monitoring, then a wide frequency scanner is a must.

The really hot military action can be found on the UHF military/aviation band (225-400 MHz), so make sure your scanner choice includes this band. Top Guns involved in mock dogfights, stealth bombers on training missions and high level satellite communications via Navy FLTSATCOM and Air Force AFSATCOM frequencies, plus a variety of communications modes can be found there—voice, encrypted data and code, for example.

The communications can also be in either NBFM (narrow band FM) WBFM (wide band FM) and AM. The majority of communications take place in the AM mode. WBFM and NBFM are mainly reserved for satellite communications.

Make sure your scanner is capable of changing mode settings. Listen in the wrong mode and you will hear either fuzzy garbled communications or nothing at all. I had a friend who bought the same equipment I had, (receiver, antennas, etc) and programmed it all with the same frequen-

cies I had entered in mine, but was still not getting anything on his radios.

When asked for advice, I noticed that he had entered the proper frequencies, but not in the correct mode. All of his UHF frequencies were entered as NBFM (most receivers default to that setting). Once corrected, my friend heard everything I did.

Other Bands

As we stated earlier, military action takes place on many bands. You can hear many military units on VHF low (30-50 MHz). During the summer sporadic skip season, it is not uncommon to hear signals from military bases from hundreds (and sometimes thousands) of miles away.

You can also hear military aircraft talking to FAA air traffic controllers on the VHF Air band (118-136 MHz), so don't buy a scanner that skips those frequencies either.

An almost forgotten band where many high level military communications take place is a small piece of the UHF band just above the military aviation band and below the UHF public service band. It is a good idea, when buying your scanner, to note if it can receive the frequencies between 406 and 410 MHz. On this small group of frequencies can be found radio telephone calls from Air Force One/Two. Also SAC pagers and SAC/TAC commander's networks are active there.

Scanning Antennas

As we have already discovered, an external antenna is a must for capturing those weak military signals. An external antenna, mounted as high as possible and connected to good quality

coax, will open up worlds of radio that you didn't know existed. That weak military satellite signal cannot be picked up by that tiny whip, sticking out the back of your scanner. When shopping for antennas, check out the specifications. The higher the "dB" number the more efficient the antenna is. Directional "beam" antennas work the best for military monitoring.

Of all the antennas I have tried, the Grove Scanner Beam is the best. I'm not just saying that because this article appears in *MT*. It's the truth; the Scanner Beam works great, especially when used with an antenna rotator. When pointed at a distant station or military satellite, the antenna really pulls in those weak signals. However, a directional antenna is just that: *directional*.

Working much like a telescope, a directional beam antenna receives best those signals in the direction in which it is pointed. An *omni-directional* antenna receives signals equally from all directions and is best for general use. Using both types of antennas in conjunction with an antenna switcher works well. You can even get a general directional fix on a station using this method.

Amplify it

Even with the proper scanner and a good outside antenna, many monitoring enthusiasts report that they still aren't hearing much. I had the same problem, thinking there just wasn't any military action in my area. The solution was to add an antenna amplifier to my system. There are many on the market, made by manufacturers such as Grove and GRE, but if you want a quick solution on a budget, consider purchasing a Radio Shack 20 dB inline coax signal amplifier, model #15-1115. Although it was meant to be used in a satellite TV system, it works great on the UHF military band. The amplifier is a two-piece unit. Part of it is mounted at the antenna and the other (the power module) is mounted at the receiver.

I discovered the amplifier when I was looking for a way to boost my TV reception. Just for kicks I tried it on my scanner. Needless to say, I was really surprised how well it worked, especially on those weak SATCOM signals. The amplifier costs only \$29.95, and it's well worth it. You will see (or should I say hear) a world of difference. The only drawback to such an inexpensive amplifier is that the gain is not adjustable and nearby signals can overload the scanner.

Veteran utility monitor, Larry Van Horn, will be the first to tell you that military monitoring isn't available at the push of a digital button. Monitor during daytime hours when military personnel are at work, do systematic bandscans such as the ones suggested in May's "Utility World" column, and pick up all the tips and frequencies you can through reading and talking with other hobbyists. The communications are there; now go find 'em!

MT

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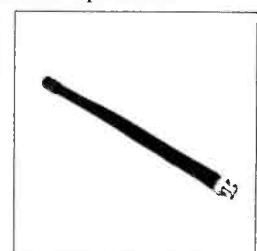
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An Open Letter to David

By Gayle Van Horn



POLYNÉSIE FRANÇAISE GP 1^{re} PAFIETE

RADIO TAHITI

FREQUENCES	
740 KHZ	20 Kw
6135 KHZ	4 Kw
9750 KHZ	4 Kw
11825 KHZ	20 Kw
15170 KHZ	20 Kw

Yesterday I received a letter from a young man named David. He had just discovered the world of shortwave radio. His excitement and enthusiasm literally jumped from the pages!

By the second page of his letter, he was asking me about QSLs. "Uh-oh," I murmured, "he's hooked for sure." He'd seen my QSL Report column, but he was still somewhat puzzled about reception reports and the whole QSL process. "Do you think Spain would answer me?" he asked.

You bet, David; Spain and a lot more!

David's excitement brought back a flood of memories of my early when I thought "exotic DX" was Swiss Radio. "Fix your own dinner" was my new catch phrase.

When the first QSL arrived, there was no stopping me. That was twelve years ago, and since then hundreds of QSLs have passed through the mailbox. I ignore the comments and raised eyebrows from the mailman as I sign for a registered letter from North Korea. Get used to it, David.

I am here, David, to explain to you the "QSL Facts Of Life." Forget about the ham operator down the street who tried to explain QSLs to you. This game is different.

What is a QSL?

A QSL is a card, letter or a similar confirmation by a shortwave radio station that you indeed heard their station's broadcast, based upon your reception report details (hang on, David, I'll come to that).

Incoming mail and your report are usually answered by station personnel, the Station Manager or the Chief Engineer. In recent years, many stations have hired their own "QSL Manager." Your QSL card or letter has hopefully been stamped "We Confirm," or "We Verify." Other times, they may just sign with their name or initials as the "Verification or Veri Signer."

Okay, now that you understand what a QSL is, let's start in front of your receiver. Is that Radio XYZ you just tuned in? Great; begin making program notes as you listen. For a large international broadcaster, twenty to thirty minutes has always been my time limit. Avoid writing "a man talking and a lady singing a pretty song." Believe me, that won't get you anywhere at the other end.

Write it Right

First note the date of reception. Hold on now, David; there is more than one way to write the date. Avoid writing your date as "6/1/92." Here in the United States that reads as June 1, but in most other countries it means January 6. I'd recommend that you spell out the date as June 1 or 1 June, 1992, to avoid any confusion.

In recent years, recording the time by UTC (Universal Time Coordinated) has replaced GMT (Greenwich Mean Time), but they are essentially the same, and either can be used in reception reports to large international broadcasters.

However, smaller stations may not use a "24 hour clock," and they may find it less confusing to use their local time opposed to "UTC." To convert UTC into the local time of the country, check out your *World Radio TV Handbook* for a chart of differences between local time and coordinated universal time from Afghanistan to Zimbabwe. Maps with the appropriate time zones are also included and show how many hours each area is ahead or behind UTC. Indicate that your program details are reported in their local standard time.

And here enters another factor to consider, David. Changing the report details to local time may mean that you also have to change the date of your reception. Have I lost you? Okay, let's pretend I just heard Radio Fajita in Mexico, logged here in Louisiana at 0200 UTC on February 21st. Remember that it's the next day UTC time after 0000 hours. Actually, according to local time, I heard Radio Fajita on February 20th in both the United States and at the station in Mexico. When reporting, if you include the local time at the station, don't forget to adjust the local date accordingly.

Additionally, if the station you logged is beyond the International Date Line, local time at the station will be a different date than your location. Brush up on time and day changes against those on the other side of the Dateline. If not, your report may reflect an incorrect date as far as the station is concerned.

Kilohertz and Meter Bands

Now that I have you totally confused, let me mention briefly the role of the frequency and its relation to the meter band. Thank goodness for digital frequency read outs. Unfortunately, I

resorted to a great deal of "guestimating" in my early DX months. Today's shortwavers have the luxury of tuning a frequency within 0.1 kilohertz. However, if you are using an analog receiver, you may still have to determine the exact frequency. If you're lucky, the broadcaster will announce the frequency in addition to the station identification. If not, verify the frequency by using *MT's Shortwave Guide!*

What about listing the meter band when reporting the frequency? Some DXers report the given meter band; others do not. The definitive rule has yet to be decided. You may have heard a station identifying their frequency as "5950 kilohertz in the 49 meter band," and it is certainly advisable to use this quote in your report. If you find you are writing to a Latin or an Indonesian station, its use in reporting may be of value. Many stations in these areas continue to use the meter band as a point of reference.

Who Said What

The best time to begin your programming details is at the hour or at the half hour. At these times, the station will usually sign-on (or sign-off). Listen for the time tone or interval signal. An interval signal is a brief musical melody (or sound effect) that precedes the sign-on, followed by the station ID (identification) and frequency. You may also hear a station's musical jingle or a recorded ID or promotional that many DXers call a "canned" promo.

News will usually follow, or perhaps a brief news headline update. Now it's time for tonight's programming. Formats vary daily for each station. However, most of the larger stations have a cultural feature that might be a fascinating report on the recently discovered "Lost Paintings of Picasso," or even better, a Travelogue show.

While making your program notes, remember that program information is your most important item when writing to a station. Your details should be as complete and specific as possible. However, don't get bogged down in a word-for-word quote for an hour. Summarize your program notes, or your report may be reshuffled to the bottom of the stack from boredom!

My programming notes are included with a time line, as in this example:

0029: Musical interval signal of instrumental melody.

- 0030: Station sign-on with tone signal. Lady announcer with station ID, "This is Radio XYZ broadcasting from San Marino on 5950 kilohertz."
- 0031: Male announcer reading the international news. Items included a plane crash in Zaire, a presidential state visit to France, and the upcoming '92 Summer Olympics.
- 0035: Musical fanfare ending the news. Rock music from artists Elton John and Phil Collins. Titles were, "Nikita" and "I Don't Care Anymore."
- 0039: Cultural Report on San Marino's new museum, and an interview with the curator. Exhibits were discussed including...

See what I mean? Generalize your report. A clock set to the WWV time signal which shows the seconds will provide an accurate time by which to organize the program details.

Don't be afraid to express your thoughts on their programming, but as any DXer will tell you, be diplomatic—especially if you thought tonight's feature on growing truffles was a bore.

As with many enthusiasts, you may wish to report to a station whose broadcast is in a language you do not understand. If you do not speak that particular language, there honestly may not be an easy answer for this problem. My first recommendation, simplistic as it may sound, is to practice. With time, you will begin to pick out key words and phrases. News items, especially, include places and names in all languages, and the same is true for station identification and location.

Music can be described by style, vocals or rhythms, even though you may not recognize the artists. With practice, you'll learn to spot the various styles of worldwide music. Although in a foreign language, the type of programming can also often be identified with the aid of musical themes, dedications or sporting events.

And now, David, a final thought on program details. You may recall I mentioned my practice of limiting reports to 20-30 minutes. Other experts may tell you that a station broadcasting in English, with a clear signal, requires only ten minutes.

But, what about the station with the poor signal? Does it only need thirty minutes of monitoring? No, in this instance, you may need an hour or more of listening to obtain adequate details. Several years ago, while attempting to log Radio Vanuatu, I spent several late evenings gathering programming details on their two frequencies. Five minutes here, ten minutes the next night, fifteen the next. Finally, I was able to construct a week of loggings. Two months later their QSL arrived, and it remains one of my most prized verifications. Treat each station individually.

The Elements of Reception

As odd as it may sound, there is more to reception than simply whether you heard Radio Netherlands or Radio Cairo. There are a number of ways to include reception information; however, many reporters begin their reception description with the SINPO code.

The SINPO code was developed by international broadcasters to provide a more accurate format for rating their station's reception on a scale of 1 to 5. The "S" stands for signal strength, "I" for man-made interference, "N" for atmospheric noise (static), "P" for propagation (fading) and "O" for overall reception quality. Try using this example for your SINPO report:

<u>Strength</u>	<u>Interference</u>	<u>Noise</u>
5 Excellent	5 None	5 None
4 Good	4 Slight	4 Slight
3 Fair	3 Moderate	3 Moderate
2 Poor	2 Severe	2 Severe
1 Very Poor	1 Extreme	1 Extreme

<u>Propagation</u>	<u>Overall Merit</u>
5 None	5 Excellent
4 Slight	4 Good
3 Moderate	3 Fair
2 Severe	2 Poor
1 Extreme	1 Unusable

You may prefer to use only the SIO code. This simply uses the SIO references as above, and eliminates the listing of static and fading.

SINPO codes are reported mostly to the international stations, and could be a source of confusion to some smaller stations. A written description of each element of reception will likely be more useful to the latter.

One of the first things I was taught when reporting on signal reception was not to inflate the SINPO numbers. In other words, David, don't attempt to make the station personnel feel good (in your hopes for a QSL) with a better rating than their signal deserves. Think about how many letters reach Radio Moscow in a week. Undoubtedly, their technicians know how their broadcasts are being received in the United States. Nor will a 10 watt station be fooled by a SINPO rating of 55555, so keep it honest.

Report Formats

So now you have a full thirty minutes of reception. Let's look at several ways in which your report may be written. First is a basic report form where you fill in the blanks and add the details. You can design your own form and have it printed in quantity, which saves times. Some stations enclose a report form with their QSL reply. However, overall, this method tends to

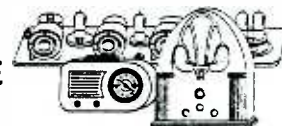
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limit the amount of reception information you can include.

Another approach is to prepare a letter which includes all of the reception data. As opposed to the form report, you can easily include your comments and personal information.

My proven style is to use a combination report. I enclose a cover letter sent to the Station Manager. This opening paragraph may help illustrate my favorite reporting style:

Radio Station Cagliari
P.O. Box 1052
Cagliari, Sardinia

Dear Sir/Madam;

I am pleased to report reception of your station's broadcast on shortwave radio.

If you find the enclosed program details to be correct, I would be honored to receive your station's QSL verification card or letter to confirm my reception.

I then describe my receiving equipment and reception. I also include a brief personal paragraph on my hobbies and the city I live in. This is usually followed by a question about their country or a particular area. A general interest in their country goes a long way. Tailor your "cover letter" to your own style.

The second page contains all the basic reception information and program details, presented in the time line example I explained previously. If you use the combination letter, put your name and entire address on each page.

Before we proceed to "tricks of the trade," let me stress the most important item in your report: Always, your request for a QSL must be polite! They're giving us the favor of a reply, and demanding a verification will be a waste of time. Politeness could be the key to receiving a colorful station pennant, sticker or special souvenir!

Tricks of the Trade

David, your report to Radio XYZ looks great! But don't send it yet; I have a few more ideas up my sleeve. Ever heard of "enclosures?" Enclosing a souvenir to the station has become a common practice among DXers in recent years. The possibilities are as endless as your imagination. However, a few might include: picture postcard of your city or area, your business or shortwave listener card, radio or TV bumper stickers, photographs of your shack, yourself or family, travel brochures from the Chamber of Commerce, or commemorative postal stamps.

Why not create an enclosure that is unique to you or your city? Mardi Gras souvenirs work wonders for me, and your city might also have a special event or holiday. You want to grab their attention, David, so be creative!

Return Postage

Ask any QSL enthusiast, and chances are they will have a varied opinion of enclosing IRCs, as opposed to mint postage or currency.

The use of International Reply Coupons (IRCs) continues to be the most widely used method of supplying the station with a postal rate which covers the cost of the station's reply to you.

IRCs can be purchased at the local post office for ninety-five cents each. Make sure the postal clerk rubber stamps the left side of the note, for an incorrect stamp will render the IRC worthless.

The number of IRCs depends on how easy the station is to verify. One to three appears to be the standard, with two being the most commonly used. Circumstances may vary, but I wouldn't recommend sending IRCs to a smaller station. Often, the local postal clerk is not familiar with them, or perhaps the station is a distance from the post office and exchanging them is impractical.

When reporting to a smaller station, it is better to enclose mint (unused) postage stamps of the country to which you are writing. I have had phenomenal success with this practice, and would recommend it highly. Two sources from which to obtain mint stamps are:

- DX Stamp Service, 7661 Roder Parkway, Ontario, NY 14519.
- William J. Plum, 12 Glen Rd., Fleming, NJ 08822.

Both dealers will supply you with their current price list for a self-addressed, stamped envelope.

The third alternative—enclosing currency—continues to be debated among hobbyists. This practice is against the law in many countries; others welcome the use of U.S. currency. This is a matter you will have to consider depending on the station and the country.

As a general rule, the practice of enclosing some sort of return postage is recommended, unless you are certain that it is not necessary. For example, return postage did not used to be necessary to most of the communist countries. Their broadcasting agenda was to promote propaganda, and usually they would gladly pay the postal expense. Today, however, there may be few stations that can afford such luxury. Even the larger international broadcasters are experiencing budget cuts and programming cutbacks. Enclosing return postage certainly can't hurt and may increase your QSL chances.

Make Mine Airmail

Before you mail your letter, let's go over a few more items. Don't even think of sending your report via surface mail! The savings in postage aren't worth it—it's like putting your letter on a slow boat to China! Airmail obviously is the only way to go. If you're using a non-airmail type envelope, print "Airmail" on the front and the



Sample International Reply Coupon

back. An inexpensive, pre-inked "Airmail" stamp is useful if you're planning to send a stack of letters (and you probably are).

Speaking of stacks of letters, another inexpensive investment is a postal scale. All your letters can be weighed at home to eliminate extra trips to the post office. Why not keep an extra supply of airmail stamps and IRCs on hand? By using this tip, your letter could be prepared and mailed within a day!

The Waiting Game

David, you should feel good about yourself! You've gathered your program details, written an outstanding report, remembered your enclosures and hopefully impressed Radio XYZ enough to receive their QSL (and maybe a pennant).

Now comes "The Waiting Game," or perhaps it should be "The Virtues of Patience." Check out the QSL Report, and you'll notice a reply rate that can range from a couple of weeks to a year. Most international stations reply within two or three months. Smaller stations of Asia and South America may test your patience even further.

QSLs vary among stations, and don't be discouraged if your return took four months when mine took three weeks for the same station. Why, you ask? Who knows; maybe it's due to staff changes, or maybe it's just the phase of the moon! Don't be discouraged if you hit a dry spell receiving replies...all of us have been there.

The Final Word?

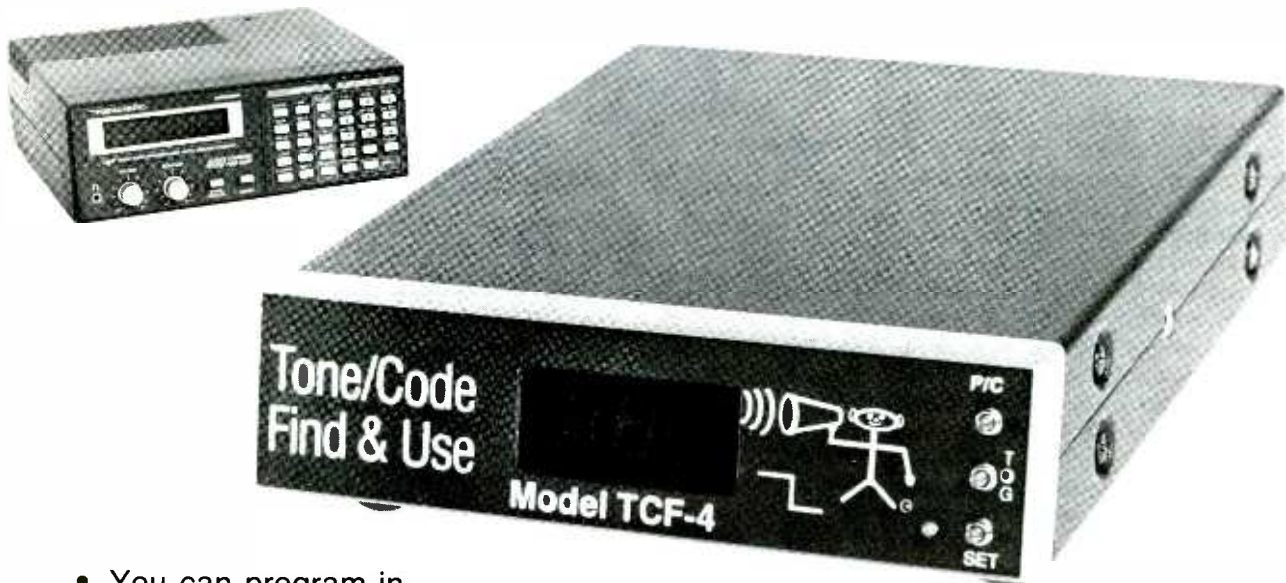
Is there really a final word on the art of QSLing? Probably not, for as long as there are stations out there to hear, there will be stations to confirm. Old favorites sign-off while new stations sign-on.

Techniques and attitudes change with each station, but ultimately, it is your determination and persistence that will determine your success in QSLing. There are no special tricks, no magic voodoo powder, unless you consider creativity and patience. Rare is the DXer who has confirmed every country he has heard or written. But isn't that part of the challenge?!

MT

Tone/Code Finder/User

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Notes from a Convention Convert

By R.C. Watts

Prior to attending the 1990 Monitoring Times Convention, I had never met another DXer or SWL, despite being an off and on listener for almost 50 years. I missed out on exchanging information with other listeners and knowing more about the broadcasting stations. I almost didn't attend the convention, having undergone major surgery a few months earlier, but I decided to risk going anyway. I enjoyed it thoroughly. It was a real eye opener as far as the radio listening hobby is concerned.

While wandering around the exhibits, I picked up a leaflet advertising the 1991 European DX Council meeting (EDXC '91). Weeks later, I found it tucked into one of the books I had purchased. With no real intention of going, I requested convention information from Spain and checked into ticket prices from a travel agency.

Well, discounting the Gulf War travel worries, I bought the tickets in January. Again, health problems almost prevented me from attending, but after a very long trip, I found myself at EDXC '91 in Sitges, Spain.

Was it worth it? I have to say yes! Spanish hospitality was the best, and several broadcasters were represented: Radio RSA, Radio Korea, Radio Japan, Voice of Free China, Voice of Turkey, VOA, BBC, Deutsche Welle, Radio Austria International, Red Cross Broadcasting Service,



21st-24th August

EDXC 92
P.O. Box 212
SF-33101 TAMPERE
FINLAND

Radio France International, Radio Moscow, Radio Nederland, Radio Sweden, BRT, Spain's RNE and REE, and last but not least, Radio Miami International.

Most of the stations had stickers, sample QSL cards, pennants and other goodies for the taking, and everyone got a Grundig T-shirt. Dario Monferini and friends from Italy brought a large quantity of various station stickers. Lots of other interesting people attended, such as Michael Murray, Anker Petersen and a delegation from Bangladesh. Highlights included rare QSLs, sticker and antique radio displays, and tours of the regional TV production/control facility and Barcelona's leading newspaper plant.

The two conventions were quite different, but I enjoyed them both. More broadcasters came to EDXC '91, but there were many more listeners at the MT Convention. Knoxville has better facilities, but naturally is not as exotic as Spain. The vendors turned out in force for the MT convention, which had lots of quality seminars. EDXC '91 had few of either, being more oriented toward social entertainment.

I have no plans to attend EDXC '92 in Finland, but rumor has it that EDXC '93 might be in the Canary Islands! Health permitting, I hope to attend the MT convention every year.

Meantime, I contribute to the periodicals when I can and continue my world band radio column in *Reacter* magazine for REACT International.

I gained a new insight into our radio listening hobby while sitting at the back table and listening. Most of the people at both conventions were more than willing to share their knowledge and experiences, so I soaked up as much as my mental storage capacity would allow. This radio listening is a good therapy, and has gotten me through some bad periods in my life and will probably do so again. I can't ask more of a hobby! Most of all, having met some fellow listeners, I no longer feel alone at the dials.

Postscript from the Editor:

This year's Monitoring Times Convention will be held at the CNN Center in Atlanta, Georgia, October 2-4. Check out this issue for more details. Register before June 30th, and help yourself to a discount!

EDXC '92 details can be found by writing to the address above. If you want to be more adventurous, like R.C. Watts was, EDXC '92 details can be had by writing to the address above. If you leave a little earlier, you could first attend the Fourth Hamvention in St. Petersburg July 31-August 2. *MT* readers Royal and Darlyne Jaynes of Eugene, OR, attended last year. Royal says it is fairly easy to get to St. Petersburg via Helsinki, Finland. SWLers are welcome; write to the Organizational Committee, 4th Int'l Hamvention, P.O. Box 118, SF-15111, Lahti, Finland.

Other ways to meet fellow hobbyists closer to home can be found through clubs or other special radio events, some of which are listed on pages 108 and 109. Don't wait fifty years to get involved; do it now!

MT



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Shortwave Broadcasting

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AFGHANISTAN As rebels took over Radio Afghanistan April 25, external service was suspended with 9635 carrying domestic, and 7199 moved up to 7202.3, better than ever. Watch 4775, 6230 for reactivations (Victor Goonetilleke, Sri Lanka, Radio Netherlands *Media Network*) Pashtuna leader's clandestine, Message of Freedom on 7090, relayed Radio Afghanistan one day only (BBCM via RNMN)

(non) Radio Free Afghanistan, Munich via RFE/RL sites in Germany, Spain and/or Portugal, alternates quarter-hours in Pashto and Dari: 0230-0330 on 11970, 11815, 9770, 9715; 1300-1330 on 21510, 17835, 17760, 17725, 15445; 1530-1600 on 21510, 17805, 15160 (BBCM) With Afghanistan under new management, what will become of RFA?

ANGOLA Radio Nacional reported that the People's Assembly would allow MPLA to continue broadcasting the Angolan Combatant program through Radio Angola, but UNITA's Black Cockerel is illegal as a separate station. Airtime will not be granted to UNITA unless it closes Vorgan down. (BBCM)

ANTIGUA Deutsche Welle relay finally has a new local ID tape pronouncing the island correctly as an-TEE-ga, instead of an-TIG-yew-uh; noted opening at 1100 on 15205 (William Westenhaver, PQ)

ARGENTINA Radio Nacional heard on 26290 at 2245 until 0200, two hours after sunset; next day partially readable by 2000, variety of programming in domestic service. Does not work out to be a harmonic or mixing product. Similar outlet heard once at 1205 on 26260 (Alan Roberts, PQ, *World of Radio*)

RAE in English at 1900-2000 on 15345 weekdays only, 0200-0300 on 11710, includes feature programs: Monday, *Buenos Aires 92*; Tuesday, *Scientific Argentina*, *Argentine Provinces* (1900), *Argentine Women* (0200); Wednesday, *DX Actuality*, Box 555; Thursday, *Latitude South*; Friday, *Argentine Women*, *Review of the Week*; effective at least until April 29 (RAE)

AUSTRALIA Radio Australia strong and clear on new 17565 at 1500-1800, site unknown (Edwin Southwell, England) Same never heard before so good this time of day, 1430-1745, beamed to Asia (John F. Wilson, Hockessin, DE)

BOLIVIA Radio San Jose de Chiquitos reactivated 5580.21 in mid-April after several months, heard at 2350. Radio Emisoras Capitan Victor Ustariz, La Voz del Tropico, Villa Tunari, ID at 2246 on new 4437.75, and with second transmitter parallel on 5948.19; mentioned two meter bands (Juan Carlos Codina©, Peru via Dario Monferini, W.O.R.)

BOSNIA-HERCEGOVINA Bijeljina, site of Radio Yugoslavia highpower shortwave, was the focus of a battle in early April; it's just over the border from Serbia, so might be considered a different radio country, especially if Serbs lose control of Bosnia (W.O.R.)

BOUGAINVILLE Radio Free Bougainville had a weak but readable signal on 3880, signing off around 1108 UTC; used a 600-meter beverage of Nick Hall-Patch at Sombrio Beach, west coast of Vancouver Island (Walt Salmaniw, BC, W.O.R.) Also heard here and reported; got a reply but no QSL from Honiara on Interim Government letterhead; then a handwritten reply from Sam Voron back in Australia who said IARN had broken the blockade on communications and medical supplies (Scott Edwards, CA, W.O.R.)

BRAZIL Radio Transamerica heard testing on new 11705 until sign-off at 2200; asked for reports to C.P. 6084, 91031 Porto Alegre, RGS (Yuji Omiya, Parana, W.O.R.)

BURMA *Myawadi Athan Hlwint Htana*, on 5973 in minority languages 1030-1330, Burmese 1430-1530. Myawadi is on the Thai border close to current fighting between Burmese and Karen forces; not parallel to 4725, 5990, 6570, and off the air 1330-1430 when Rnagoon's

main newscast is relayed on 4725 (BBCM) 5973 is very active, as strong as 5990; fades in around 0900. Seems to be aimed at Burmese security forces (Victor Goonetilleke and Sarath Weerakoon, Sri Lanka, RNMN) Visiting a Karen refugee camp on the Thai side, students told me Burma is still the English name; the hated SLORC regime made it Myanmar (Juergen Lohuis, DSWCI *Shortwave News*)

CAMBODIA (non?) Voice of the Great National Union Front of Cambodia, the Khmer Rouge station, switched back to 5408 from 5200 on 7th March (BBCM)

CANADA RCI started a weekday service to Canadian peacekeeping forces in Yugoslavia, 1900-1930 in English and French, with news from CFN Germany at 1910 and 1925; on 21675, 17875, 15325, 13650, 7245, 5995 (Michael Schulsinger, OH, and BBCM)

CHINA a 14-day shortwave listeners' tour of China, all-inclusive except tips and departure taxes, is planned for Sept. 17-30, 1992, escorted by Bruce MacGibbon and/or Glenn Hauser. Itinerary: Shanghai, Hangzhou, Suzhou, Wuxi, Nanjing, Beijing. Price is \$1966 from San Francisco; add \$200 from JFK. Deposit due by early July; further information from Bruce MacGibbon, 2295 NE Juniper Ave., Gresham, OR 97030 (via SW Echo via Al Quaglieri)

COLOMBIA Radio Patria Libre, clandestine, on new 15050 at 0030-0105, much improved signal, closing music started with the *Internationale*, ended with Colombian anthem, also mentioned 5850 and that 15050 may vary (Tim Hendel, FL, W.O.R.) 5850 confirmed (Codina, Peru via Monferini) 15049.97 at 0037-0109, previously on 4690 (Brian Alexander, PA, W.O.R.) A few days earlier, 1147-1208 on 15040 (Dave Valko, PA, *Fine Tuning*) Other morning frequency announced is 6300 (via Hendel) Skip-distance theory makes one wonder if the 15 MHz outlet is beyond Colombia?

COSTA RICA End of June is absolute deadline to get AWR's Cahuita site operational. After a year's delay due to earthquake, 6150 started testing in late April; then 9725 transmitter was to be moved from Alajuela; then 5030, and frequencies in 15 and 13 MHz band to be activated (*Costa Rica Today*, AWR)

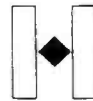
James Latham, RFPI reported that 99% of the parts for their 30 kW transmitter were on hand and construction could begin.

CROATIA Croatian Radio, Zagreb on 21480 audible around 1150-1330 with a few minutes of English news at 1203; seems active weekends only (William Westenhaver, PQ, W.O.R.) Heard in English, late March at 2100-2155 on 17272, weak but clear (Nobuyoshi Aoi, Radio Japan *Media Roundup*) Illustration via Gordon Darling, PNG

CZECHOSLOVAKIA Radio Czechoslovakia replaced Interprogram with English half hours, 0600 and 1030 on 6055, 7345, 9505, 11990 (John Norfolk, OK, and Edwin Southwell, UK)

ECUADOR Besides the weekday 1730-1800 program on 15350, HCJB relays another show from Radio Nacional, UTC Sundays around 0130-0200 on 15140, as do all other Ecuadorian stations. I phoned inactive stations to find out plans: No plans to revive shortwave, said La Voz del Triunfo, Radio Iris and Radio Paz y Bien; Ondas Quevedenyas to reactivate 3325; and Sistema de Emisoras Atalaya to come back on 4760 (Rich McVicar, HCJB *DX Partyline*)

EL SALVADOR The two clandestines were legalized April 1. YSU reported that Radio Farabundo Marti moved to San Salvador volcano, but only on FM, with calls YSFF. Radio Venceremos said it would continue on SW 6300, now legalized, to reach Salvadorans in



HRT

HRVATSKI RADIO

Japan *Media Roundup*) Illustration via Gordon Darling, PNG

Shortwave Broadcasting

California; wanted callsign YSRV, but it is already assigned to Radio Veritas (BBCM)

ERITREA Voice of the Broad Masses of Eritrea, now transmitted from Asmera, uses 7490, 7020, 3940 at 0400-0700, 0900-1100, 1400-1800 in six languages. ID in Amharic is: "Yeh be Asmera Ketema Yemigegne Yesifiw Yeritrea hebz dems Yeamarigna Agelgilot new" (BBCM)

FINLAND Some Radio Finland programs to North America: *Airmail*, Saturday 1345, Monday 0140, 1140, 1245, 1345. *Finnish History*, Saturday 0145, 1310. *Roots in Finland*, Thursday 0145, 1140, 1245, 1345, Sunday 1340. *Names in the News*, Friday 0145, 1140, 1245, 1345, Saturday 1330. *Starting Finnish*, Saturday 1340, Sunday 1345. *Forum Helsinki*, Sunday 1300-1330 (via Scott Nelson, SD)

FRANCE RFI to North America at 1230-1300 on 21635, 21645: Sunday, *Club 9516*. Monday, *French Weeklies*, *Sports*. Tuesday, *Land of France*, *North/South or Look East*. In France. Wednesday, *Books*, *Economic Issues or Planet Earth*. Thursday, *Arts in France*, *Counterpoint*, *Sports*. Friday, *Trends or Portraits & Profiles*, *Made in France*. Saturday, *Film Reel*, *Focus on France*, *Science* (Simson Najovits, RFI, W.O.R.)

GUINEA Rdif. Nationale announced MW 1404 is not working, 4910 is not worth mentioning, so 7125 and 9650 are reactivated, later joined by 6155 (BBCM)

HAITI (non) From mid-April via WHRI, Radio Miami International is broadcasting Radio 16 Decembre, clandestine program of the Aristide government, originating at the Washington embassy and other US locations, weekdays 2100-2300 on 17830, Sundays 1100-1300 on 9850, in Creole (Jeff White, W.O.R.)

HONG KONG RTHK's weather broadcast on 3940 aired one week only, April 17-23 at a time earlier than previous years, 1015-1030; April 17-29 at 2215-2230 (*Hong Kong Daily* via Toru Yamshita, Radio Japan *Media Roundup*)

HUNGARY Some Radio Budapest features planned for June: 3 and 6, *The Earth Summit*; 3, 17, 21, *If You Come to Hungary*; 4 and 7, *Music and the Picture of Dorian Grey*; 10 and 14, *Gold Standard*—olympic kayak/canoe; 11 and 14, *In the Mist*, short story; 17 and 20, *Pro and Con*—pollsters; 18 and 21, *Music and Street Names*; 18 and 21, *Convictions*—science and religion; 24 and 28, *Gold Standard*—modern pentathlon; 24 and 27, *Breathing Easier?* Update runs early in the Monday-Saturday shows, with these topics: Monday, sport; Tuesday, expo; Wednesday and Thursday, open; Friday, parliament; Saturday, business. Listen at 2100-2200, 0200-0300 on 11910, 9835, 6110 (via Mike Wager, UK)

IRAN For a while on 15260 vs. BBC Ascension, VOIRI in May appeared on 15315 vs. Bonaire, going from English to Spanish at 0300; in the clear only after 0025 (gh, NM)

IRAQ The Radio of Iraq, Call of the Kinfolk (Arabic: *Idha' al-'Iraq*, *Nida' al-Ahl*) was heard at the end of March on 11860 at 1005-1047, the next day on 11880 at 1008-1203; addressed to Iraqis in Saudi military camps, subsequently shifted to 0900-1100 on 11880. The only other Iraqi external service on SW, for the Americas, returned to 2215-0115 on 17740, 15150, 11945, mostly in Arabic but news and comment in English around 0000 (BBCM) Sometimes as early as 2340 or 2345, lasting 10-11 minutes; at end of April some bubble jamming hit the lower two (William Westenhaber, PQ, W.O.R.) Baghdad heard evenings on 9985 in Arabic along with semi-harmonic 4992.5, parallel to 4605 (Finn Krone, Denmark, AWR via WDXC Contact)

ISRAEL Some Israel Radio programs, after the news: *Postmark*—Israeli stamps, Sun. 1300, 2130, Thu. 1900. *New from Israel*—science & tech. Mon. 1900, Tue. 1300, 2130. *This Land*—travel magazine, Wed. 1000, 1900, Thu. 1300, 2130. *Jewish News*, Wed. 1900, Thu. 1300, 2130. *Studio Three*—arts, Thu. 1000, 1900. *Letter from Jerusalem*, Fri. 1000, 1900, 2130. *T.G.I.F.*, Fri. 1000, 1900. Festivals pre-empting regular programs starting the night before: May 31, Jerusalem Day; June 7,

Festival of Weeks; August 9, Fast of Av. Also, election coverage is expected starting at 1900 June 23 (IBA)

ITALY Beware of writing to IRRS: I got an unsolicited letter from a contractor in Honolulu who felt we were destined to discuss salvation (Frank Orcutt, NY, W.O.R.) IRRS is mainly USB but also some LSB to ward off adjacent-channel interference (HCJB DXPL)

RAI Radio-Uno domestic service relayed on high power 15485 at 0800-1700, then switch to 9825 (Richard Measham, BBCM on RNMN) See also PORTUGAL

JAPAN Radio Japan moved 11870 to 15230 for North America at 0300-0330, 0500-0600 (John Norfolk, OK) It's hit-and-miss whether you get a full-data or no-data QSL (Bob Padula, ADXN)

JORDAN Radio Jordan's English service bans Barbra Streisand since she helped Israeli fund-raising; John Lennon's "Imagine," sex and drugs, but country and western is a winner because they believe it embodies Arab cultural values (Jan Arraf, Reuter, via Ken Mason)

KAZAKHSTAN Radio Alma Ata World Service in English at 1831 on 15360; and at 2031 on 15360, 15385 and 15215 (Ernie Behr, Ont., W.O.R.) 1830-1900 on 5035, 5260, 15360, 17605, 17715, 17730 and maybe others (Marc Vissers, Belgium, W.O.R.) Before the DST shift, 1930-2000 external English program "Atameken" was Friday and Saturday only on second program Shalkar, and daily at 2130-2200 on frequencies above plus: 3955, 5960, 5970, 7115, 9505, 9690, 11825, 15250, 15270, 15285, 15315, 17765, 21490 (BBCM)

KOREA NORTH Radio Pyongyang at 1245 closing Spanish on 13152, the second harmonic of 6576 where also heard (gh NM) Voice of National Salvation, clandestine from North to South, has English 0030-0100 on 4557, 4450, 4400, 3480; Korean 0255-0700, 0955-1700 on additional frequencies 6010 (*til 1400), and 4120, 1955-0030; all also on MW 1053 (BBCM)

KURDISTAN (non?) Iraqi Kurdistan Radio appeared in late March on 4130, militantly anti-Baghdad, 1600-1725 repeated at 0400-0525; supports the Kurdistan Socialist Party. Voice of Iraqi Kurdistan, supporting the Democratic Party of Kurdistan, had disappeared from 4175 but returned a week later, at 1600-1835. Voice of the People of Kurdistan announced a new 10-kW transmitter on 6160, heard at 1600-1830 parallel to 3930 and 7055 (BBCM)

KUWAIT Radio Kuwait finally resumed English at 1800-2100 on 13620 (John F. Wilson, DE; Edwin Southwell, UK; Brian Alexander, PA)

KYRGYZSTAN Kyrgyz Radio introduced an English newscast in domestic program one, 4010 kHz at 0010-0015 (BBCM) May have shifted to 2310 for summer.

LITHUANIA Radio Vilnius reported sites and expenses for foreign relays: Khabarovsk 17690, Moldova 11860, Petropavlovsk-Kamchatskiy 17605, Krasnodar 9530—2 megarubles rent per year plus another megaruble for feeds; gave up a transmitter in Ukraine which would have cost as much as all the others (BBCM) Received Radiocentras QSL for last June 29, 0600-0628 on 9710, 50 kW beamed 259 degrees,

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endorsed "first reception report from the Western Hemisphere!" (Antonio Ribeiro da Motta, Brazil)

MACEDONIA Shortly before it too declared independence, this republic's Macedonian Radio, Skopje, was still relayed via Radio Yugoslavia, in Macedonian, daily at 0100-0130 on 11870, 1100-1130 on 21605, 1900-1930 on 6100 (BBCM)

MOZAMBIQUE Voice of Renamo announced it would shift to 9860 at 1600-1700 (BBCM)

NETHERLANDS RN plans to keep using SW for a sesquidecade (*Radio Enlace*) Media Network may appear in separate editions for satellite and shortwave (RNMN)

The alternate program on Sundays is *East of Edam*, named for a town north of Hilversum famous for its cheese, an undefinable mix of subjects, at 0235, 0335, 0835, 1435, 1835, Monday 0135. *Research File*, main Monday program also repeats Thursdays 0850, 1450, 1850, Fridays 0150. Wednesday documentaries also air Fridays 0850, 1450, Saturdays 0150 (via Diane Mauer, *W.O.R.*)

NETHERLANDS ANTILLES TWR's generators run most efficiently at full load, so MW & SW transmitters operate at same time spans, mainly on 6, 9, 11 and 15 MHz; the 50 kW can use 17 MHz but not very well; 7 and 13 MHz are not authorized (*Bonaire Wavelengths*)

NEW ZEALAND Print Disabled Radio started experimental use of 250 W weekdays at 2200-0600 on 7290 (also given as 7295), as ZL2XAL; after 0600 on 3935 (Arthur Cushen, RNZI)

Kiwi Radio, pirate with Hastings address on 5850 expects to operate June 1 and October 24 this year among other dates from 0600 with 50 to 1200 watts AM (Kevin Forsyth, WA, *DXPL*)

NIGERIA Voice of Nigeria has news at 0530, 0630; features at 0600 and 0615: Sunday, *This Week on VON, Listeners' Letters*. Monday, *Who are the Nigerians, Nigerians and Politics*. Tuesday, *Southern Connection, Nigerian Scene*. Wednesday, *Nigerian News-letter, Wheel of Progress*. Thursday, *West African Scene, Nigerian Scene*. Friday, *Listeners' Letters, Sporting Scene*. Saturday, *African Writers, Musical Heritage*. Per 1st Quarter 1992 Schedule which shows 15120, 11770, 9690, 7255, but believed active only on the last (via Larry Russell, MI, *W.O.R.*)



VOICE OF NIGERIA

PALAU KHBN first heard April 21 on 9830, Chinese before and after 1200 when weak but intelligible English announcement mentioned frequency, address in Koror, Palau (gh, NM) Voice of Hope—Asia first heard next day in Japan at 1110-1301 (N. Takahashi, Radio Japan *Media Roundup*) Limited schedule, nothing on 11980 yet; address P.O. Box 56, Koror, Palau 96920 (Y. Havashi, *ibid.*)

PAPUA NEW GUINEA (?) Radio G'Day, pirate on 11400 heard last two Sundays in March at 0650-0730, address as P.O. Box 3474, Boroko, PNG (Geoff Cosier, Peter Bunn, *OzDX*; Don Rhodes, Chris Hambly, *ADXN*)

PERU R. Horizontes, Chiclayo, reactivated 4509.27 from 0000 past 0300 (Juan Carlos Codina©, Lima, via Dario Monferini)

PHILIPPINES In a relentless campaign to deprive every possible ethnic group of their original religion, FEBC adds more and more obscure languages. Impress your friends by identifying them: Aceh, 1045-1115 on 15100; Minangnese 1000-1030 on 11995; Zhuang 1330-1400 on 9820; Khmu 2215-2230 on 9875, Akha 2300-2315 on 11650, both Saturday and Sunday only; Lahu 2315-2330 on 11650 (via BBCM) PBS, Manila, 6172 active until 1403 (Craig Seager, *ADXN*)

PORTUGAL Rated No. 2 only to *World of Radio* for its DX news value is the AWR DX program by Finn Krone, Sundays 0815-0830 on 9670 (Mike Wager, *WDXC Contact*) Also via Italy Sundays 0650 on 7205, 0950 on 7230 (*Play-DX*)

RUSSIA Radio ALA stands for name of station leader, Alexander

Leonovich Astafiev (Anatoly Klepov, *DX Moscow* via *Play-DX*) 3995 replaced 5040 at 1900-2000 (M. Schmitz, Germany and Dario Monferini, Italy, *Play-DX*)

Radio Aleph is newest independent station, Hebrew via Radio Moscow 12075 and 7130, Tuesday, Thursday and Saturday 1600-1630; other days, RM in Arabic! (BBCM via *RNMN*)

FEBC now 0800-1000 on 9560, dropped 4060 and 5965 (Y. Kato and S. Aoki, Radio Japan)

Radio Galaxy, 9880, 1900-2200 including English program about medical treatments (Brian Alexander, PA)

Gospel of Our Nation, by Japanese religious sect OSK, via Radio Moscow Far East site, 15315 at 1300-1400 in Japanese, but with Greek title, *Evagerion Tess Bashireiasu* (BBCM)

Radio Pamyat' 1500-1800 on 11665 ex-12060 (Y. Kato, Radio Japan *Media Roundup*)

Radio Polis, St. Petersburg, 0330-1300 on 6045 (BBCM) Radio Radonezh, Orthodox church station, 1130-1330 on 11675 (BBCM) Heard opening at 1128 (Jerry Berg, MA, *Fine Tuning*)

Radio Rezonans, Moscow, business format, 0300-0500, 1100-1200, 1800-2000 on 11945 (BBCM) Radio SNC, Moscow, means Stas Namin Centre, 0200-2400 on 11735, including BBC Russian hour relays via satellite at 0400, 1300 (BBCM) Radio Space, 1400-1445 on 12075 Moscow (BBCM)

unID from Yekaterinburg sounding like Radio Trek, 6910.0 at 1600-1800 (Finn Krone, Denmark via Dario Monferini, *W.O.R.*) Radio Station Vedo has daily English mailbag 1650-1656 on 13710 (*ibid*)

SAIPAN is 13 MHz band already too crowded? KHBN went out of band, 13840 at 1800-2400 (*W.O.R.*)

SOMALIA Opposition started their own Radio Mogadishu, 6957.0 varying to 6957.7 on AM at 0400-0500, 1600-1800; USB plus carrier on 9467.2, then 9450, 9495, 9475 at 1000-1100, 1400-1600 (BBCM)

SOUTH AFRICA Radio RSA increased English to Africa: 0200-0400 7270, 0300-0500 5960, 0400-0600 9695, 0600-0700 15220; 1000-1200 no change; 1600-1800 9565, 11885 (BBCM)

SWITZERLAND SRI's Sunday rotation: 1st and 3rd, *Supplement*; 2nd, *Roundabout Switzerland*; 4th, Swiss music; 5th (such as May 31), *The Name Game*, with prizes (via Daryl Rocker, NY)

TAIWAN VOFC may cut back foreign languages, since people don't listen to SW; concentrate on Mandarin to America (John Fong, VOFC, *RNMN*)

UKOGBANI BBC phone-ins are back Sundays at 1401: on *The Human Child* May 31 and June 7; *Earthlives*—the Rio summit, June 14 (*London Calling*)

UKRAINE Radio Ukraine expanded World Service in Ukrainian to 12 hours a day, mainly one-hour blocks, at 1300-1700, 1800-2000, 2200-2300, 0100-0230, 0300-0630 on up to 10 frequencies at once (BBCM) 17790 and 21765 put mix on 25740 vs. DW around 1340 (Alan Roberts, PQ, *CIDX*)

USA *World of Radio* same as last month on WWCR except Monday 0500 taken by Jewish talkshow on 7435, repeated at 1000 on 15690. *Signals* repeat Tuesday 1050, old time radio Wednesday 1050. WWCR offers free ads for club meetings and publications: contact Adam Lock. Tentative target for third transmitter is yearend (*W.O.R.*)

Radio Miami International bought Radio Clarin's 50-kW transmitter—that's why it was testing in March. Should be on shortly with calls WRMI, frequencies requested 9485, 9950, 9955, 7385, 5915, 5905, 5900 at 2100-0500, 0900-1200. See also HAITI (*W.O.R.*)



VATICAN VR started mass in English, first and third Sundays 1600-1630 to Asia on 15090, 17730 (*W.O.R.*)

ZAMBIA Radio Zambia scrapped external service due to loss of funds from ANC (Johannesburg *Star* via BBCM)

Broadcast Loggings

Thanks to our contributors — Have you sent in YOUR logs?
Send to *Gayle Van Horn, c/o Monitoring Times.*
English broadcast unless otherwise noted.

0007 UTC on 7415

USA: Pirate WRTR. Classic oldies, "WRTR" ID and Maryland P.O. Box, abrupt sign-off at 0035 UTC. Pirate-Action Radio heard on 7415 kHz at 0333 UTC, with music and IDs as, "the station that always tells the truth." Cheers TV theme to sign-off at 0340 UTC. Whiskey Radio-WSKY heard on 7415 at 0037 UTC. Wellsville P.O. address to classic 60's tunes. Sign-off at 0213 UTC. (Nicholas P. Adams, Newark, NJ)

0015 UTC on 4920

ECUADOR: Radio Quito. Spanish. News items and local commercials. Announcer chat and station IDs. Recheck of station at 1135 UTC, with music and mentions of stations on the Ecuadoradio network. Ecuador's Emisoras Progreso heard on 5061.9 kHz at 0225 UTC. Announcer talk over Latin music and "Radio Progreso" ID. (David A. Gasque, Orangeburg, SC)

0030 UTC on 9720

IRAN: VOIRI. News on Azerbaijan/Armenia conflicts. Frequent IDs amid heavy interferences. Arabic music to English service ID and station sign-off. (Stephen R. Hunter, Drexel Hill, PA) World news topics on Israel, Lebanon, and Korea on 9022 kHz at 0038 UTC. (Robert E. Tucker, Savannah, GA)

0034 UTC on 11830

IRAQ: Radio Iraq Int'l. English/Arabic. Arabic style music to news and discussion on Yemen and Lebanon's relations with Israel. U.S. rock music, station IDing as, "Radio Iraq International". Arabic programming commencing at 0047 UTC. (Hunter, PA) (Tucker, GA) Arabic program on 11740 at 2058 UTC. (Maywoods DX Team, KY)

0037 UTC on 6150

COLOMBIA: Caracol. Spanish. Talk radio style dialogue with "Caracol" IDs included. Very good reception and free from any interferences. Colombia's Radio Dif. Nacional audible on 11821.5 kHz at 0050 UTC. Excellent Latin vocals, heard on parallel frequency 17865 kHz. (Terrence, NY)

0040 UTC on 15115

NORTH KOREA: Radio Pyongyang. Talk and English service schedule prior to sign-off at 0048 UTC. (Terrence, NY) Commentary and cultural show heard on 13650 kHz at 2320 UTC. (Carson, OK) Station sign-on at 1500 UTC on 11705 kHz with news. (J. Craig Petterson, Ogden, UT) (Wright, MS) (Rose Carmine, Sidney, OH)

0041 UTC on 4920

AUSTRALIA: Radio Australia. Closing news to aboriginal ethnic music. Signal trounced by Colombian station at 0050 UTC. (Gasque, SC) Stock Exchange Report on 5995/9580 kHz at 1400 UTC. (Carson, OK) (Walton, CN) Music from the Tasmanian Symphony featured on 9580 at 1430 UTC. (Bob Fraser, Cohasset, MA) (Wright, MS)

0109 UTC on 7345

CZECHOSLOVAKIA: Radio Czechoslovakia. News on Czech crafts, and a hydroelectric project. "Mailbag." English service ending at 0128 UTC. Excellent signal quality. (Gasque, SC) Additional monitoring on this frequency from 0320-0415 UTC. (John Carson, Norman, OK) (Wright, MS)

0128 UTC on 4852.4

YEMEN: Rep. of Yemen Radio. Arabic. Continuous talk and reading from announcer to 0205 UTC. Mentions of city San'a at 0205 UTC. Brief news spot to Holy Koran recitations at 0210. (Gasque, SC)

0144 UTC on 6030

BRAZIL: Radio Globo. Portuguese. Fair signal quality for an excited announcer's evening program. Radio Universo heard on 9565 kHz at 0720 tune-in, with fair signal quality. Radio Educacao Rural's morning show heard on 3385 kHz at 1015 UTC. News briefs and IDs included. (Gasque, SC)

0212 UTC on 9680

USA: Voice of Free China Relay. Special program features on Taiwan, and interviews with the English Department staff. (Tucker, GA) Stock Market Report and news on international film festival heard on 5950 kHz at 0214 UTC and 0705 UTC. (Carson, OK)

0215 UTC on 5060

IRAQ: Clandestine-Sedya Mohajaden. Arabic. Anti-Iranian clandestine using Radio Baghdad's transmitters. Programming mostly talk with classical and march music. Station constantly jumps frequencies between 5060-5090 and 4670-4690 kHz. Programming usually begins at 0215 UTC and continues until after 0430 UTC. (Gasque, SC)

0248 UTC on 11755

FINLAND: Radio Finland. Station IDs for close of transmission. (Eric M. Walton, Vancouver, BC Canada) Newscast at tune-in at 0732 UTC on 9560 kHz. News editorials followed, with co-channel interference from Swiss Radio. (Gasque, SC) News, weather, and "Perspectives" show at 1441 UTC on 15400. (Tucker, GA)

0300 UTC on 15575

SOUTH KOREA: Radio Korea. Korean style music and features. (Gary Bertsch, AZ) Additional monitoring on 9750 kHz at 1218 UTC. News and editorials on Korean/Japanese relations. (Tucker, GA) Regional news on

7275 kHz at 1124 UTC. (Craig Young, Okinawa)

0325 UTC on 9420

GREECE: Voice of Greece. Greek/English. Greek folk music to 0340 UTC. Fair signal for English newscast. (Dave Frenz, Milwaukee, WI) Monitored on parallel frequencies 9395/11645 kHz from 0340-0350 UTC. (Bertsch, AZ) Greece's Radio Macedonia heard on 11595 kHz at 1935 UTC with Greek programming amid poor to fair signal. (Maywoods DX Team, KY)

0408 UTC on 9655

SWAZILAND: Trans World Radio. Religious music and announcements in unknown African vernacular. English ID at 0430 UTC. (Tucker, GA)

0430 UTC on 970

VENEZUELA: Radio Rumbos. Spanish. Audible also on parallel 9660 kHz. Station ID at tune-in, into Venezuelan music program. (ED) Radio Nacional heard on 9540 kHz from 1145-1159 UTC. Station IDs with fair signal to fade-out. (Terrence, NY)

0503 UTC on 7255

NIGERIA: Voice of Nigeria. Interview on new federal capital Abuja. Intermittent fading during African music and discussion on African human rights. (Tucker, GA) (Maywoods DX Team, KY)

0540 UTC on 8005 USB

RUSSIA: Radio Baltica. Russian. Male/female announcer chat, interrupted by ID at 0558 UTC. Strong signal. Possibly some type of feeder, but unsure at this time. (Gasque, SC)

0545 UTC on 5010

CAMEROON: CRTV-Garoua. French. Pop French vocals to local news briefs. (Maywoods DX Team, KY) CRTV-Buea heard on 3970 kHz at 2245 UTC. Pop vocals heard to drumbeat interval signal. Station sign-off at 2304 UTC and national anthem. (Wright, MS)

0600 UTC on 3366

GHANA: Ghana Broadcasting Corp. International news and station ID. (Maywoods DX Team, KY) News, anthem, and ID "this is Ghana broadcasting from Accra." Vernacular language following. (Terrence, NY)

0810 UTC on 7490 USB

RUSSIA: Radio Unis. Russian/English. Tune-in to a weak signal for folksy music. At 0814 UTC, station suddenly boosted their power, as if the engineer suddenly threw the switch! Lady came on with an English announcement looking for investors with phone number included. Phone number given as: 095-233-6060 or 095-233-6244. Then just as quickly, the station dropped in power as before 0815 UTC. This one was weird! (Gasque, SC) *David, readers might be interested to know this station is called Radiostanisia Yunost, a program for youth. (Yunost is Russian for Youth) Station is indeed running ads and check 4740 kHz at this time. (ED.)*

0826 UTC on 3925

JAPAN: Radio Tanpa. Japanese. Radio play in progress at tune-in. Public service type announcements and station ID. Musical jingle ID at 0859 UTC. Good signal with minimal amateur-radio interference. (Gasque, SC)

1235 UTC on 15255.5

BANGLADESH: Radio Bangladesh. Fair signal for talk in indigenous language, and references to Dacca. (Brian Schaft, Berea, OH) Weak signal for English IDs, native music and news. (Frenz, WI)

1612 UTC on 21505

SAUDI ARABIA: BSKSA. Arabic/English. Interview with American who recently converted to Islam, with Arabic translation. (Tucker, GA) Additional monitoring on 9705 kHz at 1855 UTC. English service with listener phone-in calls, and discussions on regional issues. Signal fair with deep fading. (Frenz, MI)

1615 UTC on 11980

GUAM: Adventist World Radio. "DX Asia Waves" program monitored to 1625 UTC. Excellent signal quality with only minimal background interference. (Charles Mc Coy, Aurora, CO) Indonesian service monitored on 15310 kHz at 2025 UTC. (Young, Okinawa) "Musical Break" program and biblical drama at 2305 UTC on 15610 kHz. (Carson, OK)

2025 UTC on 15505

KUWAIT: Radio Kuwait. Arabic. Weak Arabic vocals to station ID. Time tips and national news items. (Wright, MS) Arabic programming at 2105 UTC. Interviews to trumpet interval signal and ID at 2200 UTC. (Hunter, PA)

2050 UTC on 15120

SRI LANKA: SLBC. Talk, indigenous music, and station IDs. QSL address to "Up on the Moon" tune. Signal overwhelmed by VOA sign-on at 2122 UTC. (Tucker, GA) (Wright, MS)

2215 UTC on 7429.8

RUSSIA: Radio Volikov. Russian. After repeated replaying of the tape, I believe this station is called Volikovsbmoui-vyshkevani. Mostly Russian pop music, station ID at 2259, and station sign-off at 2300 UTC. (Gasque, SC)

2220 UTC on 6060

KAZAHKSTAN: Radio Alma Ata. Russian. Clear signal for monitoring a Eastern Orthodox religious service. Music continuing for overall religious transmission. (Maywoods DX Team, KY)

2350 UTC on 4940

KYRGYZSTAN: Radio Yakut. Russian. Adult pop music at tune-in. Station ID at 2352 and 2357 UTC. Radio Moscow covered this frequency with news to 0005, followed by classical music program. (Gasque, SC)

Larry Van Horn
c/o MT, P.O. Box 98
Brasstown, NC 28902

Exclusive: Air Force Weather Stations

Until three years ago, it was widely reported in the hobby press that the military stations sending FAX and RTTY weather information on HF frequencies were transmitting from Carswell AFB, TX. But the theory didn't hold up to investigation in the July 1989 issue of *MT*, when I revealed the story of the U.S. Air Force's High Frequency Regional Broadcast (HFRB) stations.

It took many calls to find out the location of these stations, but I finally found an office that could answer my questions. The USAF Air Weather Service (AWS) at Scott AFB was very interested in getting the word out about their new weather broadcast stations.

At present, there appear to be at least four confirmed stations on the air out of a 1989 proposed network of eleven stations. Stations have been identified at Elk Horn, NE, near Offutt AFB; Elmendorf AFB, AK; Homestead AFB, FL; and Vicenza Naval Base in Italy. Other sites supposed to be in operation now include Guam, probably Croughton in England, and several still undisclosed sites.

The HFRB transmitter at each site sends out an independent side band broadcast. The facsimile rests on the upper side band about 1 kHz above the base frequency, and the RTTY is on the lower side band about 2 kHz below the center frequencies listed in this column. The transmitter sends out its signal to an antenna that has both a high and low takeoff angle assuring the reception of a good signal no matter whether the receiver is close to or far from the transmit site.

The RTTY side of the broadcasts contains coded weather information, and the facsimile sends out weather charts. FAX broadcasts use 120 rpm/576 IOC, and RTTY will be broadcast at 74.2 baud.

According to an official Air Force source, there is no schedule for these broadcasts. It is catch as catch can on any particular weather product being available at any particular day or time.

The broadcasts are intended for US Air Force units that are deployed and need weather information. I am sure that some sort of agreement is reached by the deployed units, and the serving HFRB on what weather products will be sent. None of the stations in the system seem to run parallel, indicating, as the name of the network says, that they are regional in nature.

For the most part, broadcasts on these stations will be in the clear; however, these stations might have occasion to scramble some of the message traffic, depending on which deployed units are getting the weather traffic, though I haven't seen any scrambling during my monitoring periods.

The system is being used by deployed U.S. Army units as well. It is my understanding that the information comes from the U.S. Air Force Air Weather Service automated weather network.

Since the original article appeared in July 1989 and an update in October 1990, some additional changes have occurred to the network. For one thing, the stations are no longer under the AWS at Scott.

As most of you are probably aware, the military is doing some major changes and down sizing. The Air Force is rapidly moving towards only two major commands in the future: Air Combat (old SAC/TAC together) and Air Mobility (old MAC and others). The exact alignment of all the old into the new I don't know at this moment; but the changes have already started, and one source indicates that the HFRB stations will be under the

Air Force
Weather Service,
Elk Horn,
Nebraska.



Air Combat umbrella once all is said and done. Right now they belong to the host command at the base they are located at. Hence it is difficult to get any kind of solid information on the whole status of the network.

Here is the frequency/station information as I currently have it.

AFS - Elk Horn, NE (near Offutt AFB) was the first HFRB to join the network. This station's frequencies as listed currently by the Air Force are as follows: 3231, 5096, 6904, 10576, 11120, and 19326 kHz. The 3, 5 and 6 MHz frequencies are used at night and the 10, 11 and 19 MHz are daylight channels.

The second station to join the network was Elmendorf AFB in Alaska. The listed center frequencies for that station are 2280, 3394, 5096 all at night and 7398, 10665, 15805 and 19332 kHz used during daylight hours.

Another long awaited station seems to have recently appeared in the spectrum. That station is located in Homestead AFB in Florida. This station will probably broadcast weather to the Caribbean and Latin American units. According to the AWS staff in Homestead, the following frequencies are being used: 3398, 4855, 7398 (a strong daytime frequency here in New Orleans), 7870, 10997, 11622, 15781 and 19363 kHz.

In the 1992 edition of the *Klingenfuss Utility Guide*, Joerg lists a new AWS station in Vicenza, Italy, using the call sign IBH. He reports the following frequencies in use: 5233 (Fax), 5237 (Fax), 5394 (Fax), 7621 (RTTY), 7625 (Fax), 13587 (Fax).

In addition, Joerg also lists 13384 (Fax) and 13387 (RTTY) as Elk Horn, but I disagree with that assessment. The base frequency of 13386 kHz is not part of the frequencies released to me by the Air Force for Elk Horn. Based on sketchy monitoring that I have done, my guess is these 13 MHz frequencies are probably coming from Europe (maybe from Croughton).

Jacques d'Avignon in Cornwall, Ontario, has also reported hearing AWS FAX transmissions on 7624 (Italy?) and 20909 kHz. That last frequency has yet to be attached to a known AWS site.

It will be difficult to assess or get additional information on this network until the Air Force gets these stations under one command again, but we'll bring you an update in a few months, as more becomes available.

Name Changes Galore!!!

Just when you thought it was safe to come out of the dark and start to understand everything happening in Eastern Europe and the old Soviet Union, along comes a new list. This time our good friend at the Library of Congress Federal Research Division, Mr. Tim Merrill, has come to the rescue to update all of us on some of the name changes they have for the former Eastern Bloc nations and the CIS. Table 1 lists these changes. Thanks, Tim, and be sure to keep us posted on any more so that we can pass them on to our readers.

In the Mailbag

I always look forward to contributions from Paul over across the pond. Recently, he sent some interesting frequencies and callsigns:
• 6728 20/48 TFW (Tactical Fighter Wing) over in Europe

Table 1

Russian Republic (Approved name changes)

<u>Former Name</u>	<u>New Name</u>	<u>Coordinates</u>
Andropov	Rybinsk	58° 03'N 30° 50'E
Brezhnev	Naberezhnyye Chelny	55° 42'N 52° 19'E
Chernenko	Sharypovo	55° 33'N 89° 12'E
Frunze	Bishkek	42° 54'N 74° 36'E
Gegechkori	Martvili	42° 24'N 42° 22'E
Georgiu-Dezh	Liski	50° 59'N 39° 30'E
Gorkiy	Nizhniy Novgorod	50° 20'N 44° 00'E
Gotval'd	Zmiyev	49° 41'N 36° 21'E
Kalinin	Tver'	56° 52'N 35° 55'E
Kirovabad	Gyandzha	40° 41'N 46° 22'E
Kuybyshev	Bulgar	54° 57'N 49° 04'E
Kuybyshev	Samara	53° 12'N 50° 09'E
Leninabad	Khudzhand 4	0° 17'N 69° 37'E
Leninakan	Kumayri	40° 48'N 43° 50'E
Leningrad	Sankt-Peterburg [Russian] Saint Petersburg [Conventional]	59° 55'N 30° 15'E
Makharadze	Ozurgeti	41° 56'N 42° 00'E
Mayakovskiy	Bagdadi	42° 04'N 42° 49'E
Mikha Tskhakaya	Senaki	42° 17'N 42° 04'E
Ordzhonikidze	Kharagauli	42° 01'N 43° 13'E
Ordzhonikidze	Vladikavkaz	43° 00'N 44° 44'E
Rybach've	Issyk-kul'	42° 20'N 76° 12'E
Sverdlovsk	Yekaterinburg	56° 51'N 60° 30'E
Tsulukidze	Khoni	42° 20'N 42° 26'E
Ustinov	Ishevsk	56° 51'N 53° 14'E
Voroshilovgrad	Lugansk	48° 34'N 39° 20'E
Zagorsk	Sergiyev Posad	56° 18'N 38° 08'E
Zhdanov	Mariupol' 4	7° 06'N 37° 33'E
Zhdanov-Port	Mariupol'-Port	47° 04'N 37° 30'E

Administrative Name changes in the former Soviet Union

<u>Former Name</u>	<u>New Name</u>	<u>Coordinates</u>
Gor'kovskaya Oblast	Nizhegorodskaya Oblast	56° 00'N 45° 00'E
Krymskaya Oblast	Krymskaya A.S.S.R.	45° 00'N 34° 00'E
Kuybyshevskaya Oblast	Samarskaya Oblast	53° 12'N 50° 09'E
Moldavskaya S.S.R.	S.S.R. Moldova	46° 30'N 27° 00'E
Krasnovodskaya Oblast [abolished in 1988]	Balkanskaya Oblast [reestablished in 1991]	40° 00'N 54° 30'E

Tentative Name Changes in the former Soviet Union

<u>Former Name</u>	<u>New Name</u>	<u>Coordinates</u>
Kalinino	Tashir	41° 07'N 44° 17'E

Kirov	Vjatka	58° 33'N 49° 42'E
Shevchenko	Aktau	43° 39'N 51° 13'E
Tol'yatti	Togliattigrad	53° 31'N 49° 26'E
Ul' yanovsk	Simbirsk	54° 20'N 48° 24'E
Armyskaya S.S.R.	Respblika Armeniya	40° 00'N 45° 00'E
Azerbaydzhanskaya S.S.R.	Azerbaydzhanskaya Respblika	40° 30'N 47° 30'E
Belorusskaya S.S.R.	Respblika Byelarus	53° 00'N 28° 00'E
Gruzinskaya S.S.R.	Respblika Gruzija	42° 00'N 43° 30'E
Kirgizskaya S.S.R.	Respblika Kyrgyzstan	41° 00'N 75° 00'E
S.S.R. Moldova	Respblika Moldova	46° 30'N 27° 00'E
Tadzhikskaya S.S.R.	Respblika Tadzhikistan	39° 00'N 71° 00'E
Turkenskaya S.S.R.	Respblika Turkmenistan	40° 00'N 60° 00'E
Ukrainskaya S.S.R.	Ukrayina	49° 00'N 32° 00'E
Uzbekskaya S.S.R.	Respblika Uzbekistan	41° 00'N 64° 00'E

The following name changes have been approved in Eastern Europe

<u>Former Name</u>	<u>New Name</u>	<u>Coordinates</u>
Albania:		
Gyteti Stalin	Kucove	40° 48'N 19° 54'E
Bulgaria:		
Tobukhin	Dobrich	43° 34'N 27° 50'E
Czechoslovakia:		
Gottwaldov	Zln	49° 13'N 17° 40'E
Hungary:		
Gyr-Sopron Megye (ADM1)	Gyr-Moson-Sopron Megye	47° 40'N 17° 15'E
Komrom e (ADM1)	Komrom-Esztergom Megye	47° 35'N 18° 20'E
Leninvros	Tiszajvros	47° 56'N 21° 05'E
Szabolcs-Szatmr Megye(ADM1)	Szabolcs-Szatmr-Bereg Megye	48° 00'N 22° 10'E
Szolnok Megye (ADN1)	Jsz-Nagykun-Szolnok Megye	47° 15'N 22° 30'E
Estonia:		
Estonian Soviet Socialist Republic	Republic of Estonia	59° 00'N 26° 00'E
Estonskaya S.S.R.	Eesti Vabarik	
Latvia:		
Latvian Soviet Socialist Republic	Republic of Latvia	57° 00'N 25° 00'E
Latviyskaya S.S.R.	Latvijas Republika atvija	
Lithuania:		
Lithuanian Soviet Republic	Republic of Latvia	56° 24'N 24° 00'E
Litovskaya S.S.R.	Lietuvos Respublika Lietuva	
Kapsukas	Marijampole	4° 34'N 23° 21'E

• An E-4 NEACP (National Emergency Airborne Command Post) Aircraft number 75-0125 operating in Europe recently was using the callsign ADOPT 21 on the way over and BEVO 85 on its return to the states.

• MAC (Military Airlift Command) flights connected with Torrejon AB, Spain, have been heard using the callsign READY 01/02/03, etc. The personal plane of Commander in Chief SAC (Strategic Air Command) is a KC-135E number 59-1514, heard using the callsign CASEY 01. Commander in Chief of Space Command was also noted using a KC-135 number 60-0376 and using the callsign SMOKEY 01.

Thanks for the info, Paul, please check in often.

Again from across the pond, this time in England, Robin Hood checks in to tell us about some single letter HF beacons in CW he is currently hearing.

Letter Frequencies

P	3167	3291	3649	3732	3807	3837	4043
	4476	4605	5305.7	5308.7	6507	6664	6708
	7034	8494	13636	17015	20991		
C	4302	5306	7039	8495	13636.1	16990	17016
	20992						

D	5304.2	7038.6	8494.6	13635.7	17015.7	20991.7
S	5305.8	7638	13635.8	17015.8	20991.7	
W	15011					

Finally, Robin Hood sends along the following RAF USB frequencies:

Akrotiri (Cyprus Flightwatch)	4730.0		
Bouler, UK	3116.0		
Neatishead, UK	4710.0	4739.0	
Portreath, UK	4710.0		
Upavon (ARCHITECT)	4540.0	4609.0	4742.0
Upavon VOLMET	4722.0		

Thanks to Robin Hood, Paul, Jacques, the AWS staff at Homestead and Scott AFB, including Sgt Black, the Old Salt (congrats in your retirement), and the rest of you on the next two pages who make this column top notch. "We couldn't do it without ya baby."

By the way, Gayle and I are on the Genie Service Radio and Electronics Round Table, and our mailbox is L.VANHORN1; feel free to submit column input through the mailbox only. Now let's see what you have been hearing this month in the Utility World.

Utility World

Utility Loggings

Abbreviations used in this column

Aero	Aeronautical	LSB	Lower Side Band
AFB	Air Force Base	MAC	Military Airlift Command
AM	Amplitude Modulation	MARS	Military Affiliate Radio System
ARQ-E3	Single channel ARQ data mode	MEDFER	Medium Frequency Experimental beacons
ARQ-M2	Multiplex ARQ data system with 2 data channels	Meteo	Meteorology
ARQ-POL	Polish diplomatic ARQ system	NDB	Non-directional beacon
AWACS	Airborne Warning and Control System	Ops	Operations
Canforce	Canadian Forces	OTHR	Over-the-horizon Radar
CG	Coast Guard	QRM	Interference
CGC	Coast Guard Cutter	QSX	I am listening to (frequency)
Comms	Communications	RTTY	Radio Teletype
COMSTA	Communications Station	SAC	Strategic Air Command
CP	Command Post	SAR	Search and Rescue
CQ	General Call for any station	SITOR-A	Simplex ARQ mode A
CW	Continuous Wave, Morse Code	sitrep	situation report
Freq	Frequency	TANJUG	Telegrafska Agencija Nova Jugoslavija
GCCS	Global Command and Control System	threatcon	threat condition
HF	High Frequency	Unid	Unidentified
ID	Identification	U.S.	United States
KCNA	Korean Central News Agency	USB	Upper Side Band

All frequencies in kilohertz (kHz), all times in UTC. All voice transmissions in English unless otherwise noted.

- 48.5 Unid stations sending a string of RTTY RY's then encrypted traffic at 1726. (Ted Hay-Watford, ON Canada) *Ted this was probably FXL-Silver Creek, NE a SAC COMSTA. They use this one with 50 baud encrypted RTTY all the time-Larry.*
- 522.0 TVX-Unid NDB with CW ID that takes three seconds at 0140. (Mike Hardester-Jacksonville, NC)
- 1620.0 SBT-Believe to be a MEDFER hobby beacon with code ID at 0525. Unlisted. (Hardester-NC)
- 1656.7 VA-MEDFER hobby beacon located at Smith Mountain Lake, VA at 0345 with code ID. (Hardester-NC)
- 1662.7 GDY-MEDFER hobby beacon located at Elliston, VA with poor reception at 0410 with code ID. (Hardester-NC)
- 2991.5 CFH-Canforce Halifax, NS with RTTY RY test tape and weather. (P.Loo-Montreal, ON)
- 3164.6 Single letter 'P' CW HF beacon heard at 2233. (PJS-United Kingdom) *Welcome to the column PJS-Larry.*
- 3195.0 RHP22-Unid station working RAP2 using RTTY and CW at 2355. (Jim-UK)
- 3196.0 Single letter 'R' CW HF beacon at 0009. (PJS-UK)
- 4028.0 Spanish female 5-digit number station in AM at 0601. (Bill Fernandez-MA)
- 4042.5 Single letter 'P' CW HF beacon heard at 0026. (PJS-UK)
- 4248.0 ZRQ-Cape(Simonstown) Radio, South Africa with V CW marker at 0022. (Jack Dix-Yonkers, NY)
- 4316.0 VHI2-Royal Australian Navy, Darwin with V CW marker at 1048. (Dix-NY)
- 4343.0 JWT-Stavanger Naval Radio, Norway with V CW marker and WLO QRM at 2327. (Dix-NY)
- 4350.0 TBB5-Turkish Naval Radio, Ankara with V CW marker at 2035. (Dix-NY)
- 4373.0 Y5C working Giant Killer in USB at 0530. (Norm Pihale-Northfield, MN) *Some nice stuff this month Norm, really like getting the aircraft ID vs call sign stuff. Keep up the good work-Larry.*
- 4593.5 U.S. Air Force MARS net heard in USB at 0121 with heavy QRM. (Lish-FL)
- 4594.0 German female 3/2-digit number station in AM at 0608. (Fernandez-MA)
- 5015.0 German female 3/2-digit number station in AM at 0615. (Fernandez-MA) *The same at 0036. (Lish-FL)*
- 5223.0 B6A working unid station in USB at 0620 and CG 1720 working COMSTA Miami in USB on frequency 3 echo 5. (Pihale-MN)
- 5246.0 RFI51-Unid station with 50 baud RTTY at 2322. (Jim-UK)
- 5305.5 Single letter S/C CW HF beacons at 0011. (PJS-UK)
- 5414.0 English female 5-digit number station in AM at 0315 (Fri UTC). (Tom Mazanec-Maple Heights, OH)
- 5758.5 U.S. Army MARS net in USB at 1537. (Henry Brown-East Falmouth, MA)
- 6375.0 PWB33-Belem Radio working other station CW simplex at 1003. (Dix-NY)

- 6383.0 6VA-Dakar Radio, Senegal with CQ CW marker at 2041. (Dix-NY)
- 6471.8 SXA24-Greek Naval Radio, Piraeus with V CW marker at 2045. (Dix-NY)
- 6507.0 Single letter 'B' CW HF beacon heard at 2113. (PJS-UK)
- 6508.0 German female 5-digit number station in AM at 0410 (Sat UTC). (Mazanec-OH)
- 6693.0 Navy type comms. Operator suggested that Sierra-4 Juliett Golf go green in USB at 0906. (Brown-MA) *Interesting, Henry, that tactical call has been used a lot, wonder who that is-Larry.*
- 6761.0 Fogpatch Control working unid SAC aircraft in USB at 0820. (Peter Stawick-Norman, OK) *Welcome to the column Peter, hope you check in often-Larry.* Tribe 43 (B-1B) Huron 32 (KC-135) and Hawk 87 (B-1B) working Sunspot at 0442. Grandslam (Grand Forks AFB CP) with a message for Norse 41 (B-1B aircraft based out of Grand Forks) at 1524. Super 70 (KC-135) and Exxon 76 (KC-135) working Rams Head at 1617. Snoop 10 (RC-135) working Footwork at 0313. Havoc 73 (B-52H) working Footwork at 0325. Luger 14 (B-52) working Lump Sum ops at 0439. Tuff 52 (B-52) with phone patch to Luke Meteo at 0051. Awake 67 and Guss 10 (KC-135) told to switch to 11111 at 0105. Jambo 17 (B-52) working Brushwork at 0220. Chill 19 (B-52) working Warriors Den (Minot) at 0546. All comms used USB. (Pihale-MN)
- 6820.0 Heard. "Will you give me Bobby's dispatch." Sounded like a Caribbean accent. Heard Hamilton and what sounded like Bermuda Control mentioned in USB at 0953. (Brown-MA) *Interesting, Henry, the only thing I have for this one in the past was Orion Control at Wright Pat working an aircraft going into Andrews. This one bears watching as well-Larry.*
- 6825.0 Spanish female 5-digit number station in AM at 0220. (John L. Gomer-Sacramento, CA) *Welcome, John, hope you report often-Larry.*
- 6840.0 Spanish female 4-digit number station in AM at 0230. (Gomer-CA)
- 6890.0 Spanish female 5-digit number station in AM at 0510. (Gomer-CA)
- 6897.0 MAC 71001 with Cape Osborne. MAC aircraft is on the ground at Banjo and will maintain a listening watch. Also heard CGC Dependable and King 2 working DOD Cape at 2253 in USB. Banjo is the alternate landing site in Gambia. Some comms were heard on 4855. (Brown-MA)
- 7425.0 Spanish female 4-digit number station in AM at 0300 and 0400 (Sat UTC). (Mazanec-OH) Also heard at 0300 with 4-digit numbers (Stawick-OK)
- 7457.0 Unid station idling ARQ-E3 signal. (P.Loo-Montreal, ON)
- 7460.0 Tors Cove Radio, St. Johns, Newfoundland with USB phone patch traffic to a fishing boat off Labrador at 1130. (Ray McCarthy-Sag Harbor, NY)
- 7570.0 OYR-Adsiat Radio, Greenland with CW CQ marker at 0009. (Dix-NY) *Nice catch Jack-Larry.*
- 7662.0 KWA80-Unid State Radio with QSX CW marker at 2313. (Dix-NY) *Guam looks better based on propagation. Too early for Japan, another old KWL90 frequency-Larry.*
- 7767.0 Holemaster working an unid station in USB at 1140. (Brown-MA)
- 7947.0 Spanish female 5-digit number station in AM at 1525. (Fernandez-MA)
- 8079.0 English female 3/2-digit number station in AM at 0040. (Dix-NY)
- 8449.3 8PO-Bridgetown Radio, Barbados with CW DE marker at 2045. (Jim-UK)
- 8471.8 SUP-Port Said Radio, Egypt with CQ CW marker at 2124. (Jim-UK)
- 8173.0 German female 3/2-digit number station at 2346 in USB. (Dix-NY)
- 8441.4 70A-Aden Radio, Yemen with DE CW marker at 1816. (Dix-NY)
- 8442.3 TCR-Istanbul Radio, Turkey with CQ CW marker at 2000. (Dix-NY)
- 8446.4 ZAD2-Durres Radio, Albania with V CW marker at 2113. (Dix-NY)
- 8450.0 5AB-Benghazi Radio, Libya with CQ CW marker at 2357. (Dix-NY)
- 8454.8 9WH20-Kota Kinabalu Radio, Malaysia with CQ/traffic list CW marker at 1032. (Dix-NY)
- 8457.0 PKP-Dumai Radio, Indonesia with CQ CW marker at 1019. (Dix-NY)
- 8459.0 YQI4-Constanta Radio, Romania with CQ CW marker at 1910. (Dix-NY)
- 8474.0 JYO-Aqaba Radio, Jordan with CQ CW marker at 2113. (Dix-NY)
- 8494.0 Single Letter 'S' CW beacon at 1016. 'P' marker at 0906. (Dix-NY)
- 8495.0 Single Letter 'C' CW beacon at 1005. (Dix-NY)
- 8521.0 AIS26-Unid station with V CW marker at 1949. (Dix-NY) *Jack believe this is VIS26 out of Sydney, Australia-Larry.*
- 8530.0 HML-Nampho Radio, North Korea with CQ CW marker at 1130. (Dix-NY)
- 8600.0 RIT-Moscow Naval Radio, Russia with call for UGKO in CW at 1922. (Dix-NY)
- 8609.0 CLJ-Havana Radio, Cuba with CQ CW marker at 1001. (Dix-NY)
- 8734.0 VIP-Perth Radio, Australia working Queen Elizabeth II with duplex phone patch traffic in USB at 1214. (Henry Brown-E. Falmouth, MA)
- 8788.0 WLO-Mobile Radio, AL with weather broadcast simulcast on 8806 in USB at 1209. (Brown-MA)
- 8972.0 Many tactical calls here on Navy Atlantic Safety of Flight frequency in USB at various times. (Fred Dodge- Menands, NY)
- 8989.0 Panther Delta with phone patch thru McClellan GCCS to Tiger Ops with sitrep on air base defense exercise at Davis Field with KIA sniper.

	Threatcon Bravo. Classified secret-simulated. Said to later use 9650 primary and 9510 secondary and later 5960. (Norm Pihale-Northfield, MN) <i>Hummm, most interesting log from a lot of perspectives including the 'water dripper'-Larry.</i>	14359.0	SNN299-Ministry of Foreign Affairs, Warsaw, Poland with 75 baud RTTY 5 letter groups at 0820. (Burkart-LA)
8993.0	MAC 67948 (C-141) working Ascension GCCS in USB at 0531. Bull 65 (C-130 out of Little Rock, AR) working phone patch to FORMAT thru MacDill GCCS in USB at 0237. (Pihale-MN)	14547.5	JAL44-Kyodo Tsushin News Service with English language news with heavy QRM from an unknown station transmitting SITOR-A at 0800. (Burkart-LA) <i>Probably the Italian embassy in Algeria on 14546.5-Larry.</i>
9006.0	Sierra 4 Juliett Golf working Trenton military at 0138 in USB. (Pihale-MN) <i>Now I know I had seen that callsign before. Quick check of callsign database says that it is the call of the Navy Atlantic Tacamo aircraft-Larry.</i>	14786.5	9PL-Kinshasa Aero, Kenya with 50 baud RTTY test tape at 0755. (Burkart-LA)
9023.0	Huntress working Okie Sam in USB with an all stations test at 0401. (Brown-MA) Chalice Bravo requesting status from Fred in USB at 1614. E-3 AWACS ground link control. Sentry 44 (E-3) with a phone patch to Trenton Military thru Raymond 24 in USB at 0334. (Pihale-MN)	14832.0	KGA63/67-Unid stations exchanging CW radio checks at 1722. (Dix-NY)
9109.0	821-Unid station with VVV of 821 DBB CW marker at 2352. (Dix-NY)	14880.0	JMG4-Tokyo Meteo with 50 baud RTTY coded weather messages at 0710. (Burkart-LA)
9117.5	PCW1-Ministry of Foreign Affairs, Den Haag, Netherlands with SITOR-A idler and CW ID at 2223. (Dix-NY)	14936.2	NNN0NIK- U.S. Navy MARS station passing SITOR-A message traffic at 1627. (Hey-ON)
9252.0	Spanish female 5-digit number station in AM at 0400. (Gomer-CA)	15000.0	JJY-Tokyo Standard Time and Frequency Station, Japan with morse code ID twice and voice ID under WWVH with reasonable signal at 1140. (L Van Horn-LA)
10125.0	CIO-Israeli Mossad Number station in AM at 0245. (Gomer-CA)	15682.0	English female 5-digit number station at 1737 in USB. (Dix-NY)
10281.0	French Army station [RTI] circuit using ARQ-E3, "Controle de Voie". (P.Loo-Montreal, ON)	16528.0	WYD-Seattle Radio, WA calling Star Hong Kong at 1817 in USB. (Dave-KA0ZIR)
10465.0	Several males talking in Spanish, fast burst of Spanish phrases and numbers interspersed with whistling, some CW (smugglers?) from 0255-0322 in USB. (Gomer-CA) <i>Probably smugglers John-Larry.</i>	16922.0	HMZ-Pyongyang Radio, North Korea with CQ CW marker at 0005. (Dix-NY)
10521.0	French Army station [IMA] circuit using ARQ-E3. (P.Loo-Montreal, ON)	16960.0	Unid station sending VVV B LUM and VVV B LUL in CW most evenings here on the west coast. (John Maky-Green Valley, CA) <i>John while the two calls you had are not listed based on the marker and general frequency area, I believe you were hearing FUF-Martinique, FUM-Papeete, or FUJ-Noumea all French Naval Radio stations in the marine band. Give them another listen. These stations all transmit around 16960-Larry.</i>
10780.0	Vessel Liberty Star (Shuttle solid rocket booster recovery ship) calling Cape Radio in USB at 1247. Cape sent them to 5810 as their primary frequency. (Brown-MA)	17080.0	UA13-Nakhodka Radio, Russia with a manual 50 baud RTTY transmission at 0730. (Burkart-LA)
10908.0	RMP-Russian Naval Radio, Kaliningrad with CW call to UAN5 at 2037. (Dix-NY)	17125.0	JJF-Tokyo Naval Radio, Japan calling JSVY in CW at 2330. (Dix-NY)
11111.0	Guss 10 noted here from 6761 at 0109, called frequency 'Quad One' in USB. (Pihale-MN) <i>Good catch Norm, new one for me and others I am sure. Wonder if this also has a regular SAC designator?-Larry</i>	17141.6	UFN-Novorossiysk Radio, Russia with 50 baud RTTY messages at 0721. (Burkart-LA)
11139.0	Unid diplomatic RTTY station using 75 baud sending plain text news items at 0840. DFZG? (Mark Burkart-New Orleans, LA) <i>Probably Mark, nothing from Klingentuss-Larry.</i>	17163.0	RNO-Russian Arctic/Antarctic Meteo Center, Mscow with 50 baud RTTY transmission at 0740. (Burkart-LA)
11174.0	Stations RMMZ, UAHY and RMNJ working each other using CW simplex at 2048. (Dix-NY)	17170.0	ZLW-Wellington Radio, New Zealand with CW DE marker at 1827. (Dix-NY)
11176.0	RS803-U.S. Navy C-9 aircraft working Ascension GCCS in USB at 0419. MAC 67951 and 50220, both aircraft C-141 working Ascension GCCS in USB at 2213. (Pihale-MN)	17245.0	KMI-Dixon Radio, CA working ship duplex phone patch traffic in USB at 1814. (Lish-FL)
11198.5	LYNX-Noted an SITOR idler using the call sign 'LYNX' at 2344. (Dix-NY)	17284.0	CUL-Lisbon Radio, Portugal working ship duplex phone patch traffic in Portuguese at 1855. (Lish-FL)
11239.0	MAC 38081, 67952 and 60147 all C-141 aircraft working McClellan GCCS in USB. (Pihale-MN)	17311.0	KMI-Dixon Radio, CA working ship duplex phone patch traffic in English using USB at 1947. (Lish-FL)
11243.0	Roma 65 (KC-135) working Sizeable in USB at 1529. (Pihale-MN)	17323.0	FFL81-St. Lys Radio, France working ship duplex phone patch traffic in French using USB at 1941. (Lish-FL)
11246.0	AAC1004-Colombian Air Force aircraft working MacDill AFB GCCS in USB at 1724. (Brown-MA)	17341.0	SVN6-Athens Radio, Greece working ship duplex phone patch traffic at 1934 using USB. (Lish-FL)
11475.7	HMF52-KCNA New Agency Pyongyang, North Korea with RTTY 50 baud news items at 0529. (Burkart-LA)	17347.0	PCG61-Scheveningen Radio, Netherlands working ship duplex phone patch traffic in Dutch using USB at 1925. (Lish-FL)
11605.0	Unid station sending a series of V's OVG5 8/12/16/ ZKR6 7 10 11 MC/S in CW at 1820. Who is this? (Ron Pratt-Oak Harbor, WA) <i>Ron it is probably OVG-Danish Naval Radio on 11607.5 out of Frederikshavn-Larry.</i>	18019.0	Rook 01 working several stations here in USB at 1638 - 1748. (John Parks-Cleveland, OH) Raymond 19 working Aphid 77/78 with weather for Eglin at 0204 in USB. (Brown-MA)
11620.0	SLL2/3-Unid stations with V CW marker at 2355. (Dix-NY) <i>Jack believe this was HLL 2/3 Seoul Meteo in CW on this frequency-Larry.</i>	18414.8	8BY-Unid station sending a V CW marker at 1646. (Dix-NY)
11638.0	DDK8-Hamburg Meteo, Germany with RTTY 50 baud test tape at 0830. Note that 4583 (DDK2) and 7646 (DDH7) were also listed on test tape. (Burkart-LA)	19822.5	5AF-Tripoli Air, Libya with RTTY RY's at 50 baud at various times. (Hay-ON)
12210.0	KWA80-Unid State Radio on an old KWL90 Manila freq with CW QSX marker at 0059. (Dix-NY) <i>I still believe propagation favors the Pacific, probably Guam-Larry.</i> Spanish male sending letters and numbers in AM at 0320. (Gomer-CA) <i>Interesting log John-Larry.</i>	19865.0	YZJ4-TANJUG Belgrade, Yugoslavia with RTTY news in Spanish at 1728. (Hey-ON)
12678.0	UQE-Kholmok Radio, Russia with V CW marker at 0003 (Dix-NY)	20280.0	USAFOTH-R-B Radar. Interesting that this (and whole project) installation was dropped a year ago but was thought to be operated by a skeleton crew for 8 hours a day for possible Customs/SAR and other peace time uses. I have heard this site active the past year but with only about 5% of the original air time as when it was tested and in use in the early warning system. Heard at 2108. (Fernandez-MA)
12684.5	UFM3-Nevelsk Radio, Russia with CQ CW marker at 1101. (Dix-NY)	20286.5	SPW-Warsaw Radio, Poland with SITOR-A news in Polish at 1449. (Hay-ON)
12711.0	HCG-Guayaquil Radio, Ecuador with V CW marker at 0939. (Dix-NY)	20418.0	Unid ARQ-M2 stations idling at 0551. (Burkart-LA) <i>I only show Poland here with ARQ-POL-Larry.</i>
12720.0	UPB-Providenia Bukhta Radio, Russia with CQ CW marker at 2103. (Dix-NY)	20991.0	Single letter 'K' CW HF beacon heard here 24 hours a day on the west coast. (Maky-CA)
12844.5	UON-Baku Radio, Russia calling 4KK in CW at 1302. (Dix-NY)	20991.5	Single letter 'S' CW HF beacon heard at 1119. (PJS-UK)
12847.0	DZE-Mandaluyong Radio, Philippines with CW CQ marker at 1220. (Dix-NY)	22705.0	FFL92-St. Lys Radio, France with French ship duplex phone patch traffic using USB at 1610. (Lish-FL)
13201.0	MAC 60148 (C-141) working McClellan GCCS in USB at 2254. (Pihale-MN)	22708.0	PCG71-Scheveningen Radio, Netherlands with Dutch ship duplex phone patch traffic using USB at 1616. (Lish-FL)
13244.0	MAC 40620 (C-141) working Ascension GCCS in USB at 2226. (Pihale-MN) JT655 (Navy C-9) working VR-56 ops thru MacDill GCCS, diverting to Norfolk due to fuel leak. (Larry Van Horn-New Orleans, LA)	22780.0	EHY-Madrid Radio, Spain with duplex phone patch traffic using USB in Spanish at 1900. (Lish-FL)
13560.0	BMB-Taipei Meteo, Taiwan with a V CW marker at 0028. Announced the following frequencies in marker 3641/5909/8117/13560. (Dix-NY)	22795.0	XDA-Mexico City Radio, Mexico with duplex phone patch traffic using USB in Spanish at 1920. (Lish-FL)
13636.2	Single letter 'F' CW HF beacon at 0031. (Dix-NY)	22801.0	KMI-Dixon Radio, CA working ship duplex phone patch traffic using USB at 1944. (Lish-FL)
13991.5	STK-Khartoum Air, Sudan with RTTY RY's 50 baud at 1951. (Hay-ON)	22807.0	PPR-Rio de Janeiro Radio, Brazil with duplex phone patch traffic using USB in Portuguese at 1922. (Lish-FL)
		22937.0	English female 5-digit number station in AM at 2102. (Fernandez-MA)

The Scanning Report

Bob Kay

*c/o MT, P.O. Box 98
Brasstown, NC 28902*

Bicycle Scanning

Scanning from a bicycle provides a degree of mobility and invisibility that cannot be experienced from an automobile. A cyclist can stop along the road, or rest beneath a tree without drawing attention to his or her activities. And if you're stopped next to a transmitting antenna, no one will know that you're trying to capture the frequency.

Scanning from a bicycle is easy. Simply attach a hand held scanner radio to your belt, and clip a small speaker (Grove Catalog--SPK 9), to your shirt collar. Interested in a more sophisticated system? No problem. Scanner buffs who are familiar with a few basic hand tools can easily install a scanner radio, amplified speaker, frequency counter and mobile scanning antenna to a bicycle. If you're having difficulty mounting equipment to your bike, drop me a short note with an SASE to Bicycle Scanning, P.O. Box 98, Brasstown, NC 28902. Briefly describe your problem and I'll do my best to provide a solution.

Are your local police using a special frequency that can't be located in frequency directories? Take your frequency counter for a bike ride near the police station. During the change of shifts, police officers will usually check their radios from the parking lot. If you're riding in the vicinity, you stand a good chance of catching that elusive frequency.

Exploring a military base from a bicycle can be an exciting experience. A cyclist can usually enter a military installation with nothing more than a standard "walking visitor pass." Few installations require specific passes for bicycles. Upon entering the base, fire up your frequency counter and look for nearby antennas.

Construction sites can provide hours of colorful and interesting monitoring. To discover the operating frequencies, stop your bike near the activity and wait for someone to use a transmitter. The displayed frequency on your frequency counter can then be monitored on your scanner radio.

Cordless phone enthusiasts can leisurely cycle through their neighborhood and monitor dozens of cordless conversations. Apartments and other highly populated areas will provide hours of interesting conversations. If you're planning to stop for some serious monitoring, take along a pair of lightweight headphones. Most folks will think that you're listening to the FM broadcast band.

Taking your bike on a picnic is an excellent way to monitor the airways. Can't find the frequency to your local state park? Plan a picnic next to the park's dispatch building. Again, no one will suspect that your bicycle has been transformed into a 10 speed scanning machine. To help prevent detection of mounted equipment, bring along a towel or extra shirt and toss it over your equipment when it's not in use.

If your state has restrictive scanning laws, scanning from a bicycle may not protect you from prosecution. Licensed motor vehicle operators in Pennsylvania, for example, can be issued traffic citations when operating a bicycle. It is logical to assume that mobile scanning laws could also be applied to bicycle scanning. Since the answer isn't clear cut, review your local mobile scanning laws and choose your riding territory with care.

Scanning from a bicycle can also be dangerous. Don't try to manipulate the controls on your radio while cycling. Stop your bike in a safe area and then make the necessary adjustments. It's also a good idea to check with your doctor before you start cycling. Bicycle scanning has the seductive ability to lure you miles away from home. It is not uncommon to suddenly realize that there are miles of road between you and your doorstep.

*Bicycle
Scanning is
an excellent
way to get
outdoors
and
discreetly
capture
some new
frequencies.*



Scanning from a bicycle is a unique way to enjoy the hobby of scanning. You don't need a fancy bike, or expensive equipment. Simply push your portable scanner onto your belt and pedal your way into fun and adventure. See you in the park!

Treasure Hunt

Hurry. You have fifteen minutes to crank out a legally binding "Living Will." You have another ten minutes to draft and type a letter to challenge your credit rating. Selling a car? Try typing a "Bill of Sale" in less than five minutes.

Can't do it? Sure you can. But you'll need the software that was developed by Parsons Technology. "It's Legal 2.0" can prepare 24 binding legal documents in a matter of minutes using pull-down windows and on-screen prompts. Anyone can produce a Bill of Sale, Board of Directors Minutes, Better Business Bureau complaint letter, Request for Credit Report, letter to Challenge Credit Rating, General Power of Attorney, Durable Health Care Power of Attorney, a Living Will and much more.

It's Legal 2.0 is customized for each state. There's also a legal guide which explains the purpose and usage of documents. To produce a legally binding document in your state, simply type in a few lines of information, and the software fills in the proper legal jargon.

To win It's Legal 2.0, simply find the answers to the following clues:

1. The ECPA prohibits the monitoring of voice pagers. True or False?
2. The ECPA also prohibits you from de-scrambling a radio transmission. True or False?
3. What is the scan speed on Radio Shack's PRO-37?
4. A walkie talkie with a "red dot" designator would operate on what itinerant frequency?
5. Proficiency in Morse Code is required to operate Radio Shack's HTX-202. True or False?

The average list price of Parson products is only \$49.00 dollars. All Parson software has a thirty-day, no hassle, money-back guarantee. To receive a software catalog write to: Parsons Technology, Hiawatha, IA 52233-0100. The phone number is: (319) 395-9626. When you call or write, don't forget to mention *Monitoring Times*.

Frequency Exchange

Summer scanning in *Los Angeles County, California*, can be a lot of fun. Ralph Fellows lives nearby and he has provided an extensive list of L. A. County Sheriff Department frequencies:

Frequency	Channel	Frequency	Channel
486.9875/483.9875	1	485.9375/482.9375	6
486.3625/483.3625	2	487.0375/484.0375	7
486.2125/483.2125	3	486.6875/483.6875	8
486.2625/483.2625	4	487.1625/484.1625	9
485.8625/482.8625	5	485.9125/482.9125	10

Ralph's complete list contains 66 separate frequencies for the L.A. County Sheriff. To receive the complete list free of charge, send an SASE to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902. In the meantime, grab your tanning oil and enjoy the California sun and sand.

If you didn't get a tan in California, don't get discouraged. you'll have plenty of time to soak up the rays in *Phoenix, Arizona*.

154.755	Phoenix Police
154.800	Arizona University Police
154.905	Prison Work Gangs
154.92	Dept. of Corrections
154.935	Dept. of Public Safety
155.310	Gila Co. Sheriff Dept.
161.550	Southern Pacific Railroad
460.975	ADT Security Alarm/formerly Central Alarm
463.2750/468.2750	Corporate Security Inc.
464.700	Danguard Security Service
851.9625/806.9625	Arizona Sand & Rock

The above frequencies are from a six page list that was sent in by Joe King. The frequencies begin in the VHF low band and end in the 800 megahertz band. Joe's complete list is available for a #10 SASE and \$2.00 dollars. Send your request to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

How's your tan? Need a little more time in the sun? No problem. Let's visit with Harriet Ferns in *El Paso, Texas*.

163.625	Border Patrol	170.125	Ft Bliss MP chn #2
163.675	Border Patrol	462.95	El Paso EMS
164.115	Border Patrol	463.00	El Paso EMS Disp.
165.0625	Ft. Bliss Fire Dept.	464.025	El Paso EMS chn #2
170.025	Ft. Bliss MP channel #1		

According to Paul Rice, *Marion County, Indiana*, has a new radio system. Let's stop in and check out the new frequencies.

Police/Fire

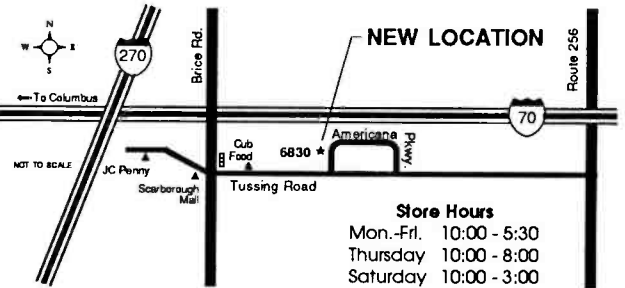
TCMS	Base/Transmit		
1	860.9875	13	857.7625
2	860.9375	14	857.2625
3	860.7625	15	857.2125
4	860.2625	16	856.9375
5	859.9375	17	856.7625
6	859.7625	18	856.2125
7	859.2625	19	855.4875
8	858.9375	20	867.1125
9	858.7625	21	866.5375
10	858.2625	22	866.1250
11	857.2125	23	866.1000
12	857.9375	24	866.8375

Mutual Aid

Channel	Transmit/Receive		
1	866.0125	4	867.5125
2	866.5125	5	868.0125
3	867.0125		

UNIVERSAL RADIO HAS MOVED

Universal Radio has moved four miles to its new expanded location. We are now only 15 minutes from downtown Columbus and the Columbus airport. Visit our big operational showroom. We carry all lines of new and used shortwave and amateur equipment. Get a hands-on look at that new rig you have been thinking about!



HUGE COMMUNICATIONS CATALOG

The new Universal Radio 100 page communications catalog covers everything that is new for the amateur, shortwave listener and scanner enthusiast. Equipment, antennas, books and accessories are all shown with prices. This informative publication is available FREE by fourth class mail or for \$1 by first class mail.



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Okay, gang, that's all of them. Punch 'em into your scanner, and let me know what you hear.

The Atlantic coast is another fine place to work on your tan. Our first stop along the eastern seaboard is *Montgomery County, Maryland*. Here are a few of the frequencies that Scott Mayhugh monitors from his Maryland home.

39.10	State Police	44.74	State Police Helo
39.26	State Police	155.52	Sheriff
39.32	State Police	155.985	Sheriff Disaster net
39.40	State Police	490.437	Maryland PD
47.32	Dept. of Trans.	490.587	Maryland Crime units
47.40	Dept. of Trans.	490.712	Maryland PD

As we cruise through *Rhode Island*, Jim Creamer has invited us to enjoy a few of his favorite frequencies.

33.40	Bess Eaton Doughnuts (drive-thru)	154.025	Westerly Water Dept.
		154.695	RI State Police port.
31.54	Park Police	154.935	RI State Police (SP)
31.58	Park Police	154.60	Warwick Mall Sec.
31.62	Fire Towers	155.19	RI SP
31.74	Fire Towers	155.445	RI SP (statewide)
47.46	Westerly Amb.	155.610	RI SP (information)
47.58	Westerly Amb.	155.905	RI SP

Our last stop for this month is *Canton, Massachusetts*. Chris Brindly sent in a hand written memo with the following information: "The town of Sharon, has moved from 33.50 to 483.3375—Tone 141.3"

"The town of Foxboro has a new proposed frequency of 484.3375—Tone 100."

Well, gang, that's it for this month. If you want a deeper tan, go back to the beginning of the column and try Bicycle Scanning.

Computer Corner

Check your local BBS boards for the new V3.01 version of "Radiolog." As most of you know, Radiolog is a Shareware frequency management program that can store, sort and print a huge data bank of frequencies and descriptions.

The 3.01 version allows for duplicate entries to be entered into the same file. It also features more colors, revised on screen control features and easy to understand instructions. Within fifteen minutes of loading the program, you'll be adding and sorting frequencies.

If you have a copy of Radiolog, exit the program and read the registration statement. If you see "V3.01" in the red colored block, you already have the new version.

Can't find it? No problem. Here's the deal. Send a blank 5.25 inch floppy disk, and a return mailer with 73 cents postage to P.O. Box 173, Prospect Park, PA 19076. If that's too much hassle, here's the other half of the deal. Send \$4.00 dollars to the above address and I'll format the disk, copy the program, provide the mailer, and lick the stamps.

How you decide to order the disk is entirely up to you. But please note that this offer is only good until July 10, 1992. Requests received after July 10 will be returned.

Like It/Buy It

The new version of Radiolog is not free. If you decide to use the program, the author requests that you send a small registration fee. Her name and address are listed on the software.

Registered owners also receive the latest information on new releases and/or fixing problems with the software.

Canadian Frequency List

The *Canadian Frequency List* contains 126 pages of red hot scanning frequencies that are used by Police, Fire, ambulance and other agencies. You'll also find a section on 800 MHz trunking and cellular frequencies. The range of frequencies begins at 27.00 MHz and ends at 960.00 MHz. Published by J&M Communications, 3149 Beverley Crescent, North Vancouver BC V7R 2W4, the *Canadian Frequency List* is spiral bound, features a glossy cover and measures 5 x 8 inches.

The book is in its sixth edition and retails for \$18.95. If you're interested, contact J&M at the above address or call: (604) 984-7076.

Seismic Scanning Revisited

In our March issue, Tony Colonello, from Adelano, California, asked if anyone could provide the frequencies that are used by North Carolina Seismograph stations. Several readers responded by sending in the following maintenance frequencies:

Seismic Transmitter Site Maintenance Crews						
168.35	163.10	169.825	164.10	164.80	164.675	
California Seismic Maintenance Crews						
164.675	169.825	162.20	166.95	168.50	164.10	164.80

The following voice and/or data frequencies were provided by readers in various locations throughout the nation. Check them out; they could be active in your area.

162.595	162.80	163.40	163.60	163.80	164.85	165.81
166.42	166.65	167.195	167.81	171.22	171.405	
173.190						

Seismic scanning buffs claim that when an earthquake occurs, the data frequencies will change their tone or pitch. If there's a seismic transmitting station in your neck of the woods, let us know what you hear.

More Photo Radar

The Kansas City Police department has asked the city to include \$75,000 to \$1000,000 dollars in the budget for a Photo Radar Unit.

Photo radar uses a laptop computer and a high speed camera to photograph speeding vehicles. Citations are mailed to the vehicle owner. Photos are not mailed with the ticket. They are retained on file with the court and can be viewed if desired.

Kansas City Police said Photo Radar would be very effective at busy Kansas City intersections and along interstate highways. The Kansas City Council is expected to vote on the issue within the next two months. (News clipping from the *Kansas City Star*.)

Correction

Here's a letter from the Kent County Sheriff's Department, Grand Rapids, Michigan.

"In reference to your short news item in the March 1992 Scanning Report. The Deputy Sheriff that crashed his car while watching his mobile data terminal was an Ottawa County Sergeant, not a Kent County Deputy as the article implies.

"The crash occurred not in Grand Rapids, but in Jenison. The Kent County Sheriff Department does not have MDT capabilities at this time."

My apology to the Kent County Sheriff Department. However, I can't help but wonder if the Ottawa County Sergeant has any amusing anecdotes about Kent County Deputies?

Scanner Ears

Race car driver Darrell Waltrip is concerned that someone is going to hear him curse over the radio and report the incident to one of Waltrip's sponsors.

As you know, listening to two-way communications between the driver and the pit crew is very popular at the races. But as we also know, Mr. Waltrip should not be concerned. The ears of a seasoned scanner buff won't be offended by a few curse words. If Mr. Waltrip could listen to the cordless phone and baby monitor frequencies, he would quickly realize that scanner buffs have heard it all!

To hear driver/pit crew communications, search between the following ranges: 151.00-154.00, 461.00-469.00 and 851.00-869.00.

Scrambling Headache

In Harrisburg, Pennsylvania, a burglar, fleeing from city police officers, ran toward a State Capitol Police Officer. The burglar hesitated as if to surrender, but continued running when it was clear Capitol Police didn't know the man was wanted by city police.

Although Capitol Police patrol state property in the heart of Harrisburg, they can't monitor the city police broadcasts because they are scrambled.

The city has spent \$112,000 dollars to purchase and install the new scrambling system. To install the scramblers on 126 police radios, the city spent an additional \$74,000 dollars.

A month after the system went into operation, the mayor of Harrisburg, stopped paying on the \$180,000 dollar scrambling system. Why? It was discovered that the system could be decoded with a handful of electronic parts costing less than \$10.00 dollars. (News clipping from the *Harrisburg Patriot*.)

Next Month

More hot frequencies and new ideas that can only be found in the pages of *Monitoring Times*.



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Goin' Portable Again

I have one of those spouses who simply can't pass up a flea market, swap meet or garage sale. It seems like everything in our basement and attic came out of someone else's basement and attic. Last fall she really topped herself, though. She brought home a "Pop-Up" Camper! I knew I never should have put that trailer hitch on the truck...

This is going to be a radio article, right, Uncle Skip?

Abso-Positively my Captain! This trend toward the camper's lifestyle that my significant other has thrust upon me has led me to give more thought to portable monitoring—one of the fastest changing aspects of our hobby.

It was only back in 1980 that Old Uncle Skip was hanging out at some radio convention or other when the topic turned to technological advances. The Sony ICF-2001 (predecessor of the famous ICF-2010) had just hit the market. Everyone was buzzing with ideas about how far this miniaturization thing would take us. Even the most visionary among us would have scoffed at the notion that a full featured shortwave receiver and a computer for logging that could also serve as a terminal for packet radio when linked to a handheld FM transceiver that also covered the very scannable public service bands could all fit in the same briefcase! (How's that for a run-on sentence!) Radio monitoring that once took up a whole room can now be carried around on vacation without straining anybody's back. Today the only limits to how much you can fit into how little a space seems to be the limits of your wallet.



Don't pass up your radio milestones this summer just because you didn't think ahead to your vacation.

All this new, often expensive, technology can be very confusing to the beginning radio monitor. Some applied clear thinking prior to jaunting off to vacationland is called for. This must be the start of...

UNCLE SKIP'S NEW AND IMPROVED GUIDE TO PORTABLE MONITORING

Maybe we should begin with a reality check. As I said earlier, you can now pack the whole caboodle into your kit bag and go off on vacation. But let's get real here. Just how much monitoring are you going to squeeze in between amusement parks, surfing, hiking, hang gliding, sightseeing, mountain biking and all those "family management" tasks that hold a vacation together?

If you are doing more than an hour or two of daily listening while having all that fun in the sun, your kids are probably helping your spouse look up the phone numbers of divorce lawyers. So if you are only going to do SOME listening on vacation, you really do not need to take ALL aspects of the hobby on the road. Just sorting out your thinking on this point will probably save you enough money to tack on a few extra vacation days.

Lately I find it easy to get beginners ready to go portable, because most beginners are getting started in the hobby with portable receivers in the first place. It makes no difference if your interests lean toward shortwave or scanning; the radio supply catalogs that can be found through the pages of *MT* list dozens of fine portable receivers just waiting to go on the road with you. If you have kept an eye on Larry Magne's column "Magne Tests," you have seen any number of portables checked out by our in-house shortwave expert.

When selecting a portable receiver you will obviously seek out the best performance for the buck. You will also need to pay attention to power and antenna needs associated with taking the show on the road.

Power Trips

If your idea of roughing it is a condominium overlooking the Casa del Sol you probably won't worry too much about batteries. Many more Spartan campgrounds even provide a place to plug in these days. If you are planning to travel outside of the United States you must remember that all plugs are not created equal nor are all wall socket voltages. Check with your local travel agent concerning power differences in foreign lands and then head out to your local radio Shack

or other electronics supply house and pick up the appropriate AC power converter and plug adapter.

For those of us who plan to go further off the beaten track than our extension cords will allow, batteries are in order. Over the last few years it seems everyone has gone wild over rechargeable batteries. Once again, think about your listening habits while on vacation. If you are going so far afield that you won't be able to plug your receiver in, where are you going to recharge your rechargeable batteries???

True; "out in the sticks" portable monitoring is best served by several sets of good old fashioned alkaline batteries. You can't recharge them, but they last longer and die out more gradually than rechargeable cells. Before you go on vacation, put a set of alkaline batteries in your rig and use it for a few evenings while timing your listening sessions. This will give you a practical idea of how much time you can get out of a set of batteries. When you calculate that you will only get an hour or two of listening in each day, it's easy to figure out how many batteries you will need. Don't forget to buy your batteries BEFORE you head out on your trip. Tourist Trap battery prices can be inflated more than Aunt Tillie's waterwings! (Please pack those used batteries out of the outback. The environment will thank you.)

Having said all that, some folks will still find rechargeable batteries a great way to go portable. Nickel-cadmium batteries are widely available. The key to their successful use is in proper recharging. If your receiver is not specifically designed to use and recharge NiCads you will need to purchase a recharging unit that meets the standards of the cell manufacturer. Improper recharging can lead to early battery failure. Most folks who use rechargeable batteries buy two sets of cells, recharging one set while running down the other.

The latest technology, however, is giving rechargeable battery buffs something to be really excited about. Another battery technology is poised to put NiCads on the back shelf. Nickel metal-hydride (NiMH) has been around for awhile but is only now trickling down to us common folks. They take a bit longer to recharge but they also last longer than NiCads. More importantly, they put out about twice as much current as their NiCad cousins. Another very important factor is that NiMH technology is environmentally safe, as opposed to NiCad's toxic waste disposal problems.

NiMH batteries are still hard to find, but that should be changing soon. Bill Cole of *The North-East Scanning News* lists one direct sale source for NiMH cells: Harding Energy Systems, 826 Washington Ave., Grand Haven, MI 49417 (616) 847-0989.

Since we are talking about several different kinds of batteries and using them as field expedients, there is another caution you must observe. Never, never, never MIX different types of batteries in one application. Combining old style carbon-zinc batteries in an appliance with alkaline batteries can result in one or more of the cells bursting. Mixing alkalines with rechargeables can also have severe negative effects. So if you are in the woods with two of one kind of battery, three of another and you need five to listen to the radio, pack it in and sit around the campfire telling ghost stories instead.

Antenna Ideas

Another positive development in the portable radio market has been antenna technology. It used to be that low cost receivers were just a circuit with a whip antenna stuck on one end. Most modern portables now benefit from circuit design that is optimized for the attached whip antenna. This is both a blessing and a curse. While the rig will work just fine as is, improvement in the antenna department may require more thought.

Only a few years ago your humble radio sage would have recommended hooking a few meters of wire to the end of the portable's whip antenna as the best way to increase performance instead. Do this trick with a modern portable and you are more likely to *decrease* overall performance.

Once again, it's reality check time. While on vacation, are you planning to dig down deep to catch that rare contact from the internal service of Radio Freedomia, or are you going to do a few light hours of tuning through the large international broadcasters like BBC and Deutsche Welle? If sanity prevails, the whip antenna that comes with your portable will meet most of your needs. If you still have the urge to dip into DX while vacationing, you will need to pick out a portable that has an auxiliary antenna jack. Most receivers so equipped will have some data in the owner's manual that will advise you as to suggested antenna strategies.

More than likely, the best all around external antenna will be a simple long wire. "Long" is a relative term here, because if your long wire is too long it will lead to overloading from strong signals on most portables. Construct your longwire out of light gauge insulated stranded wire. Pick a wire that has an outside insulating covering that will be unobtrusive. White, black or gray works well around most structures, or you might try green if you're out in the woods. This will allow you to enjoy your hobby without intruding on the esthetics.

There is one clear exception to this notion. If you will be stringing your antenna anywhere that folks (including yourself) might trip over it

or get "clotheslined" by it, go with a bright warning color such as red or yellow. You might also tie strips of brightly colored cloth every few feet to further warn people that you are plying your portable radio pleasure in the area.

Stringing antennas during vacations can be an adventure in itself. As stated earlier, most vacation spots won't want you doing anything that detracts from the beauty that everyone else is spending good money on. (If Sir Winston Churchill can end his sentences with prepositions so can I!) So the rule of the day in traveling monitoring is: **Don't put up anything you can't take down.**

If you are going the longwire route, a quick and easy way to get your antenna up is to firmly fasten a one ounce fishing weight to the far end of the long wire. This will get you up a tree fast, but it will get you up the wrong kind of tree if you're not careful with your swinging and throwing technique. Make sure you don't toss your wire anywhere near power lines. Electrocutation usually brings one's vacation to a quick end.

Scanner enthusiasts can improve their overall listening pleasure by simply raising the altitude a bit. If you are staying in hotels during your

vacation, try to make reservations for rooms on the upper floors. I once vacationed in a town with a quaint little church. I talked the local pastor into permitting me to climb up into the bell tower, putting me about two stories above everything else for miles.

As for antenna choices for portable scanning, you can stick with the traditional "Rubber Duckie" either in its basic form or one of the high performance aftermarket types. If you are traveling in your car you can kill two birds with one stone by using a magnetic mount multiband scanner antenna. This will allow you to listen to your scanner while traveling (combining hobby and practical uses). The mag mount mobile antenna can then be mounted on almost any metal surface to provide some extended scanning with your portable receiver.

Are We Having Fun Yet?

You bet, Bunkey. Traveling light can still bring plenty of radio monitoring fun. Like Woodie Guthrie said, "This land is your land." Head on out and see a part of it with your scanner, and maybe even a little corner of the rest of the world, too, through your shortwave set.

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Military Monitoring To-Go

Military monitoring is an exciting hobby. Where else can one sit in the relative comfort of one's home and monitor stealth fighters on training missions or top guns dueling in mock dogfights? But monitoring doesn't have to be done only from the easy chair. With the weather warming up and spring fever setting in, let's get out on the road. Don't forget your military band scanner!

Your Federal File columnist took a recent military monitoring expedition to New Mexico, known as a hot bed of military activity and a monitoring bonanza. My trip would be concentrating on the military activity in the eastern half of the state. With its many military bases, the trip promised to be a great way of getting out of the monitoring shack, in hopes of bagging some great military communications catches. But, before the trip, I had some homework to do.

Getting it Together

I planned to go near several Air Force bases and pass through a few military MOAs (Military Operation Areas) in Eastern New Mexico, so I bought several maps to help with the planning of the trip. A quick visit to the local FAA flight service station and a few bucks was all it took to obtain some great aeronautical charts of the area. These maps are a must in helping locate your monitoring targets, and I highly recommend you purchase a set for your local area as well.

Also of great help are U.S. Geological Survey maps. Where the FAA maps will show you the locations of the MOAs, the USGS maps will show you every road, jeep trail and topographical land feature of the area. In some remote areas, the obscure jeep trails and paths are the only way to get into the area of interest. A standard highway map won't show such minute features as hills, trails etc., which are important when hunting for that perfect place from which to monitor

ROSWELL AREA MILITARY FREQUENCIES

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TOWER: 272.700

GRND CTRL: 348.600

MILITARY ATC ALB. CTR:

(ROSWELL AREA) 257.600,

251.100, 257.200, 272.200,

351.700, 319.200, 242.450

259.200, 353.600,

397.900, 269.400

CARLSBAD ATC: 343.600

EL PASO ATC: 343.600,

278.300, 285.500

ROSWELL

Another part of planning any monitoring expedition is to decide what equipment to bring. I decided on three receivers—two scanners and a shortwave receiver plus a frequency counter. One scanner is used exclusively to cover the UHF military band, while the other covers the regular police bands. When prowling around military reservations, it is a good idea to listen in on the local law enforcement and security forces to make sure you aren't trespassing where you shouldn't be.

I also brought along a portable digital shortwave receiver to keep an ear on the known military HF frequencies in use in the area. I then set about programming the scanners with published frequencies of the bases and MOAs I would be visiting.

With the scanners programmed, I installed them in the car. I used supervelcro to keep everything in place, not wanting to drill any holes in the car to mount them. I then took the car for a bumpy test drive, making sure everything was connected securely and antennas etc. wouldn't come loose on some rut-filled back road far from any electronics store.

Other things to keep in mind when you are planning your trip are: a dash mounted pad for writing down your intercepts, call signs etc., spare batteries and a tape recorder used for keeping notes or recording directly off the scanners. Once you have everything together, it is time to hit the road.

On The Road

Roswell, New Mexico, was my first stop. One of the reasons for visiting Roswell was the various rumors that stealth aircraft were using the airport for training. Roswell is also well-known to UFO investigators. According to many UFOlogists and the local populace, a UFO crashed near Roswell in the summer of 1947. The crash at Roswell has been the subject of many books and has become a local legend. I have heard many of the stories surrounding the 1947 crash, some of them from the actual participants, and the events surrounding the incident are still told almost 50 years after they took place. Even if one doesn't believe in the crash stories, it usually doesn't stop one from visiting the Roswell Crash UFO Museum located near the entrance of the Roswell airport.

The Roswell Industrial Air Center was formerly Roswell AFB. Many military aircraft still use the facility. The first day I was there, I saw several T-38s from Reese AFB in Texas and some F-15s from Holloman AFB (near Alamogordo) as well. My plans were to spend a couple of days in the Roswell area, which would give me plenty of time to snoop around. Checking in at the local FSS, I was able to obtain the local

VHF/UHF frequencies used at Roswell. (See Table One.) They came in handy when I monitored an F-117A doing touch and go's at the airport.

I later found out that it was based at Holloman (about 100 miles away) and was there to train pilots of the 49th Fighter Wing. Holloman is to become the new F-117A base when the whole wing (37th TFW) is moved from their base at Tonopah, Nevada, this summer. The 37th TFW will be absorbed into the 49th. The first F-117s are slated to start arriving in May. It didn't look as though any military aircraft were based at Roswell.

I did find a relatively new building that looks suspiciously like a hangar. The building is protected by a security gate that opens by an electronic code key. Parked on the runway side of the hangar were five fire extinguishers. The building is set apart from all other buildings at the airport in a remote area on the east side of the base. Although I never saw any activity there, I did see a car once parked at the hangar bearing U.S. government plates. What the building is used for remains a mystery.

Next Month

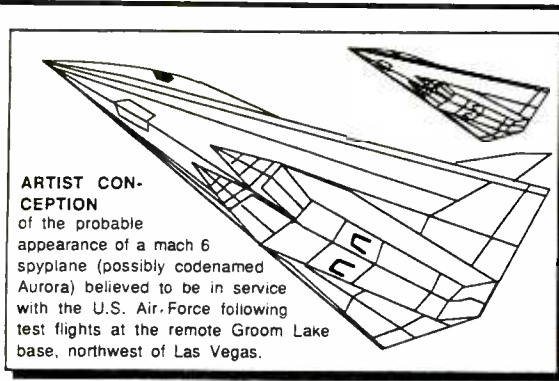
We will continue our monitoring expedition through New Mexico, prowling around the MOAs managed by Holloman AFB, and Cannon AFB, near Clovis, and we find an unexpected surprise near the small New Mexico town of Melrose.

MAILBAG

High Mach at Machrihanish?

The Federal File was flooded with clippings this month from papers across the U.S. relating a story by stealth expert Bill Sweetman and clippings from a Scottish newspaper. It seems that a hypersonic stealth spyplane (possibly codenamed *Aurora*) is thought to be operating out of a secret NATO/U.S. Army Forces airstrip at Machrihanish on the Mull of Kintyre. Readers will remember the *Aurora* was first revealed to *MT* readers in the November 1989 issue. According to the Edinburgh daily newspaper, *The Scotsman*, high altitude flights of a hypersonic aircraft have been conducted over the North Atlantic from bases on the U.S. east coast, and the aircraft involved have been landing at the base at Machrihanish.

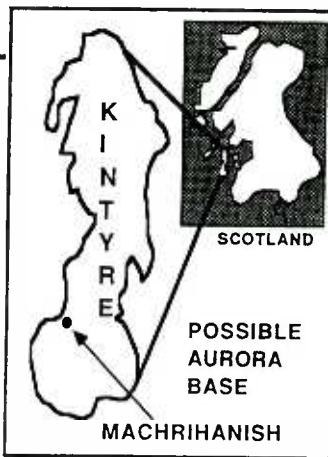
The Scotsman goes on to say, "It is thought that the operation is a joint one between the U.S. Department of Defense and the CIA, the purpose being the high altitude testing and development of the very latest U.S. spy plane. They (the aircraft) have been kept out of sight in a special hangar built to house the specialist MC-130 Hercules transport plane used for dropping



**ARTIST CON-
CEPTION**
of the probable
appearance of a mach 6
spyplane (possibly codenamed
Aurora) believed to be in service
with the U.S. Air Force following
test flights at the remote Groom Lake
base, northwest of Las Vegas.

Source: Jane's Defence Weekly

Graphic By Steve Dougliss

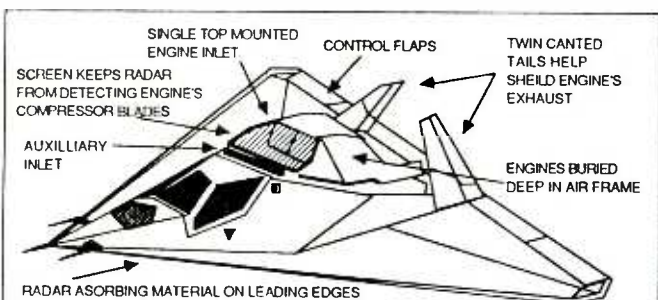


**POSSIBLE
AURORA
BASE**
MACHRIHANISH

special forces at very low level. The official MOD (Ministry of Defense) line is, they have no knowledge of any operations at the base, but both civil and military pilots have reported unidentified aircraft making rapid climbs close to the Scottish coast. According to official sources, over three million dollars will be spent on the base over the next three years, but the Pentagon has not revealed the reasons behind the massive investment. One possibility is the aircraft is the latest version of the SR-71 Blackbird spy plane known to have used Machrihanish in the past."

The Sweetman article, which was featured in many newspapers across the country, quoted Scottish reports of "mysterious fast-moving radar blips and strange engine sounds" coming from the area of the joint Royal Air Force/NATO base at Machrihanish. Radar blips were tracked at approximately three times the speed of sound by civil air controllers located near the base. When Scottish controllers phoned the base asking what sort of aircraft was being operated that could have explained the strange radar blips, the voice on the other side of the phone told the controllers to "forget what they had seen."

Also included in the Sweetman article were reports from the West Coast of the U.S. of strange aircraft sightings and reports of sonic booms. It seems that a network of 220 seismic sensors have recorded a series of hypersonic booms, indicating that a mach 3 + aircraft is being test flown over western states as well. U.S. Geological Service seismic sensors used to monitor earthquakes in California have been recording the strange series of booms since last summer.



NORTHROP'S 1976 XST DESIGN

The sensors indicate that a hypersonic aircraft has been racing at high speed across California and Nevada. The flight paths of the mysterious aircraft indicate that they may be flying from the secret military test base at Groom Lake, Nevada. Other strange reports of mysterious aircraft flying in the Antelope Valley area of California and near Edwards AFB are being reported as well. The reports describe extremely fast supersonic aircraft as well as huge, slow-moving blimpty airships and unusual triangular shaped aircraft. Whatever is going on, it is apparent that the U.S. government is testing some sort of extraordinary aircraft capable of remarkable performance.

Sacramento Stealths

Speaking of strange stealth objects that go whoosh in the night, Rick Roop writes us from Sacramento, California, saying he has seen and monitored multiple flights of F-117As in the Sacramento area. Using a PRO-2006 scanner, he has monitored the stealths on 316.100 MHz and 319.900 MHz. Rick says that he monitored at least eight different F-117s with the following callsigns: RIDER (66,61,58,63,64), BANDIT (7, 28) and ICE 65. Rick says he also monitored the callsign OMEGA, but doesn't know the aircraft type.

Rick, there have been many reports of a triangular shaped aircraft flying in formation with multiple F-117as in the Sacramento area. (It is possible that the aircraft could be the TR3A Black Manta, a secret stealth tactical reconnaissance aircraft that is known to operate in conjunction with F-117As.)

The TR-3A is thought to be based on an early Northrop stealth design that competed with Lockheed's design that would eventually become the F-117A. See illustration.

Thanks for your input, Rick, and keep your ears and eyes open for the TR-3A. Oh, and don't forget to take a picture of it!

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Tuning in to ARINC

Welcome aboard! Get ready to update your list of ARINC frequencies—both HF and VHF—take a peek at a new computer flight program, and add some frequencies to your company and Air Traffic Control (ATC) lists for various areas of the country.

ARINC (Aeronautical Radio Inc.) has HF communications centers in New York, San Francisco (SF) and Honolulu. However, 97% of their US mainland air/ground VHF comms are handled from the SF center on 15 VHF Networks (see map insert contributed by Bill Dickerman of Williamsport, PA).

In response to the many letters we've received asking for ARINC's HF (shortwave) frequencies, here's a listing which you can clip and save (all frequencies kHz):

HONOLULU:—Major World Air Route Area (MWARA) HF Air/Ground Communications

Area Served	Frequencies
Central East Pacific 1	3413, 5574, 8543, 13354, 17904
Central East Pacific 2	5547, 11282, 13288, 17904
Central West Pacific	2990, 4666, 6532, 0903, 11384, 13300, 17904
North Pacific	2932, 562S, 6655, 8951, 10040, 11330, 13273, 13339*, 1794S*, 2192S*
South Pacific	3467, 5643, 8867, 13261, 17904

Long Distance Operational Control (LDOC)

Area Served	Frequencies
Central, North, West & S. Pacific	3013, 6640, 11342, 13348, 17925, 21964

NEW YORK—MWARA HF Air/Ground Communications

Area Served	Frequencies
North Atlantic Family A	3016, 5598, 8825, 13306, 17946
North Atlantic Family E	3476, 6620, 0906, 11309, 17946
Caribbean Family A	2807, 5550, 6577, 8046, 8918, 11396, 13297, 17907

LDOC

Area Served	Frequencies
North Atlantic, Caribbean	3494, 6640, 11342, 13330, 17925, 21964

SAN FRANCISCO—MWARA HF Air/Ground Communications

Area Served	Frequencies
Central East Pacific 1	3413, 5574, 8843, 10057, 13354, 17904
Central East Pacific 2	2869, 5547, 6673, 11282, 13288, 17904

LDOC

Area Served	Frequencies
Central East Pacific	3013, 6640, 11342, 13348, 17925, 21964

HOUSTON RADIO (Universal Aviation) is an ARINC leased contract station who also operates ARINC's LDOC frequencies:

Area Served**	Frequencies
Caribbean, C. America, S. America	6637, 10075, 13330, 17940, 21904

** (But not limited to this area)

* Recent addition to this family of frequencies.

As we've mentioned previously, on the MWARA freqs, the ARINC international air/ground voice services handle the air traffic services within the oceanic areas for which the United States FAA (Federal Aviation Administration) has ATC responsibility. This means that they relay messages from ATC to aircraft in their area(s) and vice-versa. The radio operators do not control the traffic but are a very vital link between ATC and aircraft. The transmissions heard here are referred to as "Flight Safety Messages."

Flight Safety Messages are referred to as "Flight Safety Messages."

Airline Operational Control traffic—also called "Flight Regularity Messages"—are handled on the Long Distance Operational Control Frequencies. The message texts heard on these freqs generally pertain to non-ATC matters.

The domestic VHF networks are used primarily for handling operational control comms (Flight Regularity Messages) for aircraft operators. This includes airline companies, corporate aircraft fleets and others.

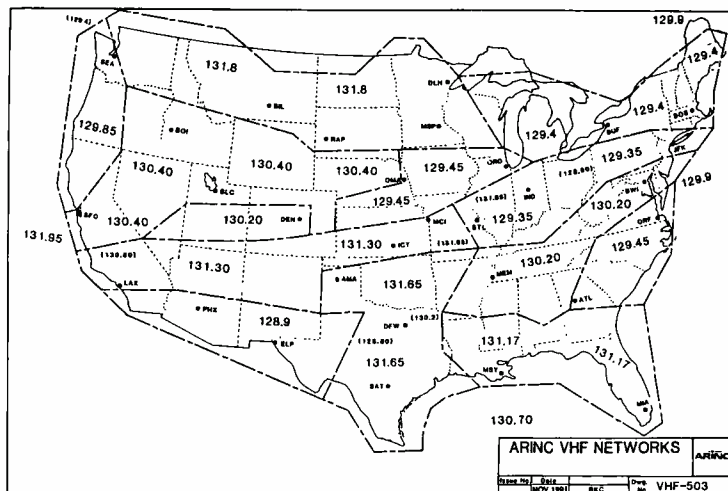
In Hawaii, 131.950 (international VHF) and 129.500 MHz are utilized, as well as 128.95, which is used for VHF air-to-air. In New York, the international VHF frequency is 129.900 and air-to-air frequency in use is 131.800. The Caribbean frequency is 130.550. 131.960 is the international VHF freq used in San Francisco and their air-to-air is 128.950 MHz.

In our next column, we'll go more in-depth with ARINC's actual air/ground communications operations. We thank Richard Govell, ARINC's Manager of Air/Ground Operations, for his kind assistance again in providing us with charts and information about procedures.

Flying by Computer

Once again, SubLogic has a really great product on the market for all of us computer pilots. After 'flying' "Flight Assignment A.T.P.," this writer has to say that it's number one in computer flying simulations. It even tops Microsoft's "Flight Simulator" in versatility and realism.

"Flight Assignment A.T.P." is a commercial jet simulator in which you can fly a 737, 747, 767, Airbus or a Shorts 368 prop jet, for a change of pace. There's a lengthy and very comprehen-



sive manual (if I can understand it, anyone can) which comes with it and is mandatory to read before you try to fly the career assignments or free flight. If you've just gotta get airborne before you're "qualified," there's an autoflight simulation in which you can sit back and observe flight dock activity during various trips between cities, but that's all you can do if you choose autoflight—observe. Once you go through the manual and learn "how to fly" the various aircraft, you'll enjoy yourself a lot more.

The scenery at the 26 major airports included in the simulation, as well as that enroute, is fantastic. In addition, there are 330 other airports with correct approach lights, runway markings to FAA specs, VASIs and more. And, just as in Flight Sim, you can choose just how much or how little scenery you want to see. You can also choose your weather, time of day (or night), season, etc.

After every flight you are graded on performance, and each time you'll find yourself improving a little bit more. However, I advise you to keep the manual close to your PC for quick reference even after you think you know how to fly each type of aircraft. Sometimes, you can get a "zonk" slipped to you without knowing how it happened.

Your PC will need graphics capability and at least 512K minimum memory to handle A.T.P., dual floppy disk drives (3-1/2" or 5-1/4") and/or a hard drive. You really will appreciate the fantastic scenery more if you have a color monitor. A mouse and/or joystick is optional; I prefer using the keyboard.

The price of this gem at Electronic Boutique stores and other retail software outlets is around \$45.00. By mail order from various companies it runs from \$37.00 to \$40.00—well worth the price for what you get!

SubLogic is putting out all kinds of great add-ons and supplements for this simulation as well as for "Flight Simulator" (they produce the scenery disks for Flight Sim!). For a catalog of

their products, you can write to: SubLogic, 501 Kenyon Road, Dept. MT, Champaign, IL 61820 USA. Whether you "fly" via a computer and/or are a real time pilot, don't miss this one.

Reader's Corner

• Tim Rogers, Knoxville, TN, sent these company frequencies from his area:

American Airlines:	129.200
FedEx:	131.950
United Airlines:	129.500
Delta Air Lines:	129.550
Continental:	130.900

Freqs from *McGhee/Tyson airport* include:

Airport Security:	155.085
Approach Control:	123.900, 118.000, 118.706
FAA-Knoxville:	408.825, 166.175

• From David Eason, Chevy Chase, MD, here are companies' freqs which can be monitored in the Washington, D.C. area:

USAir:	131.000, 130.100
Continental Airlines:	131.500
Air Jamaica:	129.750
Northwest Airlines:	129.875
Carnival (charter):	129.450
British Airways/Henson Aviation:	129.158
Delta Air Lines:	131.358
United Airlines:	130.750
American Airlines:	130.775
Air France:	130.125

• Roger West, who hails from Amery, WI, contributes Tower/Tracon frequencies from *Minneapolis/St. Paul International Airport*:

ATIS:	120.800, 135.350, 272.750
UNICON:	122.950
Approach Ctl:	119.300, 126.950, 335.500
Departure Ctl:	120.000, 124.700, 284.700, 357.400
Ground Ctl:	121.900, 348.600
Tower:	126.700, 257.600
Clearance Del:	133.200, 240.150
Aiport Police:	460.275
Fire Dept. & Crash Crew Trucks:	154.010, 154.130, 154.295
SAC:	311.000, 321.000
Airline Ramp Frequencies:	
USAir:	460-825
Braniff:	460.700
Northwest:	460.800, 460.650
Marriott In-Flight Services:	461.600
Minneapolis ARTCC (Center):	120.300
Princeton, MN Flight Service Station:	122.200, 122.300, 122.550, 255.400

Roger would like to have a performance schedule for the US Army's Golden Knights. If someone has one available, please send it to me and I'll fire you off Roger's copy of the Air Force's Thunderbirds and Navy's Blue Angels

performance schedules in exchange.

• Ralph H. Fellows, II, Fellows, CA, tells us that flying in and out of *Norton AFB* will end in October of 1993. Some of the frequencies which will be in use until then include:

Norton AFB G3:	4.4915
Drop Zone Tng:	7.9610
Norton AFB TAC Tng:	10.2685
Norton AFB ILS Marker:	75.000
Norton AFB ILS Local Rnwy 06:	109.300
Norton AFB A/C Emergency:	121.500
Norton AFB Local Control:	119.450
Norton AFB Ground Ctl/Clearance Delivery:	121.800

These are excerpts from a large, comprehensive list which Ralph sent to me. Unfortunately, there were too many to list all of them; however, we'll try to include some in future columns.

• Keith Short, KOHBKY, Columbus, OH, sent us a clipping from the *Columbus Dispatch* concerning construction of a new 180-foot Air Traffic Control Tower at the Port Columbus Airport. This tower is to cost \$11-15 million and will replace the 60-foot tower which is now in use. Construction is to begin in about four years, and the tower should be ready for occupancy in 1996.

Currently, the Columbus tower houses 45 controllers and 10 supervisors who direct traffic for about 1,400 takeoffs and landings daily. In addition, they handle radar traffic patterns for several hundred other aircraft passing through Columbus airspace.

• Finally, from Bill Battles, East Kingston, NH: Bill was monitoring the Portishead Radio frequency of 14898 kHz when he heard a pilot calling who hailed from London and had been flying for several days. The pilot asked Portishead Radio to set up a privately charged patch; he wanted to ask his neighbor to check his water pipes due to a cold spell back in London. So Portishead sets up the patch and the neighbor tells him that he'll be more than glad to check on it a bit later—right then he was stark naked, having just gotten out of the shower! The patch was terminated and Bill says the pilot apologized to the Portishead Radio Operator, saying that he didn't realize his neighbor would be so graphic. The radio operator, pilot and Bill all had a good laugh over that one!

Bill also tells us that on this past Christmas Eve, he heard Cambridge Bay Radio call Ice Radio (Iceland) and give them a Merry Christmas Greeting in Icelandic. Bill says that the operator did pretty well, but the Ice Radio operator came back with the greeting perfectly. It was really neat to hear!

Thanks, Tim, David, Roger, Ralph, Bill and Keith!

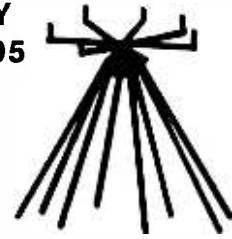
That's it for now. Until next time, 73 and out.

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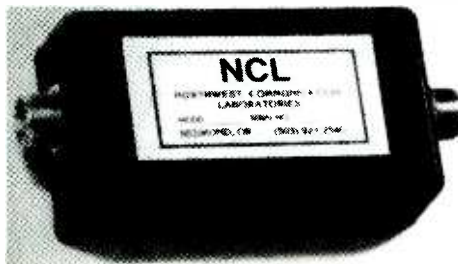
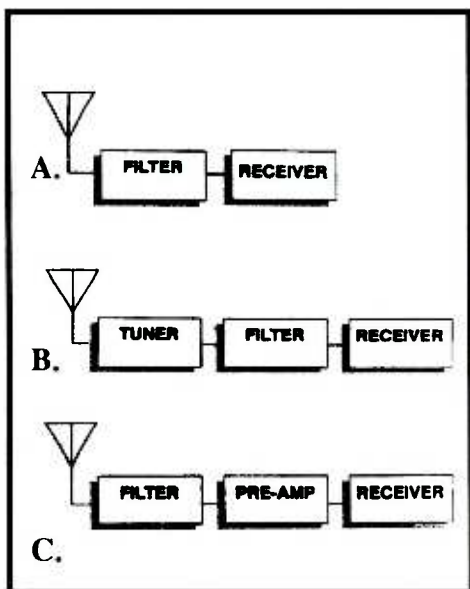
Keeping Broadcast Signals at Bay

Tuning the longwaves shouldn't be music to your ears—unless of course it's rock music from Ireland's Atlantic 252! In reality however, AM broadcast signals are sometimes heard in places they don't belong. The symptoms are usually distorted voice, music and hash at various spots on the LF dial. Living within 10 miles of an AM station makes you especially vulnerable to this type of interference.

In most cases, the problem is Intermodulation Distortion (IMD) caused by overloading in your receiver. Strong AM broadcast signals can plow right through the tuned circuitry of your radio and be processed as if they were desired signals. In tough cases, the interference can render all but the strongest beacons unreadable.

The next time music or a local talk show host shows up on your favorite beacon frequency, don't call the station with complaints. Chances are the problem needs to be solved at your end. The solution is to install an inexpensive lowpass filter between your receiver and antenna. The filter should be tuned to reject signals above about 550 kHz.

In this way, longwave signals pass through unchallenged while AM broadcast signals are sharply attenuated. If you can keep broadcast signals from reaching the receiver in the first place, you won't have to worry about IMD. Installing a filter is simple and requires no receiver modification. It connects in series with your antenna lead as shown below in block diagram (a). Are you using a tuner? No problem. Just be sure to install the filter between the tuner and your receiver as shown in (b). If your setup includes a preamplifier, install the filter before it as in (c).



A filter, such as this unit by NCL, often cures broadcast interference

Commercially-made filters for LF reception are not always easy to find. One U.S. company that specializes in them is Northwest Communications Laboratories, 813 SW Highland, Suite C-310, Redmond, OR, 97756. I recently had the opportunity to evaluate two of their models (one for long wave and another for shortwave). I found that they completely eliminated the interference I was getting from a nearby 50kW AM station. The folks at NCL tell me they're also working on some other new products that will be available soon. Write to them for current information, and tell them you heard about them in *Monitoring Times*.

Contest Update, Mailbag

Jan Dyroff (MA) wanted to be "first on the block" to get the Longwave DX Award (LDXA) announced back in March. Jan submitted the required three Canadian QSLs and sent along six other northern veries for good measure. Congratulations, Jan, and to all the others that have participated so far. In future columns, I'll be showing some of the QSLs that were received.

Don't have your certificate yet? The contest is still on and the rules are simple. Just supply photocopies of beacon QSLs from three Canadian provinces. Include two stamps to cover mailing costs and your award will be on its way.

In the LOWFER department, Howard "Mort" Mortimer (Baldwinsville, NY) reports that he's now up and running on 178.6 kHz with a 1 watt experimental beacon. Mort says the beacon operates 24 hours a day and uses two ID's--one is "ZWI," patterned after Mort's ham call, WB2ZWI, the other ID is "ZWI Syracuse, NY." Reception reports are welcomed and you can find Mort listed in the ARRL *Radio Amateur's Callbook*. If you need his address, drop me a line here at *MT*.

Every now and then a letter arrives that is truly inspiring. Our publisher, Bob Grove, recently forwarded such a letter to *Below 500 kHz*. The letter comes from Bill Burns (IN) who

gave some kind words about the magazine and said, "I have recently developed a major interest in listening to the longwaves." To prove it, Bill included a list of over 60 beacons heard in a period of just two hours. Bill's loggings were made with his DX-440, a dipole and a Grove Mini-Tuner 3. He ties the two feed wires from his antenna together and connects them to the tuner. He says the tuner really makes his '440 hum below the broadcast band.

The best times he's found for DXing are from 6 to 7 am and also from 2 to 4 am local time. It's always refreshing to hear from someone who's just discovered the fun of LF. Welcome aboard, Bill.



The LDXA Certificate comes ready for framing.

Loggings Potpourri

This month's loggings are brought to you by five new contributors. The dial spinners are: Bob Combs (NM), Bill Burns (IN), Jan Dyroff (MA), Stan Forsman (CA), and D. Drusch (MN).

See you next month!

Beacon Loggings			
Freq	ID	Location	Contributor
200	HXF	Hartford, WI	BB
215	W	Winnipeg, Man.	JD
218	PR	Prince Rupert, BC	SF
248	HZP	Zionsville, IN	BB
266	PYX	Perryton, TX	BC
284	QD	The Pas, Man.	SF
341	YFN	Cree Lake, Sask.	JD
353	IN	Int'l Falls, MN	DD
365	AA	Fargo, ND	DD
365	MA	Mayo, Yukon	JD
371	MD	Bemidji, MN	DD
382	EA	Empress, Alberta	SF
391	DDP	San Juan, PR	BC
395	XEN	Xenia, OH	BB
1631	TI*	Kingman, AZ	BC

*Medium frequency experimenter (MEDFER)

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Collins R390A (Reconditioned/Calibrated)	CALL
Japan Radio NRD-525	\$ 1125
SONY ICF-2010	\$ 349
SONY ICF-7600	\$ 220
SONY Pro-80	\$ 370
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City Folk

A beautiful patchwork quilt is created every weekday morning in New York City. Each section is carefully selected and placed to compliment and contrast with the piece that came before it. The result can be heard on WFUV. Tuneweaver Liz Opoka will happily guide you through her world filled with lyrical stories and fine musicians. Her program, "City Folk," is presented every weekday over Fordham University's 50,000 watt public radio station broadcasting on 90.7 FM. Its powerful signal sends her voice all over the Metropolitan New York City area, and as far away as the fringes of Boston. From a tiny studio high atop stately Keating Hall, she becomes the lunchtime companion for thousands of lovers of folk, bluegrass, Celtic, Tex-Mex, western swing, cajun, and zydeco music.

Liz makes your indoctrination into her world of song easy. "I will occasionally mix in a song by someone well-known like Paul Simon, followed by a lesser-known performer. Hopefully, this will broaden the experience of my listeners." Habitual listening to City Folk results in a well-rounded education in alternative music. A self-taught scholar on the subject herself, Liz will effortlessly tutor you as you listen to a multitude of singer-songwriters and acoustic musicians.

A student of classical music, Liz admits that she loves to listen to just about everything. Her musical training is evident whenever she is on the air. You can almost envision her conducting the WFUV record collection as if they were members of a symphony orchestra. Each song is skillfully blended with the next, creating infor-

mal suites of music, instead of random sets usually heard on the air. The result is uncommonly pleasant to listen to.

When she leaves the air her work continues. Liz has recently become the music director for all the shows on WFUV. You'll find her on the phone with record companies, with potential performing artists, or with persons she has asked to audition new recordings. She is often asked to introduce acts on stage. "I really don't like to be the center of attention before a large group of people, but if I don't accept these invitations I feel it's disrespectful to the music, so I do."

Liz Opoka has worked hard to gain her prominent position in New York radio. As she earned her Master's degree in Communications at Fordham, she also volunteered up to 40 hours a week at WFUV doing just about everything! At graduation, she was hired as a full-time employee, and City Folk became her on-air home five days a week. Her soothing voice and presentation did not come easy, requiring years of practice and refinement. Liz grew up in the Five Towns area of Long Island and suffered from a fairly thick Noo Yawk accent.

Independent producers and their record labels enjoy City Folk as well. Commercial radio is saturated with the sounds of classic rock, oldies, country, urban, and contemporary hit radio, leaving very little room for alternative sounds. City Folk provides an invaluable showcase for artists that normally wouldn't be heard on the air. The telephone rings constantly during her show with listeners seeking sources for the songs they love and can't find in commonplace record shops.

City Folk has become a valuable working tool for New York City's folk music community. "The daytime mission of WFUV is to get the music out to the people and support local clubs where this music can be heard." Liz is confident that they succeed. Many local clubs sponsor ticket give-aways, and the phone response is enormous. "Listeners of folk music are incredibly loyal!"

Almost every kind of music is presented during the week on WFUV. Fordham University's voice also airs radio institutions like Bill Shibilski's Polka Party, Ceol Na Ngeal, and A Thousand Welcomes for Irish listeners, and Brij Lal's Bharat Vani presenting the news and music of India. Does Liz Opoka enjoy her work at WFUV? "I think of it not as a career as much as something I love to do." It shows.

Bits 'N' Pieces

The people of New Hampshire take their public radio station very seriously. After studying the results of market research, Concord's WEVO-FM decided to drop its diversified fine arts schedule. Jazz and folk music programming left the air, and statewide news was cut back to a minimum, making room for an all-classical format. With hopes of raising interest and raising funds, the station's Board of Trustees believed the change would better suit the needs of the public. They failed to recognize the real problem. Monetary support of WEVO had declined as a result of a failing economy in the Northeast.

Public response was overwhelming. WEVO became deluged with protests, and The Public Radio Interest Group of New Hampshire was immediately formed. Within two weeks The Group had organized an endless protest by telephone, a letter writing campaign producing sacks of mail, and a multitude of signatures on petitions. New Hampshire wanted "macrame radio" back on the air, and they missed all its local personality and color.

With little advance notice, a public meeting was called to discuss the conflict. Sub-zero weather did not deter over 400 people from assembling in the chambers of The State House in Concord. Local mayors, community leaders, and citizens from all walks of life stood and told The Board of their love for WEVO as it was before the change.

The Board of Trustees and the irritated listeners agreed on one matter: WEVO was suffering from a financial crisis. Their Fall 1991 fundraiser was about \$100,000 short of expectations. Station listener-members didn't have enough money to renew their subscriptions of support to the station. A raffle to raise \$30,000 managed to coax only \$11,000 out of listener's pockets.

Public pressure produced some positive results. A compromise program schedule now includes folk, jazz and classical music. Until their finances solidify, however, news staff vacancies will not be filled, and no money will be appropriated for travel, conferences, training, and the purchase of supplies. The invaluable statewide news program "New Hampshire Daily," a thirty minute local companion to NPR's "All Things Considered," seems to be gone forever. Public radio's future depends upon the public. Without their contributions, WEVO and others like it may continue to deteriorate. Stay tuned!



Liz Opoka with WFUV morning show host Darren DeVivo

Be an American BandScan Reporter.

See any stories about radio in the local paper? Send them to Monitoring Times, PO Box 98, Brasstown, NC 28902.

Mailbag

John Vanderbeck has become quite an expert at DXing travelers' information stations from his listening post in Las Vegas, Nevada. TIS stations generally use 10 to 50 watt transmitters with short vertical antennas around 30 feet long making them excellent DX catches. He regularly hears McCarran International Airport's station on 530 kHz, and logged a special temporary station operated by The National Association of Broadcasters on 1610 kHz during their yearly convention in America's gambling capital. John has also logged low power TIS stations from the Hoover Dam, Grand Canyon National Park, and California's Cajon Pass. "Sometimes these stations have to compete with the 50 kilowatt Caribbean Beacon from Anguilla in the West Indies!"

The secret to his success is his Select-A-Tenna signal booster. This device is an amplified loop antenna that pulls in signals on medium wave like crazy! No direct connection is needed between the unit and your radio. It radiates the signals it receives and is loosely coupled to your set through the air. You must position the device close to your radio for the best effect.

John asks *MT* readers for some assistance to identify a new TIS station that has just come on the air using 1610 kHz. "It is usually pretty fuzzy here, but it is in English and sounds like '....Latvia Travellers Information Station Testing 1,2,3,4,5.' I haven't been able to read the very first word. Does anyone know? Help!" John pleads.

We can suggest one possibility: WNCK 810 operating from Lancaster, California, on the fringes of the Mohave Desert, near Edwards Air Force Base. Remember, you can recognize TIS stations by their unusual call letters. For example, Grand Canyon National Park uses KOP 737 and KOP 738 for its stations on 1610 kHz. If you've think you've heard John's mystery station, please let us know and we'll send you a souvenir for your help. Write to: American Bandscan, P.O. Box 98, Brasstown, NC 28902 today!

New Station Grants

More broadcasters are going on the air every day. You'll find the latest entries here: Dillingham, AK 99.1; Dunsmuir, CA 100.1; Sacramento, CA 103.5; Morris, IL 103.1; Salina, KS 90.7; Virgie, KY 107.5; Baker, LA 107.3; Helena, MT 103.1; Hanover, NH 91.3; Belvidere, NJ 107.1; Greensboro, NC 1470; Beulah, ND 97.9; Ashtabula, OH 98.3; Ponca City, OK 88.7; Giddings, TX 1600; and Emory, VA 90.7. Courtesy of *The M Street Journal*.

For Sale

Should we carry you back to old Virginia? A wonderful FM station is priced for quick sale in the Old Dominion state. Fully equipped and staffed, this strategically placed outlet is being offered for \$450,000. Inquire by calling 301-590-1950.

A high powered FM in North Dakota is available at a bargain price. Appraised at over \$800,000, it serves a majority of this state. Real estate, new studios, and their current management team are included in the deal. Family illness necessitates a quick transfer of ownership. It's priced to sell at \$575,000 on terms, or make a cash offer. Call 1-800-827-2483 for details.

If you must have nothing but the best, here it is! A full powered Class C FM, broadcasting with 115 kilowatts ERP, is ready for sale. Covering an 80 mile radius, this powerhouse covers a capital city in the Midwest and far beyond. The package features a modern studio, building, and grounds, a microwave STL link, remote monitoring, and a multi-satellite receiver. A 25 kilowatt Collins transmitter will provide years of trouble-free operation. It can be yours for 1.5 million dollars cash. Contact the owner at 515-274-5961.

International Bandscan

Russia has been constantly realigning their broadcasting operations in the past year. Their nationwide domestic service has been renamed "Russia's Radio." Radio Stantsiya Polyus is a new entry on 1260 kHz, broadcasting from St. Petersburg from 0400 to 1400 UTC daily. You'll also find Radio SNC on 1260 kHz serving as Moscow's source for Russian and Western rock 'n' roll 22 hours a day. SNC stands for "Stas Namin Centre" named after a well-known Russian music promoter. Radio Vladivostok has had to cut its programming hours by 50% due to a budget crunch.

A fifth domestic radio network recently began operations in Belgium. Radio Donna is broadcast by the BRT on 927 kHz AM and on a variety of FM frequencies throughout the country. The station's name and logo were presented to the public on a popular evening TV show.

Credits

Many thanks to Liz Opoka and the staff of WFUV. Also thanks to *MT* readers Malcolm Kaufman, Ron Carruthers, John Vanderbeck, David Parsons, and M.L. Cauthon III. Additional material provided by *Broadcasting Magazine*, *The Boston Globe*, *The M Street Journal*, and *The British DX Club*. Until next month, happy trails!

MT

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June 1992

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Galaxy 5 Heralds New Era

With the March 21 launch of Hughes Communications Galaxy 5 satellite, a much anticipated era of satellite broadcasting has begun. The TVRO industry began in the late 1970's when the first of the broadcast satellites was launched and grew steadily with the subsequent launch and utilization of many more similar satellites.

The design life of these "birds" was generally 10 to 12 years and, as expected, the earlier ones have begun to die. The reason that these satellites have a life-span at all has to do with the amount of "station-keeping fuel" which is stored onboard. Geosynchronous orbit satellites must be kept still in assigned slots above the Earth's equator in order for Earth stations (dishes) to see them. "Flying" the satellite is the job of the company that owns the bird and is done by firing small onboard rockets which keep it in place. Eventually, the satellite literally runs out of gas and begins drifting erratically.

Satellite operators know well in advance when this condition is approaching and make the necessary preparations. The first of these preparations is to have a second generation satellite on the shelf and a launch date reserved. The trick here is timing. Launch schedules are very tight and it is not unusual to book passage on a launch vehicle years in advance of lift-off. This means that the engineering team responsible for the design of the satellite has a relatively small window between in-flight testing and real life

use of their first satellite and production and preflight testing of the replacement bird.

The best part about the great distance in time between generations of satellites is that tremendous advances in satellite design and construction can occur. Imagine if you bought a computer every ten years. The leap of technology you would experience would be staggering. So too, with satellites. Galaxy 5 will have twice the output power that its preceding generation had. Other replacements pending will double the capacity of transponders as well as power.

Nor have Earth-bound designers been asleep while better satellites are being made. Advances in reception technology are making smaller, more versatile receivers possible. Compression transmission techniques will eventually make existing satellite capacity double or triple. This excess capacity should have the effect of insuring low prices for satellite users (a fact which fiber optic makers would like to hide). All told, this means that satellite delivery of video, audio and data will remain the most competitive method of delivery available.

Small Is Beautiful

How will this march of progress effect the TVRO industry? For one thing, this has always been an industry in which "smaller" means bet-

ter sales. The introduction of higher powered satellites, of which Galaxy 5 is only the first, means that smaller, better designed receiving antennas are possible. Size has always been a problem. It is a fact that the sight of a ten-foot diameter dish in the backyard has not been welcomed by many. But a truly smaller C band dish, say four or five feet in diameter, will have trouble seeing only one satellite at a time. Thus, the potential of interference from adjacent satellites only two degrees apart in the sky is quite real.

What will potential TVRO customers go for? Over a year ago, antenna manufacturers were introducing 7.5 foot dishes and making some previously hard to reach sales. Now, companies such as Kaul-Tronics, Inc. are rolling out new 6.5 foot dishes. As the accompanying photo shows, this dish has a "quad" or four-legged feedhorn mount which insures stability so crucial to Ku band reception. Smaller dishes means smaller price tags and expanded production inevitably leads to even smaller price tags. All to the benefit of the consumer.

Who's Next?

A number of interesting changes will take place this year as the older satellites are retired. Galaxy 1R will replace its namesake G1 and will be relocated to 133 degrees west; Satcom C4 will be seen at 135 degrees west; Satcom C3 will be seen at 131 degrees west. All of the above named birds will feature 16 watt transponders and give sparkle-free reception to the continent.

Also expected this year will be the launch of Hughes' Galaxy 7-H which is a "hybrid" C-Ku band satellite. It will feature 24 sixteen watt C band transponders and 24 fifty watt Ku band transponders. It will be located at 91 degrees west longitude.

Finally, looking toward the end of the year and possibly bumped into next year (but still worth addressing), is ACTS-1. Called the Advanced Communications Technology Satellite, this bird is an experimental design from NASA which will operate in the Ka band (19.2-20 GHz and 29-30 GHz). Design life is intended to be four years. Access to this satellite will be made available to all by NASA which will encourage its use for the development of new technologies. It will be well worth watching developments from this project.

Kaul-Tronics, Inc. introduces their new high-performance 6.5 foot four section mesh antenna, the XI-6 Plus 37 dBi C band and 45.6 dBi Ku. Total weight including the four point mount is 62 pounds. It's also available with an immobile patio mount for fixed viewing of a single satellite such as Galaxy 5. For more information write KTI, 1140 Sextonville Rd., Dept MT, Richland Center, WI 53581, or call 608-647-8902.



TVRO News

• Little used C-Ku hybrid satellite ASC-1 (128 degrees west) will be seeing a lot of use with the retirement of Westar 5. Potential Integrated Receiver Decoder (IRD) buyers should be interested in an article in the March 30-April 5 *ONSAT* guide. Here, no fewer than 46 models of satellite receiver IRDs were compared in the most comprehensive of such lists I have seen. Back issues may be available. For more information call: 1-704-482-0114 Monday-Friday 8:30-5 PM ET.

• Atlanta-based Brightside Network has been operating out of channel 23 on Canadian satellite El. According to industry trade papers, the endeavor is backed by investors from the Middle East with big plans for development. As with similar projects trying to launch in these uncertain economic times, there's a lot of big talk and not a lot of discernable action.

• The FCC recently issued a unanimous decision in favor of satellite dish owner Joseph Carino who has been engaged in a zoning battle with the town of Deerfield, New York, for more than five years. It is another victory for TVRO owners, but cities and municipalities are counting on most citizens being unable to hire an attorney for five years to fight such illegal ordinances. Until the FCC can slap these First Amendment muzzlers with huge fines and other punishments, the cable-interest oriented local governments will continue to harass its citizens.

• *USA Today*, in an ad in *Broadcasting Magazine* from February 10, 1992, is apparently planning America's first "live in-flight news channel to debut this year on Delta Airlines." They claim the "all-news format" will be produced in Gannett headquarters in D.C. and relayed to commercial aircraft nationwide via satellite. No word on exactly how this will be done, but it's clear that if it's a success, similar efforts for other mobile vehicles cannot be far behind.

• The May 1992 issue of *Earth* magazine has an extensive article on receiving satellite images on home computers. The eight page article features many graphics and color pictures taken from a home computer monitor. If no longer available on newsstands, call for the back issue: 1-414-796-8776, or write *Earth* at 21077 Crossroads Circle, Waukesha, WI 53187.

• The Monitor Channel (F4,20) may, by the time this is printed, be no longer with us. In a country where religious broadcasting is a billion dollar money-making machine with dubious aims and achievements at best, the Christian Science's Monitor Channel was the great exception to the rule. As an antidote to CNN, the Monitor Channel will be deeply missed.

• New England Cable News becomes a pioneer in the regional all-news format. Found on

Satcom F-4 and in the clear, NECN has all the earmarks of a well-produced local news show with a much bigger beat. A well-wired and well-heeled demographic audience might make this channel able to fly.

• As projected in this column several months ago, the FCC now says it will delay the issuance of a HDTV standard for at least five months. The new deadline is expected to be February 1993. You, too, can look like a genius by predicting that it may not happen then either.

• The World Administrative Radio Conference held in March of this year has set aside 40 MHz of the 1.5 GHz (L) band for satellite and ground based Digital Audio Broadcasting (DAB). However, due to conflicts with military users of that band in this country, the WARC gave the U.S. an exemption and the use, instead, of 56 MHz of the 2.5 GHz (3) band. Industry sources indicate that commercial use of the band with CD quality audio delivery could be possible in the next three years.

• A full-page ad from religious cable programmer Trinity Broadcasting Network (TBN), in a recent cable trade journal, asked cable companies to add them to their channel line-up. And why not? TBN will pay the local cable company up to a dollar per subscriber if they'll find space for them. And that's chump change compared to what TBN probably figures each subscriber is worth in terms of ad revenue and donations.

• An article in the April 6 *Cablevision* magazine spelled out what many of us had been hoping for: "So far, experiments in placing baseball on PPV (pay-per-view)...generally have fallen on their face." But don't be so quick to get out the shovels for the burial. The real test of sports on PPV comes this summer with the summer Olympics.

• Finally, a question was asked as to how Associated Press photos were sent via satellite. The answer was found in a publication called *Spectrum* which bills itself as "An Associated Press Communications Review." In the Volume 6, 1990, edition, the system which is called "PhotoStream" was explained. First, a photographer, regardless of his actual location, transmits the developed photo via an AP Leafax 35. This device is a "...digital photo compression and transmission system..." which sends the photo either via land line or portable satellite up-link to the New York headquarters where the picture is then relayed to the satellite and received by AP members. According to Mark Long's *World Satellite Almanac*, AP uses two transponders on Spacenet 3 (87 degrees west). He writes: "...AP's three-meter antennas are crystal-controlled to operate only on Transponder 1 (3.720 GHz)."

MT

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Have You Paid Your Dues?

What? I just paid for all this ham gear and now I gotta pay dues?

You bet you do! If you enjoy ham radio and want to keep on using the privileges you earned with your ham ticket you must pay dues. Now I don't mean digging down and coming up with hard cash (although that too is required at times). I mean giving of your time, skill and knowledge so others can benefit from ham radio.

Some of the ways you can pay your dues are as follows:

Get involved in traffic and emergency nets. Volunteer to be part of your club's next communications team for the local walk-a-thon, parade, bike tour. Help set up gear in the local school to show students how radio works, maybe even talk to the astronauts. Join MARS (Military Affiliated Radio System) and help enlisted personnel keep in touch with folks at home.

If you have writing skill, contact the ARRL to see if you can become a Public Information Assistant (PIA). PIA's write up news releases for newspapers and magazines on amateur activity in their area. They also keep the ARRL headquarters informed of what is going on locally.

Clubs

A local ham club can point you in the right direction. If you are not a member of a ham club, I urge you to join the nearest group as soon as possible. Most clubs have on-going public service programs and will welcome you with open arms, give you direction and use your skills in their activities.

Another popular way of paying your dues is to become a VE (volunteer examiner) to help administer amateur tests. To become a VE you must hold at least a General Class amateur license. There are several examining groups in place, the most popular being the ARRL. Check with your club to make sure you get signed up with the correct examination group.

Teaching

To many of us, teaching would-be hams is the most satisfying of services. Whatever your major skill is—CW or theory—share it with someone and watch them grow.

There are several ways you can get into teaching amateur radio; you can become an instructor with a club and teach classes or you can teach on a one-to-one basis.

When a club sets up amateur radio classes, generally a group of half a dozen or more licensed members share the teaching duties, each teaching a field with which they are well ac-

quainted. Such classes will attract from half a dozen up to a hundred individuals. Naturally, larger groups require more instructors.

In today's world, many would-be hams simply cannot attend organized classes. These are the folks who can benefit from an Elmer (an individual who takes them in hand to help learn the required information). Should you become an Elmer to one or more newcomers, be sure to keep track of where each individual is in his studies. Frequently you can set up a schedule for a specific day and time for each student, and maybe even get them together from time to time for a group session.

However, many times a teaching session begins with a phone call (hi Elmer, I'm free Thursday afternoon from 3pm on, can we get together?). Do your best and hang in with the student; you will both appreciate it in years to come!

Radio Shack HTX-202

If you are using one of Radio Shack's neat 2 meter handi-talkies (HTX-202) and want to get on packet, follow diagram one. The circuit comes from N5UBX (Joe LeBlanc, Lafayette, LA) and was published in Radio Shack's February 1992 *Merchandising Newsletter*.

Just a few notes on the hookup—the mike input is the smaller jack; do not connect anything except the center connector on this plug (i.e. don't be concerned about ground) The ground is picked up at the audio input line. Any 2200 ohm resistor from 1/8th to 1 watt is ok. It is very difficult to pack the resistor and capacitor inside the plastic housing of the sub-mini mike connector; consequently you might find it necessary to wrap electrical tape (as I did) or build a different housing for the hook-up. It works just fine!

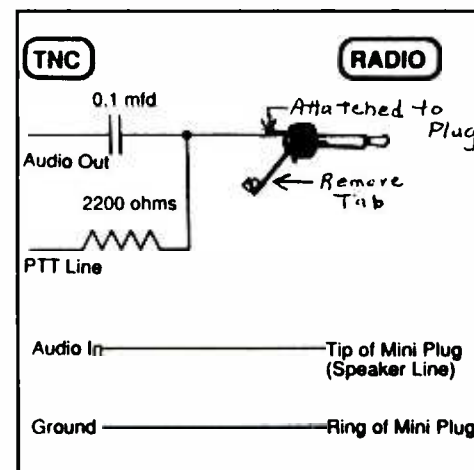


Diagram 1

MONITORING TIMES



Photo 1

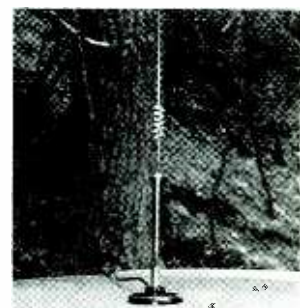


Photo 2

A Different Two Meter Antenna

If you are involved with emergency communications you should be interested in a neat two meter antenna from Lakeview Co. It is a two meter collinear number 9007B.

There are two very worthwhile features about this antenna. The first is that it provides about the highest gain you can get in a conventional mobile antenna, and the second is that it can be easily removed and joined to a radial kit which is included with the antenna, to make a super base antenna. Price on this antenna is \$28.95 plus shipping.

What this means to emergency communications is that you can use it while mobiling, then if need be, unscrew it from your vehicle and join it to the radial kit, erect it on a couple of ten foot poles to provide truly superior performance for your emergency (or home) base station. (Photo one)

A second nifty antenna from Lakeview is the Dual Band magnetic mount for 2 meters and 70 centimeters. The antenna acts as a quarter wave on two meters and provides 3 dB of gain on 70 cm. The Dual Band comes in either black or chrome to suit most tastes and please the eye. So if you have a new dual bander, this may be the antenna for you; price is \$27.95. (Photo two)

Both antennas are available from Lakeview Company, 3620-9A Whitehall Rd, Anderson, SC 29624, phone 803-226-6990 for more info, or 800-226-6990 to place an order.

That's all for this month gang. See you during the VHF QSO party June 13 to 15th and Field day June 27-28th. 73, Ike, N3IK

M

Rob Leonard's

Ham DX Tips

It's a great time of year. The birds are out singing, the sky is nice and blue, and the weather is just nice enough to get outside for all sorts of activities. And this is just what amateur radio operators do, too! June is the second month of that "special" DX season when amateurs all around the Northern Hemisphere take their rigs and antennas outdoors and set up operations at local fairs, festivals, celebrations and exhibits. Besides the regular DX offerings we have for you this month, be sure to check 7250 kHz, 12450 kHz, 21350 kHz and 28350 kHz (+/- 10 kHz) SSB between 1500 and 0000 UTC each Saturday and Sunday for special US and Canadian stations. Using normal callsigns, the operators will announce what their special event is and the address to write for a special QSL or certificate.

Here are some other DX targets for you to try for in the meantime:

ALASKA WL7CBM (Timothy Lass, P.O. Box 10, Gambell, AK 99742) can be found operating from St. Lawrence Island at between 2200 (Sunday UTC) and 0300 (UTC Monday) each week on 28460 kHz.

ANTIGUA Look for V29PI who has been appearing on 21155 kHz SSB and CW Sundays at 1330 UTC. His QSL manager is DJ5KY, Friedrich Muenzel, Jupiterstr 22, D-S156 Otterding, Germany.

BRUNEI V85PB (Peter Bacon, P.O. Box 715, Seria 7082, Brunei) is on 14240 kHz at 1800 UTC daily.

BOLIVIA Look for CP8HD operating RTTY on 21090 kHz most days at 2200 UTC to 0300 UTC. Send reports to Herman Suarez Serrate, P.O. Box 322, Trinidad, Beni, Bolivia.

ESTONIA ES7FQ (Heller Luik, P.O. Box 126, 202900 Viljandi, Estonia) is offering this country to RTTY enthusiasts on 14085 kHz at 1130 UTC.

FRANCE Special events station TM6JUN will celebrate the 48th anniversary of the World War II D-day landings in Normandy operating by repeating 3 to 8 June on the following frequencies. CW: 3544, 7030, 14044, 21044, 28044 kHz; SSB: 3775, 7070, 14244, 21344, 28444 kHz. Send QSL requests to Mario Andre, 631 Rue Carentan, 5000 Saint Lo, France.

INDONESIA YU4GDX (P.O. Box 99, Pangkalpinang 33101, Bangka Island, Indonesia) is on 21260 kHz SSB at 1400 UTC Saturdays and Sundays.

JOHNSTON ISLAND For those on the Pacific Coastal areas, look for KH3HF on 6 meters, 50108 kHz, operating CW and SSB at 2330 UTC. KH3HF is Richard D. Giles, P.O. Box 976, APO, AP 96558. KH3AE has been on 28550 kHz SSB as late as 0200 UTC and on 24980 kHz SSB at 2200 UTC. KH3HF is John Barlett, P.O. Box 764, APO, AP 96305.

LIBERIA EL2PP is a regular on 21265 kHz SSB starting around 0001 UTC every day. His QSL's can be obtained from his QSL manager: Libertario Salvadori, Via 8, Giovanni 16, I-57123 Livorno, Italy.

PARAGUAY Not an easy to catch country on the bands, but if you can copy CW (or have a computer program that can) you can log ZP6CW (Doug Woolley, P.O. Box 73, Caacupe, Paraguay) who inhabits 10101 to 10105 kHz starting at 1230 UTC. Doug says that his wife, ZP6CU, has a limited understanding of English, but if you need a YL (Young Lady) contact from Paraguay (there are awards for contacting a certain number of countries by speaking to YL ops), get in touch with Doug and he'll try to arrange a contact.

QATAR Mohamed A Al Mannai (P.O. Box 1556, Doha, Qatar) A71BK can be located on 28575 kHz at 1230 UTC daily.

WALVIS BAY Our around the world trip ends this month with a DX tip about this South African enclave located along the coast of Namibia. ZS9A appears on 21315 kHz starting at 2000 UTC. Send your SWL reports and QSO reports to Ian Sutherland, P.O. Box 2327, Walvis Bay, CT 9190 South Africa.

I'd like to end this month with another reminder that warm weather in this part of the world also brings many Islands on the Air (IOTA) DX-peditions. Check the frequencies of 14260, 21260 and 28460 kHz SSB when propagation is in because they can be active with such operations worldwide. 'Til next time; have fun and good DX, 73 de Rob.

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Radio Chaos Busted

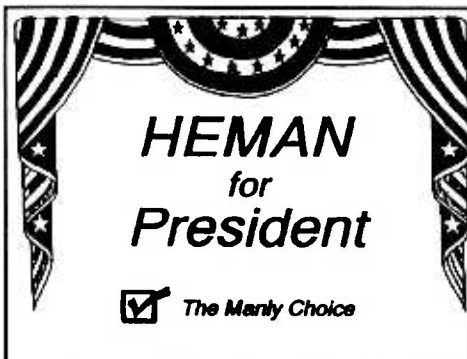
It appears that Captain Chaos of **Radio Chaos International** has made his final short-wave pirate broadcast. The FCC announced that it busted this station on March 20. Radio Chaos was allegedly operated by Frank Foskey of Clark, New Jersey.

MT's New Jersey readers, Paul Havemann of Oak Ridge and Bob Kozlarek of Elmwood Park, forwarded copies of articles about this bust from the Newark *Star Ledger*. The paper quoted some puzzling remarks by FCC personnel. John Rahtes, engineer-in-charge of the FCC Philadelphia office, claimed that Chaos had interfered with international broadcasting stations. However, no international broadcasters are currently active on the 7415 kHz bust frequency.

Dozens of *MT* readers heard Radio Chaos International's numerous broadcasts in March, including Dwight Weidman of Falling Waters, WV, and Paul Havemann. The station's Achilles heel was an unwise sudden affiliation with Lad of the **Voice of the Night**. Captain Chaos and Lad engaged in nearly daily marathon broadcasts and seemingly endless two-way interchanges. This certainly made it easy for the FCC to track down Chaos.

Veteran DXer David Alpert of New York City sends in a related article from the January 17 issue of *Washington City Paper*, a DC publication. This article contains many quotes from FCC Field Operations Bureau Chief Dick Smith. Smith claimed that pirate radio "seems to be on the wane," and that pirates "can interfere with aircraft navigation channels." The article also mentions the "apparent retirement" of RNY's still-active Alan Weiner. Hmm.

Such quotes would seem to suggest that sometimes the FCC does not have a keen understanding of its own work. But, the lengthy and frequent broadcasts in its final days from Chaos with the **Voice of the Night** were obviously very poor pirate operating practices.



Will we have a pirate in the White House?

Clandestine News

Glenn Hauser has been printing fresh **Radio Free Bougainville** news in his *MT* column. Scott Edwards of Los Alamitos, CA, forwards material on this station from Glenn Baxter's International Amateur Radio Network. A few DXers have found that it can sometimes be heard with difficulty in North America on 3880 kHz around 1000.

Robert Thomas of Bridgeport, CT, forwards information on the **Voice of Independent Kashmir**. This one is an extremely tough catch in North America. But, it very rarely can be heard here on 5000 kHz under WWV. It's supposedly scheduled in parallel on 6300 kHz between 0230-0330, but the now-licensed **Radio Venceremos** has also been using this frequency lately. Kashmir occasionally jumps frequencies as well.

I've been regularly hearing the anti-Colombian clandestine **Radio Patria Libre** with excellent signals on its new frequency of 15045 kHz between 0030 and 0100. This one has previously been "DF-ed" to a location "within" northern Colombia. Very few clandestines actually locate transmitters within their target countries, for obvious reasons.

Pirate Broadcasts on Satellite

Scott Becker of Becker Satellite Network announces that he is relaying programming from North American pirate stations via satellite! This legal service permits clear reception of pirate stations in all parts of North and South America. The network currently uses Westar 5, Transponder 23, 5.8 MHz wideband audio between 1400-2000 UTC, and Spacenet 2, Channel 7, 7.5 MHz wideband audio at 0000+ UTC. Future expanded schedules are anticipated.

This is clearly an unusual means for pirate stations to expand their audience while totally eliminating risks from the FCC. Pirates interested in the service should contact Becker directly. The BSN address is Kiowa, Kansas 67070, and its business phone is (414) 658-8778. Although the relays are not free, Becker says that fees are both relatively modest and negotiable.

Have any *MT* readers picked up these satellite pirate relays? Among the stations currently aired are **Radio DC** and **RNI**. Incidentally, Al Sikes of Radio DC writes in to confirm that he has been sending out QSL's for logging reports printed in the ACE "DiaLogs" column.

Pirates Running for President?

Although you won't see this on CNN, both He Man of **He Man Radio** and Ray Cathode of **Tube Radio** have tossed their hats into the ring

as candidates for President of the United States. He Man is running on a sexist platform, while Cathode is emphasizing themes of individual freedom.

Don't laugh! Comedian Pat Paulsen actually received more votes for President than Eugene McCarthy did in the 1992 New Hampshire primary. Glenn Waber of Hubertus, WI, sends in the He Man campaign poster that is pictured here.

Europirate Notes

This has been a relatively good year for Europirate reception in North America. Cathy Turner of Yonkers, NY, snagged **Radio Fax** on 6205 kHz at 0100. This one is probably the most widely heard Europirate on this side of the Atlantic. I frequently check this one myself as sort of a propagation marker. If Fax is coming in well, then other Euros will probably be audible as well.

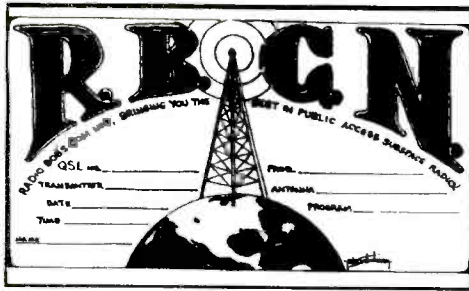
Radio Dublin has returned to shortwave. Pat Murphy of Chesapeake, VA, fished them out on 6911 kHz at 0500. Like most Euros, Dublin features a rock music format. Glenn Waber found **Radio Marabu** on 41 meters! (Most Europirates tend to favor 49 meter frequencies). He logged them on 7420 kHz at 0200 with a mix of rock and comedy sketches.

We hear this month direct from the Free Radio Campaign-Finland, which coordinates a robust pirate scene in eastern Scandinavia. An IRC or \$1 US will get you a copy of FRCF's extensive list of taped Europirate programming that is available on cassette tapes. Their address is PO Box 82, SF-40101 Jyvaskyla, Finland.

Simon Mason of Hull, England, reports that dozens of European numbers stations are still active, and he sends in an interesting tape to prove it. John Santosuosso previously reviewed Mason's excellent book, *Secret Signals-The Europirates Mystery*, in this column. The book is available from several *MT* advertisers, including its publisher Tiare Publications.

Liberation Radio Claims Police Harassment

Last month, we discussed the situation at **Radio Free Detroit**, a small ten watt community-based pirate in Detroit's inner city. Several similar stations are active in other towns. One of these is **Liberation Radio**, which operates in Decatur, Illinois. Its operator, Napoleon Williams, writes in this month. He says that his fiancée has been jailed, and that his daughter has been removed from the family by police. Williams alleges that his operation of Liberation Radio and his support for striking workers in



RBCN's comedy has been a welcome addition.

April at the local Caterpillar Tractor plant are behind the police actions. Have any *MT* readers actually picked up one of these local community FM pirates?

Record Pirate Activity

Literally hundreds of North American pirate station loggings were sent in this month by *MT* readers. There is no doubt that 1992 is breaking all previous records for the volume of shortwave pirate broadcasts. On most weekend evenings, 7415 kHz has literally been swarming.

Mark Seiden of Miami, FL, writes in with a suggestion. Given the currently huge amount of pirate activity, Mark thinks that a loggings section might be useful. I'm trying a version of Mark's suggestion this month. Your overwhelming support of the "Outer Limits" is much appreciated, and I want to present information so that it is useful to *MT* readers. Your comments and suggestions on this are very welcome.

More Maildrop Procedures

Dave Gasque of Orangeburg, SC, writes in with another tip that I need to mention. He reminds us that reception reports sent to pirates **must include three first class mint stamps** to cover postage and maildrop forwarding costs. If you don't follow this rule, your report will probably not get through to a station.

Dave also notes that some stations have been announcing that reception reports should be sent to *MT*, the "Outer Limits," or to other shortwave publications and hobby club bulletins. These station announcements should be ignored; *we do not serve as maildrops*.

Pirate stations that wish to receive mail should make arrangements with an active postal maildrop, and your reports to stations should be sent through these drops. Stations listed in the column this month are using four different addresses: PO Box 109, Blue Ridge Summit, PA 17214, PO Box 452, Wellsville, NY 14895, PO Box 25302, Pittsburgh, PA 15242, and PO Box 17354, Atlanta, GA 30316.

What We Are Hearing

CSIC- 7413 kHz at 0200; Pirate Rambo hosts a Canadian rock and comedy format, including a recent feud with Kristin Kaye of the Signals DX program. Addr:

Blue Ridge Summit. (Joe Leach, Dayton, OH and George Stoner, Monroe, MI).

East Coast Beer Drinker- 7415 kHz at 0800; format includes rock, comedy, TV audio clips, and beer drinking. Addr: Blue Ridge Summit. (Bill Morse, Elgin, IL).
Experimental Propagation Radio- 7416 kHz at 0430; rock music format. Addr: none. (Robert Stone, Schodack Landing, NY).

FCC Radio- 7427 kHz at 0500; a new station with a rock format. Addr: falsely claims that any FCC office will QSL. (Skip Harwood, Beale AFB, CA).

KMCR, Magic Carpet Radio- 7420 kHz at 0300; has a format of rock and pirate songs. Addr: Blue Ridge Summit. (Norm Alexander, Diamond Springs, CA).

Kranker Radio International- 7415 kHz at 0445; very professional rock music format. Addr: Pittsburgh. (Paul Friend, New York, NY).

Midnite Radio- 7415 kHz at 0230; slick talk show format with. The FCC alleges a previous bust of this one, but the station denies this. Addr: Blue Ridge Summit. (George Zeller, Cleveland, OH).

RBCN 7415 kHz at 0330; a hilarious good ole boy comedy and country music format, a.k.a. Radio Bob and the Voice of Shakerag. This was Donnie's first pirate ever! Addr: Atlanta. (Ed Barton, La Grande, OR and Donnie Pardue, Sanford, NC).

Radio USA- 7415, 7490, and 21495 kHz reported by many readers at various times; Mr. Blue Sky's veteran station features punk rock, comedy, and relays of other pirates. Addr: Wellsville. (Robert Thomas, Bridgeport, CT).

Rubber Chicken Radio- 7415 kHz at 0230; a new station with a comedy format including a Congressional bank sketch. Addr: none. (Mark Seiden, Miami, FL).

VERO, Underground Radio- 7415 kHz at 0400; a new west coast station with comedy and discussions of Libyan politics. Addr: none. (N. Alexander, Diamond Springs, CA).

Voice of Laryngitis- 13800 kHz at 2100; the Huxleys' veteran comedy station often has a Hen Schnauzer parody of *MT*'s Glenn Hauser. Addr: Wellsville. (ANARC's Rich D'Angelo, Wyomissing, PA).

Voice of the Night- 7415 kHz most all day; Bill's first pirate! Youngboy announcer "Lad" rock, novelty songs, QSO/Sand vicious attacks on other stations and DXers. Probably the most controversial pirate ever. Kristin Kaye of Signals labels it as a "baby pirate." Addr: Wellsville and Pittsburgh. (Randy Reese, Medina, NY and Bill Hennessy, Marble Falls, TX).

Voice of Stench- 7415 kHz at 0145; features a classic rock format via a **WSKY** relay. Addr: Pittsburgh. (Mac Woodman, Decatur, Georgia).

WARI- 7417 kHz at 0500; formerly WGNK, Dr. Lobotomy features an eclectic music format. Addr: Wellsville. (Pat Murphy, Chesapeake, VA).

WAZU- 7415 // 7490 kHz at 2200; a slick rock and philosophy format heard via a **Radio USA** relay. Addr: Wellsville. (William Schmitz, Washington, DC).

WFRN- 7415 kHz at 0200; a rock music format. Addr: none, uselessly (see above) solicited reports via *MT*. (Thomas Gray, Indianapolis, IN).

WGOP, Conservative Radio 7415 kHz at 0430; a Republican advocacy format. Addr: Wellsville. (Andy Ronan, Chicago, IL).

WJFK- A letter direct from the station says that they QSL logging reports (not reception reports) printed in the ACE and Pirate Pages bulletins. Jim notes that Baltimore has a licensed **WJFK** on 106.7 MHz FM and 1300 kHz AM. (Jim Buscher, Arlington VA).

WLIS- 7415 kHz at 0000; a very unusual format of SWBC station interval signals via a **CSIC** relay. Addr: Blue Ridge Summit. (Brenton Steck, La Porte, IN).

WRTR- 7415 kHz at 0000; a rock format with a preacher parody. Addr: announces a defunct box in Baltimore. (Nicholas Peter Adams, Newark, NJ).

WSKY- 7415 kHz at 0200; host Mike Richards with a professionally produced rock oldies and mailbag format. David's first pirate! Addr: Wellsville. (David Christy, Lake Wales, FL, Jeff Bradley, Watertown, MA, and Edward Hlywa, Fredericksburg, VA).

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LUNCH BREAK
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EXHIBITS CLOSE
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What? You're Still Waiting on a QSL from All India Radio ?

We may be onto a good tip for collectors who seek the Indian subcontinent's QSL.

Send your next reception report to the attention of All India Radio's "Audience Research Unit." This previously slow verifier has been replying in less than a month! Is AIR this month's new record breaker?

Don't forget ... LRA36 Radio Nacional Arcangel San Gabriel of Antarctica continues to welcome your reception reports. Check out 15475.73 kHz from 2100-2300 UTC for Spanish programming and multilingual IDs.

Send your report and return postage to: Base Antartida Esperanza, Comando de Comunicaciones, Comando en Jefe de Ejercito, C.P. 9411, Antartida, Argentina.

If you're in a hurry for that QSL, try writing: GIB, Casilla 2868, 1000 Buenos Aires, Argentina. QSLs are 100% guaranteed if two IRCs are included with complete and detailed reports.

*Alberto Araujo
of Cocoa
Beach, FL,
submitted this
QSL from
Radio
Rumbos,
Venezuela.*



AUSTRALIA

Northern Territory Service-VL.8T Tennant Creek, 2325 kHz. Full data station QSL card, without verification signer. Received in 20 days for an English report. Station address: Australian Broadcasting Corp., GPO Box 9994, Sydney NSW 2001/ or Box 9994, Darwin, Northern Territory 5750. (David Gasque, Orangeburg, SC)

BELGIUM

BRT International, 15515 kHz. No data picture post card, without veri signature. Program schedule and Belgium bird stamps which I requested included! Received in 43 days for an English report. Station address: Postbus 26, B-1000, Brussels, Belgium. (Robin Verhose, Spring Lake Hts., NJ) (Frank Hillton, Charleston, SC)

ENGLAND

Portishead Radio, 8516 kHz. Full data QSL, and personal letter verified by Larry Bennett-Customer Services Officer. Station information brochure included. Received in 8/11 days for an English Utility report, and 1 IRC. Station address: British Telecomm International, Portishead Radio Station, Highbridge, Somerset TA9 3JY, England. (Nagl Martin, Austrian DX Club) (Stanley Klemanowicz, Torrance, CA)

GERMANY

Deutsche Welle, 6160/17810/6040/9670 kHz. No data picture card, with preprinted veri signer signature Peter Sluge-Freq. Tech. Received in 50/6395/105 days for an English report and 2 IRCs. Station address: Postfach 10 04 44, D-5000 Koln 1, Germany. (Paul Sullivan, Albany, CA) (Michael Mc Ferrin, Smith Creek, MI)

INDIA

All India Radio, 11620 kHz. Full data QSL of Taj Mahal Agra, verified by initials M.Z. Received in 23 days for an English report. Station address: External Services Division, Audience Research Unit, P.O. Box 500, New Delhi 110001, India. (Nicholas P. Adams, Newark, NJ) (Craig Jordan, Sacramento, CA)

ISRAEL

Kol Israel, 7465 kHz. Full data station logo card and program schedule, without veri signer. Received in 55 days for an English report. Station address: External Services, P.O. Box 1082, 91 010 Jerusalem, Israel. (Steve Hunter, Drexel, PA)

NETHERLANDS ANTILLES

Radio Netherland-Bonaire Relay, 11720/21455 kHz. Full data Solar Eclipse card, without veri signer. Received in 36 days for an English report and 1 IRC. Station address: P.O. Box 222, 1200 JG Hilversum, Netherlands. (John Carson, Norman, OK)

Trans World Radio-Bonaire Relay, 9535/11930 kHz. Full data QSL card, verified by Sally Rork. Received in 26/32 days for an English report, mint stamps, and 2 IRCs. Station address: Bonaire, Netherlands Antilles. (Sullivan, CA) (Adams, NJ) (Mc Ferrin, MI) (Hilton, SC)

NIGERIA

Voice of Nigeria, 7255 kHz. No data color drawing cards, without veri signer. Received in 522/540 days for an English report mint stamps. Station address: Broadcasting House, P.M.B. 4003, Falomo, Ikoyi, Lagos, Nigeria. (Doug Merkel, St. Louis, MO) (Alberto Araujo, Cocoa Beach, FL) (Terry Powers, San Diego, CA)

PAKISTAN

Pakistan Naval Radio Station, 17093.6 kHz. Full data QSL card and letter, verified by Muhammad A. Khan-Lt. Cmndr. Pakistani Navy. Received in 32 days for an English Utility report, and 1 IRC. Station address: Directorate of Signals, Operations Division, Naval Headquarters, Islamabad, Pakistan. (Martin, Austria)

SHIP TRAFFIC

LAKE GUARDIAN-WA9Q082, 4077 kHz. (EPA Research Vessel) Full data prepared QSL card, verified by D. Sullivan. Ship's fact sheet included. Received in 34 days for an English Utility report, and a self-addressed-stamped envelope. Ship address: c/o Marine Post Office, Detroit, MI 48222. (Russ Hill, Warren, MI)

USCGC DEPENDABLE-NOWK, 4134 kHz. Full data prepared QSL card with ship's stamp, verified by J.C. Tindall, RM3. Received in 36 days for an English Utility report, and a self-addressed-stamped envelope. Ship address: P.O. Box 2626, Panama City, FL 32402-2626. (Hill, MI)

M/S NOORDAM-PICO, 6227 kHz. (Cruise Ship) Full data prepared QSL card with ship's stamp, postcard of the ship, and a personal note from the veri signer P.J. Kenny. Received in 38 days for an English Utility report, and a self-addressed-stamped envelope. Ship address: Holland-America Line, 300 Elliot Ave. West, Seattle, WA 98119. (Hill, MI)

FAUST-WRYX, 156.65 MHz. (Roll-On/Roll-Off Car Carrier) Full data prepared QSL card. Received in 47 days for an English Utility report, and one U.S. dollar. Ship address: Walleniusrederierna, Swedenborgsgatan 2, Postfach 17086, S-104 62 Stockholm, Sweden. (Hank Holbrook, Dunkirk, MD)

SUNBELT DIXIE-D5BU, 156.65 MHz. (Car & Refrigerated Carrier) Full data prepared QSL card. Received in 109 days for an English Utility report, and one U.S. dollar. Ship address: Maruha Kaiun Co., Ltd., 3-3, 2 Chome, Shiba, Minato-ku, Tokyo, Japan. (Holbrook, MD)

TAIWAN

Kaohsiung Radio, 12864/22565 kHz. Full data color QSL card, verified by Simon Tsay-Station Master. Received in 24/32 days for an English Utility report, and 1 IRC. Station address: c/o Maritime Radio Telegraph, Coastal Station, 142 Jiin-Tien Road, Kaohsiung, Taiwan, Rep. of China. (Martin, Austria) (Klemanowicz, CA)

UNITED ARAB EMIRATES

U.A.E. Radio-Abu Dhabi, 11965/7215 kHz. Full data color folder card of skyline, verified by initials from the Ministry of Information and Culture. Received in 20 days for an English report on a postcard. Station address: P.O. Box 63, Abu Dhabi, United Arab Emirates. (Hunter, PA)

U.A.E. Radio & TV-Dubai, 11945 kHz. Full data world map card, without veri signer. Flag pennant and program schedule included. Received in 24 days for an English report, and 2 IRCs. Station address: P.O. Box 1695, Dubai, United Arab Emirates. (Klemanowicz, CA)

VENEZUELA

Radio Rumbos, 9660 kHz. Full data color scenery card of Caracas, verified by illegible initials. Received in five months for a Spanish report. Station address: Apartado 2618, Caracas 1010A Venezuela. (Araujo, FL)

How to Use the Shortwave Guide

1: Convert your time to UTC.

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

Note that all dates, as well as times, are in UTC: for example, the BBC's "Ken Bruce Show" (0030 UTC Sunday) will be heard on Saturday evening (8:30 PM Eastern, 5:30 PM Pacific) in North America, not on Sunday.

2: Choose a program or station you want to hear.

Some selected programs appear on the lower half of the page for prime listening hours. If it's news you're interested in, check out the complete "Newline" listing, which begins on the next page.

Occasionally program listings will be followed by "See X 0000." This information indicates that the program is a re-run, and refers to a previous summary of the program's content. The letter stands for a day of the week, as indicated below, and the four digits represent a time in UTC.

S: Sunday
M: Monday
T: Tuesday
W: Wednesday
H: Thursday
F: Friday
A: Saturday

3: Find the frequencies for the program or station you want to hear.

Look at the page which corresponds to the time you will be listening. Comprehensive frequency information for English broadcasts can be

found at the top half of the page. All frequencies are in kHz..

The frequency listing uses the same day codes as the program listings; if a broadcast is not daily, those day codes will appear before the station name. Irregular broadcasts are indicated "tent" and programming which includes languages besides English are coded "vl" (various languages).

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

Of course, every station can't be heard all the time. To help you find the right frequency, we've included information on the target area of each broadcast. Frequencies beamed toward your area will generally be easier to hear than those beamed elsewhere, even though the latter will often still be audible. Every frequency is followed by one of these target codes:

am: The Americas	me: Middle East
na: North America	as: Asia
ca: Central America	au: Australia
sa: South America	pa: Pacific
eu: Europe	va: various
af: Africa	do: domestic broadcast
me: Middle East	om: omnidirectional

Consult the propagation charts. To help you further find the right frequency, we've included propagation charts at the back of this section, which take into account conditions affecting the audibility of shortwave broadcasts. Simply pick out the region in which you live and find the chart for the region in which the station you want to hear is located. The chart indicates the optimum frequencies for a given time in UTC.

Programs for Shortwave Listeners

This section, published quarterly, lists programs with news and information about shortwave radio for listeners. (RR) denotes reruns of programs broadcast earlier in the week. For brevity, only programs at certain peak listening times are included.

Sundays

0000 WRNO: World of Radio
0025 Spanish Foreign Radio: DX Spot
0140 Radio Havana Cuba: DX'ers Unlimited
0039 HCJB: DX Party Line
0110 Radio Czechoslovakia: DX Special
0110 Voice of America (Americas, Caribbean): Communications World
0125 Spanish Foreign Radio: DX Spot (RR)
0215 KSDA, Guam: DX Asiawaves
0218 Swiss Radio Int'l: Swiss Shortwave Merry-Go-Round
0300 Radio For Peace Int'l: World Of Radio
0235 Radio Budapest: DX News
0340 Radio Havana Cuba: DX'ers Unlimited (RR)
0239 HCJB: DX Party Line (RR)
0245 Voice of Free China: Radio Corner
0330 TWR, Bonaire: Bonaire Wavelengths
0330 Radio Japan: Media Roundup
0315 Voice of Turkey: DX Corner (biweekly)
0305 WWCR: World Of Radio
0410 Radio Czechoslovakia: DX Special (RR)
0418 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
0340 Radio Havana Cuba: DX'ers Unlimited (RR)
0509 HCJB: DX Party Line (RR)
0525 Spanish Foreign Radio: DX Spot (RR)
1130 Radio Austria Int'l: Austrian Shortwave Panorama
1330 Radio Austria Int'l: Austrian Shortwave Panorama (RR)
1330 Radio Australia: Communicator
1530 Radio Austria Int'l: Austrian Shortwave Panorama (RR)
1530 Radio Japan: Media Roundup (RR)
2130 Radio Japan: Media Roundup (RR)
2330 Radio Japan: Media Roundup (RR)
2335 BRT, Brussels: Radio World

Mondays

0130 Radio Japan: Media Roundup
0330 Radio Austria Int'l: Austrian Shortwave Panorama (RR)
0345 Voice of Free China: Radio Corner (RR)
0430 Radio New Zealand Int'l: Mailbox (biweekly)
0700 Radio For Peace Int'l: World Of Radio (RR)
1320 Kol Israel: DX Corner
1312 BRT, Brussels: Radio World (RR)
2045 WWCR: World of Radio
2154 Kol Israel: DX Corner
2320 Radio Vilnius: Feature For DX'ers

Tuesdays

1243 Radio Sweden: Sweden Calling DX'ers (biweekly)
1513 Radio Sweden: Sweden Calling DX'ers (biweekly) (RR)
1610 Polish Radio, Warsaw: DX Program
2315 Polish Radio, Warsaw: DX Program (RR)

Wednesdays

0113 Radio Sweden: Sweden Calling DX'ers (biweekly) (RR)
0213 Radio Sweden: Sweden Calling DX'ers (biweekly) (RR)
0235 Radio Budapest: DX News (RR)
0300 Radio For Peace Int'l: World Of Radio (RR)
0415 BBC: Waveguide

Thursdays

0015 Radio Czechoslovakia: DX Special
0100 HCJB: Ham Radio Today
0130 BBC: Waveguide (RR)
0235 Radio Budapest: DX World
0300 HCJB: Ham Radio Today (RR)
0315 Radio Czechoslovakia: DX Special

0530 HCJB: Ham Radio Today (RR)
1350 Radio Netherlands: Media Network (RR)
1550 Radio Netherlands: Media Network (RR)
1750 Radio Netherlands: Media Network (RR)
1950 Radio Netherlands: Media Network (RR)

Fridays

0050 Radio Netherlands: Media Network (RR)
0354 Radio Netherlands: Media Network (RR)
0430 Radio Australia: Communicator (RR)
2000 Radio For Peace Int'l: World Of Radio (RR)
2115 WWCR (Program Two): World Of Radio (RR)
2230 Radio Sofia: DX Program

Saturdays

0235 Radio Budapest: DX World (RR)
0241 Radio Portugal: Feature (monthly) (RR)
0400 Radio For Peace Int'l: World Of Radio (RR)
1315 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
1710 Voice of America: Communications World (RR)
1515 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
1715 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
1310 BRT, Brussels: Radio World (RR)
1900 Radio For Peace Int'l: World Of Radio (RR)
2015 Swiss Radio Int'l: Swiss SW Merry-Go-Round (RR)
1615 KSDA, Guam: DX Asiawaves (RR)
2330 KSDA, Guam: DX Asiawaves (RR)
2336 BRT, Brussels: Radio World (RR)
2350 Radio Nacional, Bogota: Colombia DX

MT Monitoring Team

P.O. Box 98, Brasstown, NC 28902-0098

Greg Jordan
Frequency Manager
North Carolina
919-661-0095

Dave Datko
California

B.W. Battin
New Mexico

Jacques d'Avignon
Propagation Forecasts
Ontario, Canada

Kannon Shanmugam
Program Manager
Massachusetts

John Carson
Oklahoma

Jim Frimmel
Texas

newsline

"Newsline" is your guide to news broadcasts on the air. • All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. • All broadcasts are daily unless otherwise noted by the day codes.

0000 UTC**(8:00 PM EDT, 5:00 PM PDT)**

BBC
CBC, Northern Quebec
Christian Science Monitor
Croatian Radio, Zagreb [M-A]
Radio Australia
Radio Beijing
Radio Havana Cuba [T-S]
Radio Kiev
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Thailand
SBC Radio 1, Singapore
Spanish Foreign Radio
Voice of America
WWCR (Program Two) [T-A]
WWCR [T-A]

0005
Radio Pyongyang

0010
Radio Beijing*

0030
Christian Science Monitor (Asia) [M]
Christian Science Monitor [T-F]

HCJB
Radio Havana Cuba [T-S]
Radio Netherlands [T-S]
Radio Yugoslavia
Voice of America (Americas, East Asia) (Special English) [T-S]
Voice of America (East Asia) (Special English) [M]

0050
WRNO [W, A]

0100 UTC**(9:00 PM EDT, 6:00 PM PDT)**

All India Radio
BBC
CBC, Northern Quebec [S-M]
Christian Science Monitor
Croatian Radio, Zagreb [S]
Deutsche Welle
FEBC Radio Int'l, Philippines
Radio Australia
Radio Belize
Radio Budapest

Radio Canada Int'l [S-M]
Radio Havana Cuba [T-S]
Radio Japan
Radio Luxembourg
Radio Moscow
Radio Prague Int'l
Radio Tashkent
Radio Thailand
Radiotelevisione Italiana
SBC Radio 1, Singapore
Spanish Foreign Radio
Voice of America
Voice of Indonesia
WWCR [T-A]

0115
Radio Havana Cuba* [T-S]

0130
Christian Science Monitor (Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Yugoslavia
Voice of Greece [M-A]
0145
Radio Korea (News Service)
0155
Voice of Indonesia

0200 UTC**(10:00 PM EDT, 7:00 PM PDT)**

BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Romania Int'l
Radio Thailand
RAE, Buenos Aires [T-A]
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
Voice of Free China
Voice of Myanmar
WWCR [T-A]
0215
Radio Cairo
Radio Nepal

0230

Christian Science Monitor (Africa, Europe) [M]
Christian Science Monitor [T-F]
HCJB
Radio Havana Cuba [T-S]
Radio Moscow
Radio Pakistan (Special English)
Radio Portugal [T-A]
Radio Tirana, Albania
SLBC, Sri Lanka
0250
Radio Yerevan

0300 UTC**(11:00 PM EDT, 8:00 PM PDT)**

BBC
CBC, Northern Quebec
Christian Science Monitor
Deutsche Welle
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize
Radio Havana Cuba [T-S]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M-F]
Radio Prague Int'l
Radio Sofia
Radio Thailand
SBC Radio 1, Singapore
TWR, Bonaire
Voice of America
Voice of Free China
Voice of Turkey
WRNO [F]
WWCR [T-A]

0310
Radio Beijing*

0315
Radio Cairo
Radio Havana Cuba* [T-S]

0330
BBC (Africa)*
Christian Science Monitor (Africa, Europe) [M]
Christian Science Monitor [T-F]
Radio Bahrain
Radio Havana Cuba [T-S]
Radio Moscow (World Service)

0450
Radio RSA

Radio Havana Cuba [T-S]
Radio Netherlands [T-S]
Radio Tirana, Albania
UAE Radio, Dubai
0340
Voice of Greece [M-A]
0350
Radiotelevisione Italiana
0355
Radio Japan [M-F]
WYFR (Network) [T-A]

0400 UTC**(12:00 AM EDT, 9:00 PM PDT)**

BBC
CBC, Northern Quebec [T-S]
Christian Science Monitor
Deutsche Welle
Kol Israel
Radio Australia
Radio Bahrain
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l
Radio Prague Int'l
Radio Romania Int'l
Radio RSA
Radio Tanzania
Radio Thailand
SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
0405
Radio Pyongyang
0410
Radio Beijing*
0425
Radiotelevisione Italiana
0430
BBC (Africa)* [M-A]
Christian Science Monitor (Africa, Europe, NE Asia) [M]
Christian Science Monitor [T-F]
Radio Bahrain
Radio Botswana
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
0450
Radio RSA

0500 UTC**(1:00 AM EDT, 10:00 PM PDT)**

BBC ("Newshour")
CBC, Northern Quebec
Christian Science Monitor
Croatian Radio, Zagreb
Deutsche Welle
HCJB
Radio Australia
Radio Bahrain
Radio Beijing
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio Lesotho
Radio Moscow
Radio Thailand
SBC Radio 1, Singapore
Spanish Foreign Radio
Voice of America
WWCR

0510
Radio Beijing*
Radio Botswana

0515
Radio Canada Int'l [M-F]
Radio Havana Cuba* [T-S]
Radio Korea (News Service)

0530
Christian Science Monitor (Africa, Europe, NE Asia) [M]
Christian Science Monitor [T-F]
Radio Austria Int'l
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Romania Int'l
Radio Thailand
RTM, Malaysia
UAE Radio, Dubai
Voice of Nigeria
0550
Radio For Peace Int'l [T-A]

0600 UTC**(2:00 AM EDT, 11:00 PM PDT)**

BBC
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra*
Radio Australia
Radio Bahrain

newslines

- Radio Havana Cuba [T-S]
Radio Moscow
Radio New Zealand Int'l [M, F-A]
SBC Radio 1, Singapore
Voice of America
WWCR [M-A]
0605
Radio Pyongyang
0609
BBC*
0610
Voice of Malaysia
0630
BBC (Africa)*
BRT, Brussels
Christian Science Monitor [M-F]
Radio Austria Int'l [T-A]
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
RTV Congolaise, Brazzaville [M-F]
Swiss Radio Int'l
Voice of Nigeria
0640
Radio Prague Int'l
0645
Radio Romania Int'l
- 0700 UTC**
(3:00 AM EDT, 12:00 AM PDT)
BBC
Christian Science Monitor
GBC Radio, Accra
MBC, Blantyre, Malawi [M-A]
Radio Australia
Radio Havana Cuba [T-S]
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l [M, W-H]
SBC Radio 1, Singapore
SLBS, Freetown, Sierra Leone
Voice of Free China
Voice of Myanmar
0703
Croatian Radio, Zagreb
0705
Radio Pyongyang
0715
Radio Havana Cuba* [T-S]
0730
BBC (Africa)* [M-A]
Christian Science Monitor [M-F]
HCJB
Radio Austria Int'l
Radio Ghana
Radio Havana Cuba [T-S]
Radio Moscow (World Service)
Radio Netherlands [M-A]
Radio Prague Int'l
0745
Radio For Peace Int'l [T-A]
0755
Radio Japan [M-F]
- 0800 UTC**
(4:00 AM EDT, 1:00 AM PDT)
BBC
Christian Science Monitor
GBC Radio 1, Accra [S]
GBC Radio 2, Accra
MBC, Blantyre, Malawi [S]
Radio Australia
Radio Bahrain
Radio Finland [M-F]
- Radio Moscow
Radio New Zealand Int'l
Radio Pakistan
SBC Radio 1, Singapore
SLBS, Freetown, Sierra Leone
Voice of Indonesia
0805
Radio Pyongyang
0810
Voice of Malaysia
0815
Radio Korea (News Service)
0830
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Netherlands [M-A]
Swiss Radio Int'l
0840
Voice of Greece [M-A]
0850
Radio Finland [M-F]
0855
Voice of Indonesia
- 0900 UTC**
(5:00 AM EDT, 2:00 AM PDT)
BBC
BRT, Brussels [M-A]
Christian Science Monitor
Deutsche Welle
GBC Radio 1, Accra [M-F]
GBC Radio 2, Accra
MBC, Blantyre, Malawi [M-A]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Japan
Radio Moscow
Radio New Zealand Int'l [M]
SBC Radio 1, Singapore
Voice of Nigeria
0903
Croatian Radio, Zagreb
0910
Radio Beijing*
0930
Christian Science Monitor [M-F]
Deutsche Welle (Africa)* [M-F]
Radio Afghanistan
Radio Korea
Radio Moscow
0950
Radio Tikhiv Okean [S]
0955
Radio Japan [M-F]
- 1000 UTC**
(6:00 AM EDT, 3:00 AM PDT)
All India Radio
BBC
Christian Science Monitor
GBC Radio 2, Accra [A]
HCJB
Kol Israel
MBC, Blantyre, Malawi [S]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Korea
Radio Moscow
Radio New Zealand Int'l [T-W]
Radio RSA
Radio Tanzania
- SBC Radio 1, Singapore
Swiss Radio Int'l
Voice of America
1010
Radio Beijing*
1015
Radio Korea (News Service)
1030
Christian Science Monitor [M-F]
MBC, Blantyre, Malawi [M-F]
Radio Austria Int'l [M-F]
Radio Moscow
Radio Netherlands [M-A]
RTM, Malaysia
JAE Radio, Dubai
Voice of Nigeria
1040
Voice of Greece [M-A]
1055
All India Radio
- 1100 UTC**
(7:00 AM EDT, 4:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
Deutsche Welle
GBC Radio, Accra [A-S]
MBC, Blantyre, Malawi [A-S]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Jordan
Radio Moscow
Radio New Zealand Int'l
Radio Pakistan
Radio RSA
SBC Radio 1, Singapore
Swiss Radio Int'l
TWR, Bonaire [M-F]
Voice of America
WWCR [M-F]
1105
Radio Pakistan (Special English)
Radio Pyongyang
1110
Radio Beijing*
Radio Belize [T-A]
Radio Botswana [M-F]
1115
Radio Korea
Radio Nepal
1125
Radio Belize [M]
Radio Botswana [A-S]
1130
BRT, Brussels [S]
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
Radio Austria Int'l [M-F]
Radio Lesotho
Radio Moscow
Radio Netherlands [M-A]
Radio Yugoslavia
RTM, Malaysia*
1135
Radio Thailand
1150
Radio RSA
1155
Radio Japan [M-F]
- 1200 UTC**
(8:00 AM EDT, 5:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
MBC, Blantyre, Malawi [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Bras, Brasilia [M-A]
Radio Canada Int'l [M-F]
Radio Moscow
Radio Romania Int'l
Radio Tashkent
Radio Thailand
RTM, Malaysia
SBC Radio 1, Singapore
SLBC, Sri Lanka
Swiss Radio Int'l
Voice of America
WWCR [M-F]
1209
BBC* [M-A]
1210
Radio Beijing*
1215
HCJB [M-F]
1230
Christian Science Monitor [M-F]
Radio Cairo
Radio France Int'l
Radio Korea (News Service)
Radio Moscow
SLBC, Sri Lanka
TWR, Bonaire
Voice of Turkey
1235
Voice of Greece
1245
SLBC, Sri Lanka
1255
WYFR (Network) [M-F]
1257
HCJB [M-F]
- 1300 UTC**
(9:00 AM EDT, 6:00 AM PDT)
BBC ("Newshour")
BRT, Brussels [M-A]
CBC, Northern Quebec
Christian Science Monitor
GBC Radio, Accra
Kol Israel
Polish Radio, Warsaw
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize
Radio Canada Int'l [S]
Radio Jordan
Radio Korea
Radio Moscow
Radio Romania Int'l
Radio Tanzania [A-S]
SBC Radio 1, Singapore
Voice of America
1303
Croatian Radio, Zagreb
1305
Radio Pyongyang
1310
Radio Beijing*
1320
SLBC, Sri Lanka
- 1325**
HCJB [M-F]
1328
Radio Cairo
1330
All India Radio
Christian Science Monitor [M-F]
FEBC Radio Int'l, Philippines
Radio Austria Int'l [M-F]
Radio Canada Int'l [M-F]
Radio Moscow
Radio Tashkent
RTM, Malaysia
Swiss Radio Int'l
JAE Radio, Dubai
Voice of America (Special English)
1346
All India Radio [A]
1350
Radio For Peace Int'l [T-A]
1355
Radio Finland [M-F]
- 1400 UTC**
(10:00 AM EDT, 7:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
GBC Radio, Accra
MBC, Blantyre, Malawi [M-F]
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio France Int'l
Radio Japan
Radio Moscow
RTM, Malaysia*
SBC Radio 1, Singapore
Voice of America
WWCR [M-F]
1405
Radio Finland
1410
Radio Beijing*
1415
Radio Canada Int'l
Radio Nepal
1425
HCJB [M-F]
1430
Christian Science Monitor [M-F]
FEBC Radio Int'l, Philippines
Radio Austria Int'l
Radio Moscow
Radio Netherlands [M-A]
1445
BBC (East Asia) (Special English) [M-F]
Radio Korea (News Service)
Voice of Myanmar
1455
All India Radio
- 1500 UTC**
(11:00 AM EDT, 8:00 AM PDT)
BBC
CBC, Northern Quebec [A-S]
Christian Science Monitor
Deutsche Welle
GBC Radio 2, Accra
Radio Australia
Radio Bahrain
Radio Beijing



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newslines

- Radio Belize [M-A]
Radio Japan
Radio Jordan
Radio Korea
Radio Moscow
Radio Portugal [M-F]
Radio Romania Int'l
Radio RSA
RTM, Malaysia
SBC Radio 1, Singapore
SLBC, Sri Lanka
Voice of America
1505
Radio Pyongyang
1510
Radio Beijing*
1520
Radio Tallinn [M-F]
1530
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
FEBA, Seychelles
FEBR Radio Int'l, Philippines
Radio Austria Int'l [M-F]
Radio Moscow
Radio Tirana, Albania
Swiss Radio Int'l
Voice of Greece [M-A]
Voice of Nigeria
1545
Radio For Peace Int'l [T-A]
- 1600 UTC**
(12:00 PM EDT, 9:00 AM PDT)
BBC
CBC, Northern Quebec [A]
Christian Science Monitor
Deutsche Welle
GBC Radio 2, Accra
MBC, Blantyre, Malawi
Polish Radio, Warsaw
Radio Australia
Radio Bahrain
Radio Beijing
Radio Canada Int'l [M-F]
Radio France Int'l
Radio Jordan
Radio Lesotho
Radio Moscow
Radio Pakistan
Radio RSA
Radio Tanzania
SBC Radio 1, Singapore
Voice of America
Yemen Radio
1609
BBC*
1610
Radio Beijing*
Radio Botswana [M-F]
1615
Radio Korea (News Service)
Radio Pakistan (Special English)
1630
Christian Science Monitor [M-F]
Radio Canada Int'l [M-F]
Radio Moscow
Radio Netherlands [M-A]
UAE Radio, Dubai
Voice of America (except Africa)
(Special English)
WYFR (Network) [A]
1635
WYFR (Network) [M-F]
- 1700 UTC**
(1:00 PM EDT, 10:00 AM PDT)
BBC
CBC, Northern Quebec [A]
Christian Science Monitor
GBC Radio 2, Accra
Kol Israel
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Japan
Radio Korea
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Pakistan
Radio Prague Int'l
Radio RSA
SLBC, Sri Lanka
Voice of America
1705
Radio Pyongyang
1710
Radio Beijing*
1725
Radio Surinam Int'l [M-F]
WYFR (Network) [A]
1730
Christian Science Monitor [M-F]
Radio Moscow
Radio Romania Int'l
Radio Sofia
Swiss Radio Int'l
1740
BBC (Africa)*
1750
Radio RSA
- 1800 UTC**
(2:00 PM EDT, 11:00 AM PDT)
All India Radio
BBC
BRT, Brussels
CBC, Northern Quebec [M-H]
Christian Science Monitor
GBC Radio, Accra
KVOH
MBC, Blantyre, Malawi
Polish Radio, Warsaw
Radio Afghanistan
Radio Australia
Radio Bahrain
Radio Belize [M-F]
Radio Bras, Brasilia [M-A]
Radio Canada Int'l [M-F]
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Portugal [M-F]
Radio Tanzania
Voice of America
1830
Christian Science Monitor [M-F]
Radio Austria Int'l
Radio Belize
Radio Moscow
Radio Netherlands [M-A]
Radio Prague Int'l
Radio Tirana, Albania
Radio Yugoslavia
Swiss Radio Int'l
Voice of America (Special English)
1840
Voice of Greece
- 1845**
Radio Cote d' Ivoire, Abidjan
Radio Korea (News Service)
1855
BBC (Africa)* [M-F]
Radio Finland
WYFR (Network) [M-A]
- 1900 UTC**
(3:00 PM EDT, 12:00 PM PDT)
All India Radio
BBC
Christian Science Monitor [M-A]
Deutsche Welle
GBC Radio 2, Accra*
HCJB
Kol Israel
KVOH
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Japan
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Portugal [M-F]
Radio Tanzania
RAE, Buenos Aires [M-F]
SLBS, Freetown, Sierra Leone
Spanish Foreign Radio
Swiss Radio Int'l
Voice of America
1910
Radio Beijing*
Radio Botswana
1920
Voice of Greece
1930
Christian Science Monitor [M-F]
Deutsche Welle* [M-F]
Radio Canada Int'l
Radio Ghana
Radio Havana Cuba [M-A]
Radio Korea
Radio Moscow
Radio Romania Int'l
Voice of Nigeria
1935
Radiotelevisione Italiana
1945
Radio Korea (News Service)
Radio Sofia
1955
BBC (Africa)* [M-F]
- 2000 UTC**
(4:00 PM EDT, 1:00 PM PDT)
BBC
CBC, Northern Quebec [S-F]
Christian Science Monitor
GBC Radio, Accra
KVOH
MBC, Blantyre, Malawi
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Budapest
Radio Havana Cuba [M-A]
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Prague Int'l
SLBS, Freetown, Sierra Leone
Voice of America
- Voice of Indonesia
Voice of Nigeria
Voice of Turkey
WWCR (Program Two) [M-F]
2005
Radio Pyongyang
2010
Radio Beijing*
2025
Radio Havana Cuba* [M-A]
Radiotelevisione Italiana
WYFR (Network) [M-F]
2030
Christian Science Monitor [M-F]
Polish Radio, Warsaw
Radio Havana Cuba [M-A]
Radio Moscow
Radio Netherlands [M-A]
WYFR (Network) [A]
2055
Voice of Indonesia
- 2100 UTC**
(5:00 PM EDT, 2:00 PM PDT)
All India Radio
BBC ("Newshour")
BRT, Brussels
CBC, Northern Quebec [S-F]
Christian Science Monitor [M-A]
Deutsche Welle
GBC Radio 2, Accra*
KVOH
MBC, Blantyre, Malawi
Radio Australia
Radio Bahrain
Radio Beijing
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Kiev
Radio Moscow
Radio New Zealand Int'l
Radio Prague Int'l
Radio Romania Int'l
Radio Yugoslavia
SLBS, Freetown, Sierra Leone
Spanish Foreign Radio
Swiss Radio Int'l
Voice of America
WWCR (Program Two) [M-F]
2110
Radio Beijing*
2130
Christian Science Monitor [M-F]
Kol Israel
Radio Austria Int'l
Radio Cairo
Radio Moscow
Radio Vilnius
Swiss Radio Int'l
WYFR (Network) [M-F]
2145
Radio Sofia
2150
Radio For Peace Int'l [M-F]
2155
WYFR (Network) [M-A]
- 2200 UTC**
(6:00 PM EDT, 3:00 PM PDT)
All India Radio
BBC
CBC, Northern Quebec [M-F]
- Christian Science Monitor
GBC Radio 2, Accra
MBC, Blantyre, Malawi
Radio Australia
Radio Beijing
Radio Canada Int'l
Radio Havana Cuba [M-A]
Radio Moscow
Radio New Zealand Int'l
Radio Tirana, Albania
Radiotelevisione Italiana
SBC Radio 1, Singapore
SLBS, Freetown, Sierra Leone
Voice of America
Voice of Free China
Voice of Turkey
2203
Croatian Radio, Zagreb
2208
Voice of America (Caribbean)* [M-F]
2209
BBC*
2210
Radio Beijing*
2225
Radio Havana Cuba* [M-A]
2230
Christian Science Monitor [M-F]
Radio Havana Cuba [M-A]
Radio Moscow
Radio New Zealand Int'l [A-H]
Voice of America (Special English)
2245
GBC Radio, Accra
Voice of Greece
- 2300 UTC**
(7:00 PM EDT, 4:00 PM PDT)
BBC
CBC, Northern Quebec [A]
Christian Science Monitor [M-A]
Radio Australia
Radio Belize [M-F]
Radio Canada Int'l
Radio Japan
Radio Korea
Radio Luxembourg
Radio Moscow
Radio New Zealand Int'l [S-F]
Radio Vilnius
RTM, Malaysia
SBC Radio 1, Singapore
Voice of America
2305
Radio Pyongyang
2315
All India Radio
2320
Radio Thailand
2330
BRT, Brussels
Christian Science Monitor [M-F]
Radio Moscow
Radio Nacional, Bogota [A]
RTM, Malaysia*
2345
Radio For Peace Int'l [M-F]
Radio Korea (News Service)
2355
Radio Japan [M-F]
WRNO [W, F]

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[12:00 PM EDT/9:00 PM PDT]

FREQUENCIES

Table listing frequencies for various countries including Israel, Czechoslovakia, Canada, Cuba, Ecuador, Guatemala, Netherlands, Norway, Romania, Sri Lanka, Switzerland, Tanzania, Thailand, United Kingdom, USA, Germany, North Korea, Australia, Bahrain, Bulgaria, Canada, China, Cook Islands, Costa Rica, and Kenya.

Table listing frequencies for Luxembourg, Malaysia, Namibia, New Zealand, Russia, Sierra Leone, Singapore, South Africa, USA, Zambia, Italy, Cuba, Nigeria, Swaziland, United Kingdom, and Nigeria.

SELECTED PROGRAMS

Sundays

- 0405 Christian Science Monitor: See S 0005.
0405 Swiss Radio Int'l: Grapevine. See S 0005.
0415 BBC: Feature. Take an alphabetical odyssey on "An A-Z Of Rock 'N' Pop" (through July 5th).

Mondays

- 0405 Christian Science Monitor (Americas, Europe): The Sunday Service. See S 1605.
0405 Swiss Radio Int'l: Feature. See S 0605.
0406 Christian Science Monitor (Africa, Asia, Middle East): News Features And Interviews. See M 0006.

- Janet Suzman's presentation of Nadine Gordimer's "An Occasion For Loving" (8th-24th).
0435 BBC (Africa): Network Africa. See M 0335.
0445 BBC: Andy Kershaw's World Of Music. Exotic music from the world over.
0405 Swiss Radio Int'l: Dateline. See M 0605.
0406 Christian Science Monitor: News Features And Interviews. See M 0006.

- 0406 Christian Science Monitor: News Features And Interviews. See M 0006.
0415 BBC: The Farming World. See H 0145.
0430 BBC (Europe): Europe Today. See M 0430.
0430 BBC: Off The Shelf. See M 0430.
0435 BBC (Africa): Network Africa. See M 0335.
0445 BBC: From Our Own Correspondent. See S 0330.

0500 UTC

[1:00 AM EDT/10:00 PM PDT]

FREQUENCIES

Table listing radio frequencies for various countries including Lesotho, Malawi, Bulgaria, Sri Lanka, Cameroon, Swaziland, United Kingdom, Vatican Radio, Germany, Australia, ABC Brisbane, Perth, Bahrain, Canada, China, Cook Islands, Cuba, Ecuador, Guinea, Japan, Kenya, Luxembourg, Malaysia, Namibia, Netherlands, New Zealand, Nigeria, Russia, and Radio Moscow.

Table listing radio frequencies for various countries including Sierra Leone, Singapore, Spanish National Radio, Thailand, USA (Boston, Salt Lake City, Los Angeles, Washington), USA (Noblesville, Red Lion, Pennsylvania, Kentucky), WMLK, WCCR, WYFR, Zambia, Botswana, South Africa, Canada, Ghana, Austria, Cameroon, Romania, Swaziland, UAE, and United Kingdom.

SELECTED PROGRAMS

Sundays
0505 Christian Science Monitor: Herald of Christian Science. See S 0005.
Mondays
0506 Christian Science Monitor (Africa, Asia, Middle East): General Features. See M 0106.
0534 Christian Science Monitor (Africa, Asia, Middle East): Letterbox. See M 0134.
0547 Christian Science Monitor (Africa, Asia, Middle East): Religious Article. See M 0147.
Tuesdays
0506 Christian Science Monitor: General Features. See M 0106.
0534 Christian Science Monitor: Letterbox. See M 0134.
0547 Christian Science Monitor: Religious Article. See M 0147.
Wednesdays
0506 Christian Science Monitor: General Features. See M 0106.
0534 Christian Science Monitor: Letterbox. See M 0134.

0547 Christian Science Monitor: Religious Article. See M 0147.
Thursdays
0506 Christian Science Monitor: General Features. See M 0106.
0534 Christian Science Monitor: Letterbox. See M 0134.
0547 Christian Science Monitor: Religious Article. See M 0147.
Fridays
0506 Christian Science Monitor: General Features. See M 0106.
0534 Christian Science Monitor: Letterbox. See M 0134.
0547 Christian Science Monitor: Religious Article. See M 0147.
Saturdays
0505 Christian Science Monitor: Herald of Christian Science. See S 0005.

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0600 UTC

[2:00 AM EDT/11:00 PM PDT]

FREQUENCIES

0600-0630	Swiss Radio Int'l	15430af	17565af	21770af					
0600-0700 sa	Eq. Guinea, R. East Africa	9585af							
0600-0700	Ghana, Radio 1, Accra	4915do							
0600-0700 f	Ghana, Radio 2, Accra	3366do							
0600-0700	Korea, Seoul	7275om	11810na	15170na					
0600-0700	Lebanon, King of Hope	6280me							
0600-0700 tent	Liberia, ELBC Monrovia	7275do							
0600-0700	Luxembourg, RTL	15350va							
0600-0700 smtwha	Malaysia, RTM Radio 4	7295do							
0600-0700	Malaysia, Voice of	6175as	9750as	15295as					
0600-0700	Malta, V. of the Medit.	9765eu							
0600-0700	New Zealand, RNZI	17770pa							
0600-0700 s	New Zealand, ZLXA	3935do							
0600-0700	Nigeria	3326do	4990do	7255af					
0600-0700	Russia, AWR Russia	11855as							
0600-0700	Russia, Radio Moscow	4740do	4975do	6175va	7130va				
		7135va	7150am	7160va	7310va				
		9450va	9530va	9535va	9750va				
		9765va	9855va	11730va	11765va				
		11880va	11950na	12035va	12055va				
		11980na	12050na	13665na	15240na				
		15375va	15420va	15425na	15455va				
		15465va	15470va	15520va	15530va				
		15545va	15550va	15560va	15595va				
		17570va	17590va	17610va	17615va				
		17635va	17655va	17665va	17680va				
		17690va	17700va	17775va	17825va				
		17845va	17890va	21680va	21690va				
		21785va	21790va	21845va					
0600-0700	Sierra Leone, SLBS	3316do							
0600-0700	Singapore, SBC1	5010do	5052do	11940do					
0600-0700 vi	South Africa, Radio Oranje	9630do							
0600-0700	Swaziland, TWR Swaziland	5965af	7200af	11750af					
0600-0700 sa	Thailand	4830as	9655as	11905as					
0600-0700	USA, CSMonitor Boston	9455na	9840eu	9870am	17555as				
		17780as							
0600-0700	USA, KTBN Salt Lake City	7510na							
0600-0700	USA, KVOH Los Angeles	9785na							
0600-0700	USA, VOA Washington	3980eu	5995eu	6040eu	6060me				
		6110eu	6140eu	6873eu	7170me				
		7325me	11805me	11815me	11825me				
		11915me	15205me						
0600-0700	USA, VOA Washington	6035af	6125af	7405af	9530af				
		9575af	15115af	17715af					
0600-0700	USA, WHRI Noblesville	7315eu	9495sa	7490na					
0600-0700	USA, WJCR Upton, Kentucky								
0600-0700 smtwhf	USA, WMLK Bethel, Penna.	9465eu							
0600-0700	USA, WWCR Nashville	5935na	7435na						
0600-0700	USA, WYFR Okeechobee, FL	5985am	7355eu	9680eu	11725na				
		13695af							
0600-0700	Zambia, Radio 2, Lusaka	6165do	7235do						
0603-0610 tent	Croatian Radio, Zagreb	7240eu	9830eu						
0615-0630 s	Cameroon CRTV Bertoua	4750do							
0615-0630	Korea World News	7550eu	15575me						
0625-0700	Kenya, Voice of	4935do							
0630-0635 mtwhf	Congo, RTV Congolaise	7105do	9610do						
0630-0645	Finland, YLE	6120eu	9560af	11755eu					
0630-0655	Belgium, BRT Brussels	5910au	11695eu						
0630-0700	Austria, ORF Vienna	6015na							
0630-0700 smtwhf	New Zealand, ZLXA	3935do							
0630-0700	Romania, R. Romania Int'l	7225eu	9665eu	11940eu	15365eu				
0630-0700	Swiss Radio Int'l	17565va							
0630-0700	United Kingdom, BBC London	5975na	6180eu	6190af	6195eu				
		7230eu	9410eu	9600af	9640pa				
		11760me	11940af	11955as	12095eu				
		15070va	15310as	15400af	15420af				
		15590va	17830as	17885af	21470af				
		7150pa	15280as	15360pa	17790as				
		21715as							
0630-0700	Vatican Radio	11625af	15090af	17730af					
0635-0700	Monaco, TWR Monaco	9480eu							
0645-0700	Ghana B'casting Corp.	6130af							
0645-0700	Romania, R. Romania Int'l	11810au	11940au	15335au	17720au				
		17805au	21665au						

SELECTED PROGRAMS

Sundays

- 0605 BBC (Africa): Postmark Africa. See S 0335.
 0605 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0605 Swiss Radio Int'l: Feature. Programs broadcast on a rotating basis are "Supplement" (news analysis), "Roundabout Switzerland" (travel/discovery), "Swiss Music," and "The Name Game" (Swiss game show).
 0615 BBC: Letter From America. Alistair Cooke presents his unique reflections on the USA.
 0630 BBC (Africa): African Perspective. See S 0430.
 0630 BBC: Jazz For The Asking. Digby Fairweather plays listener requests.

Mondays

- 0605 Swiss Radio Int'l: Dateline. Analysis on world events and a closer look at the Swiss national fabric.
 0606 Christian Science Monitor: News Features And Interviews. See M 0006.
 0615 BBC: Recording Of The Week. A personal choice from the new classical music releases.
 0630 BBC: Feature. See S 1401.
 0635 BBC (Africa): Network Africa. See M 0335.
 0655 Radio Finland: Press Review. A round-up of current stories in the Finnish press.

Tuesdays

- 0605 Swiss Radio Int'l: Dateline. See M 0605.
 0606 Christian Science Monitor: News Features And Interviews. See M 0006.
 0615 BBC: The World Today. See M 1645.

- 0630 BBC: Rock/Pop Music. Hear "McCartney at 50" (2nd/9th/16th) before undertaking a new series of Paul Jones' "Counterpoint" (through August 11th).
 0635 BBC (Africa): Network Africa. See M 0335.
 0655 Radio Finland: Press Review. See M 0655.
Wednesdays
 0605 Swiss Radio Int'l: Dateline. See M 0605.
 0606 Christian Science Monitor: News Features And Interviews. See M 0006.
 0615 BBC: The World Today. See M 1645.
 0630 BBC: Meridian. Events in the world of the arts.
 0635 BBC (Africa): Network Africa. See M 0335.



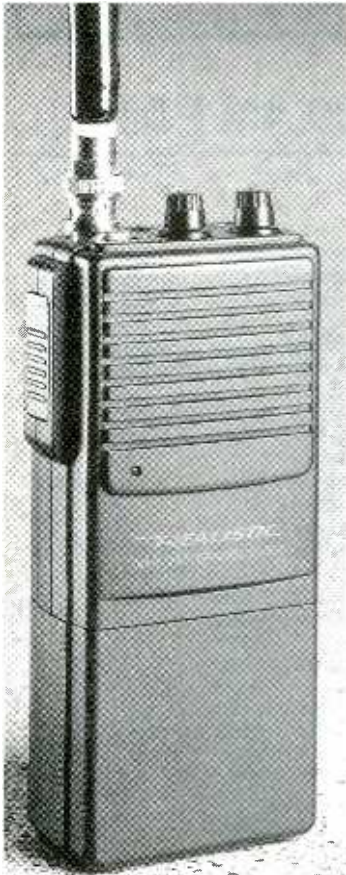
FRED DICK

*The BBC's
Kathryn
Davies
is a
presenter
of
Dateline
East Asia.*

- 0655 Radio Finland: Press Review. See M 0655.
Thursdays
 0605 Swiss Radio Int'l: Dateline. See M 0605.
 0606 Christian Science Monitor: News Features And Interviews. See M 0006.
 0615 BBC: The World Today. See M 1645.
 0630 BBC: Sports International. See H 0230.
 0635 BBC (Africa): Network Africa. See M 0335.
 0655 Radio Finland: Press Review. See M 0655.
Fridays
 0605 Swiss Radio Int'l: Dateline. See M 0605.
 0606 Christian Science Monitor: News Features And Interviews. See M 0006.
 0615 BBC: The World Today. See M 1645.
 0630 BBC: Meridian. See W 0630.
 0635 BBC (Africa): Network Africa. See M 0335.
 0655 Radio Finland: Press Review. See M 0655.
Saturdays
 0605 BBC (Africa): Quiz Of The Week. See A 0335.
 0605 Christian Science Monitor: Herald of Christian Science. See S 0005.
 0605 Swiss Radio Int'l: Grapevine. See S 0005.
 0615 BBC: The World Today. See M 1645.
 0618 Swiss Radio Int'l: Swiss Shortwave Merry-Go-Round. See S 0018.
 0630 BBC (Africa): Spice Taxi. A look at African culture, from presidential style to cult films.
 0630 BBC: Meridian. See W 0630.

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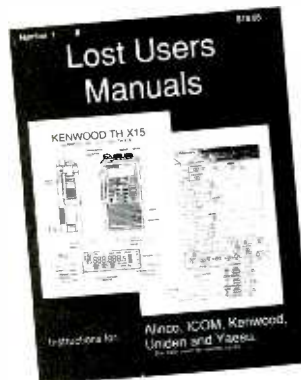


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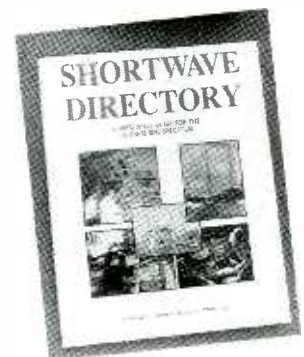
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1200UTC

[8:00 AM EDT/5:00 AM PDT]

FREQUENCIES

1200-1205	New Zealand, RNZI	9700as			
1200-1210 w	Malawi B'casting Corp.	3381do	5995do		
1200-1215	Cambodia, Voice of	9695as	11938as		
1200-1225 sa	Ghana, Radio 2, Accra	3366do			
1200-1230	Iran, Islamic Republic	7215va	9525va	9685va	11790va
		11930va			
1200-1230 smwha	Mongolia, Ulaanbaatar	11850as	12015as		
1200-1230 as	Norway	17860as	21705as		
1200-1230	Somalia, Radio Mogadishu,	6095af			
1200-1230	Thailand	4830as	9655as	11905as	
1200-1230	United Kingdom, BBC London	6045eu	6180eu	6190af	6195eu
		9410eu	9515na	9660eu	9740na
		9750eu	9760eu	11750as	11760me
		11940af	12095eu	15070eu	15220na
		15310as	15420af	15575me	17640va
		17705eu	17790af	17840af	17885af
		21470af	21660af		
1200-1230	USA, VOA Washington	6110as	9760au	11715as	15155au
		15425as			
1200-1230	Uzbekistan, R. Tashkent	5945as	9540as	15470as	17745as
1200-1230 s	Zambia, Radio Zambia int'l	9505af	11880af	17895af	
1200-1300	Australia	6020as	6080as	7240as	9580pa
		9710pa	21720as		
1200-1300	Australia, ABC Brisbane	4920au			
1200-1300	Australia, ABC Katherine	2485au			
1200-1300	Australia, ABC Perth	6140do	9610do		
1200-1300	Bahrain Broadcasting Svc	6010me			
1200-1300	Bonaire, TWR Bonaire	11815am	15345am		
1200-1300 mtwhf	Cameroon CRTV Douala	4795do			
1200-1300	Canada, CFCX Montreal	6005do			
1200-1300	Canada, CFRX Toronto	6070do			
1200-1300	Canada, CFVP Calgary	6030do			
1200-1300	Canada, CHNX Halifax	6130do			
1200-1300	Canada, CKZU Vancouver	6160do			
1200-1300 mtwhf	Canada, RCI Montreal	9635am	11855am	17820am	
1200-1300	China, Radio Beijing	9530as	9665na	9715as	11600pa
		11660as	15450pa		
1200-1300	Cook Islands	11760pa			
1200-1300	Costa Rica, AWR	9725ca	11870ca		
1200-1300	Costa Rica, RFPI	15030na	21465na		
1200-1300	Ecuador, HCJB Quito	11925am	15115am	17890am	21455om
1200-1300 sa	Eq. Guinea, R. East Africa	9585af			
1200-1300	Ghana, Radio 1, Accra	4915do			
1200-1300	Kenya, Voice of	4935do			
1200-1300	Luxembourg, RTL	15350va			
1200-1300	Malaysia, RTM Radio 4	7295do			
1200-1300	Nigeria	4990do	7285do		
1200-1300	Nigeria, Voice of	7255af			

1200-1300	Papua New Guinea	4890do			
1200-1300	Russia, Radio Moscow	4810do	5940eu	5950eu	5960eu
		7130va	7160va	7245va	7260va
		7380va	9560va	9705va	9780va
		9855va	9885va	9895va	11705va
		11765va	12025va	13705va	15280va
		15325va	15345va	15465va	15475va
		15480va	15535va	17570va	17600va
		17605va	17615va	17655va	
		17665va	17690va	17700va	17780va
		17790va	17810va	17840va	17860va
		17870va	21680va	21725va	21785va
		21800va			
1200-1300	Sierra Leone, SLBS	3316do	5980do		
1200-1300	Singapore, SBC1	5010do	5052do	11940do	
1200-1300 vl	South Africa, Radio Oranje	9630do			
1200-1300 sa	Tanzania	5985af	9684af	11765af	
1200-1300	USA, CSMonitor Boston	9425au	9495am	13625as	13760na
1200-1300 as	USA, CSMonitor Boston	15665eu			
1200-1300	USA, KTBN Salt Lake City	7510am			
1200-1300	USA, WHRI Noblesville	7315am	9465am		
1200-1300	USA, WJCR Upton, Kentucky		7490na		
1200-1300	USA, WWCR Nashville	5935am	15690am		
1200-1300	USA, WYFR Okeechobee, FL		5950am	7355am	9705am
			11830am	17760am	
1203-1210 as	Croatian Radio, Zagreb	7240eu	9830eu	21480eu	
1215-1230	Cyprus, Radio Bayrak	6150va			
1215-1300	Egypt, Radio Cairo	17595as			
1215-1300	Korea, Seoul	9750am			
1226-1300	Ghana, Radio 2, Accra	7295do			
1230-1250 mtwhf	Finland, YLE	15400na	21550na		
1230-1300	Bangladesh	15200as	15605as	15647as	17750as
1230-1300	France, RFI Paris	9805eu	11670eu	15155eu	15195eu
		21635na	21645na		
1230-1300	Sri Lanka B'casting Corp.	6075as	9720as		
1230-1300	Sweden	15170as	17740as		
1230-1300	Turkey, Voice of	9675as			
1230-1300	United Kingdom, BBC London	6045eu	6180eu	6190af	6195ca
		9410eu	9515na	9660eu	9740na
		9750eu	9760eu	11760me	11940af
		12095eu	12170as	15070eu	15220na
		15310as	15420af	15575me	17640va
		17705eu	17790af	17840af	17885af
		21470af	21680af		
1230-1300	USA, VOA Washington	6110as	9760au	11715au	15155as
		15425as			
1230-1300	Vietnam, Voice of	9840as	12020as	15010as	
1235-1245	Greece, Voice of	15565na	15650na	17515na	
1258-1300	Gabon, Africa Numero Un	9580af	17630af		

SELECTED PROGRAMS

Sundays

- 1201 BBC: Play Of The Week. See S 0101.
1205 Christian Science Monitor: Herald of Christian Science. See S 0005.

Mondays

- 1206 Christian Science Monitor: News Features And Interviews. See M 0006.
1215 BBC: Quiz. Science in "The Litmus Test" (1st); a super-brain-off in "Masterbrain" (8th); and yet another season of the favorite general-knowledge quiz "Brain Of Britain" (through October 4th).
1230 Radio Finland: Business Monday. See M 0520.
1240 Radio Finland: Press Review. See M 0655.
1245 BBC: Sports Roundup. See S 0315.
1245 Radio Finland: Airmail. See M 0140.

Tuesdays

- 1206 Christian Science Monitor: News Features And Interviews. See M 0006.
1215 BBC: Multitrack 1: Top 20. See M 2330.

- 1240 Radio Finland: Press Review. See M 0655.
1245 BBC: Sports Roundup. See S 0315.
1245 Radio Finland: Sports Fare. See T 0145.
1250 Radio Finland: Close-Up. See T 0150.

Wednesdays

- 1206 Christian Science Monitor: News Features And Interviews. See M 0006.
1215 BBC: New Ideas. See M 1615.
1235 BBC: Talks. See M 1635.
1240 Radio Finland: Press Review. See M 0655.
1245 BBC: Sports Roundup. See S 0315.
1245 Radio Finland: Highlights. See W 0145.
1250 Radio Finland: Close-Up. See T 0150.

Thursdays

- 1206 Christian Science Monitor: News Features And Interviews. See M 0006.
1215 BBC: Multitrack 2. See W 2330.
1240 Radio Finland: Press Review. See M 0655.
1245 BBC: Sports Roundup. See S 0315.

- 1245 Radio Finland: Roots In Finland. See S 1340.
1250 Radio Finland: Close-Up. See T 0150.

Fridays

- 1206 Christian Science Monitor: News Features And Interviews. See M 0006.
1215 BBC: Feature. Malcolm Billings travels to archeological digs to examine the world's cultural "Heritage" (through July 10th).
1240 Radio Finland: Press Review. See M 0655.
1245 BBC: Sports Roundup. See S 0315.
1245 Radio Finland: Roots In Finland. See S 1340.
1250 Radio Finland: Close-Up. See T 0150.

Saturdays

- 1205 Christian Science Monitor: Herald of Christian Science. See S 0005.
1215 BBC: Multitrack 3. See F 2330.
1245 BBC: Sports Roundup. See S 0315.

1600 UTC

[12:00 PM EDT/9:00 AM PDT]

FREQUENCIES

Table listing radio frequencies and stations. Columns include frequency, station name, and call letters. Includes stations like Singapore SBC1, USA VOA Washington, and various international broadcasters.

SELECTED PROGRAMS

Sundays

1605 Christian Science Monitor: The Sunday Service. A religious service from the First Church of Christ, Scientist, in Boston.
1615 BBC: Feature. See S 0230.
1645 BBC: Letter From America. See S 0615.

Mondays

1606 Christian Science Monitor: News Features And Interviews. See M 0006.
1615 BBC: New Ideas. Innovative developments in technology and new products.
1635 BBC: Talks. Some of the world's top athletes feature on "The Olympians" (through July 20th).

Tuesdays

1606 Christian Science Monitor: News Features And Interviews. See M 0006.

1615 BBC: Megamix. See T 1130.
1645 BBC: The World Today. See M 1645.

Wednesdays

1606 Christian Science Monitor: News Features And Interviews. See M 0006.
1615 BBC: Rock/Pop Music. See T 0630.
1645 BBC: The World Today. See M 1645.

Thursdays

1606 Christian Science Monitor: News Features And Interviews. See M 0006.
1615 BBC: Network UK. Issues and events affecting people across the UK.
1645 BBC: The World Today. See M 1645.

Fridays

1606 Christian Science Monitor: News Features And Interviews. See M 0006.

1615 BBC: Science In Action. The latest news about scientific innovations.
1645 BBC: The World Today. See M 1645.
Saturday
1605 Christian Science Monitor: Herald of Christian Science. See S 0005.
1615 BBC: Sportsworld. See A 1430.

I have found MT to be the very best communications magazine available, and I have recommended it to many friends.

Joseph Davis
Westland, MI

2300 UTC

[7:00 PM EDT/4:00 PM PDT]

FREQUENCIES

2300-0000	Australia	11720pa	11880pa	15160pa	15320pa	2300-0000	USA, CSMonitor Boston	9465na	13625as	15405af	15665eu
		15365pa	17795pa					17555af			
2300-0000	Bulgaria, Radio Sofia	9595am	9700am	11660eu	11660na	2300-0000	USA, KTNB Salt Lake City	15590na			
		11720eu	11950na	17825na		2300-0000	USA, VOA Washington	7120as	9770as	11760au	15185au
2300-0000	Canada, CFCX Montreal	6005do						15290au	15305as	17735as	17820as
2300-0000	Canada, CFRX Toronto	6070do						9530me	11905me	11960eu	17885me
2300-0000	Canada, CFVP Calgary	6030do				2300-0000	USA, WHRI Noblesville	9495na	13760sa		
2300-0000	Canada, CHNX Halifax	6130do				2300-0000	USA, WINB Red Lion, Penn.	15145eu			
2300-0000	Canada, CKZU Vancouver	6160do				2300-0000	USA, WJCR Upton, Kentucky		7490na		
2300-0000	Cook Islands	11760pa				2300-0000	USA, WRNO New Orleans	7355na			
2300-0000	Costa Rica, AWR	9725ca	11870ca			2300-0000	USA, WWCR Nashville	12160na	15690		
2300-0000	Costa Rica, RFP1	13630na	15030na	21465am		2300-2305	Ghana, Radio 1, Accra	4915do			
2300-0000	Guam, KSDA Guam	15610as				2300-2305	Ghana, Radio 2, Accra	7295do			
2300-0000	India, All India Radio	9910as	11715as	11745as	15110as	2300-2330	Canada, RCI Montreal	11940sa	15235na		
		15145as	17830as			2300-2330	Lithuania, Radio Vilnius	11780na	13645na	15580na	
2300-0000	Japan NHK	11735eu	11815am	15195as	15430am	2300-2330 as	Norway	11795am			
		17810pa				2300-2330 as	Norway	11795am			
2300-0000	Luxembourg, RTL	15350va				2300-2330	United Kingdom, BBC London	5975na	6175na	6195as	7145as
2300-0000 smtwha	Malaysia, RTM Radio 4	7295do						9410eu	9570pa	9590na	9915sa
2300-0000	New Zealand, RNZI	17770pa						11775sa	11945as	11955as	12095na
2300-0000	Russia, Radio Moscow	6000am	6045am	7110va	7115am			15070na	15260sa	15340pa	15400af
		7135va	7150am	7255va	7295va	2300-2350	North Korea	11700am	13650am		
		7330va	7390va	9625va	9715va	2300-2350	Turkey, Ankara	9445na			
		9725va	9790va	9810va	9870va	2315-0000 tent	Iraq, Radio Baghdad	11945na	17740sa		
		9905va	12045va	12050va	12055va	2330-0000 as	Canada, RCI Montreal	11940sa	15235sa		
		15425va	17570na	17610va	17655va	2330-0000	Canada, RCI Montreal	5960am	9755am	13670am	
		17665va	17775va	17890va	21480va	2330-0000 a	Colombia, R.Nacional	11822.5	17865am		
		21530na	21690va	21770na	21790va	2330-0000 m	Sri Lanka B' Casting Svc	15425am			
2300-0000	Sierra Leone, SLBS	3316do				2330-0000	United Kingdom, BBC London	5975na	6175na	6195as	7145as
2300-0000	Singapore, SBC1	5010do	5052do	11940do				7325na	9570pa	9590na	9915sa
2300-0000	South Africa, Radio Orion	4810af						11750sa	11945as	11955as	12095na
2300-0000	Thailand	4830as	9655as	11905as				15070na	15260sa	17830as	
2300-0000	UAE Radio Abu Dhabi	9605na	11965na	13605na		2330-0000	Vietnam, Voice of	9840as	12020as	15010as	
2300-0000	Ukraine, Kiev	5960eu	6020eu	7380eu	9785eu	2330-2355	Belgium, BRT Brussels	9930na	13655na		
						2335-2345 smtwhf	Greece, Voice of	9425sa	11645sa	12105sa	

SELECTED PROGRAMS

Sundays

- 2305 BBC: World Business Review. The previous week's news and upcoming events.
2315 BBC: Music With Matthew. Brian Matthew with classical music selections.

Mondays

- 2305 BBC: World Business Report. The latest news from the markets worldwide.
2306 Christian Science Monitor: General Features. See M 0106.
2315 BBC: Talks. All this month, John Turtle's "The Learning World" examines education issues.
2330 BBC: Multitrack 1: Top 20. Tim Smith presents the smash singles on the UK pop music charts.
2334 Christian Science Monitor: Letterbox. See M 0134.
2347 Christian Science Monitor: Religious Article. See M 0147.

Tuesdays

- 2305 BBC: World Business Report. See M 2305.
2306 Christian Science Monitor: General Features. See M 0106.
2315 BBC: Concert Hall. See S 1515.
2334 Christian Science Monitor: Letterbox. See M 0134.
2347 Christian Science Monitor: Religious Article. See M 0147.

Wednesdays

- 2305 BBC: World Business Report. See M 2305.
2306 Christian Science Monitor: General Features. See M 0106.
2315 BBC: From Our Own Correspondent. See S 0330.
2330 BBC: Multitrack 2. Graham Bannerman presents new pop records, interviews, news, and contests.
2334 Christian Science Monitor: Letterbox. See M 0134.
2347 Christian Science Monitor: Religious Article. See M 0147.

Thursdays

- 2305 BBC: World Business Report. See M 2305.

- 2306 Christian Science Monitor: General Features. See M 0106.
2315 BBC: Music Review. News and views from the world of classical music.
2334 Christian Science Monitor: Letterbox. See M 0134.
2347 Christian Science Monitor: Religious Article. See M 0147.

Fridays

- 2305 BBC: World Business Report. See M 2305.
2306 Christian Science Monitor: General Features. See M 0106.
2315 BBC: Worldbrief. A roundup of the week's news headlines and developments.

- 2330 BBC: Multitrack 3. News and releases from the British alternative music scene.
2334 Christian Science Monitor: Letterbox. See M 0134.
2347 Christian Science Monitor: Religious Article. See M 0147.

Saturdays

- 2305 BBC: Words Of Faith. See S 0309.
2305 Christian Science Monitor: Herald of Christian Science. See S 0005.
2310 BBC: Book Choice. See H 0140.
2315 BBC: A Jolly Good Show. See T 1515.

*Radio Havana
Cuba QSL
submitted by
John Carson,
Norman, OK.*



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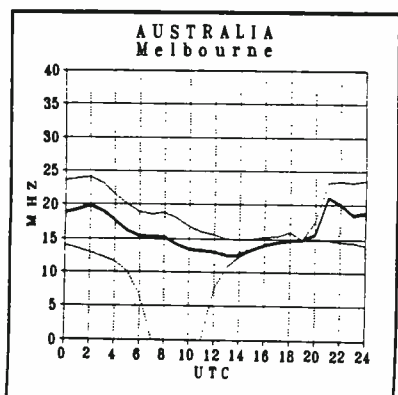
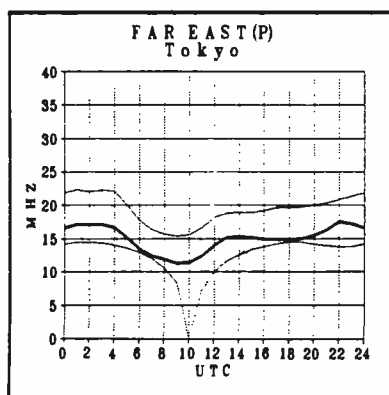
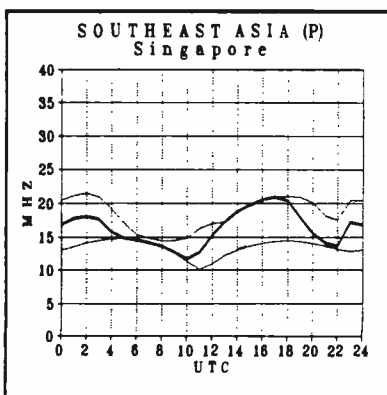
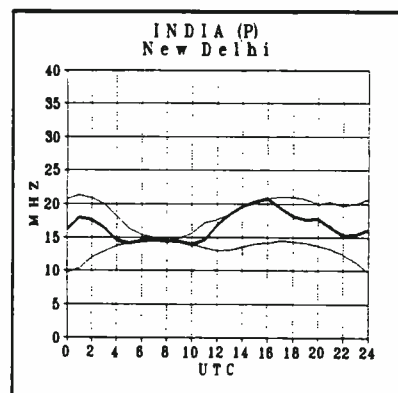
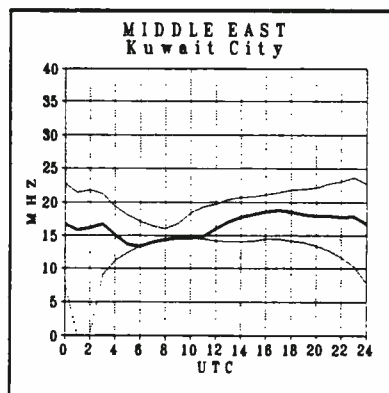
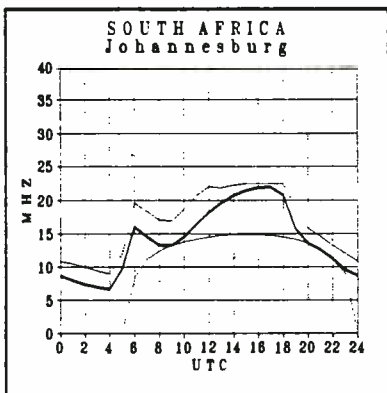
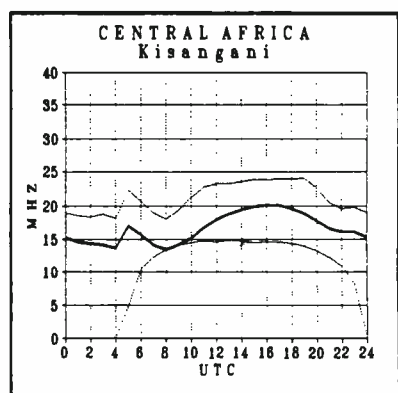
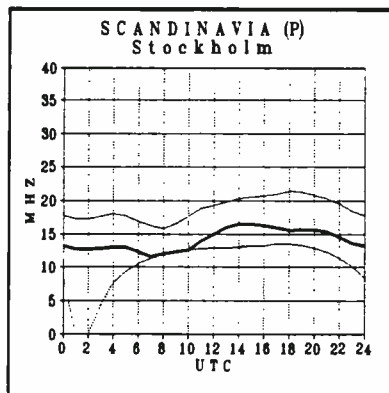
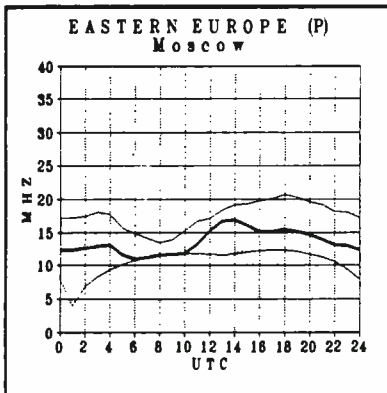
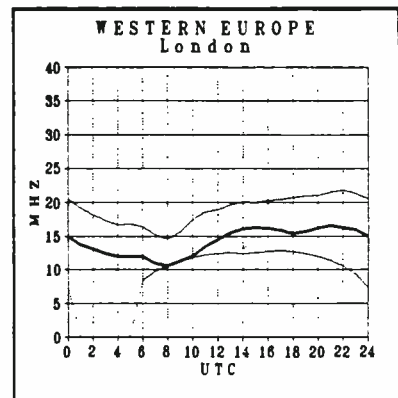
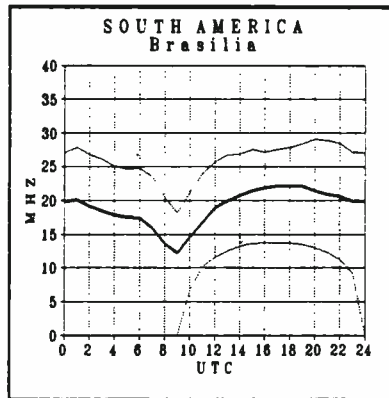
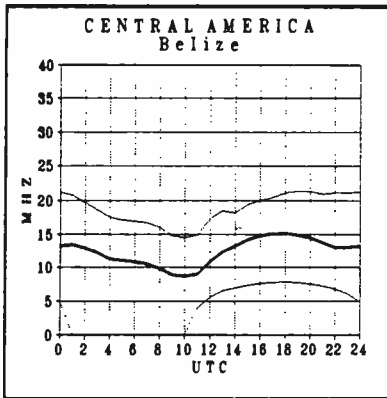
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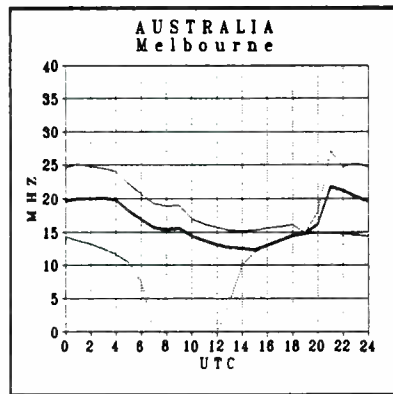
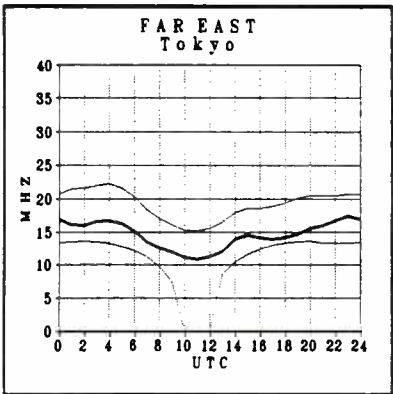
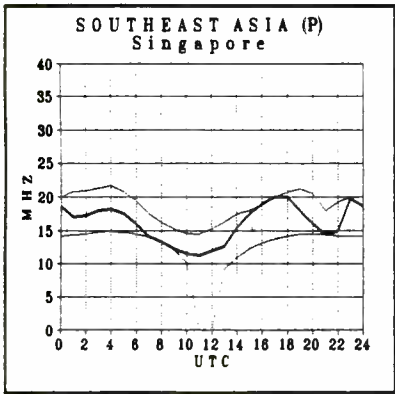
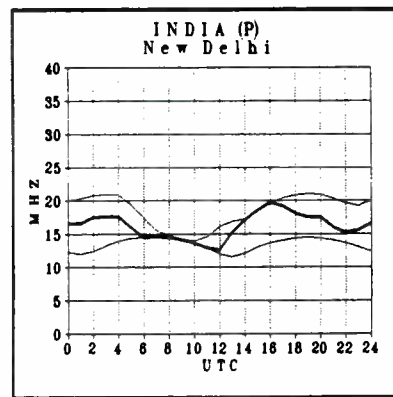
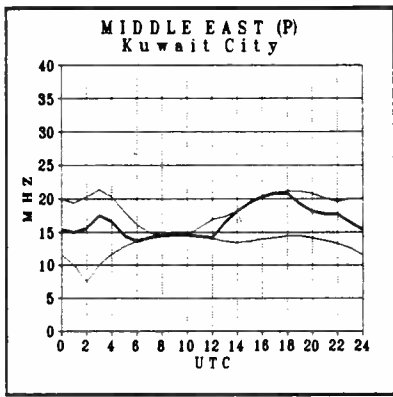
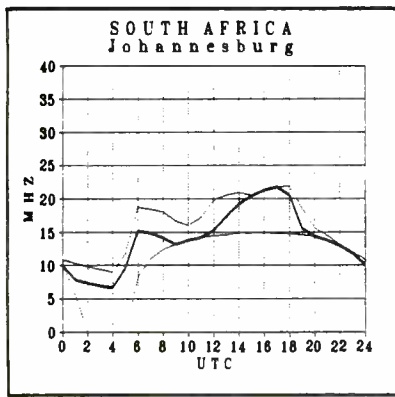
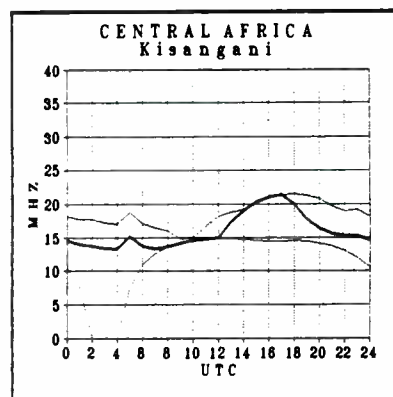
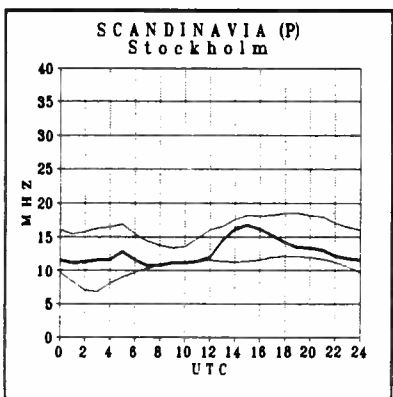
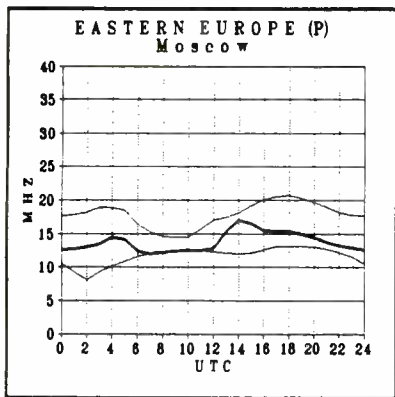
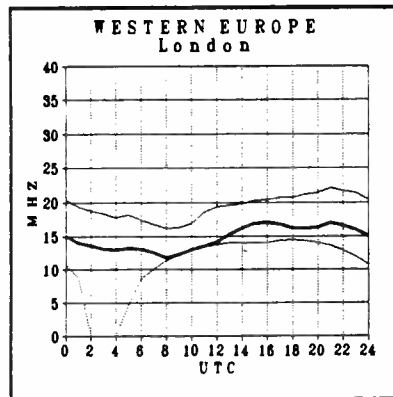
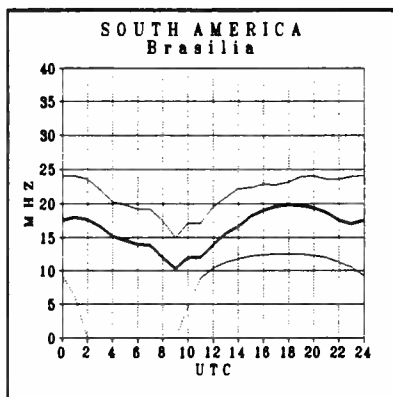
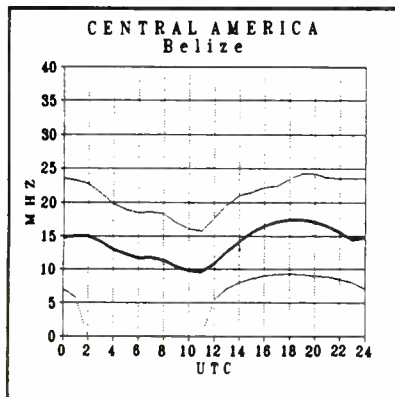
Propagation conditions: Eastern United States

How to use the propagation charts: Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location. Then look for the one most closely describing the geographic location of the station you want to hear.



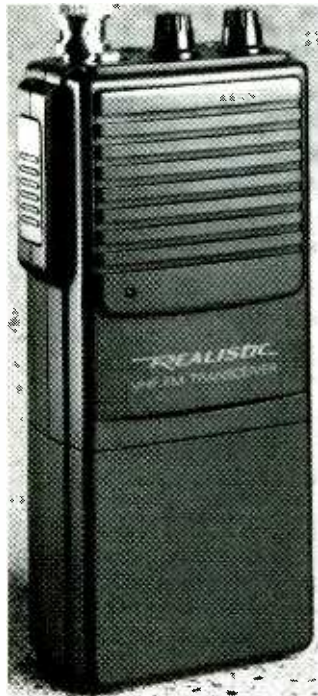
Propagation Conditions: Western United States

Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom line is the lowest usable frequency (LUF). You will find the best reception along the heavy middle line. Circuits labeled (P) cross the polar auroral zone. Expect poor reception on these circuits during ionospheric disturbances.



what's new?

Larry Miller



New Realistic Business Band Transceiver

Radio Shack has released a new 2-channel, 1 watt business band transceiver. This is Radio Shack's first two-way business band transceiver and it is superb.

The compact, lightweight radio comes ready to operate on the 156.625 kHz business channel but optional plug-in crystals are available for other frequencies.

The unit comes with a removable and rechargeable nickel-cadmium battery pack and AC charger. A 150 mm detachable antenna, belt clip and vinyl carrying case are also supplied.

Retail price for the BTX-120 is \$149.95. A full "hands on" review of the radio can be found in Bob Grove's Scanner Equipment column on page 94.



New Go-Anywhere 5-Watt CW Rig

MFJ Enterprises has introduced a neat, go-anywhere 5-watt 20 meter CW transceiver that is small in size and big in performance. The MFJ-9020 covers 14.000 to 14.075 MHz with a stable 5-watt output transmitter, superheterodyne receiver, RIT, audio-derived AGC, adjustable semi break-in, CW sidetone, and built-in speaker plus earphone jack.

The '9020 measures only 2.25 x 6 x 6.5 inches and operates from 12-15 VDC. It's great for traveling, vacationing and QRP (low-power) DXing.

The MFJ-9020 CW Transceiver sells for just \$179.95. An optional plug-in narrow CW filter is available for \$29.95. An optional plug-in curtiis-chip keyer is also available for \$39.95.

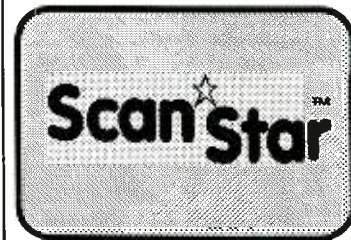
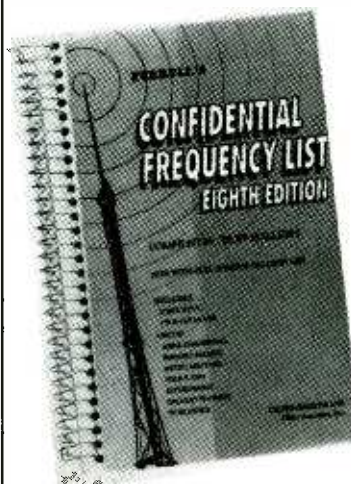
For more information, contact your favorite radio dealer or call MFJ direct at 1-601-323-5869. Please mention *Monitoring Times* when you call or write.

Confidential Frequency List

The new 8th edition of Ferrell's *Confidential Frequency List* is now out. Sporting a new metal spiral binding and well over 500 pages, the book contains voice, RTTY, CW and FAX modes used by aero, commercial, embassy, marine, meteo, military, police and government ground stations worldwide.

The frequency list starts at 1613 kHz and runs through 27998 kHz. There are also sections describing the international allocation of call signs, ICAO Location Indicators, Naval Message Indicators, frequency allocation charts and even a reverse frequency list containing information arranged by call.

Author Geoff Halligey continues a proud tradition with the new 8th edition of Ferrell's *Confidential Frequency List*. At \$19.95 it is available from Gilfer Associates (201-391-7887), P.O. Box 239, 52-MT Park Avenue, Park Ridge, New Jersey 07656 and a number of other dealers including Grove Enterprises and DX Radio Supply.



Scan Star

As scanners become more and more sophisticated, many are being designed to interact with computers. In fact, without a computer interface, you're simply not going to get the best out of some of the top-of-the-line scanners. Scan*Star is software designed to maximize your scanner's potential. Its flexibility is hard to beat.

Scan*Star can direct your scanner to find new frequencies and when it does, it can log them to disk and/or printer. Scan*Star also allows users to create their own custom scanning programs, drawing from any combination of files, banks, search ranges or single channels. You can even specify the percentage of time to be spent scanning each one.

Scan*Star is easy to use and install. It runs on IBM or 100% compatible 286 or better personal computers with EGA/VGA/Mono displays and supports the JRC NRD-525 and NRD-535, ICOM R7000, AOR AR-3000 and the Uniden MR-8100.

Scan*Star can also be used to create and edit frequency databases for radios that don't have computer control capability.

The program is a very affordable \$49.97. Write to Scan*Star at P.O. Box 640891, San Jose, California 95164-0891 or use your Mastercard or Visa and call V Communications at 408-296-4224. Tell them that you read about it in *Monitoring Times*.



New Antique Radio Trader

Wireless Trader is a new antique radio publication targeted for the active collector. Containing only classified advertisements, the publication is mailed twice a month in order to give subscribers what publisher Bill Howard calls "a 'fast results' type of buying, selling and trading..."

Wireless Trader accomplishes this not only by its bi-monthly publication schedule and first class mailing, but by allowing readers to leave ads by telephone voice mailbox.

Subscriptions are \$16.95 per year (24 issues). Send your check or money order to Trader Publications, 4290 Bells Ferry Road, Suite 106-36-MT, Kennesaw, Georgia 30144. The single issue cover price is \$1.00, presumably acceptable for samples as well.

Japan Radio NRD-535D White Paper

Jock Elliott and the other reviewers of the Japan Radio NRD-535D can't say enough about the "D" model (improved version) of the NRD-535. In the summary of findings, Elliott says

that the radio "offer[s] superb performance for chasing faint world band, ham or utility stations..." The set is rated a full 5 stars.

This is a pricey receiver, no doubt, ringing in at a list price of just under \$2,000. So whether you're seriously considering the purchase of one of these units or just dreaming about it, the *RD! White Paper* on the Japan Radio NRD-535D/NRD-535 Receiver is well worth its \$5.95 price. To get yours, write to International Broadcasting Services, Ltd., Box 3000, Penns Park, PA 18943.



Philadelphia Fire Films

If you enjoy the excitement of monitoring fires on your scanner then you'll really enjoy Philadelphia Fire Films' video of the 12-alarm high rise fire at Philadelphia's One Meridian Plaza. Philadelphia Fire Films combines spectacular up-close video of this spectacular blaze with actual scanner activity for a pulse-quickenning 60 minute film.

The entire video, which also includes two other fires, is \$24.95 plus 5.00 shipping from Philadelphia Fire Films, P.O. Box 47762MT, Philadelphia, PA 19150-7762.

South Carolina Scanning

A new edition of Larry Williams' *Scanner Frequency*

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- 1992 Police Call Directory for MI & OH: Slightly torn cover -- \$8.00
- Hidden Signals on Satellite TV: Bent cover -- \$17.00
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Yukon Territory Scanner Frequency List

The second edition of Ron Tull's *Yukon Territory Scanner Frequency List* is a collection of various lists and reprints including licensees in the Yukon, British Columbia and the Northwest Territory. It includes selected entries from Ontario and Quebec as well.

To order the *Yukon Territory Scanner Frequency List*, send \$25 to Ron Tull, 209-922.5 Alaska Highway, Whitehorse, Yukon Territory, Canada Y1A 3Y9.

Directory centers on signals receivable in the Greenville/Spartanburg area of South Carolina, but includes state highway patrol frequencies from around the country and interesting chapters on various aspects of scanning and equipment.

Listings include maritime, military bases, amateur repeaters, aircraft, cellular charts, business licensees and public safety.

The compact directory is \$7.95 from Radio Research, 10 Elf Lane, Dept. MT, Greenville, SC 29611.

Scanner Experimenter's Newsletter

If you are technically inclined and scanner oriented, you will enjoy *MT* columnist Bill Cheek's almost-monthly newsletter, *World Scanner Report*, which contains endless tidbits on modifications, accessories, computer control and other improvements for scanners.

To explore the world beyond "Experimenter's Workshop," subscribe to *World Scanner Report*; \$25 buys a ten-issue subscription from W.B. Cheek, Commtronics Engineering, P.O. Box 262478-MT, San Diego, CA 92196. (*WSR* is not to be confused with *National Scanning Report*, which is a non-technical publication of the Bearcat Radio Club.)

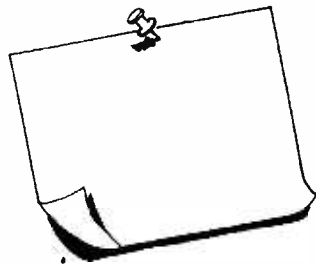
QSL Survey

The Suriname DX Club International has released the new 2nd edition of their *QSL Survey*. The 54 page booklet is divided into three parts. "Received QSLs" concentrates on what was sent to stations in order to get a QSL. There are 1,467 entries. "Verification signers" includes all reported verification signers since mid-1988. Finally, there is a statistical analysis of the information contained in the "Received QSL" section.

The *QSL Survey* is available for \$7.00 postpaid from Ravin Sewdien, Bechaniestraat 58, Paramaribo, Suriname. Incidentally, we have warned, based on the comments of several readers, not to send cash to Suriname. Mr. Sewdien, however, says that he "has never encountered any problem with this" adding that 62% of the orders he has received

include cash payment. Sewdien also discourages the use of registered mail.

While the Suriname DX Club International is a respected and well known organization, we continue to urge caution in sending cash overseas.



Notes

- We were notified of an address change for ordering Skyfoot's *Ontario Scanner Glossary* and *12 Scanner Radio Projects*, as reviewed in April. The new address is:

Joe Skyfoot Word and Music
Creations
5468 Dundas St. West
Suite 528
Etobicoke, Ontario
Canada M9B 6E3

Phillip Boucher apologizes for any returns correspondents may have experienced.

- Also reviewed in April was the *Maritime Frequency Directory*. While author Robert Gad's name does appear on the cover sheet, he wrote to clarify that "the overwhelming bulk of the effort and industry in this book was Bob Coburn's, not mine." Both Robert Gad and Robin Lindley are contributing authors, but editor Robert Coburn is apparently due the major credit for this massive compilation.

Reviews

By Bob Grove

MFJ Antenna System Analyzer

The new MFJ247 makes HF mobile, portable and base station antenna system analysis a snap. Not only will it read VSWR at any frequency from 1.8-30MHz, but it has an accurate frequency counter to display its self-generated operating frequency.

The 247 is ideal for measuring impedance matching on antenna systems for receivers, transmitters and transceivers without actually applying RF power from a transmitter or external signal generator.

Powered from six AA cells (not included) or an external 12 VDC power source (not included), the 247 provides an LCD readout up to seven decimal places, depending upon gate time chosen, with one part per million accuracy.

The unit is entirely self contained, but, if used with an external signal generator, can provide accurate SWR (standing wave ratio) and signal frequency measurement to 150 MHz.

The MFJ-247 VSWR analyzer retails for \$189.95 from amateur radio dealers or MFJ directly at 1-800-647-1800.



Fisher CZ-6 Metal Detector

It has been nearly a half century since Dr. Gerhard Fisher patented the first metal detector, a heavy, tube-type, radio transmitter and receiver which evolved into the famous pancake-shaped mine detector of World War II.

By modern day standards, Fisher's invention was primitive; today's solid-state instruments are much more sophisticated. An outstanding example is Fisher's new CZ-6 QuickSilver, a giant step above competitive beat-frequency-oscillator (BFO) and balanced-bridge types.



Beached tourists regularly leave behind both trash and treasure at the end of the day.

Beachcombing with a metal detector conjurs up romantic images of buried treasure and lost riches; I vividly recall finding a 2-1/2 carat diamond solitaire ring sparkling in the moonlight (yes, the owner was found!). But metal locators have other applications as well—as I recently discovered with my new CZ-6.

Our Review

When the QuickSilver arrived I was impressed by its professional appearance and rugged construction. Controls were well marked, and default settings invited immediate testing without even reading the manual. The control box is splashproof and the search head is submersible.

The unit is powered by two nine-volt batteries which are easily replaced in the rear compartment. Cushioned headphones provide audible indication of nearby metal, while easy-to-identify tones suggest the most probable identifications of your target—trash or treasure!

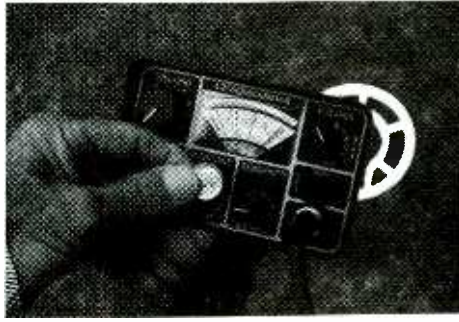
Having been involved in metal detector design and manufacture many years ago, I was eager to try the new CZ-6 QuickSilver; the descriptive literature was lavish in its claims.

For example, the meter indicates the difference between iron, aluminum foil, nickel coins and precious metal. The manual said that it really could provide this discrimination. Now that's just plain ridiculous—or so I thought.

We started by doing a little beachcombing in Sarasota, Florida. The beautiful white beaches invite "coinshooters"—retirees with competitive detectors—every day. If I could find anything after their thorough scavaging, it would be a miracle.

Sure enough, the CZ-6 signalled coinage and, after digging more than a foot down in wet, salty soil, my eager fingers brought up a blackened dime!

Next, the meter said I had found aluminum foil. Aw, what could the detector know?! I decided to dig it up anyway. And there it was—aluminum foil! Next it indicated an aluminum pop-top, and it was! I was fast becoming a believer.



The detector said it was a coin—either a dime or a quarter—and sure enough, up came a dime!

This machine not only notifies you of an aluminum pull tab before you waste your time digging it up, but the meter even shows you the SHAPE of the tab! And if you don't want to be bothered by trash, you can set the QuickSilver so that only valuable metals like coins and jewelry will be heard!

As if those conveniences weren't enough, the meter also tells you how far to dig to find small objects detected by the instrument, and a snap of a switch neutralizes mineralized ground effects, while a pushbutton allows cross-hair pinpointing of the object!

For reduced fatigue, the electronic control module may be removed from the instrument handle and worn on a belt. This unique feature really helps under extended use.

Flexibility

Metal detectors have a wide latitude of applications, from artifact collecting in abandoned homesites to prospecting for gold; from searching historic battlefields and archaeological ruins for artifacts to locating concealed articles.

Weapons detectors frisk visitors in secure areas; spike detectors prevent costly saw shattering and serious injuries in the logging industry; contractors use them to find covered or buried wiring and plumbing. The list seems endless.

Recently I was requested by a state road crew to locate a water main shutoff valve that had accidentally been covered by asphalt pavement. They knew approximately where it was, but digging randomly for it would have destroyed the new pavement.

I said, "Give me one minute." In 45 seconds I had located the valve with my Fisher and made a small "X" on the pavement; when I returned a few hours later a small metal access plate was in place—exactly where I told them to dig!

My next mission is more serious. Recently a state employee was shot by a sniper. I will be taking the CZ-6 to try to find the shell casing which would provide invaluable evidence in the criminal case. Made of brass, this target should be easy to find if it's there.

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 Box 168, Melvin Village, NH 03850 (603) 544-2110

Even Stranger

My wife Judy and I are wildlife rehabilitators. We retrieved an injured—and endangered—Blue Heron. After cleaning the wound we spotted a strange embedded object, but couldn't make out what it was.

On a hunch, I passed my CZ-6 QuickSilver over the infected area and, sure enough, found an imbedded fishing hook! That told us how to proceed for surgical removal. Undoubtedly, birdshot and other small metallic intrusives could be found as well.

In Conclusion

As a perfectionist, I want the best metal detector I can find, and that's my Fisher CZ-6 QuickSilver. Whether I'm on the beach, in a playground or on a lost-article mission, if it's there, my Fisher will find it.

A free product catalog is available from Fisher Research Laboratory, Dept. MT, 200 W. Willmott Rd., Los Banos, CA 93635; phone 209-826-0416.



Realistic Business Band Walkie-Talkie

Radio Shack has recently become very aggressive in the two-way and amateur market. Following close on the heels of the two-meter handheld transceiver we reviewed recently is a new dual-channel VHF-FM transceiver, model BTX-120.

Made in China for Tandy, the one-watt (switchable to 0.5 watts for low power) handheld comes with a 6" flex whip, removable nicad battery pack and AC wall charger. A stainless steel belt clip provides a firm hold and a soft vinyl jacket protects the handie-talkie's case.

The BTX-120 is intended for low-power applications as in construction sites, factories, warehouses, school campuses, hospitals, stores and entertainment complexes.

One pair of crystals (itinerant 151.625 MHz) is supplied, as is an FCC license application. We were impressed by Radio Shack's conscientious emphasis on completing and submitting the FCC license application (no test required) accompanying the HT before using it.

A red LED is illuminated during transmit; if it turns yellow, it's time to recharge the batteries. The lamp shows green while receiving signals (squelch broken). An extra slip-on battery pack is available; it can be charged while you use the other pack.

A modulation limiter circuit compensates for changes in voice levels as you talk into the radio. Rubber dust plugs protect the external earphone and mike jacks when they are not in use.

Channel B

A second (blank) channel can be crystallized for a frequency near 151.625 without retuning. It may be possible that, with retuning, the unit may be useful from 144-162 MHz.

Tuning instructions are not supplied, so it would be wise to check with a Radio Shack



service center before venturing too far away from the recommended frequency range. Replacing or adding crystals should not be attempted by anyone unfamiliar with electronic circuitry and soldering techniques.

To calculate the frequency for an additional transmit crystal, the oscillator multiplies by 8; thus, the fundamental frequency of a crystal for 152.000 MHz would be 19.000 MHz.

Since the receiver uses a 10.7 MHz intermediate frequency (IF), the fundamental crystal frequency is determined by subtracting 10.7 from the operating frequency, then dividing by 4.

Crystals may be ordered from Radio Shack, but they are standard from a variety of sources. Specify the frequency, package type HC-50/T and 20 pF load capacitance.

Let's Check it Out

We field-tested two units here at *MT*, one inside the office building and the other worn outside. Even with buildings and a hillside intervening, the signals were copied nearly a half mile away, even on low power.

Audio was crisp and clear, unusually so for a low cost handie-talkie. The HT looks and feels good; case parts fit well, not like the flimsy dime-store plastic so often found in cheaper walkie-talkies.

Sensitivity of the new HT is a credible 0.5 microvolts for 12 dB SINAD, with a signal-to-noise ratio for 20 dB of 0.75 microvolts. Audio output to the speaker is 350 milliwatts—strong and clear, even in noisy locations.

Selectivity is also quite good—adjacent channel interference (15 kHz away) is attenuated by 50 dB.

Top-panel jacks for external earphone (or speaker) and microphone are provided. Radio Shack recommends their 19-310 speaker/microphone (\$19.95, not included). We tried the equivalent MFJ 285 speaker/microphone, available from *MT* amateur radio suppliers; it performed well in our lab test.

Current drain during transmit is only 150 milliamps; several hours of normal operation can be expected on a battery charge.

Unlike many lesser competitors which have screw-in antennas, the antenna connector is a BNC—bravo for Radio Shack!—so attachment to a mobile, rooftop, or other range-extending antenna (like the Grove ANT-19 telescopic whip) is easy.

The handie-talkie measures a nice, comfortable 2-1/2" x 1-1/2" x 6" and weighs 17 ounces. We rate the new Realistic BTX-120 an excellent value at only \$149.95.

MT

World's Smallest Recorder

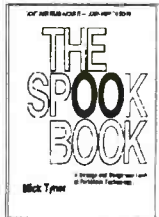
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Here's just what the world needs: yet another cheap Chinese analog portable. Right?

Actually, yes—but only in part. The SEG Precision World SED 110 portable, while no barn burner, differs in a number of respects from the lineup we're used to. It represents a significant upgrade of the poorly rated Cougar H-88 (see the 1992 *Passport to World Band Radio*).

To begin with, it's quite small—a compact bordering on a mini—and so is unusually well suited to globetrotting. And, unlike virtually all other Chinese analog models tested, it covers the 22 meter (13 MHz) band. Indeed, its shortwave frequency coverage, even though limited to selected bands, is fairly complete between 5.88-21.85 MHz, being really deficient only from roughly 9.4 to 9.5, 12.0-12.1 and 15.6-15.7 MHz. Of course, this includes the popular 9410 and 12095 kHz channels used by the BBC World Service, especially in Europe.

There's also FM, longwave and mediumwave AM. While the '110 doesn't cover much of the forthcoming new AM band extension for the Americas from 1.6-1.7 MHz, the longwave coverage is useful during trips within Europe.

Rudimentary Features and Performance

Frequency readout is coarse by today's standards—the dial can be up to 50 kHz off from what your eye interpolates is the correct frequency on the dial. Poor as that is, it's typical of what you can expect from even the best of the radios costing less than the now-famous DAK digital models (which run about twice as much).

The '110's features are basic: power, tuning knob, volume slider and two band-selector slider switches, plus a virtually useless LED "glow light" to indicate when a signal is being received. There's no power lock, a drawback for traveling, but unlike some more costly portables there is a carrying strap.

Power is by merely two "AA" cells. Between this and low battery drain, the cost of operation is minimal. For those who prefer AC power, there is a port for 3V DC via an outboard power supply, which is not provided. The telescopic antenna, like all telescopic antennas on

cheap portables, swivels, but does not rotate, which is unhandy. However, the radio does come standard with a pair of "in-the-ear" earpieces—even though FM is monaural only, not stereo as such earpieces might suggest.

Performance is equally basic. No surprises: mediocre everything, from sensitivity to selectivity to image rejection. Audio quality, while equally mediocre, is at least as good as that on a number of mini portables we've tested over the years. It's not unpleasant, but equally it is tough sledding to listen to a radio like this hour after hour.

Bottom Line: Good Throwaway Portable

The bottom line is that for \$29 (\$33.50 with shipping), the SEG Precision World SED 110 makes one of the best throwaway portables for taking on trips for casual listening, especially if you plan to tune the 13 MHz band. If it's lost or stolen, who cares? And it makes a nice gift if you don't want to bother bringing it back home. The biggest drawback for traveling DXers is that it doesn't pick up tropical stations, those found between 2.3-5.1 MHz.

The Precision World doesn't appear to be widely distributed. We purchased ours with no hassles as product #5219 from Heartland America, 6978 Shady Oak Road, Eden Prairie, MN 55344 (800/966-1233 or 800/229-2901). For those seeking other sources, the factory, Shenzhen Electronic Display Ltd., can be reached at Bldg. 205, Light Industrial District, Shangbu 518045, Shenzhen, China.

AIWA Enters with Two Sangean-Made Portables

AIWA, known worldwide for its electronic products, has introduced two portables, manufactured for Aiwa by Sangean of Taiwan, into the North American market. The first, the \$109.95 WR-A100, is the Sangean MS-101 mini in a sleeker cabinet. The second, the \$259.95 WR-D1000 compact, is the Sangean ATS-808 that's been given an attractive Euro-style facelift.

Both Sangeans have been reported on already in *MT*, with the '808 having been revisited earlier this year. In a nutshell, the '101



performs well for a simple analog portable, but has tough price competition from the numerous cheap Chinese-made portables that have been appearing in recent months. The '808, however, is one of the best compacts on the market. Both models are quite easy to operate.

The AIWA radios are only just beginning to appear on the market, with *MT* advertiser Chilton Pacific being the only dealer we've come across thus far. In due course, distribution should become more widespread.

Coming Up: DAK Portable, Lowe Receiver

For those of you who have written me about the new \$75.90 DAK DMR-3000 portable, as soon as it became known that the radio was out we ordered one, along with the much-publicized DAK active antenna. When we placed our order, we were explicitly assured by the friendly sales lady on the phone that the radio was in stock, and that even though the antenna was out of stock the radio would be shipped immediately.

Alas, a couple of weeks later we received not the radio, but a postcard telling us the radio was out of stock and backordered. While our charge card invoice hasn't arrived yet, at a recent convention of the Ontario DX Association a member indicated DAK had charged his credit card for a DMR-3000, even though the merchandise was not in stock.

This is, to say the least, a shabby way to treat customers. Let's hope the radio itself fares better. As soon as it's out and we have run it through the test hurdles, we'll let you know the results in these pages.

We have begun the long process of laboratory and hands-on testing of an interesting new tabletop model from England, the Lowe HF-150. It's somewhat cheaper than Lowe's other receivers—the pitch reportedly being well through Europe—the pitch reportedly being why buy a plastic portable when you can get a "real radio."

We'll let you know how "real" this new radio is in a forthcoming column.

The Rediscovery of Nicola Tesla

By Linton G. Robertson



It seems a sad fact of existence that men far in advance of their time are usually, through small fault of their own, held back, hampered, and ground down by many things. Contempt, fear, closed-mindedness, and the corrosive envy of mediocrity have plagued such people since the beginning of time. It was no different with Nicola Tesla, one of the most remarkable men of our age. Only recently has he come under the light of serious scrutiny again, and slowly, but surely, he is being recognized as one of the greatest minds of the age. Space prohibits a detailed recount of his life and accomplishments, but here is a brief summary of his fabulous mind and his contributions to radio and science.

Born the son of a clergyman in eastern Europe, Nicola Tesla's early life was marked by his fantastic imaginative powers, as well as his uncanny ability to visualize as concrete reality whatever it was that his fancy conceived. This gift turned out to have its drawbacks as well as its blessings, for often, as a young child, Tesla had difficulty discerning what was real from what was imaginary, so strong was his faculty of visualization. He seems to have had a most remarkable nervous system, to say the least, as his sister would, from time to time, have to patiently explain to the young boy that what he was seeing was not altogether real.

Tesla came to this country right about the time that Edison was struggling with the development of a series of truly reliable DC motors. Tesla went to work for Edison, and friction between the men did not take long to develop, especially after Tesla made good an Edison request to improve Edison's DC motors on no less than 20-odd designs. Edison had promised Tesla a \$50,000 bonus if this could be done. Edison welched on the deal, commenting, "Why, Mr. Tesla, you just don't understand our American sense of humor."

Tesla, always the gentleman, tipped his hat to Edison, left his employ and wound up *digging ditches* very shortly thereafter. So, through the jealousy of a colleague, one of the best minds of the millennium was reduced to a state of abject poverty. (Tesla and Edison were to ram heads again later during the great AC/Tesla DC/Edison battle. As we all know, Tesla won, and AC became the world standard.)

Through an unlikely set of circumstances starting with the fact that the foreman of the digging crew knew a man named Westinghouse (!), Tesla wound up being introduced to him, and

started turning out inventions for him. At this time he invented the polyphase AC induction motor, and laid the foundation for all alternator design for nearly a hundred years to come. He worked without plans or test models, creating a working unit **on the first try.** (Bold mine.) In his remarkable autobiography, modestly titled, *My Inventions*, he states how he set about his accomplishments:

"When I first conceive of an invention, I do not set to work immediately. Instead, I refine the device in my mind, adding an improvement here, an addition there, and so on. If, for example, I am designing an alternator, I run the device in my mind, and I even note **if it is out of balance.** In over twenty years of work this has been my method, and there have been no exceptions to this rule. In each case, all my devices have worked the way they should have every time."

This, from the man who created (on the first try, naturally) a working model of a radio-controlled submarine before 1915! (By the way, the US Navy refused to fund it, saying that they couldn't see a use for such a thing!)

Students of computer animation will realize right off the bat that, basically, Tesla was doing **in his head** what engineers do today using computer simulation.

Tesla, however, was not always the easiest man to work with. Preferring a way of life and work that always tended toward solitude, Tesla, when called upon to join with other colleagues, technicians and engineers, expected performance on a par with his own. On one occasion he bluntly stated that a "real engineer" shouldn't need drawings! This attitude did not always speed his projects toward completion, to say the least.

As a neighbor he must have been something of a trial, as well, the town of Colorado Springs, where he completed some of his more important researches, suffered through numerous black-outs. Mr. Tesla regularly burned up the town's generating plant while creating his own artificial lightning, and used huge amounts of current for his other projects. Peace was restored after Tesla acquired his own generating unit.

He had other personal oddities. Once, when dining with the Westinghouse's, a plate of peaches was brought to the table. Tesla stared at them in horror, and raising his hands palms up and stretching out his arms as if to shield himself from something horrible, said, "Take them away! Ugh," and turned his head away as if the sight were to awful too bear!

Predictably, he was not too good with money, spending the goodly sums he had made from his patents freely in the pursuit of his researches. He was often scrambling for funds. Still, it is worthwhile to note his generosity to those who had befriended him; Westinghouse, at one point, found his company on the ropes. He did not have enough money to pay Tesla and stay solvent. Tesla, of his own free will, signed an agreement abrogating his rights to certain royalties so his friend would not go bankrupt. This act cost him an enormous amount of money over a long period of time. Had it not been for this, Westinghouse probably wouldn't exist today.

Sadly, Tesla wrote little down, and many of his ideas have been lost as a result. One particularly lamentable loss is his uncompleted experiments on a scheme of broadcast wireless AC power distribution. Still, we know today that modern power systems, as well as all radio systems, owe their existence to him, (He invented the very concept of the tuned circuit!) As a matter of fact, the U.S. Supreme court ruled in 1947 that Tesla, NOT Marconi, was the true father of radio.

Caring little for money and wishing only to be left to pursue his studies in peace, Tesla died at an advanced age in a hotel nearly penniless and sinking into obscurity. Yet today we can appreciate a man at once a genius, a gentleman, and a great pioneer of radio. Increasingly, he is being re-discovered by a generation that hardly knew his name. After reading his autobiography, one cannot help but feel that one of the best examples of the human race lived and walked among us for a time.

If you'd like to know more about this remarkable man and his work, look for any of the following books:

1. "My Inventions," by Nicola Tesla, Hart Brothers, Williston, VT 1982.
2. "Nicola Tesla, Giant of Electricity," Crowell & Co., New York, NY 1961.
3. "Lightning In His Hand," Omni Publishers, Hawthorne, GA 1964.
4. "Tesla: Man Out Of Time," Dell, New York, NY 1983.
5. "Prodigal Genius," John O'Neill, Angriss Press, Hollywood, CA 1981.

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Almost Free-Lunch Monitoring Software?

Maybe—Read On!

Last month we gave you a barrage of reviews of commercial radio-related software and promised more would follow this month. Well this month we have more software, but with a different approach. The programs that we will look at will all be either shareware or public domain software. What does this mean? In a word ... CHEAP. In the words of Data Outlet Shareware (PO Box 776, Macon, GA 31202-0776; 1-800-347-4306), who has provided this software: With commercial you pay, you get, you try. With shareware you get, you try, you use and then you pay. I define public domain as: you pay a small handling fee and then you're on your own.

From the author's point of view; the public domain author has donated his work to the public to further the subject of his program. Usually he offers no support or fixing of bugs encountered by users. The shareware author, on the other hand, is expecting a monetary return for his efforts, albeit on the honor system. The users who would like support from the author in the form of bug-fixing revisions and answers to user questions, will send the author a reasonable "user registration fee"; pertinent registration information is included as an opening screen of the program or in a README file.

Companies such as Data Outlet Shareware will sell you a disk containing not only one, but several shareware programs to review for about \$4.00 per disk plus shipping and handling. Even at this incredibly inexpensive price, is it worth it? Are they really of use to the radio monitor? Let's begin by looking at a few such programs.

The first thing you will encounter trying to use shareware programs is that you cannot run the programs directly from the disk. In order to cram sometimes up to fifteen programs on one disk, the programs are compacted into a special format which takes less disk space. Data Outlet Shareware uses a program called UNZIP which is included on all disks and performs this expansion function. A word of caution: have plenty of formatted blank disks or hard disk space available before "unzipping."

Once a program is ready to use, it's like a treasure hunt to figure out where the author has put the basic instructions on how to set-up and use the program. They may be included in the program itself and appear when you run the program, or more likely, are in a separate file. The name of the instruction file is usually something like

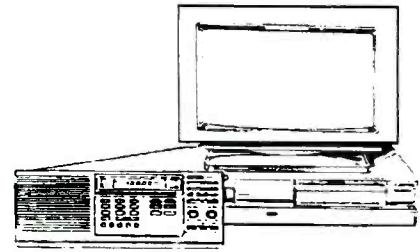
README.DOC or PROGRAM.TXT. I'm sure most of you know that these types of text files can be displayed on your screen by the command TYPE and then the full name of the file (for example: TYPE README.DOC). Using the CTRL key and the NUM LOCK key you can stop the text from scrolling down the screen. Hitting the space bar will re-start the scrolling. Typing PRINT README.DOC will print the instructions on your printer, but be sure to have plenty of paper ready.

And now we're ready to try a program called MINIPROP, Ionospheric Propagation Predictions, Version 2.0. The name describes its function. As you will discover from the 34 pages of instructions and excellent tutorial on ionospheric physics (in MP.DOC), catching rare DX stations on short-wave is not totally a roll-of-the-dice game of chance. Parameters such as seasons, solar activity and local time of day, at both the transmitter location and your monitoring site, are important factors which can indicate the "best" times and frequencies to use for listening. MINIPROP allows you to determine the optimum times and frequencies for hearing a station from a specific location on earth.

Starting the program by typing MP brings up the Main Menu. Pressing the "1" key starts a propagation prediction by asking you to input your target station's location, called TERMINAL A, latitude. If you don't know your coordinates and since most of these programs are written for our ham radio brethren, MINIPROP lets you input the ham radio call sign prefix for the location and then looks up a large city's latitude and longitude in its database. For example JA for Japan. The process is repeated for your listening location; for example, New York/New Jersey area=ham prefix W2. Next you input the date for which you want the prediction and, of course, the sunspot number or solar flux.

What?! You mean you don't keep the solar flux posted in your house on an hourly basis? Just kidding. You can receive this information on WWV (5, 10, 15 and 20 MHz) at eighteen minutes past every hour.

Then the program goes to work putting on your screen the compass bearing from your receiver to the station, both long path and short path, path length in kilometers and miles, local sunrise and sunset and the location of the grey (day/night) line on the earth.



There's more: A key press brings up a chart listing the maximum usable frequency (FMUF) and the minimum or cutoff frequency (ECOF) for every two hours of the prediction day. In addition, relative signal strengths that can be expected on five user chosen frequencies are displayed. Pressing the G key shows you the time/frequency data in Graph form—my preference for quick visual assessment. Other options allow you to print the information on the screen or return to any screen or the main menu.

So is MINIPROP worth the money? I'll let you be the judge. The cost of disk AM01.3, which contains MINIPROP, is \$3.50 plus shipping and handling. HOWEVER, for that price you also receive SIXTEEN other programs on AM01.3, although on closer inspection, three of the sixteen are either earlier versions of MINIPROP or are essential to the running of the MINIPROP program. But that still leaves thirteen others. Let's look at another program on the disk, DIPOLE.BAS in the DIAPCOIL sub-directory. Don't forget, the file must first be unzipped and transferred to a new disk.

Notice the .BAS? This indicates that the program is a basic file and requires a Basic language, such as GWBASIC 3.22, to be loaded before it will run. Selecting F3, LOAD, and typing DIAPCOILDIPOLE and then F2, RUN, starts this reduced length dipole antenna design program. Let's say I wanted to have an antenna that was made for listening to the BBC. The first question asks the operating frequency. For this case it is 15.070 MHz.

This program promises to customize the antenna to your space limitations by asking you the total length you want the antenna to be and then calculating the antenna loading coil you will have to wind. Let's say 40 feet.

Now it asks "Feet from center to loading coil?" Since this program replaces the longer resonant length of the antenna with loading coils, this question asks where you want to position them on the wire. For convenience, say eight feet from center of antenna.

Knowing we are going to use #16 gauge wire to make our antenna, the next question is answered. The program does its stuff and comes up with the ambiguous answer of -3.1 microhenries.

What does that mean? Got me. How do I build it? Who knows! AHA!! Welcome to Public Domain. Useful to some, but not most. This

program is found again on the disk called Dipole2.

Well, the huge amount of programs on the disk are quickly being reduced. Let's look at one more titled RDSSTV2, a program to decode and display slow scan tv images found in the ham bands on 28.640, 7.171, 14.230, 21.340 and 3.845 MHz. The directions are very simple and clear for connecting the audio from your receiver to the game control adapter of your PC. Tuning is made easy with a slow and crude, but adequate input level graph. And away you go. The program includes images that you can load and display, store function for your new off-air images and a few more goodies. By tapping the fire button on your joystick you can give the program a quick test before you go frequency hunting. RDSSTV2 adds another mode to our radio monitoring hobby in the form of slow scan tv reception.

So what's the verdict? Shareware, like anything these days, must be purchased carefully. Don't be fooled by the seemingly large number of programs you get for your money. Most are poorly documented, of limited use and cannot compare with high quality commercial software. However, if you can identify one or two programs, like MINIPROP and RDSSTV2, on a single disk, the value at \$3.50 is outstanding. These are the exceptions to the rule, "You get what you pay for." Go for quality, not quantity.

One further caution. The high handling charges from most shareware companies are clearly to encourage you to buy more than one disk since the charge covers the first several disks ordered. Make sure the second disk is as valuable as the first if you want to spread the handling costs. Data Outlets' AM01.3 disk is one of those winners in my opinion. It also includes a number of satellite location programs for OSCAR listeners and Sat TV people. However, although the "bird" data can be manually updated in the programs, the included data is suspect due to the birth dates of the programs which go back to the 1980's.

The current Data Outlet catalog lists fourteen disks under the Amateur Radio heading. I would recommend looking at disks AM 1.4 (formerly 1.3), 2.3, 6.2 (WEFAX), 11.2 (Control Interfaces-Beware: I couldn't get most to work, but interesting for the one that did) and 13.1 (logging & TNC interface). In most cases don't expect a free meal, but with careful searching you can find a light-lunch or snack.

If any other shareware companies are listening and contact me through *MT*, I will pass on radio related program titles. Don't forget to look for shareware distributors at ham shows where you can save the shipping and handling charges.

ScanCat Update

Leaving shareware for the moment, the SCANCAT Guys, J&J Enterprises, have totally revamped SCANCAT. The new version adds to the impressive array of existing functions with spectrum graphs for selected radios, an increased number of radios with which it interfaces (almost universal) and list presentation of the database. In addition they are now offering cables for squelch controlled scanning. The one for the ICOM is out and others are about to become available. Check their ad in this issue for the latest details. We'll be revisiting some already-reviewed software packages in the near future.

Don't forget to enter the Message Catcher (see "Radio Accessories" ad) give-away contest detailed in last month's column. You gotta be in it to win it. Here are the questions:

1. Whose job has it been to read frequency lists to me over the years?
2. What software/hardware functions are included in a "total monitoring environment"?
3. What parameter on a serial port sets the data "speed limit"?
4. Which software, radio and computer do you currently use with your radio hobby?
5. Which software do you not currently own, but are considering purchasing?

Finally, to all those who have sent in questions with SASEs, I hope I have been of help. For those of you who have not received a reply, be assured you will. Keep your suggestions and comments coming.

MT

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How to Build High-Q Coils

Perhaps you are wondering why anyone is concerned about the Q (quality factor) of a radio coil. After all, isn't a coil a coil?

Not really! Certain types of circuits require coils with high Q in order to perform a given task properly. Such applications are associated with tuned, narrow-band circuits. For example, part of a receiver's selectivity is determined by the sharpness or rejection ability of the early stages (near the antenna) in the circuit. The higher the tuned circuit Q the better the "front end selectivity," as it is called.

High-Q tuned circuits in this part of a receiver help to reject strong signals that are near in frequency to the one you wish to monitor. The better the front-end selectivity the less chance for receiver overloading if there is a very strong signal near the one of interest.

Additional receiver selectivity is, of course, obtained at the IF (intermediate frequency) of the radio. Here we use IF filters that are of the ceramic, crystal or mechanical varieties. The IF filter is chosen to provide the *overall* bandwidth of the receiver. Our IF filter may be designed for AM, SSB or CW bandwidths—wide, medium or narrow, respectively. High Q is required also in the IF filter if it is to yield the desired narrow bandwidth or selectivity.

What Determines Coil Q?

Q is dependent upon (1) the effective ac or RF resistance of the length of wire used to wind the coil and (2) the quality of the coil form dielectric (insulating material) substance. There is also a third consideration with respect to Q: The form factor of the coil plays a role in the Q obtained. Form factor is the ratio of the winding length to the coil diameter. Generally speaking, a 1:1 form factor ensures the highest Q, although I have found form factors up to 2:1 quite satisfactory.

Finally, the coil should be spaced well away from conductive objects, such as shield cans, metal chassis and metal panels. Make certain that your coil is a least one coil diameter away from metal objects.

Getting back to the coil resistance versus Q, the greater the wire resistance the lower the Q, and hence the broader the response of the tuned circuit in which the coil is used. How may we reduce the effective ac resistance of our coils? The answer lies in the use of large wire diameters.

RF current does not flow in all of the wire. There is a condition known as "skin effect." The lower the operating frequency the deeper the penetration of RF current, but it never flows all of the way to the center of the wire. Therefore, the smaller the wire the greater the resistivity to

RF or ac current. Increasing the wire diameter provides more conductor area for the RF current, and this reduces the effective resistance of the coil winding.

This is why some builders in the olden days used 1/4- or 3/8-inch copper tubing when they wound coils for their transmitters. Radio amateurs still use large diameter wire or copper tubing for the coils in high-power amplifiers and for loading coils that are used in mobile antennas.

We should acknowledge also that the efficiency of circuits is best when the tuned-circuit Q is high. In other words, the higher the Q the lower the circuit losses.

Most VHF and UHF coils are silver plated. This aids the conductivity of the coils, which lowers the resistance. The plating also discourages harmful oxidation, which can increase the resistivity of the coil wire—especially if copper or brass is used.

Coils that are wound on toroid cores of the correct material for the operating frequency (there are many core mixes or recipes) can produce very high values of Q. This is because the magnetic core material reduces the required number of coil turns and this, in turn, reduces the resistance of the winding. Irrespective of the type of coil used, toroidal or air wound, high Q may be thought of as 150 or greater. A low-Q coil may have a reading of only 10, 50 or 80, for

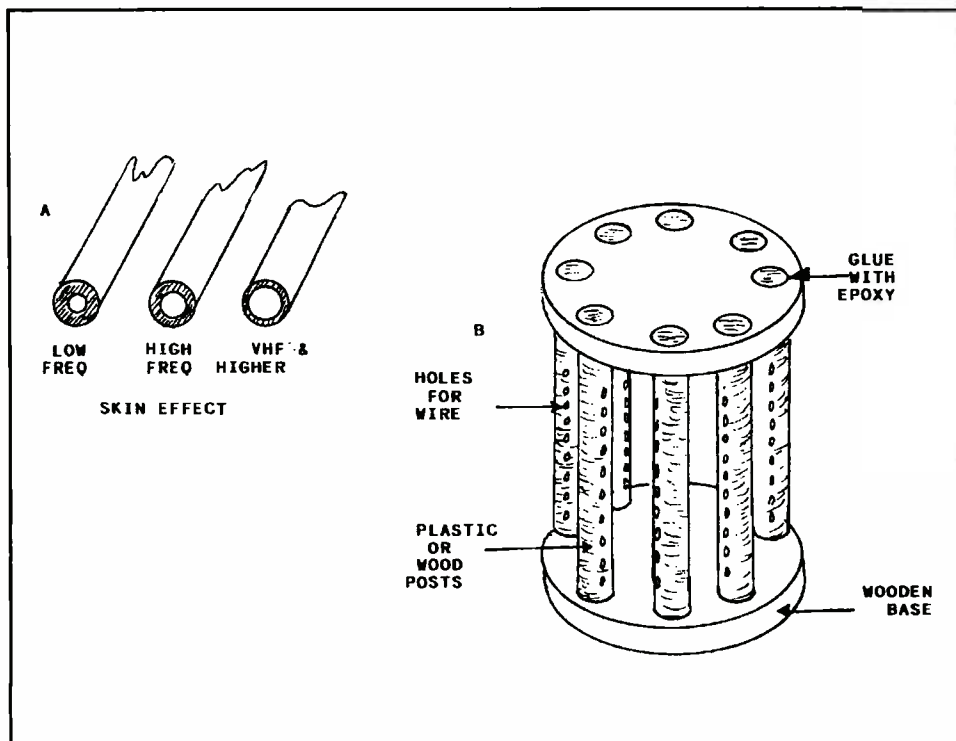


Figure 1: The illustration at A shows the relative penetration of ac or RF current versus operating frequency for wire of a given gauge. Note that the current flows deeper into the conductor at the low end of the frequency spectrum.

The drawing at B shows how you may build a coil form to obtain high Q. Although eight vertical posts are shown, you may reduce the number to six. The pillars may be drilled, as shown, to contain the wire used for the winding. An alternative method is to file notches in the posts, into which the wire is laid and glued.

example. Qs as great as 500 are not uncommon for well designed air-wound coils. Q may be measured with a commercial Q meter or while using a signal generator and an oscilloscope, as detailed in *The ARRL Electronics Data Book*.

Coil Form Insulating Material

Air-wound (self supporting) coils have the least loss and yield the highest Q. Commercial Miniductor stock, such as that manufactured by the B & W Company, has high Q. Ceramic or steatite coil forms, especially when glazed, are excellent for use when winding high-Q coils. Plastic materials such as polystyrene, Delrin, Teflon and fiberglass are suitable also. At the low end of the Q scale are coil forms made from wood, PVC tubing and paper-base phenolic.

How to Build a Large, Hi-Q Coil

I mentioned earlier that air-wound coils have high Q. We can approach the quality of a self-supporting air-wound coil by building a coil form with ribs. The major portion of the coil has air as the dielectric when this is done. Large coils of this type are often used for resonating short antennas. They may be used also in the tuned circuits for RF power amplifiers and antenna tuners. Figure 1 shows how to construct a coil of this type.

The vertical support rods may be made of plexiglass tubing or rod material. If you do not have access to a plastics dealer you can use wooden dowel rod for the supports. The doweling should be boiled for 15 minutes in canning wax or bee's wax to impregnate the wood. This keeps the wood from absorbing moisture and dirt, which would spoil the dielectric quality of the wood and degrade the coil Q.

Avoid using nylon rod or tubing for any RF coil. It will actually become hot and melt under high power at the upper end of the HF spectrum and in VHF or UHF circuits. PVC will act in a like manner under the foregoing conditions.

Wood is suitable also for the top and bottom plates of the coil depicted in Figure 1. The end plates should be treated with canning wax or finished with polyurethane lacquer or spar varnish. This will prevent the absorption of moisture.

The support rods are inserted into the end plates to provide a snug fit. The ends of the rods are abraded and coated with epoxy cement before they are inserted into the end-plate holes.

The vertical ribs can be notched to keep the coil wire in place. A drop of epoxy cement may then be placed at each anchor point to affix the wire to the ribs. Alternatively, you can drill holes in the ribs and thread the wire through them. Remember that the larger the wire diameter the greater the Q. The turns should be spaced one wire diameter from one another. Try to maintain the 1:1 form factor for the winding, as mentioned earlier.

In Conclusion

I have seen small coils that were made as shown in Figure 1. The builders used ordinary wooden house matches (heads removed) as ribs, after they were boiled in wax. Plastic knitting needles can be cut to suitable length for use as ribs, should you wish to make small coils.

Large coils with considerable inductance are handy for increasing the electrical length of short wire antennas. For example, if you do not have sufficient room for a full-size quarter-wavelength end-fed wire, you can resonate the antenna to 1/4 wavelength by placing the loading coil in series with the wire. The turns on the coil are shorted (from either end) until the signals peak in strength at the operating frequency.

Do not short circuit the coil turns at points other than the ends of the coil. If you do, the coil Q will be ruined. In other words, don't short turns along the midsection of a coil.

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Switches and Switching Techniques

One of the most useful and vital of all electronic components is the switch. It is also one of the most misused, abused, boring and least understood of all electronic components.

Oh? What's so hard to understand about making and breaking a connection, you ask? Well, in simplest form, there is nothing to misunderstand since if you cut a wire, current can't flow; splice the cut ends back together and current flows. A switch just conveniently does the cutting and splicing for you.

Radio Frequency (RF), solid-state, and digital technologies, however, demand more to switching than just cutting and splicing connections, though you can still think of it that way. Switches come in many shapes, styles, sizes and varying degrees of convenience, but there are two basic types: electro-mechanical and electronic. You are probably most familiar with the first, an example of which is the common, everyday wall switch that turns on/off the lights. Mechanical switches

are dull, boring and easy to use. Yuk. Almost equally boring are the much smaller toggle switches that we use in many of our electronic projects, rotary, rocker, slide and the more modern DIP switches. Only a bit more classy is the electro-mechanical relay.

While all these have their place in electronics, there is little to get excited about. But, this represents ONLY the tip of the iceberg in terms of real world switching needs. In typical scanner and shortwave radios, dozens, even hundreds of switching actions take place inside the radio without you even knowing it. These various electronic switches are exciting and pertinent to the hobbyist.

Thanks to modern technology, electronic switches are not only readily available, but also easier to apply and use than their mechanical counterparts. On top of that, electronic switches make possible many circuits and functions that are impossible or not feasible with mechanical

switches.

The simplest electronic switch and one of the easiest to apply is the silicon switching diode, 1N914/1N4148. (#276-1620 & 276-1122 at Radio Shack) Figure 1 shows some practical examples of diode switches: FIG-1A is an all purpose, audio/IF/Low RF switch. FIG-1B is a typical diode switch for a crystal oscillator (as many crystals as desired can be added using the techniques shown). FIG-1C shows how to use diodes to switch between IF filters; a technique that's essential if you take your receiver's selectivity seriously.

Neophytes sometimes use mechanical switches for RF and IF signals and then wonder about the poor results or ill-effects! RF and high-speed data signals are best confined to very short paths, but there is rarely a short path to a convenient toggle switch on a front panel when a crystal oscillator or IF filter is buried deep within a radio.

A diode switch allows crystals to be switched at the oscillator where RF paths can be kept very short. The convenience of a toggle or rotary switch can be retained because switched DC controls the remote diode(s) to turn them ON or OFF. When a silicon diode is forward biased with a voltage greater than about 0.6v, it becomes conductive: (-0.6v on the cathode with respect to the anode, or +0.6v on the anode, with respect to the cathode.) When a diode is not biased, or when it is reverse biased, it doesn't conduct. (A switch with no moving parts!)

The resistors, chokes and capacitors shown in Figure 1 are simple supporting networks to limit the current through the diodes; to isolate the RF path from the DC switching circuit; and to keep RF from escaping the area of the diodes. 1N914 or 1N4148 diodes are eminently suited for switching IF filters (Wide, Medium, Narrow, etc), crystals, low power RF circuits of all kinds and even antennas!

Generally speaking, diode switches are best for small signal circuits and very low power switching needs. When current requirements exceed roughly 50-ma, and/or where voltages exceed 16-35 volts, there is a better electronic switch and just about as simple: the common silicon transistor! Limited only by current and voltage maximums, the transistor is a rugged and extremely useful switching device!

Figure 2 shows practical examples of transistor switches which are designed to turn things On & Off, depending on the bias voltage at the Base of the transistor. FIG-2A offers a simple NPN transistor switch that's useful for lots of possibilities. FIG-2B is a PNP counterpart.

Pay attention to the direction of current flow as shown when using either of these two switches. Like the diode, a 0.6v bias across the emitter-base junction of the transistor is required to turn

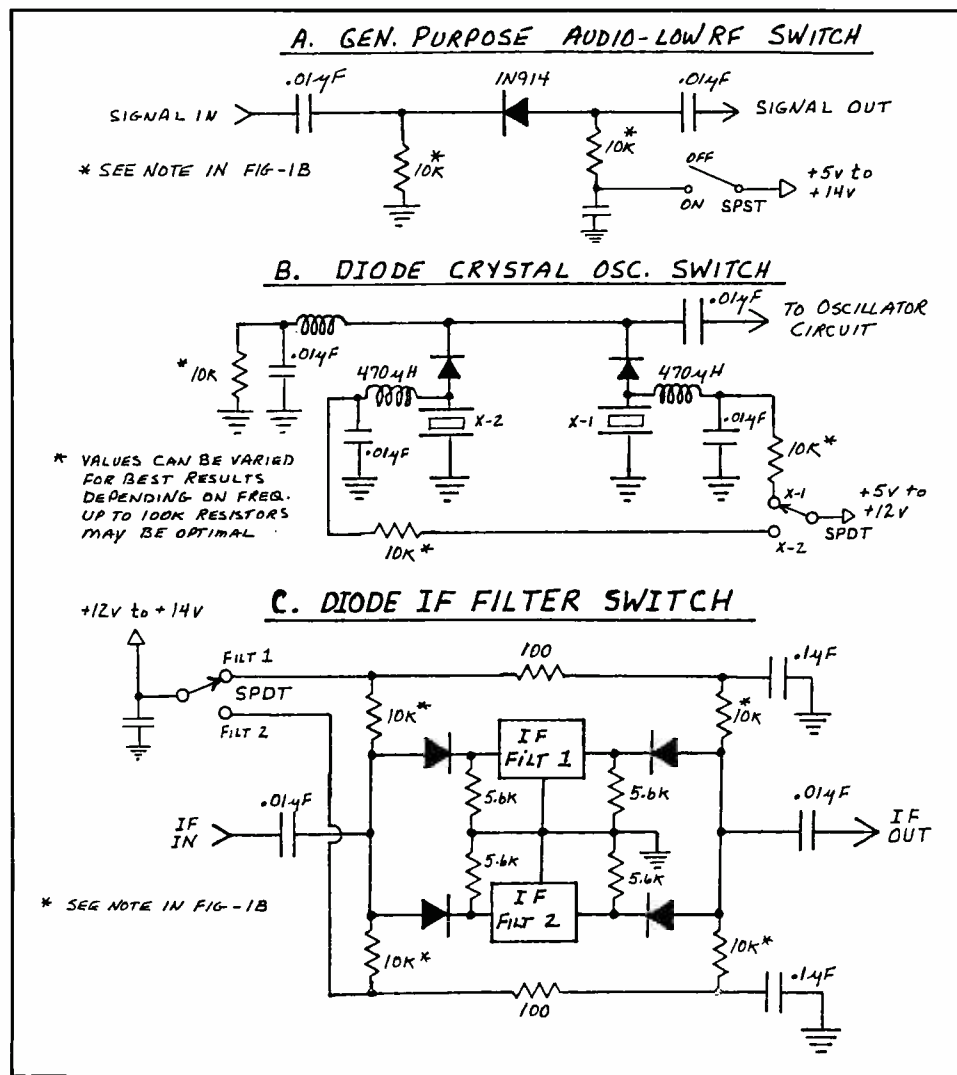


Figure 1: Diode Switches

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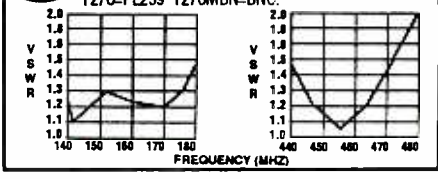
SPECIFICATIONS

The T270 mobile dualband motorola (NMO) mount antennas are designed to provide years of satisfactory operation. They bring dual band operation to discriminating users of both amateur and commercial equipment. These antennas are designed to enhance the capabilities of portable equipment. The NMO mounting is a reliable method to ensure good continuity for many years to come. These antennas are supplied with a spring loaded positive pressure contact. VSWR at resonance is typically 1.5:1 or less. Power rating is 200 Watts P.E.P. Unity gain 140-170 Mhz, 2.5 db gain 440-470 Mhz, Weight approx. 1lb., Color: Black; Impedance: 50 ohms

\$23.95 MODEL # T270M MODEL # T270MBN

SPECIFICATIONS

The T270M and T270MBN mobile dualband magnetic mount antenna kits are designed to provide years of satisfactory operation. They bring dual band operation to discriminating users of both amateur and commercial equipment. These antennas are designed to enhance the capabilities of portable equipment. The heavy duty magnet insures reliable operation at speeds up to 100 M.P.H. The base comes with a protective mylar to prevent damage to any mounting surface. These antennas are supplied with 12' of RG58A/U coax and a choice of connector T270-PL259 T270MBN-BNC.



PASSPORT'S "RDI White Paper" equipment reports contain virtually everything found during IBS' exhaustive tests of premium receivers and antennas. These reports are available in the U.S. from Universal Radio, EEB and DX Radio Supply; in Canada from PIF Books by Mail, Box 888, Hawkesbury, Ontario K6A 3E1; in the United Kingdom from Lowe Electronics Limited, Chesterfield Road, Matlock, Derbyshire DE4 5LE, England; in Australia and New Zealand from IBS Australia, P.O. Box 2145, Malaga WA 6062, Australia; and in Japan from IBS Japan, 5-31-6 Tamanawa, Kamakura 247. For a complete list of available reports, please send a self-addressed stamped envelope to RDI White Papers, Box 300M, Penn's Park PA 18943 USA.

it on; no bias or a reverse bias turns it off. A classic application of the transistor switch is to start & stop a tape recorder as signals come and go.

There are two practical ways to activate such a transistor switch: (1) use the receiver's SQUELCH gate (signal) to turn the transistor ON and OFF, or (2) use a sampling circuit for voice/audio signals to switch the transistor. Most scanners and other receivers with SQUELCH have a circuit that rests at 0v when no signals come in, and which rises to +5 to +8 volts when signals are received. SQUELCH circuits operate from this signal, and so can your Remote Tape Recorder Switch!

FIG-2C shows a practical SQUELCH-operated Remote Tape Recorder Switch. Because RF is not involved here and because tape recorders can demand various amounts of current, our Remote Tape Recorder Switch uses a relay to do the actual remote switching, but the transistor is the key to automatic control of the relay. An SPST toggle switch deactivates the circuit as desired to avoid needless relay chatter. An

optional LED signals the activation of the relay and subsequently the recorder. The LED is a (COI) "Carrier On Indicator."

The SQUELCH controlled circuit is best called a (COR) "carrier operated relay" while a voice-derived controller is called a voice-operated-relay (VOX). The VOX version of this circuit (FIG-2D) is identical to the SQUELCH version in FIG-2C, except that instead of sampling a mysterious SQUELCH signal, it can be controlled from the radio's EXTERNAL SPEAKER or HEADPHONE jack for unattended, remote recording. Audio signals are detected and converted to a DC bias for the transistor switch by the germanium diode circuit; otherwise, operation of the VOX and COR circuits is identical.

There are other variations of transistor switches and even more of other types of electronic switches that we haven't discussed here. We'll cover more next month to round out your immediate needs for high-tech switching circuits.

MT

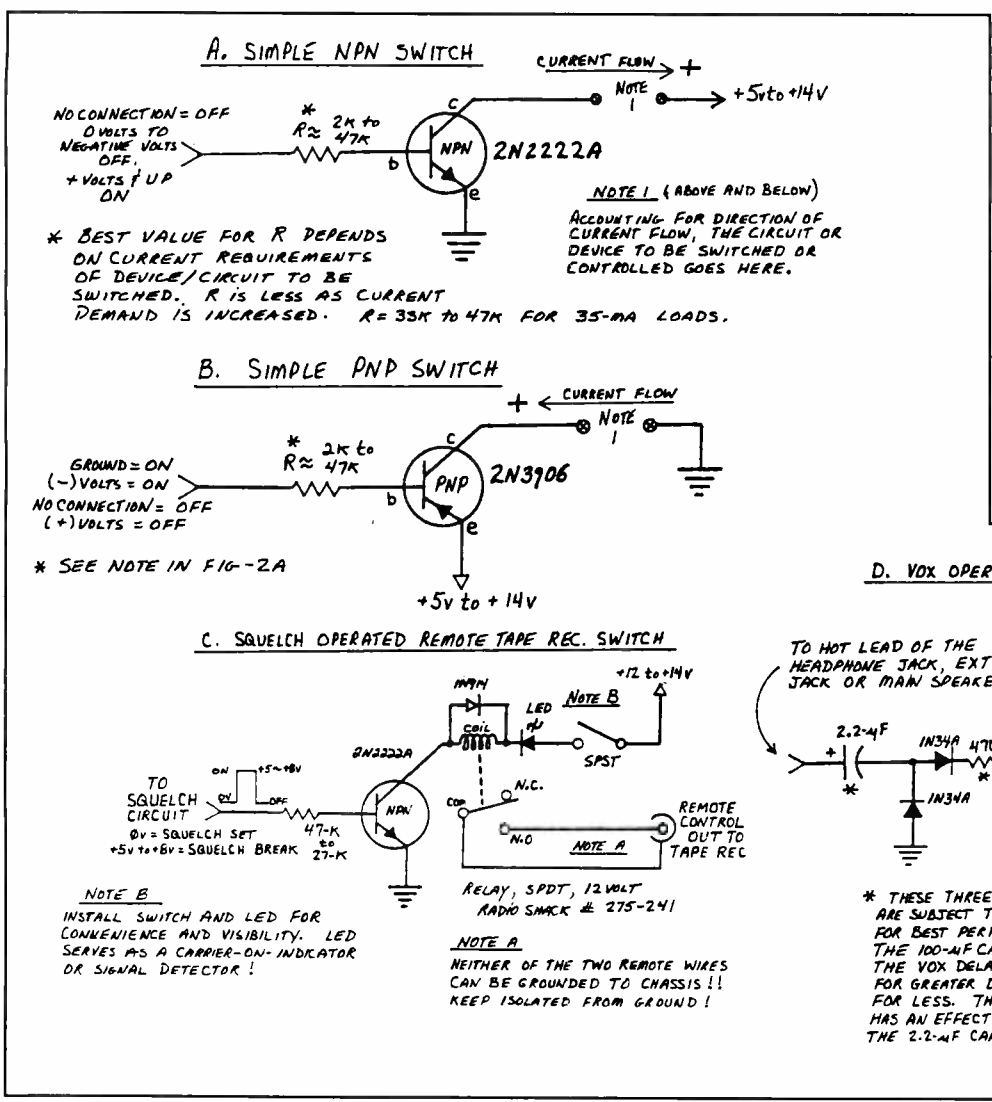


Figure 2: Transistor Switches

Using an SWR Analyzer to Optimize Your Antenna's Performance

The majority of today's most popular antenna designs are for resonant antennas: antennas tuned either to a specific resonant frequency or tuned to be roughly resonant across a band of frequencies. Chances are good that the antenna which you use is constructed from a resonant antenna design.

Some examples of resonant antennas are the halfwave dipole, the grounded quarterwave, the quarterwave groundplane, the coaxial colinear, the Yagi-Uda beam, the various log-periodic designs, and the cubical quad. Resonant designs also account for many other antennas in use today.

All of these antennas work best when they actually resonate at the frequency or band on which they are utilized.

Antenna Resonance

Have you ever noticed that a string on a musical instrument will sometimes vibrate (you will hear it sound) if another instrument plays the note to which the string is tuned? Because a musical instrument string is tuned to a particular note or audio frequency it will respond to that note much better than to any other note which vibrates the air around it. Other notes which are much different in frequency than the string's frequency just don't give the string enough excitation to make it audibly sound.

The string's response to various audio frequencies is similar to the way most antennas respond to radio frequencies. Most antennas respond to a radio signal best when the frequency of that signal is the same as the frequency to which the antenna itself is tuned. The frequency to which the antenna is tuned is said to be the "resonant frequency" of the antenna.

Just as a musical instrument string sounds out loudest when stimulated by a note of its own resonant frequency, a resonant antenna will give optimum output to the receiver when energized by a signal with a frequency identical to its own resonant frequency. Making an antenna resonant to a specific frequency will make it more sensitive to signals with that specific frequency.

For receive-only installations, tuning your antenna to resonance may not make a noticeable difference in the your reception of strong or moderate strength signals. But for weak signals it can make a worthwhile difference. And for antennas which are used for transmitting, tuning the antenna to resonance can make a significant

contribution to your transmitted signal's strength.

How to Confirm the Resonance of Your Antenna

The most common way to make an antenna element resonant is to calculate the length of the element with an appropriate resonance formula. For instance, the length of a resonant halfwave dipole wire element is determined by:

$$\text{Length in feet} = 458 / \text{operating frequency in MHz}$$

But once we mount the antenna in place we may be concerned that nearby objects could be detuning the antenna. It may be worthwhile to check to see if the antenna's resonant frequency, after it is installed, is what we planned it to be. In

this case, test instruments can be used to determine antenna resonance. Instruments which may be used for this purpose include dip meters such as a tunnel-dip, FET-dip, or grid-dip meter; the noise bridge; and the SWR meter.

To use a dip meter to check an antenna's resonant frequency, the meter's tuning-coil is usually placed against the antenna wire at the center of a halfwave antenna element and is tuned for a dip in the meter reading. This dip indicates the resonant frequency for the halfwavelength element. Dip meters are relatively difficult to use with antennas, and require considerable skill and experience for effective utilization.

To use a noise bridge to determine antenna resonance you may attach the bridge to the antenna and to a receiver which is then tuned for minimum noise. The frequency at which minimum noise is found is the resonant frequency of the antenna. Using a noise bridge is simple and easy.

It is most convenient to make antenna resonance measurements at the receiver end of the feedline, instead of out at the antenna itself. This is particularly true if the antenna is high above ground. For such convenience with either the dip meters or the noise bridge, we may connect the test device to the antenna with a feedline which is a multiple of a half-wavelength of the frequency we're testing. However, a different length feedline is needed for each frequency at which the antenna is to be tested for resonance, and this can be a tedious job.

Checking Antenna Resonance with an Antenna Analyzer

An antenna's resonant frequency can be found by determining the frequency at which it presents the lowest SWR (standing wave ratio): this frequency is its resonant frequency. An SWR meter can be located at the antenna or on the operating table attached to the receiver end of the antenna feedline. Unlike the procedures for the noise bridge and the dip meter, the feedline length is not critical and need not be a multiple of a half wavelength.

For ordinary SWR meters, this considerable convenience is offset to some degree by the fact that most SWR meters require a separate source of radio frequency signals. For amateur radio operators it is possible to use their transmitters to



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furnish these signals. But for most monitoring enthusiasts, furnishing a source of radio frequency signals can present a problem.

At least one series of commercially available SWR meters—the MFJ SWR Analyzers—have their own built-in source of radio frequency signals. For instance, the MFJ-207 in this series, shown in fig. 1., covers from 1.75 to 30 MHz. These analyzers have a dial which indicates the approximate frequency setting. However, for acceptable precision you should monitor the 207's signals with your communications receiver or connect a digital frequency counter in the jack provided for that purpose. One SWR Analyzer with identical frequency coverage to the 207, the MFJ-247, has a built-in frequency counter. (See What's New, page 90.)

Other SWR Analyzers offered by MFJ include the MFJ-208, which covers the range of 142 MHz to 156 MHz, the MFJ-217 covering 30 to 50 MHz, and the MFJ-218 which covers 150 to 170 MHz. The analyzers can be operated either from batteries or from an 110VAC adapter.

In use, these analyzers indicate SWR directly; there are no computations or adjustments

necessary. Simply connect the analyzer to your antenna or feedline, set the frequency dial, and observe the SWR. To determine the antenna's resonant frequency, tune the analyzer for lowest SWR. An antenna system may give low SWR readings at several frequencies, but the lowest reading should indicate the antenna's resonant frequency. Calculating your antenna's resonance by the formula given above helps you to know where to start looking for resonance with the SWR analyzer.

Another feature of the SWR analyzers which SWLs or monitoring buffs will find useful is that they can indicate whether your antenna is too short or too long for resonance, greatly simplifying your efforts to tune your antenna. Additional features which the amateur radio operators among us will find useful are: adjusting an antenna tuner to match an antenna system before transmitting; and determining SWR for antennas, feedlines, and even power amplifier inputs.

These analyzers are available from MFJ Enterprises Inc., P.O. Box 494-MT, Mississippi State, MS, 39762, USA. In their recent catalog, the 207 lists for \$99.95, the 208 for \$89.95, the

247 for \$189.95, the 217 and 218 for \$149.94. There are also shipping charges.

Radio Riddles

Last Month

Last month I asked: "What does the "RG" in coaxial cable designations such as "RG-58" stand for?"

Did you guess it? Thinking of the function which coaxial cable performs for radio signals might guide you to the answer. "RG" stands for "radio guide" which tells us that, like the waveguide used at UHF, we can use coax to guide radio waves where we want them!

This Month

What is a "radioist?"

We'll have the answer to that, and much more, in your next issue of *Monitoring Times*. 'Til then, Peace, DX, and 73.

M₇

Q. *I understand that an international agency assigns all shortwave frequencies. How can I purchase lists from them on a periodic basis? (Bruce Tracy, Boulder City, NV)*

A. The International Telecommunications Union (ITU) of Geneva, Switzerland, is a consortium of cooperative member countries worldwide. Frequencies are coordinated by their International Frequency Registration Board (IFRB).

Publications from the ITU can be purchased from the United Nations Bookshop, General Assembly Building, United Nations, NY, NY 10017, or from the U.S. Dept. of Commerce, NTIS, 5285 Port Royal Rd., Springfield, VA 22161. For a complete catalog, request the List of Publications from the ITU.

Q. *The Radio Shack PRO2006 is an excellent scanner, but it is in a plastic case. Is it likely someone will manufacture a replacement metal cabinet for it? (B.G., San Jose, CA)*

A. No, for two reasons. First, even in a plastic case a radio can have excellent interference immunity if it utilizes good internal shielding. Second, producing custom metal cabinets is extremely expensive and it is doubtful that there are enough PRO2006 users concerned about their plastic cabinets to make it profitable.

Q. *What is the status of the new AM medium wave band expansion? (John Demmitt, Bellefonte, PA)*

A. The FCC expects to process the first applications for the new 1600-1700 kHz extension by the end of this year. Only presently-licensed broadcasters in the 540-1600 kHz band are eligible and, according to an FCC spokesman, licensees will be allowed to simulcast for five years using the same call sign on both frequencies.

Preference will be given to those licensees who intend to transmit in AM stereo. Motorola's C-Quam is the predicted winner over the Kahn system.

Power will be limited to 10 kW non-directional daytime and 1 kW non-directional at night. The entire phase-over is expected to take five to seven years.

So what happens to the Travelers' Information Service on 530 and 1610 kHz? They can now select any AM channel between 530 and 1700 kHz on a non-interference basis.

Coastal beacons, formerly profuse in the 1600-1700 kHz range, are expected to vacate.

Q. *Is there a quick way to discharge nicad batteries? I understand that constant overcharging reduces their capacity. (Dick Bisbee, Phoenix, AZ)*

A. While "memory" is a temporary condition, there can be a temporary reduction in capacity of nicads from overcharging. "Complete discharge" in a nicad means that the voltage is reduced from the normal 1.2 volts per cell to 1.0 (NOT dead as a doornail!).

For example, if you have a nicad battery rated at 9.6 volts, it must have 8 cells in it ($8 \times 1.2 = 9.6$); when totally discharged to 1 volt per cell, a voltmeter would measure 8.0 volts across the battery terminals.

Fast-discharge nicads with a number 1157, dual-filament, automotive light bulb, available in any discount store automotive department. Solder one wire to the two tips, another wire to the brass base. Connect these two wires to a hand-held's battery to discharge it in a few minutes.

Q. *Is it lawful to operate a scanner on a train? Civilian airport? Military airport? Aboard a plane? (Daniel Myers, Abington, PA)*

A. Yes. Yes. Yes in public areas. No unless you have the captain's permission.

Q. *Is there any way to add single-sideband receiving capability to a portable shortwave receiver that is AM only? (Michael Oreskovic, Burlington, Ont.)*

A. Yes, but not commercially. Once you determine the intermediate frequency (IF) of the radio, you can build a tunable beat-frequency oscillator (BFO) for that frequency; its output is fed to several turns of wire wrapped around the radio.

When an SSB signal is heard, turn on the BFO and adjust it for intelligible reception.

The unit works in theory, but its effectiveness depends upon the strength of the incoming signal, the output level of the BFO, and the

location and number of turns on the coupling coil.

Q. *You have previously mentioned that it is better to mount a scanner antenna on a PVC mast rather than a metal mast, unless the antenna is a discone. Can you explain? (Bob Gallardo, San Jose, CA)*

A. Any mass of metal parallel to an antenna—including its own feedline—will influence incoming radio waves. The effect varies with the size of the mass, the distance and direction to the antenna, and the frequency of operation.

Some antennas like discones and ground planes are intended to mount above the tower or mast and are fed by coax at their base. These antennas are unaffected by the nearby metal since it is all underneath, not parallel with, the active area of the antenna.

Q. *Can an inexpensive AM/FM portable radio be modified to listen to TV stations in the 54-88 or 174-216 MHz ranges? (Michael Oreskovic, Burlington, Ont.)*

A. Sure. The lower range is easiest since it merely requires retuning the oscillator and RF trimmer capacitors on the main tuning capacitor. The first technique will allow you to hear down to at least TV channel 6.

Technique 1

After removing the back, locate the square tuning capacitor which is attached to the tuning dial and note the four adjustment screws. Using a felt-tip marker, place a dot at the present position of each of the slots on those screws.

Turn the radio on (battery operation to avoid any shock hazard) and select a local FM station. Using a tiny screwdriver (preferably non-inductive), slightly turn each screw until you change the station; be sure to return the other screws to their original settings.

By turning the tuning dial you will note whether the station has moved higher or lower in dial setting—you want it to go higher. Continue to adjust the screw until it has moved as high as possible.

Now, as you tune the dial lower in frequency, you should hear the audio of one or two local TV stations. To make the signal stronger, adjust one of the screws adjacent to the oscillator screw you just turned for loudest signal. If you turn the wrong one, retune in to its original setting.

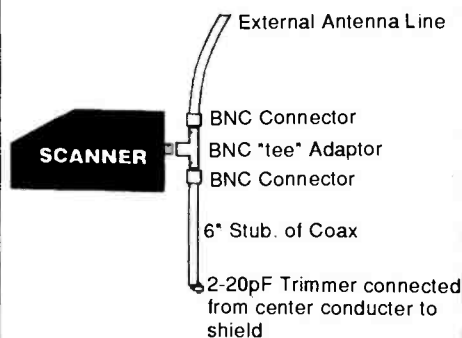
Technique 2

Without adjusting the tuning capacitor trimmers, locate the small coils adjacent to the tuner. While listening to a station, put your finger on each of the coils; one will change frequency—the oscillator coil.

Pinch the coil ends to compress its turns closer together; this will permit the radio to tune lower in frequency. If the coils are set in beeswax, it can be melted first with a soldering tool if necessary.

After the radio tunes its new range properly, squeeze the other coil for maximum volume on a weak TV signal.

Bob's Tip of the Month



A Simple Notch Filter for Scanners

While the Grove FTR5 offers relief from strong-signal overload problems in metropolitan areas, it is often only necessary—and certainly cheaper—to build a single frequency notch filter.

The simplest external device is a coaxial stub with a 2-22 pF (approximate) trimmer capacitor connected between the center conductor and copper shield at one end, and a BNC connector at the other.

The stub is connected to one side of a BNC tee connector which allows the stub and an antenna to be attached to the external antenna jack on the scanner.

With the stub in place, tune in the transmitting frequency you need to remove (not an image or intermod product) and adjust the trimmer for maximum rejection.

Maximum attenuation is about 30 dB, and the notch is rather broad, so don't expect to notch out a signal on 155.5 MHz and hear a weak signal on 155.4 MHz!

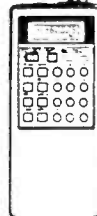
A six-inch length of coax tunes from about 80-170 MHz. The length of the coax in inches is found by dividing 1000 by the frequency in megahertz. Several stubs may be connected for different frequencies by using more than one tee (a "tee tree"?).

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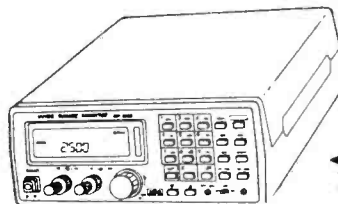
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Club Circuit

Club Profiles:

Monitor Communications Group

Serving members in a 30-35 mile radius of Philadelphia, PA, this group of radio enthusiasts is interested primarily in public safety communications, although all other two-way communications (utilities) are fair game as well. What makes this group different is that MCG members maintain contact with each other using their own 2-way radios.

MCG provides its members the use of a city-wide UHF repeater system. Members exchange information on late-breaking news events that develop within the coverage area, and can follow the action as the event unfolds.

Membership is not cheap, as it includes a license application fee, an annual repeater access fee, and the user must provide his or her own 2-way radio. A quarterly newsletter lists current membership, meetings and scheduled events.

If you live or work within the coverage area and want more information about joining MCG, write Louis Campagna, Ops Manager, Monitor Communications Group, 8002 Castor Avenue #143, Philadelphia, PA 19152-2701.

Regional Communications Network

A sister organization to Monitor Communications Group is the Regional Communications Network, which serves a 50-mile radius of midtown New York City. RCN started with two members and one repeater and now boasts 45 members and five repeaters. A 6th repeater is planned to link RCN and the Philadelphia group.

RCN's members are interested in communications from public safety to satellites, but public safety is the main emphasis. Many members of RCN are also public safety personnel themselves and will report directly from the scene during emergencies. With quick notification of breaking news events, members can listen in on current activities long before the public hears about it from the media. (Information detrimental to public safety personnel is not permitted.)

RCN does not have a publication at this time. For further information, send a #10 SASE and your area of interest to Bill Morris, Public Info. Officer, Regional Communications Network, Box 83-M, Carlstadt, New Jersey 07072-0083.

Northeast Scanner Club

Covering the large region of Maine through Virginia, the Northeast Scanning Club holds

itself together by means of its monthly, 64-page newsletter, Northeast Scanning News. The publication boasts 25 regional column editors, who rely on reader input. Each month's issue focusses on a "theme," such as Police, Weather, Federal Government, Disasters, etc. which regional editors address with stories, frequencies, agencies, etc. specific to their area.

The membership meets annually at a summer picnic, which is scheduled this year for June 6th at the Red Bank Battlefield in National Park, New Jersey.

Presently 750 scanning hobbyists subscribe to Northeast Scanning News. For more information write Les Mattson (editor and publisher), P.O. Box 62, Gibbstown, NJ 08027. A sample issue is \$2.50; annual subscription/membership is \$26 by bulk rate or \$36 for first class mail.

Club Listings N - Z

Don't see your local club listed this month or in last month's A-M listing? Write or call the Brasstown office to request a listing form for the Club Circuit.

Club Name: National Radio Club

Contact: Paul Swearingen, Publisher
Club Address: P.O. Box 5711
Topeka, KS 66605-0711
Region: Worldwide
Interests: AM/FM
Publications: DX News 30 times yearly
Sample for a 29 cent stamp

Club Name: North American SW Assoc.

Contact: Bob Brown, Executive Dir.
Club Address: 45 Wildflower Lane
Levittown, PA 19057
Region: Worldwide
Interests: Shortwave broadcast only
Publication: The Journal

Club Name: Northeast Ohio SWL/DXers

Contact: Mike Fanderys
Club Address: 5618 Velma Ave.
Parma, OH 44129
Phone: (216) 661-2443
Region: NE Ohio
Interests: SWBC and utilities

Club Name: Northeast Scanner Club

Contact: Les Mattson
Club Address: P.O. Box 62
Gibbstown, NJ 08027
Phone: (609) 423-1603 evenings
Region: Maine thru Virginia
Interests: UHF/VHF, public safety, aircraft, military
Publication: Northeast Scanning News (NESN)

Club Name: Ontario DX Association

Contact: Harold Sellers, General Mgr.
Club Address: P.O. Box 161, Station A
Willowdale, Ontario M2N 5S8 Canada
Phone: (416) 853-3169 voice & fax
(416) 299-6392 DX-Change information svce.
Region: Predominantly Providence of Ontario
Interests: SWBC, utility, MW, FM-TV, scanning, technical, propagation
Publication: DX Ontario

Club Name: Pacific NW/BC DX Club

Contact: Phil Bytheway
Club Address: 9705 Mary NW
Seattle, WA 98117
Phone: (206) 356-3927
Region: WA, OR, ID, BC
Interests: DXing all bands

Club Name: Pakistan SW Listeners Club

Contact: Mrs. Fatima Naseem
Club Address: Sultanpura, Sheikhpura 39350 Pakistan
Region: Pakistan
Interests: SWBC

Club Name: Pitt Co. SW Listeners Club

Contact: L. Neal Sumrell
Club Address: Rt. 1 Box 276, Sumrell Rd.
Ayden, NC 28513-9715
Region: Eastern NC
Interests: Shortwave bands
Publication: The DX Listeners

Club Name: Puna DX Club

Contact: Jerry Witham
Club Address: P.O. Box 596
Keaau, HI 96749
Region: Puna, HI
Interests: SW and MW

Club Name: Radio Monitors of Maryland

Contact: Ron Bruckman
Club Address: P.O. Box 394
Hampstead, MD 21074
Region: Maryland
Interests: VHF/UHF/HF utilities
Publication: Radio Monitors Newsletter of MD

Club Name: RCMA (Radio Communications Monitoring Assn.)

Contact: Carol Ruth, Gen'l Mgr.
Club Address: P.O. Box 542
Silverado, CA 92676
Region: North America, Europe, Australia
Interests: All modes above 30 MHz
Publication: RCMA Journal

Club Name: Regional Communications Network (RCN)

Contact: Bill Morris, Public Info. Officer
Club Address: Box 83-M
Carlstadt, NJ 07072-0083
Region: 50 mile radius of NY City
Interests: 2-way Radio Public Safety notification group

Club Name: Rocky Mountain Radio Listeners

Contact: Wayne Heinen
Club Address: 4131 S. Andes Way
Aurora, CO 80013-3831
Region: Colorado Front Range
Interests: All bands
Publications: Annual meeting calendar for an SASE

Club Name: Southern California Area DXers (S.C.A.D.S.)

Contact: Don R. Schmidt
Club Address: 3809 Rose Avenue
Long Beach, CA 90807-4334
Phone: (310) 424-4634
Region: California area
Interests: AM, FM, TV, scanner and shortwave broadcasting

Club Name: SPEEDX (Society to Preserve the Engrossing Enjoyment of DXing)

Contact: Bob Thunberg, Business Mgr.
Club Address: P.O. Box 196
DuBois, PA 15801-0196
Region: Worldwide
Interests: SWBC, utilities
Publication: SPEEDX-monthly newsletter

Club Name: Susquehanna Co. Scanner Club

Contact: Alan D. Gnick
Club Address: P.O. Box 23, Prospect St.
Montrose, PA 18801
Region: PA area
Interests: Scanning all bands

Club Name: Toledo Area Radio Enthusiasts

Contact: Ernie Dellinger, N8PFA
Club Address: 6629 Sue Lane.
Maumee, OH 43537
Phone: (419) 865-4284
Region: NW Ohio and SE Michigan
Interests: Shortwave, scanning, amateur

SPECIAL EVENT CALENDAR

Date	Location	Club/Contact Person
June 6	Knoxville, TN	ARRL Tennessee Convention-Hamfest/Angela Crigger, N4RPR 2707 Pine Hill Drive, Knoxville, TN 37932 (615) 694-9075 Location: Tennessee Valley Fairgrounds-Chilhowee Park 3301 E. Magnolia Avenue. Admission \$5, talk-in on 147.195+, 224.50- and 146.52 simplex.
June 7	Cheswick, PA	Breezeshooters 38th Annual Hamfest/H. Rey Whanger, W3BIS Box 8, RD #2, Cheswick, PA 15024-9451.
June 13	Loveland, CO	Superfest/CO Assoc. of DXers* Location: Lorimer County Fairgrounds, 8 AM to 3 PM.
June 13	Winston-Salem, NC	Winston-Salem Hamfest/Forsythe Amateur Radio Club P.O. Box 11361, Winston-Salem, NC 27116, (919) 785-3900 Location: Benton Convention Center, 9 AM - 5 PM.
June 14	Lancaster, NY	Lancaster Hamfest/Nick, WA2CJJ 5645 Genesee St., Lancaster, NY 14086, (716) 681-6410 Location: Elks Club Hall across from post office. \$4 admission. Talk-in on 146.550 or 224.640.
June 14	Muncie, IN	Muncie ARC Hamfest/Michael J. Mullen, N9MHZ P.O. Box 1003, Muncie, IN 47308-1003. Location: Delaware County Fairgrounds, 9 AM - 3 PM, talk-in on 146.73.
June 19-20	Albany, GA	Georgia State Convention/John Crosby, K4XA P.O. Box 1250, Albany, GA 31702
June 20	Cortland, NY	Skyline ARC Hamfest/Rick DuBrava P.O. Box 5241, Cortland, NY 13045 Location: Cortland County Fairgrounds, 7 AM to ? Talk-in on 147.180/780.
July 10-11	Maplewood, MN	Amateur Fair/Keith Mobarry P.O. Box 26331, St. Paul, MN 55126, (612) 653-9999. Location: Aldrich Arena, 1850 White Bear Ave. Friday: 6 PM to 10 PM and Saturday: 6 AM to 3 PM. Admission: \$6
July 11	Oak Creek, WI	South Milwaukee ARC Swapfest/Robert Kastelic, WB9TIK P.O. Box 102, South Milwaukee, WI 53172-0102, (414) 764-3235 ext. 58 Location: American Legion Post #434, 9327 S. Shepard Ave. 7 AM to 2 PM, \$4 admission, talk-in on 146.580 simplex.
July 11-12	Indianapolis, IN	ARRL Central Division Convention/Cornelius Head, WB9FQE 9046 Mercury Dr., Indianapolis, IN 46229.
July 12	Pittsburgh, PA	North Hills ARC Hamfest/Don Jackson, N3LAZ 8 Dale Ave., Bradford Woods, PA 15015, (412) 935-3343. Location: Northland Public Library, 300 Cumberland Road. Free admission, 8 AM to 3 PM, talk-in on 147.09.
July 12	Golden, CO	Denver Radio Club/CO Assoc. of DXers* Location: Jefferson County Fairgrounds, 8 AM to 3 PM.
July 18	Eau Claire, WI	Eau Claire ARC Hamfest/Lis Searing, N9EQR 1129 McKinley Rd., Eau Claire, WI 54701, (715) 834-1303. Location: Chippewa Falls Fairgrounds.
July 18-19	Atlanta, GA	Atlantic Radio Club/Vern Fowler, W8BLA Suite E-6, 4343 Shallowford, Marietta, GA 30062.
July 19	Washington, MO	Zero Beaters ARC Hamfest/Craig Brune, N0MFD P.O. Box 24, Dutzow, MO 63342, (314) 239-0060 Location: Hillerman Park, 6 AM to 3 PM, free admission. Talk-in on 147.240 & 444.900.
July 25	Brewster, NY	PEARLfest '92/Len Sanchez, N2KPM RD #11, Union Rd., Lake Carmel, NY 10512, (914) 225-8229 Location: JFK Elementary School, Foggintown Road, \$4 admission. 8 AM to 2 PM, talk-in on 145.130 MHz

*SASE to Colorado Association of DXers, P.O. Box 22202, Denver, CO 80222-0202 for information.

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to:

Monitoring Times Special Event Calendar
P.O. Box 98
Brasstown, NC 28902-0098

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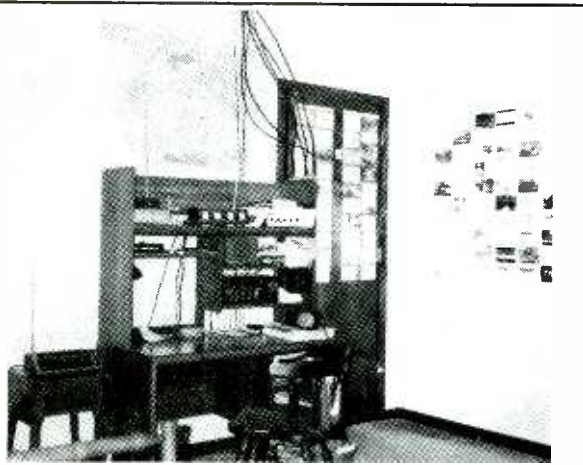
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Letters

Continued from page 4

Monitoring Post Pin-Up

Bob McPherson of Etowah, NC, shows us his shack which includes a Japan Radio NRD 525 and Bearcat 800XLT. He also has seven antennas in his attic.



battery to summon help after her van was forced off the road. Says Al, "Your 'Happy Ending' article in the Jan 1992 issue of *MT* does this 'Ole fuddy duddy' and the guy who pioneered CB and personal radio some joy. Once in a while I read about some good about CB, but not often."

It's a sad commentary on our times from a man who made a profound contribution to the development of handheld transceivers. In an article in *Mobile Radio Technology*, Tim McNary says, "Royal, a manufacturer of electronics equipment for hospitals, recruited a young engineer, Al Gross, to join his staff. Gross was recognized for his invention of the walkie-talkie. It was during World War II; the Offices of Strategic Services (OSS) called upon Gross to supply his compact miniature hand-held walkie talkies for a clandestine communications system that was highly successfully used behind enemy lines...Gross agreed to use his inventions to develop the radiopaging system."

The result was the first selective radio paging system, which, since it used citizen's band frequencies, did not require a license to operate, but on the other hand, could be heard only by the intended receiver.

Regarding the current disrepute of CB radio—"This, too, will pass." In the long run, the virtues of Citizen's Band—the lives saved, lonely hours filled, inconveniences avoided—will have been worth its development, regardless of its future disposition.

Long Distance Call

Arsenio Fornaro, who lived in Brazil for 20 years, is an avid monitor of Brazilian stations. Arsenio was DXing Radio Nacional on 1170 kHz, listening to music, sports, news, and live phone calls from people relaying messages to loved ones throughout Brazil.

At 2400 UTC, Arsenio and his wife, Carolina, decided they would try to call. "After a

couple of busy signals, someone answered and asked my name. Suddenly I realized I was on the air! ... The host asked where we were calling from and our origins and when we said we were from Brazil and resided in NY City, he displayed great satisfaction." After sending greetings to family, they said goodbye.

"The host made a positive comment about our call, but did not encourage others like us to call. I suppose this type of program is budgeted for people living and working in the remote areas of Brazil where communications is still difficult. But it was exciting when you think of talking live with millions so far away."

Disconnected

Robert Compton of Mertztown, PA, writes, "I spent my morning shaving time 7 April listening for the WCKB DX test that was announced on page 109 of the April issue.

"All I got for my trouble was the morning news on WBBM, Chicago—but—I did hear a number of tones between 0530 and 0600, which may have been from WCKB's test.

"I just wanted to thank you for publishing the notice of the test. It was my first experience at trying to catch one, and just yet another reason to keep on subscribing to *Monitoring Times*."

Thanks for the plug, Robert. I hope you'll try again when the DX Tests start up again next fall. You may want to join one of the radio clubs who sponsor the tests—the International Radio Club of America and the National Radio Club—for reliable advance notification of tests. Sometime we miss a few because of our deadlines.

That's a wrap for June. This month and next we'll be talking about monitoring while on the road or on vacation. If you give it a try, let us know what equipment you took, how it worked out, and what you heard. Send pictures and show us some of your good mobile monitoring times!

Rachel Baughn,
Editor

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Airing the Religious Issue

"I've little doubt that your editorial in this month's issue of *MT* is going to get a lot of irate response," begins a letter from Andy Melnyk, referring to Bob Grove's "religious broadcasters in perspective." On the contrary, these heartfelt responses were unanimous in their condemnation of the exploitative and self-righteous. We thought them worthy of this month's Closing Comments.

Paul Freed, Founder and President of Trans World Radio, Cary, NC

I agree with Bob Grove's "Closing Comments," although it might have been a more gracious gesture had he voiced them in an issue other than one which featured a religious broadcaster. But yes, there are too many today that use high-powered media to exploit and prey upon the gullible and guileless. In the hands of the amoral, religion is too often used as a means of making money and marketing products.

At the inception of my ministry I committed to never asking for money on the radio, never slandering another religion, and never becoming involved with politics. Today those remain fundamental policies of Trans World Radio...As a result we are one of the few international radio organizations that have never had its signals jammed by either China or the former USSR. Because of our gentle and culturally sensitive approach to sharing Christian values, our worldwide family of regular listeners is comprised of people from all religions of the world.

To be sure there are the drones, the greedy, and the manipulative that exist in religious broadcasting, but I guess you don't have to go too far in any endeavor or profession to find those who bring discredit to their peers. May I suggest, though, that there are far more exemplary Christians living lives of self-sacrifice and service who work today in Christian broadcasting.

Mrs. Leslie Edwards, Doylestown, PA:

The editor's words "I hope this issue has challenged you...to be a discriminating listener of religious broadcasters," have done just that. Bob Grove's words "...incessantly plea for contributions," hold a helpful clue: turn it off.

Broadcasters of high esteem who give inspiration and comfort through sharing the gospel, the "good news," are motivated by the idea of "freely you have received, freely give." A willingness to listen...tolerance, respect for another's choice, is a needed kindness, whether on the part of the broadcaster or the listener. But one can "be a discriminating listener" and either tune it in, or turn it off.

Andy Melnyk, Savona, New York:

My assessment of religious broadcasting is less lenient than Bob Grove's. The American religious broadcasting industry has what is probably the biggest collection of phonies, bigots, liars, frauds, and arrogant, narrow-minded, priggish snobs... There is nothing essentially different about the true motives behind the religious sham and what drives the directors of an oil company, with one difference: the

directors of the oil company do not cloak their profit and market share objectives in sanctimonious religious platitudes.

I was the Chief Engineer at a commercial AM/FM station for a few years, but having some religious motivation, I took a job as CE for a religious broadcaster. While working for the commercial station was a generally pleasant experience, working for the religious broadcaster was about as agreeable as sitting on a pile of manure on a warm day. It wasn't the work; it was the difference in management that made all the difference.

The religious broadcasting business I worked for was run by people who were self-deceived. They couldn't imagine themselves ever being wrong, not even when they were violating both the letter and the intent of the FCC rules and regulations pertaining to their stations...While their religious opinions and the right to publicize them are protected by the U.S. Constitution, many of these jerks could be prosecuted for fraud, misrepresentation and FCC violations.

The religious broadcasting industry, both the television and the radio portions of it, ought to be thoroughly audited and investigated by both Federal and State governments. It may be unfair in some respects to put the honest and sincere minority through this kind of ordeal, but it would be doing them a favor in the long run by weeding the field of frauds.

Such an investigation isn't likely to take place until we have either a president with a different political orientation or another major public scandal followed by a public outcry for a sweeping investigation.

Patricia Sweeney, Tuba City, AZ

I get very tired of hearing some man screaming about God for who knows how long because he has bought the air time. Freedom of religion is supposed to be a guaranteed right in this country, but these fanatics will not let anyone alone unless the listener converts to their belief system.

In its own way, this type of religion is as bad as atheism. I wish those broadcasters could hear how they sound. Perhaps it's up to the public to express its distaste at coercive, fear-based broadcasting. The Iron Curtain has come down; let's have more freedom of religious expression.

Rev. Joseph Cejka, Exeter, CA (responding to the fictitious claim that Madalyn O'Hair is petitioning the FCC to ban religious broadcasting)

Bravo! Your column rang bells with me. Just a few weeks ago I had to calm down a well-meaning, misguided, and overly emotional parishioner who was sure religious broadcasting was doomed. It took me a while to convince her it was a malicious hoax, similar to others: the vanishing hitchhiker, scientists drilling in Siberia and discovering Hell, and the porno film about Jesus.

While I admire and respect HCJB, TWR, RFPI, KSDA, et al, I wish KTBN and Gene Scott, co-religionists, would put a sock in it. They typify the worst in religious broadcasting.



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Display	10 Digit LCD w/Function Annunciators	10 Digit LCD w/Function Annunciators	10 Digit LCD	10 Digit LCD	10 Digit LCD	8 Digit LED	8 Digit LED
RF Signal Strength Indicator	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph
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