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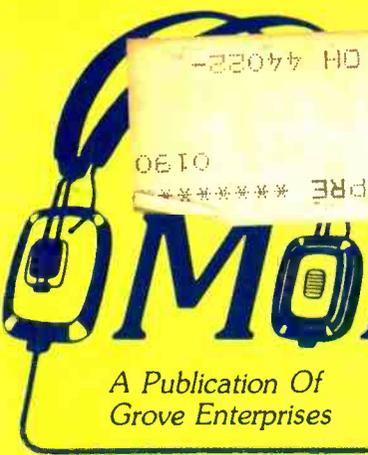
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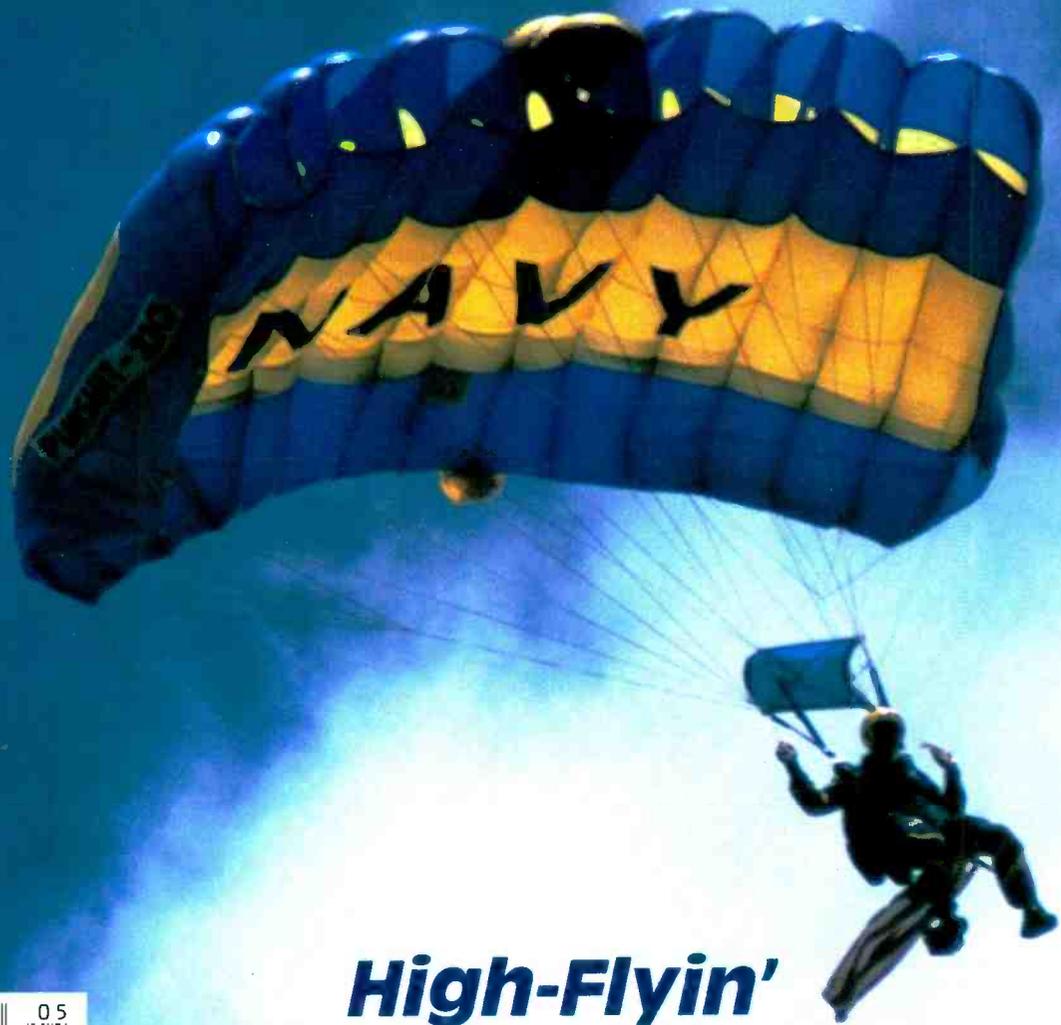
- KVOH: The Little Station That Wouldn't Quit
- Who's Listening to Shortwave? An Interview with the BBC's Graham Mytton
- KKN39: Federal Mystery Revealed
- See What You Can Hear! Program details and all the frequencies at a glance



MONITORING TIMES

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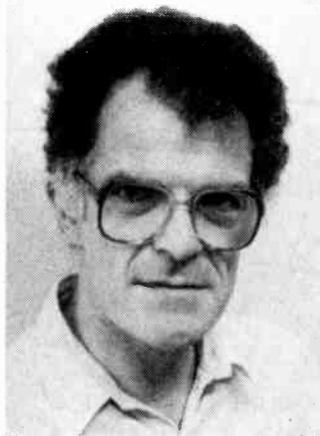
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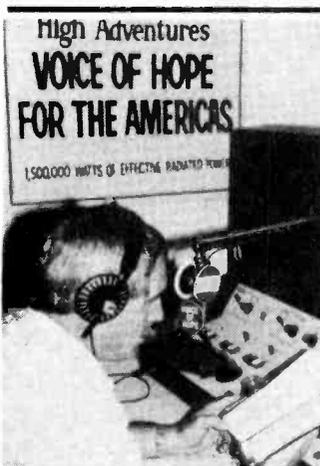
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MONITORING TIMES



Who's listening to short-wave? BBC's Graham Mytton makes it his business to know! - p.14



What's 'high adventure' about a Christian broadcasting station? - p.10

How to choose the right TV antenna - p.20

MT checks out the new AR2515 scanner - p.90

AIRSHOW! by Dave Jones 6

The thrills and chills of this summer's airshow can be doubled with the addition of a scanner and some careful preparation.

KVOH: Neither Bombs nor Bullets by Everett Slosman 10

If you're a Christian ministry that builds a station four miles north of the Israeli border, what you get is High Adventure!

Who's Listening to Shortwave?
An Interview with Graham Mytton 14

BBC's Head of Audience Research makes it his business to keep his finger on the pulse of the listening public -- worldwide!

KKN39: A Mystery Resolved by Al Zilman 18

For some time utility listeners have speculated about the location of the State Department's KKN39. Bingo! We've found it!

The Proper TV Antenna by Bob Grove 20

Just in time for TV DX season, Bob clues you in on how to evaluate your equipment in light of your listening quarry.

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ON THE COVER: The Navy Seal team performs for the public (Photo by Steve Douglass)



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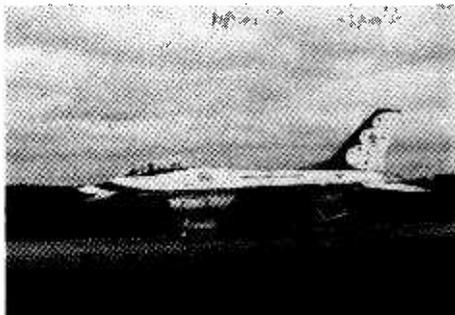
Inside this Issue • You're watching TV. Your favorite, *The New Dating Game*, is on. And just as lovely nineteen-year-old Bonnie Baker is about to select bachelor number three (the guy who listens to shortwave and raises Africanized bees as a hobby), the picture goes left, then right and rolls a few times before suddenly it's replaced by a Russian-language report on Soviet agriculture. Holy cow! Soviet Television! It's TV DX time again!

Well, actually, it's not quite that dramatic but *almost*. This month we take a look at this fascinating hobby, complete with a "how to buy" report on TV aerials.



• Even more thrilling is our profile of High Adventure Ministries Middle East outlet, King of Hope. After you read about this little operation in southern Lebanon, you'll understand why they call it *High Adventure Ministries*. Why, one time, when chief engineer Paul Hunter found himself short a couple of coax connectors, all he needed to do was wander out behind the station and take some from the downed MIG jets that littered the ground.

• Airshow! To millions of Americans, the very word raises the hairs of anticipation on the back of the neck. To the select few who also know how to tune in the "behind the scenes" action on their radios, it is -- and these are Dave Jones' words -- "pure ecstasy." Join Dave as he shares some tips on how to get the most out of your visit to the aerodrome.



• If you're one of those top-gun utility buffs who's got to know *everything* about everything, then you'll want to read Al Zilman's exciting expose on KKN39. No, says Al, KKN39 is not in Washington -- not even close. It's on page 18.



• And speaking of the ever-so-slightly off-beat, check out the report on an FM station called "W I DON'T KNOW" in this month's *American BandScan* column. It's put together by an electronic genius, run by his wife and staffed by a...robot!

• Larry Magne is out scanning the world for shortwave radios. And look at what he found on the front cover of *The Sharper Image* catalogue. It's a shortwave radio that costs a little over \$200! And is the "Tunemaster Classic Radio" worth two "C" notes? As usual, Larry doesn't mince words.

Well, that's about it for this month.

• Oh, c'mon. Don't you believe that for a second! Bob Kay is hip deep in a contest where you can win some incredible prizes, including two frequency counters from Opto Electronics. *Monitoring Times* presents an in-depth review of the AOR AR2515 Wide Coverage Scanner, Doug Demaw explains crystal oscillators and Letters uncovers a mysterious station at a nudist camp. And there's more. But we are out of space this time -- no kidding.

• So take a few minutes and explore. There's something for everyone in America's favorite monitoring magazine, *MT*. And good listening!

LETTERS

A Whiff of Irony

Robert E. Johnston of Seattle, Washington, says he caught a whiff of irony when he read our March 1989 "Letters" column. In it, we discussed the possibility that U.S. Government agencies such as the FBI might have a special interest in those who monitor the radio for a hobby. Laughs Robert, "If you are engaged in intensive monitoring of government communications, what's wrong with the government monitoring you?"

Robert further challenges us. "Publish the names and addresses of every employee or agency of the Russian government in the United States (UN delegation, Soviet Embassy, consulates, etc.) that has subscriptions to *Monitoring Times*. Is this information a matter of public record or would we have to go the Freedom of Information Act route?"

"And while you're at it, also publish the specifications, frequencies and so forth of the signals emanating from those antennas on top of the Soviet Embassy and from the antenna-studded piece of Soviet real estate on Long Island. We expect, or hope, that our own NSA has these massive arrays pretty well cased. But some of us ordinary loyal Americans would like to know more about them."

In order to preserve the privacy of subscribers, the *Monitoring Times* mailing list is neither given nor sold to anyone in any form. You will never receive solicitations from any other organization as a result of your purchase of this Grove Enterprises publication. As a privately held list, it is not subject to the Freedom of Information Act.

Second, we would dearly love to know more information about Soviet communications in the United States -- a topic scanner columnist Bob Kay explored a couple of months ago in his column.

In fact, Kay's seeming obsession with anything Soviet is not appreciated by reader Howard McFann of North Palm Beach, Florida. "I enjoy *Monitoring Times* very much and have been pleased to see the coverage

expand to include all phases of radio.

"However, I believe it is unprofessional for your writers to insert their personal beliefs into what should be technical or informative articles. A case in point is Bob Kay's diatribe about the Russians which appeared in a recent issue. I'm sure he was piqued because they would not let him roam the Soviet Embassy, but in all fairness, I doubt if our own State Department would let him snoop in any of ours." In closing, says Howard, "Remarks such as his belong on the editorial page."

Bruce Elving's article on listening to FM SCA broadcasts brought some comment, as well.

Ken Osbourne says that he's confused by Dr. Elving's article. "While I agree with Dr. Elving that listening to SCA signals is quite legal, in the article he says that 'it is even legal to eavesdrop on cellular telephones, using commonly-available UHF-TV sets in the channels 79-83 range.' I thought that all cellular phone monitoring was off-limits."

As has been said many, many times before, the whole ECPA -- the Electronic Communications Privacy Act -- is very confusing. I have seen as many different interpretations as there are

involved parties and I certainly don't have the definitive answer.

18 U.S.C. 2511(2)(g)(i) permits interception of electronic communication that is "readily accessible to the general public." I am assuming that Dr. Elving is reading "readily accessible" as it is understood by common mortals, i.e. if you can pick them up on a cheap black and white TV set, then they're readily accessible and it's ok to tune them in.

Unfortunately, those same two words -- readily accessible -- mean something entirely different and quite unfathomable to lawyers, legislators, lobbyists and other higher life forms. Further, there *appears* to be specific restriction on subcarriers such as SCA.

Dr. Elving is an internationally-recognized authority on FM and FM SCA and that provides certain validity to his interpretation. Further, we were pleased with the cautionary caveats -- "Anybody questioning the legality of tuning in SCA should contact local broadcasters for a letter of permission..." -- laced throughout the text. In short, these are his opinions, which are as good as anyone else's in these final days of freedom.

[Continued on page 100]

In any case, thank you in advance for your consideration.

By listening to commercial radio traffic you are breaking both the FCC and ITU regulations. I am sending my report to the FCC.

ms celebration, 2-25-89

CHRDO Off.

"Celebration" ship's radio officer is all wet (p.100)

WWV Unscrambles LA Traffic

Shortwave station WWV, operated by the National Institute of Standards and Technology, has for years been broadcasting highly accurate time signals from Ft. Collins, Colorado. Now those very same signals will be helping to unscramble the car-clogged routes of Los Angeles.

According to *Popular Science* magazine, when an individual traffic light drifts out of synch with other lights, chaos results in the form of back-ups. Now, WWV will be used to synchronize the traffic lights in selected corridors by means of controllers installed at each location and tuned to WWV. (Via Ed Chichorek, Somerset, NJ)



Bernard Goetz:

Vigilante Technician

When Bernard Goetz, the subway gunman, was put in jail, many people were angry. After all, they claimed, he was only protecting himself when he opened fire on several young thugs. The City of New York is happy, though, and not for the reason you might think.

Bernard Goetz is highly trained in the field of electronic calibration and while he is doing time at Riker's Island, the Department of Corrections is putting him to work on the City's radios.

What would normally cost the Fire Department between \$800 and \$1,200 a unit, is now being accomplished by Goetz at the standard jailhouse rate of fifty cents an hour. Anticipated savings to the city thus far: \$12,000. (New York *Daily News* via Cathy Turner, Yonkers, NY)

Next Time, Write

Tugboat crewman Tom Scott knew that the credit card phone call he made to his wife via a marine-telephone

wouldn't be cheap, but when he got home to find a bill for \$11,178.84, he "about fell on the floor." The bill ran for 244 pages.

Oddly enough, the problem wasn't caused by some computer-run-amuck. It happened when Scott read his credit card number over the radio to the marine operator. Someone else who was listening quickly appropriated it, ringing up calls to numbers as far away as Mexico City.

Scott will have to pay only for the original \$4 call. (Chicago *Tribune* via Howard Lash, South Hooland, Illinois)

Police Pull Plug on Woodbury Base

His handle was "Woodbury Base" and he filled the CB airwaves of Nassau County, New York, with music and salty language. But annoying as that was to the local REACT Club, it wasn't what got 34 year old Michael Todd in trouble.

For the past two or three months, Todd is alleged to have sat in his car listening to his scanner and using his CB to warn people who were about to be arrested by police.

It all came to an end when a truck driver stopped police to tell them that he saw Todd sitting in his car just off the Long Island Expressway.

When officer Don Meyer got to the car, he looked inside and saw an open bottle of wine and an installed police scanner, both illegal, according to police. He asked Todd to open up but he refused saying he was "afraid something's going to happen to me."

Meanwhile, another officer tried to open the driver's door with a "slim jim," but Todd kept his finger on the lock. Another officer went to the passenger side but Todd reached over and held that lock, too. Finally, a third officer tried the rear door; since Todd was out of hands, they got in. It took about 15 minutes to pry him out of the car.

Todd, who is unemployed, was charged with operating a motor vehicle with a revoked license, resisting arrest, possession of a police scanner,



Cape Cod Times/Ron Schloerb

Tony Bonanno, chief ranger at the Cape Cod National Seashore, inspects the abstract bust of Marconi upon its return.

obstructing government administration and various vehicle and traffic law violations. (New York *Newsday* via Herbert Gesell, Amityville, New York)

Marconi Bust Returned

Marconi is back! On March 29, a couple walking at the site of the first transatlantic wireless cable transmission noticed the bronze bust lying on the ground near the pedestal from which it had been stolen last January (see *Monitoring Times*, March 1989).

The bust was irreplaceable, having been cast from a wax mold. Tony Bonanno, chief ranger at the Cape Cod National Seashore, said the bust was "scraped up a bit here and there," and indicated that a better way to prevent theft would be explored before remounting the bust.

The \$2500 reward for information

leading to arrest of those who took the bust is being returned to the agency's operating funds and other contributors, although an investigation is still continuing into the theft. (Cape Cod *Times* via Duncan Edes, Dennis Port, Massachusetts, and National Park Service release)

Sea Lions Say "Thanks"

Federal fisheries officials have been trapping sea lions at Shilshole Bay in Washington state. The problem is that the animals have been hanging out at the entrance to Ballard Locks, feasting on Lake Washington's wild steelhead trout.

All this is well and good for the trout. However, before any captured sea lion was released, state Department of Wildlife officials sewed small radio transmitters to the animal. After receiving a number of protests (a large number of which undoubtedly came from the sea lions), the radios will now be attached with super glue instead (via Hugh Miller)

Owls Say "Thanks"

Is the spotted owl really an endangered species or are the small 20 gram radio harnesses that have been placed on them killing the owls off? That's the question facing officials in a dispute between environmentalists and the timber industry in the Northwestern U.S.

Since the early 1980s, biologists have been strapping the transmitters on the back of both juvenile and adult owls. Some scientists hypothesize that the radios, which weigh as much as two quarters, interfere with the bird's reproductive habits.

Environmentalists say that the 2,500 remaining breeding pairs of the owls nest only in old growth or "ancient" forests, which need to be protected to ensure the survival of the species. The timber industry warns that such a ban would threaten the forest products industry in the Northwestern U.S.

Says deputy director of wildlife and fisheries at the U.S. Forest Service, "[The owls aren't] on the edge of extinction, but they aren't as numerous as robins, either."

Car Phone Callers Want Eavesdropping Stopped

As you cruise down the freeway chatting to your sweetheart, lawyer, bookie or broker, remember that anyone can listen to a cellular phone -- for now. So warns a recent Associated Press article.

The fact that conversations on cellular telephones can be easily pulled from the airwaves with "inexpensive radio scanners" upsets a lot of people, "including a few Washington state legislators who have proposed a measure to make eavesdropping on cellular phone calls illegal."

"If there's no prohibition against listening in, why not just go to CB?" asked lobbyist Steve Duncan at a recent hearing. Duncan did acknowledge, however, that a state law might not stop eavesdroppers, especially since a 1986 federal law, which carries a \$500 fine, seems to have had little effect.

But "at least bragging rights would stop," said Duncan, who says that cellular eavesdroppers have been known to tape conversations and play them on commercial radio stations for entertainment.

Action on the bill has been put off for a year while a legislative committee studies it. (Via W.E. Doan, Collingswood, New Jersey)

Police Hoaxes Continue

It was a Thursday night some weeks ago when Los Angeles police were on their way to a call for help in Pacoima. Suddenly, a voice cried out from the police radio, "I'm hit!" Officers anxiously conducted a roll call on the radios to determine whether any officer was in trouble. It was determined that the call was a phony.

In an earlier incident, two dozen officers, two helicopters and special K-9 units swarmed over a neighborhood in the Mid-Cities area after a man using accurate police lingo reported an officer down and in need of help.

The hoax apparently involves a stolen Rover police radio. "We hear them on these restricted frequencies from time to time -- people saying 'hello' or causing a little mischief," says Sgt. Hal De Jong, "but I can't recall another case where there's been this kind of malicious hoax."

"The wasted money is important," adds spokesman Jay Frey, "but it doesn't even speak to the important calls that went unanswered while officers were responding to the hoax."

Engineers are now trying to lock out missing Rover radios, an unknown number of which have been lost or stolen citywide. (Los Angeles *Times* via Bradford Smith, Carpinteria, California)

Uniden Gets 938 MHz Frequencies

Uniden Corporation of America has obtained three frequencies at 938 MHz for testing a new type of trunked radio system. According to *Federal Communications TechNews*, it will employ a microcomputer-controlled repeater "capable of distributing traffic loads equitably between all transceivers in the system." Uniden hopes the new system will be more economical and efficient than current types.

You can *communicate* with other *Monitoring Times* readers. The next time you see an item about radio in a magazine or newspaper, share it with the rest of us! Send it to Communications Editor, P.O. Box 98, Brassstown, NC 28902.



AIRSHOW!

*Thrills! Chills! Excitement!
The day of the air show is
near and each night's
sleep is more difficult.*

by *Dave Jones*

Your thoughts are filled with aircraft and radio communications. The feeling is like that of a child anxiously awaiting the arrival of Christmas morning.

Attending an air show, large or small, for the first time or even the tenth time, re-awakens those Christmas-like memories for many monitors. The fact is that there are no adults at airshows -- only children of various sizes and ages.

Preparing for the Big Day

Preparation, according to Webster's dictionary, "is something done to prepare." While that isn't the most helpful definition in the world, it does remain an essential ingredient to an enjoyable and informative air show. The investment of an hour or two of one's time prior to the show date will increase your yield of excitement on the day of the show. Preparation. Remember the word well.

A week before the air show, telephone the base Public Affairs office and inquire

about the details of the show or open house. Find out when the gates open, the time of aerial demonstrations, type of equipment to be displayed and so forth. The Public Affairs office will be most happy to assist you with your questions and supply you with the necessary data.

Also inquire about general frequencies that may be in use at the show such as the tower frequency or show control frequency. Explain to the Public Affairs official that one of your hobbies is radio communication monitoring. The information obtained from Public Affairs will help in the preparation of attending the show.

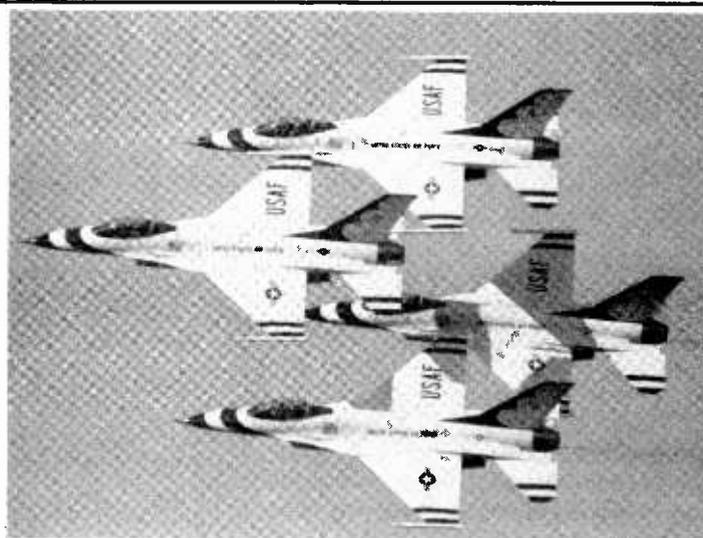
There's no doubt that viewing an aerial demonstration is exciting, but to monitor the radio communications *while viewing it* is ecstasy.

Frequency data is available from a multitude of sources including *Monitoring Times*. The frequencies for aerial demonstration teams are listed below; Table 1 for military flight demonstration teams and Table 2 for non-military.

Other frequencies of interest would be those of the base or airport at which the show is held and the public safety frequencies that may be obtained through published frequency directories or scanner clubs (refer to this month's Federal File for traveling with a scanner while monitoring military or federal activity).

Pack Those Bags (And Charge Those Batteries...)

A day or so before the show, precheck the equipment that you plan to take along to the show. Preprogram your scanner(s)



*USAF Thunderbird F-16A
"Falcons" thrill the crowd with
tight-formation maneuvers. (All
photos by Johnny Autery)*

with the frequencies found during research and for the portables, insure a fresh charge of the battery pack or new batteries. Blow the dust off of your camera and its accessories and also insure that all its batteries are fresh.

Purchase film for your camera at a local discount store and load the first roll in the camera so it will be ready. The same goes for video equipment. Table 3 lists items to consider when preparing and packing for the air show.

The Early Bird...

When the day of the show arrives, get an early start on the day. Plan to leave for the show so that you arrive 30 minutes before the gates are scheduled to open. First of all, parking is easier and a lot less of a hassle for the early bird. Along with parking nightmares, traffic snarls are also avoided. A late arrival to an air show can be spent on the access road or in search of parking while the aerial demonstrations are being performed.

Early arrival also has several other benefits. At times early arrivals are permitted entrance to the show area which allows for photographs of aircraft without the "crowd scenes." Crowd scenes are those photographs where the aircraft is located behind a mass of bodies or by the passerby who cannot resist getting into



*The public is usually invited to
tour cargo planes or tankers
such as this KC-10 Air-to-Air
Refueling Tanker.*

your photograph. (I sometimes wonder why they don't stop and ask if you would like them to autograph the photo.)

Another benefit is the opportunity to scan the base or airport frequencies that are preprogrammed into your scanner. The aerial demonstration frequencies probably will not be active; however, the base and public safety frequencies should be alive with action.

This time period will permit you to determine the active frequencies and their usages which can be noted for either continuous monitoring throughout the day or periodic monitoring. Also, the opportunity for searching of active frequencies with your scanner's search feature is available. No matter how good the source of your researched data there always seems to be one frequency that eludes you.

Once on the base grounds, obtain a copy of the day's schedule so that you can be ready to photograph the SR-71 "Blackbird" when it performs a flyby. Even though you may have contacted the base Public Affairs office earlier, schedules are subject to change. Based on the schedule and your interests, quickly plan your day mentally and perhaps jot down important times of aerial demonstrations or flybys.

Seek out your favorite aircraft on display and take those photographs before the masses arrive. Also, be sure to look at the exhibits and pick up any free literature or photographs available. There are usually some very interesting and informative flyers available at the exhibits.

An early arriver also has the opportunity to more leisurely view the exhibits and aircraft on display. When aircraft such as cargo planes or tankers are present, the public is usually permitted inside the aircraft. It is much more enjoyable to view the aircraft at your pace versus that of a large crowd.

Don't be afraid to ask the pilots and crews questions about their aircraft or basic mission. On the day of the show, it is one of their jobs. Remember, air shows at military bases are for you, the taxpayer who paid for the planes.

Airshows are often noisy. Along with your portable scanner, pack its earphone. The earphone will allow you to hear radio traffic without burning up the batteries

TABLE 1

U.S.N. BLUE ANGELS

121.900	Ground support (refueling)
142.000	"Alpha" Air-to-air tactical, primary
142.025	Ground support (NBFM Repeater Out/In 142.625)
143.000	"Bravo" Air-to-air tactical, secondary
143.600	Maintenance "Channel 10"
241.400	Air-to-air
250.800	Air-to-air
251.600	Air-to-air Aircraft 5-6 "Channel 19"; also Air-to-ground
275.350	Air-to-air Aircraft 1-4; also Air-to-ground
360.400	Air-to-air
384.400	Air-to-air
391.900	Air-to-air
395.900	Air-to-air

U.S.A.F. THUNDERBIRDS

120.450	Reported operations
140.400	Air-to-air tactical
141.850	Air-to-air tactical, primary
236.550	Air-to-air, Solo 5-6
236.600	Air-to-air
241.400	Air-to-air reported
250.850	Team leader reported
273.500	Air-to-air reported
283.500	Air-to-air reported
294.700	air-to-air reported
322.300	Air-to-air reported
322.600	Air-to-air reported
382.900	Air-to-air reported
394.000	Air-to-air reported
413.025	Ground support (NBFM), Low power

U.S.A. GOLDEN KNIGHTS

32.30	Operations - secondary
42.35	Operations - primary
123.400	Air coordination

CANADIAN SNOWBIRDS

1	275.800	11	245.700
2	295.600	12	316.500
3	310.800	13	344.500
4	227.600	14	356.600
5	243.400	15	236.600
6	240.500	16	283.900
7	378.500	17	363.800
8	266.300	18	289.400
9	294.500	19	245.000
10	322.800	20	239.800

Table 2

NONMILITARY FLIGHT TEAMS

123.400	Common airshow control (private/military)
123.450	Common airshow control (private/military)
123.450	Royal Albanians primary
123.475	Royal Albanians secondary
123.475	Team America
126.400	Showtime control
130.550	Brazilian A.F. Prop power
130.655	Brazilian A.F. Prop power
132.250	Brazilian A.F. Prop power - Solo 6-7

Table 3

PACKING LIST

Camera	Film - several rolls and speeds, flash, fresh batteries, camera bag. Load first roll prior to departure.
Scanner	Handheld - Charge batteries, earphone plug, rubber duckie antenna, preprogram. Base/Mobile - 12V power cord, antenna, preprogram. Frequency lists and directories.
Utility	Road maps/atlas, small pocket size notebook, two pens.



Stay late: departing display aircraft may give you some unique shots.



Get there early, early, early! It makes the difference between the clean shot of the SR-71 "Blackbird" Strategic Reconnaissance aircraft above and this "crowd scene" around the B1 bomber.



since the volume on the radio can be at a lower setting.

Also, the earphone plug will draw less suspicion and attention than someone waving a handheld scanner near their head to listen to a radio message. I might add that I've never been stopped or questioned by security personnel while attending air shows or open houses with scanner in hand.

Don't forget to use the small pocket size notebook and pen you packed. When taking photographs of aircraft and exhibits, create a table that lists roll and frame numbers. Next to each, jot down aircraft type or special features about the aircraft or exhibit. Then when the film is developed and received, you can correctly annotate your photographs.

The notebook and pen also are quite useful for noting of confirmed frequencies monitored, channel or unit numbers heard, or even the quick jotting of a new frequency monitored during a transmission between the tower and demonstration aircraft.

As time for the aerial demonstrations

nears, choose your observation spot and don't wait until the last moment. Find the show's center and camp as close as possible. This is where all the action takes place.

If you want to avoid the crowd, then locate areas at either end of the show center; sometimes you can secure a spot by yourself. The end locations provide photographs without the crowds in them; however, often the aircraft may be at odd angles to you. If you have your handheld scanner along with you, and it is capable of receiving AM signals be prepared for a crowd regardless of where you locate.

Meet People and Make Friends

An excellent way to meet people and make friends at air shows is to let them monitor some radio traffic from your scanner, especially that of flight demonstration teams. Remember that the average non-radio hobbist attending the air show is already in a state of awe from the aircraft and flight demonstrations. Introduce the fact that you can actually *hear* what's going on and many people will have nervous breakdowns.

People will move closer to you and ask if you can raise the volume on your radio so that they can also hear. Naturally, when people see a crowd forming, they become interested and want to see what is happening. Soon you will have your own groupies.

Some are possible converts to the radio monitoring hobby (not to mention subscribers to *Monitoring Times*) so be nice to them and answer their questions. Be patient. Remember that at one time you we just like them: an outsider looking through a window and being interested in what is seen.

FILO Principle

When the final aerial demonstration is over, do not leave. The FILO principle is to be applied -- First In Last Out. While most of the crowd is heading for the exits, this gives you an opportunity to see something you missed earlier in the day or talk to a pilot or crew who were previously busy.

Also, some of the display aircraft may be preparing for departure to their home base. Sometimes you can get close to these aircraft as they taxi out to the runways lending themselves to unique photographic opportunities. Frequencies not heard throughout the day now become active as the aircraft start to depart.

Additional VHF NBFM frequencies assigned to the base may become active as cleaning personnel start their rounds and as security begins sweeps of display or exhibits areas are closed.

Now when you are ready to leave, the crowds have dissipated and the traffic exiting the lot does not resemble a western movie scene where thousands of cattle are being lead into the stockade.

It is time now to monitor those public safety frequencies and learn of traffic flows and of any accidents that may have occurred. Last, but not least, you can quietly sit back and reflect on what a great day it was at the air show!



uniden®

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Uniden Corporation of America has purchased the consumer products line of Regency Electronics Inc. for \$12,000,000. To celebrate this purchase, we're having our largest scanner sale in history! Use the coupon in this ad for big savings. Hurry...offer ends September 30, 1989.

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Get special savings on the scanners listed in this coupon. This coupon must be included with your prepaid order. Credit cards, personal checks and quantity discounts are excluded from this offer. Offer valid only on prepaid orders mailed directly to Communications Electronics Inc., P.O. Box 1045 - Dept. UN16, Ann Arbor, Michigan 48106-1045 U.S.A. Coupon expires September 30, 1989. Coupon may not be used in conjunction with any other offer from CEI. Coupon may be photocopied. Add \$11.00 for shipping in the continental U.S.A.

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- Regency R2060-T1 \$114.95
- Regency UC102-T \$109.95
- Regency RH606B-T \$419.95
- Regency RH256B-T \$294.95
- Bearcat 200XLT-T \$249.95
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- Bearcat 800XLT-T \$249.95
- Uniden HR2510-T \$229.95
- Uniden PRO500D-T1 \$32.95

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Bearcat® 800XLT-T

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Bearcat® 145XL-T

List price \$189.95/CE price \$94.95/SPECIAL 10-Band, 16 Channel • No-crystal scanner Priority control • Weather search • AC/DC Bands: 29-54, 136-174, 406-512 MHz. The Bearcat 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the BC560XLT-T featuring priority, weather search, channel lockout and more is available for \$94.95. CEI's package price includes mobile mounting bracket and mobile power cord.

President® HR2510-T

List price \$499.95/CE price \$239.95/SPECIAL 10 Meter Mobile Transceiver • Digital VFO Full Band Coverage • All-Mode Operation Backlit liquid crystal display • Auto Squelch RIT • Preprogrammed 10 KHz. Channels Frequency Coverage: 28,0000 MHz. to 29,6999 MHz. The President HR2510 Mobile 10 Meter Transceiver made by Uniden, has everything you need for amateur radio communications. Up to 25 Watt PEP USB/LSB and 25 Watt CW mode. Noise Blanker. PA mode. Digital VFO. Built-in S/RF/MOD/SWR meter. Channel switch on the microphone, and much more! The HR2510 lets you operate AM, FM, USB, LSB or CW. The digitally synthesized frequency control gives you maximum stability and you may choose either pre-programmed 10 KHz. channel steps, or use the built-in VFO for steps down to 100 Hz. There's also RIT (Receiver Incremental Tuning) to give you perfectly tuned signals. With receive scanning, you can scan 50 channels in any one of four band segments to find out where the action is. Order your HR2510 from CEI today.

NEW! President® HR2600-T

List price \$599.95/CE price \$299.95/SPECIAL 10 Meter Mobile Transceiver • New Features Delivery for this new product is scheduled for June, 1989. The new President HR2600 Mobile 10 Meter Transceiver is similar to the Uniden HR2510 but now has repeater offsets (100 KHz.) and CTCSS encode.



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KVOH NEITHER BOMBS NOR BULLETS

by *Everett L. Slosman*

In most countries, if you want to start a radio station, you fill out the proper applications, negotiate with the authorities, and find financial backing. But there are no application forms, no central authority, and no financial institutions in Lebanon.

Therefore, if you're a Christian ministry that wants to build a radio station four miles north of the Israeli border, you find a frequency, ask for donations, and pray a lot.

The station is WORD -- The Voice of Hope, operating from Marj-Ayoun in southern Lebanon. It is run by the California-based High Adventure Ministries.

They have another radio station in Los Angeles. Working in California is not as much of an adventure as working at WORD.

WORD is now in its tenth year, broadcasting messages of peace and love in a land more accustomed to blood feuds and byzantine plots. Lebanon is where despair and hatred are as much a part of daily life as kibbi, the raw, spiced, ground meat sold by street vendors.

High Adventure Ministry is headed by George Otis, a business executive-turned evangelist. The idea of building a Christian station in the Holy Land began in 1978, during a tour of Israel.

Though there were many stations broadcasting Gospel programs to the Middle East, none were located within the area.

To Otis, a station in Lebanon would be a natural progression of his beliefs. In that area of the world, a majority of the broadcast stations exist as propaganda outlets for the government. He felt

compelled to offer a facility that aired the voices of reason and hope.

Otis found support for the project from people such as "Stormy" Weathers, the owner of a radio antenna plant in Oklahoma, and Paul Hunter, a Canadian engineer who became High Adventure's chief engineer.

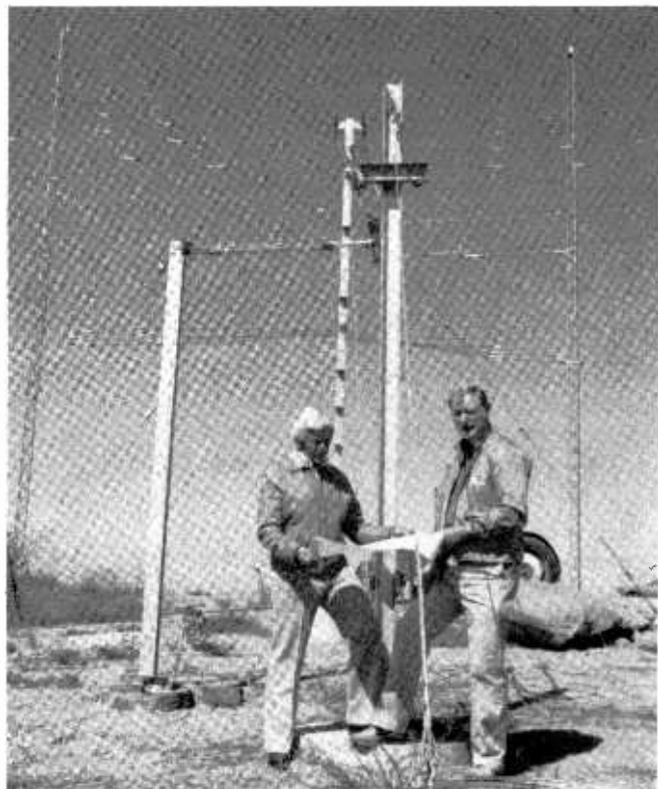
Armed with contributions and faith, they began building on a site just north of the Latani River in Al Janub province.

This area is full of biblical history. The transmitter is located in the "Valley of The Springs," so-named because the land is watered by melting snows from Mount Hermon. The antenna radials are in a field known as "The Heads of Kings." This is where the Old Testament general, Joshua, beheaded the Kings of Mizpah during one of his campaigns.

Overlooking the site, to the west, is Beaufort Castle, a twelfth century Crusader fortification. During the time WORD was being built, it was under the control of the Palestine Liberation Organization.

The PLO used Beaufort as a base from which to shell the northern Israeli towns like Matulla and Kiriya Shemona. They also

To build a radio station four miles north of the Israeli border takes special people. George Otis stands in front of the KVOH antennas with one of them: chief engineer Paul Hunter.





Mark Gallardo is the Spanish language announcer, broadcasting daily on KVOH

maintained it as a supply depot and ammunition dump in their war against Major Saad Haddad, the commander of the Christian forces in "Free" Southern Lebanon.

It was from there that they directed artillery fire and Katyusha rockets in the direction of the partially completed station.

One night, the ammunition dump blew up. No one has been able to pinpoint why. Otis believes it was a miracle. Other people credit an attack by forces under Colonel Yoram Hamizrachi, the military commander of Israel's northern border.

The truth may never be known. But interference with construction on the Voice of Hope lessened considerably.

The construction crew turned a former French customs office in Marj-Ayoun, on the main road to Beirut, into a modern studio. An abandoned pumphouse in "Heads of Kings" became the transmitter room.

Singer transmitters were shipped by sea to Israel. Then, with the help of Colonel Hamizrachi, they were transported by truck to Metulla. They went from there, under the watchful eye of Major Haddad, into Lebanon.

There are no electronic parts stores in southern Lebanon; no nearby Radio Shack to pop into for a condenser or some hookup wire. It's "wait for a shipment from the states or scrounge-it-yourself."

So, when the station engineer, Charbel Younes, needed two coaxial connectors that would take up to eight weeks to come from the U.S., he cannibalized the tail section of a downed Syrian MIG.

"I prayed and asked God to send me some," Younes said, referring to the connectors. "And He did, by airmail."

Parts were not the only problem. Weathers needed eleven cubic meters of concrete for the antenna bases. However, there wasn't a bag of cement to be found anywhere in southern Lebanon. But there was a cement plant near Kiriya Shemona.

There was a complication. The plant manager refused to risk his trucks and drivers delivering cement to Marj-Ayoun. When Otis told Colonel Hamizrachi about the problem, the answer was "Inbiot" -- Hebrew for "no problem."

The next morning, Hamizrachi arrived at the site with two cement-laden trucks that had "enlisted into the army." The soldiers

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poured the concrete, drove back across the border, and gave the trucks an "Honorable Discharge."

Construction continued, interrupted only by an occasional stray artillery shell. By June 1979, the 30 kW medium wave WORD was ready.

Opening ceremonies drew a flock of reporters. They were anxious to see the brainchild of the man Colonel Hamizrachi had once called Ha'mahsuga, "The Crazy One."

But there was still a gremlin lurking. The line from the studio to the transmitter had been run along the roadside, on the ground. Just before the official ceremonies were to start, the test transmission music went off the air.

An armored personnel carrier sent by Major Haddad, for security purposes, had accidentally cut the line. Wirecutters, electrical tape, headphones, and some fast work by the engineering staff resulted in a jury-rigged fix. The ceremonies went on without a hitch.

The Voice of Hope began regularly scheduled broadcasts on September 9, 1979, using 950 kHz.

But a major technical problem developed. Heavy military traffic rumbled by causing excessive background noise. No amount of material could soundproof the studios. It was so bad, that when some vehicles drove past, voice programs were obliterated.

Major Haddad effected a simple solution. His troops built a roadblock on the 6000-year-old road and rerouted traffic away from the station.

Another time, workers clearing weeds near the studio building found an unexploded 130 mm artillery shell. Major Haddad's troops again came to the rescue, removing the shell and

PROGRAM SCHEDULES

KVOH, International, Los Angeles, California (effective 03/27/89).

UTC	Language	Frequency kHz
1400-1600	Spanish	17775
1600-2000	Spanish	17755
2000-2100	Spanish	17775
2100-0100	English	17775
0100-0400	English	13695

Call sign: "This is High Adventure's Voice of Hope to the Americas, world class radio KVOH, Los Angeles, California."

Reception reports to High Adventure Ministries, P.O. Box 93937, Los Angeles, California 90093.

KING, The King of Hope -- Shortwave, Marj-Ayoun, Lebanon (effective 11/88).

UTC	Language	Frequency kHz
0300-0600	Arabic	6215/6280
0600-1000	English	6215/6280
1000-1430	Arabic	6215/6280
1430-1600	English	6215/6280
1600-1945	Russian	6215/6280
	Ukrainian	
	Tagalog (1600 Sat)	
	Greek (1930 Sat)	
	Serbo-Croatian (1930 Sunday)	
1945-2000	French	6280
	Swedish (Saturday)	
	Hungarian (Sunday)	
	Azerbaijani (1945 Sat)	
2000-2300	English	6280

Reception reports to High Adventure, Hotel Arazim, Metulla, Israel, or P.O. Box 7466, Van Nuys, California 91409.

Program schedules and reception report forms are available from the Los Angeles office.

Engineering requests DXers use the SINPO codes when furnishing reports.

detonating it at a safer location.

In February, 1981, the sister station, KING -- The King of Hope, began shortwave programming on 6215 and 6280 kHz using a 12 kW Singer transmitter with 60 db gain at the antenna. High Adventure now reached listeners in 50 countries, from southern Russia to South Africa.

Today, KING broadcasts in Arabic, Azerbaijani, English, French, Greek, Hungarian, Russian, Serbo-Croatian, Swedish, Tagalog, and Ukrainian.

High Adventure also has an FM station in Marj-Ayoun. A 3 kW transmitter feeds the six-bay antenna atop Mount Hermon. The frequency is "around 106.0 MHz."

As Paul Hunter explains, "There is no FCC over there. You just find a clear spot and claim it. They have had to change frequencies a couple of times."

Grabbing frequencies is how these mild-mannered evangelicals put their television station, Star of Hope, on channel 12. This was the last VHF slot left in the Middle East and the PLO wanted it for a Beirut facility.

Using the carcass of an old army ambulance to house a lashed-up transmitter, the ministry managed to put a test pattern on the air before the PLO won the race. It was St. Valentine's Day, 1981.

Later, the transmitter was moved to a permanent building and a full broadcast schedule initiated. Star of Hope was eventually transferred to the Christian Broadcast Network as their Middle

East outlet.

Working in Lebanon has not been without human costs. In October, 1985, a four-man Marxist Front squad used plastique to blow up the studio. "We lost everyone in the building," said Otis. "It was tragic."

As horrible as the attack was, High Adventure turned the other cheek, rebuilt, and continued their mission.

Last December, the station again came under attack. This time, extremists fired mortars and Katyushas at the studio, hoping to knock out the infidel Voice of Hope.

However, WORD and KING are still on the air, broadcasting a mixture of secular and gospel music framed in a contemporary format by their minister-disk jockeys. Otis calls the Voice of Hope "the world's most unique station."

Their experiences in Lebanon led High Adventure to build KVOH International, a 1.5 MW 16 meter band station aimed at Latin America and the Caribbean Basin.

With towers located on Chatswoth Peak near Los Angeles, they program in Spanish and English using a format similar to the one used at WORD and KING.

High Adventure has also applied to the Philippine government for permission to build a 4 MW outlet aimed at Asia and the Pacific Rim.

The proposed facility would reach the 60 percent of the world's population who are living in crowded conditions on just 18 percent of the world's land mass.

If everything goes right, Otis believes the station will be on-line this summer.

For George Otis, life has always been a series of enjoyable challenges. He was once the Chief Executive Officer of Lear Jet and was also heavily involved in the electronics and aircraft industries. Otis became interested in the evangelical ministry in 1970.

In typical Otis fashion, he plunged in traveling around the world lecturing and ministering. It was during these travels that he became fascinated with the potential for religious broadcasting. And this fascination has never stopped.

The name, High Adventure, comes "from my encounters with God. Getting in touch with God is not a dull experience. It's a high adventure."

Maybe that's why, to paraphrase the Greek writer Herodotus (circa 485 - 425 BC), neither bombs nor bullets nor terrorists keeps them from accomplishing their appointed course with all speed.

mt





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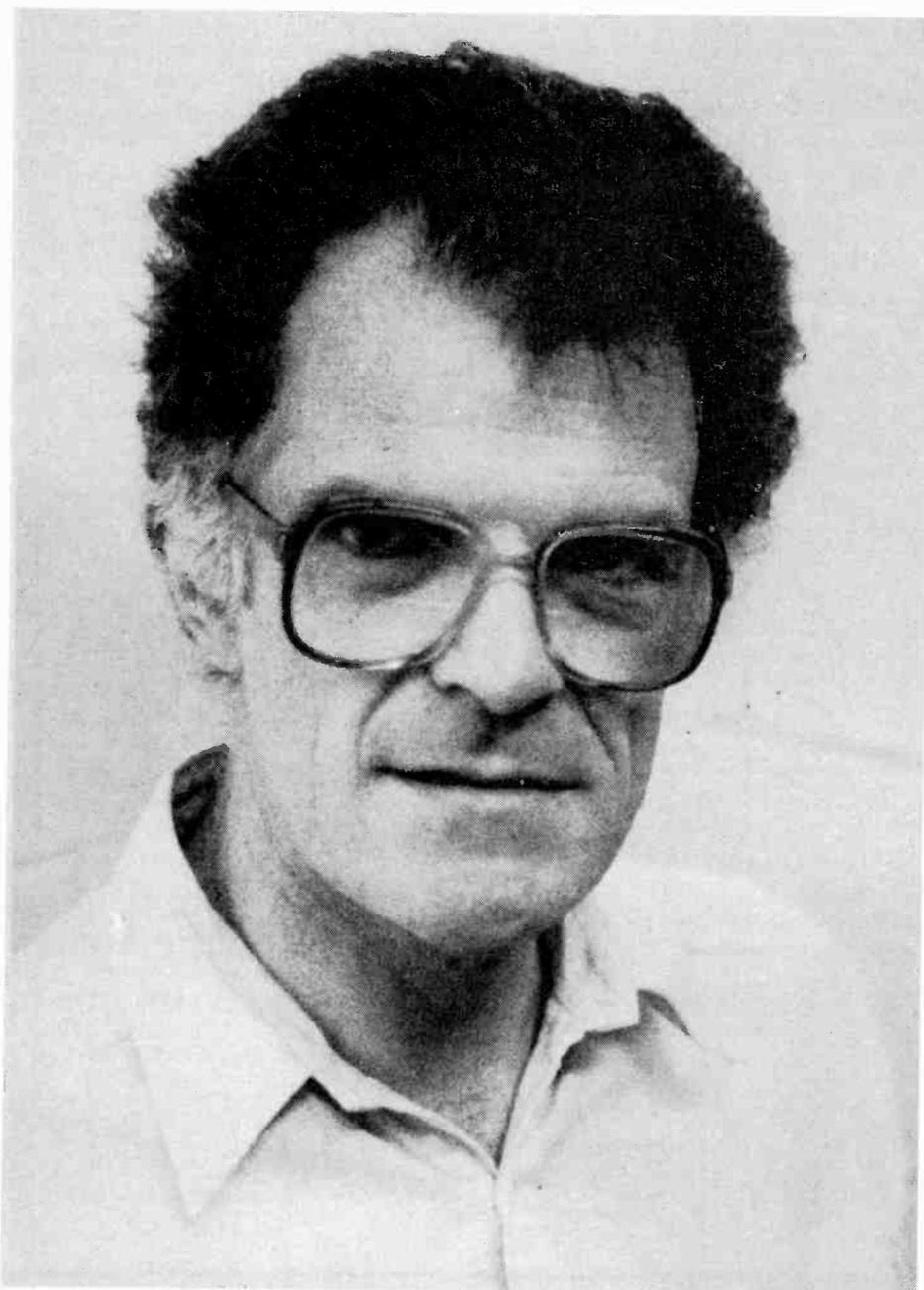
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Who's Listening to Shortwave?

An Interview with Graham Mytton

*Head of International Broadcasting and Audience Research,
BBC World Service*



Who listens to shortwave? Why? How do we know? These are the kinds of questions tackled by Graham Mytton for the B.B.C., which has the largest audience research department in the free world.

Other international broadcasters buy BBC research reports in order to plan and schedule the most effective programming. Even the BBC program changes last fall were the result of audience research.

As Mytton indicates, some broadcasters take their listener mail very seriously. If listeners hope to influence the quantity and quality of programming, they ought to write with both complaints and suggestions.

Contrary to the common stereotype, many broadcasters are not monolithic bureaucracies with little regard for the listening public.

Mytton was interviewed by Dr. Quentin Schultze of the Department of Communication at Calvin College during a recent visit to the United States.

Q: What are your responsibilities as head of audience research for the BBC World Service?

Mytton: It's two-fold. Half of my job involves looking after the 500,000 letters a year we get in thirty or so different languages. I oversee the analysis and translation. We look for trends in the mail: where they come from, who writes, what kinds of

things they say, and what other matters are reported on.

The other half of the job is audience research. Letters don't tell you how many listeners you've got and what kind of people listen -- only which kinds are willing to write to us. So we commission random-sample audience surveys in countries around the world. We also buy surveys or polls commissioned by other organizations.

Our goal is to determine the size of our audience, its demographics, how frequently and for how long people listen and how much they tune in to the BBC as compared to other national and international broadcasts. It's also very important what language they listen to and what times of the day they listen.

We are increasingly interested in how much people watch television, and how TV and video have affected their radio listening habits, especially in the Third World countries where television is growing rapidly.

Related to both of these jobs is my task of monitoring the overall trends and developments in the international broadcasting scene. That comes partly out of these surveys and partly out of our other research. I should add that it's not all number crunching. We do quite a lot of ethnographic, qualitative research using focus groups or group discussions and other forms of research.

Q: Do we really know how many people around the world listen to shortwave radio?

Mytton: Yes, although we have not actually computed it that way. Instead, we at the BBC concentrate on how many people listen to the BBC regularly or how many people listen to Voice of America or Radio Moscow or whomever. We estimate that about 120 million people listen to us at least once a week in one or

another of the 37 languages in which we broadcast.

Q: How do you get accurate audience information in countries such as the Soviet Union and Eastern European nations?

Mytton: It's impossible to go with a clipboard down the main streets of Sophia, Bucharest, or Moscow asking questions about what radio stations people listen to!

Radio Free Europe and Radio Liberty each operate research departments which do their best to get around this problem by interviewing travelers. However, the people who travel are not typical of the populations as a whole.

It is possible to do all sorts of weighting, correcting for those parts of the population who are not fully covered by that interviewing. It's still a bit difficult.

In addition to that, we do our own interviewing, for example, among Bulgarians. East Germans are not covered by interviewing done by Radio Free Europe. So we're hoping to develop that. We hope it is becoming easier to do research actually in Eastern Europe and we are having very friendly discussions with the Polish radio and television research people. We hope to do some research in cooperation with them.

Q: Who are the major shortwave broadcasters in terms of their world-wide audience?

Mytton: Well, first of all it's the BBC, followed by the Voice of America. Then it's quite a gap. Among the worldwide broadcasters, Deutsche Welle is next. However, Radio Liberty and Radio Free Europe are very important. They have very large audiences in East and Central Europe and that makes them really the next most important ones overall after the BBC and VOA.

Q: How do you account for the relatively poor audiences for Radio Moscow?

Mytton: Radio Moscow's programming has left a lot to be desired. With a few important exceptions, it's been dull. Even when some of the programs are fascinating and are well put together, they are not up to date.

Also, they are often unreliable. Radio Moscow includes propaganda with the news. Our research shows that people are put off by propaganda -- and that includes listeners to the Voice of America.

Q: What are the favorite BBC programs in North America?

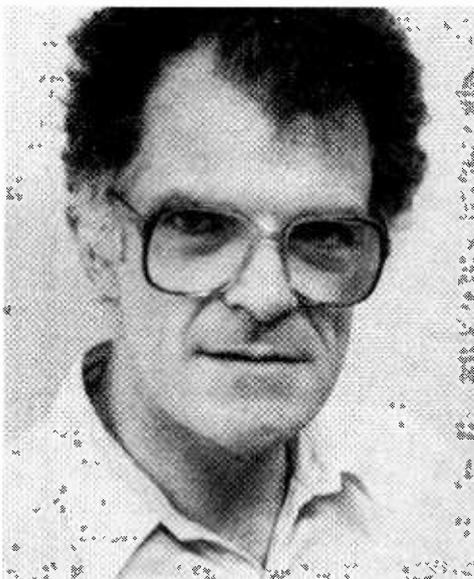
Mytton: Well, everywhere in the world, it's news. The main reason for people listening to the BBC is news. But it varies enormously from area to area. Most North Americans tune in for the bulletins of world news as an alternative to or in addition to the news available in North America.

Q: Are shortwave audiences increasing because of the user-friendly digital receivers?

Mytton: I wish I knew the answer to that. It's probably true, but the impact on the 120 million BBC listeners is tiny. Up to the end of 1987, Sony had sold one million "7600" receivers. So let's just say there's maybe two or maybe even three million digital sets. It's not an awful lot of people.

So it hasn't really made an impact on the business traveler. And if you keep your eyes open you may soon see some advertisements by the BBC in some international travel magazines actually promoting the digital set as the essential tool of the traveler.

Q: What has been the impact of the world-wide explosion of VCRs on shortwave listening?



Mytton: It's difficult to determine, and it's one of the most important things we're about to investigate in surveys in India, Pakistan, Bangladesh, and, we hope, Sri Lanka, and in the Gulf.

There are a number of projects in the field at the moment. We suspect that the VCR has not affected our weekly audience size but has decreased the amount of time that people listen to any radio, especially in the evening.

Q: Will direct-broadcast radio or TV satellites (DBS) eventually replace shortwave radio?

Mytton: No, unless something else changes. Technology isn't deterministic. The reason why the major international broadcasters have large audiences is that we're riding on the back of the domestic broadcasting activity.

The domestic broadcasters in much of the Third World and even the Soviet Union actually still rely on shortwave in order to get national audiences. North Americans tend to think of shortwave as a hobby for the experts and the like. It isn't in much of the rest of the world.

It has been an essential communications medium for many broadcasters and listeners. The BBC has

ridden on the back of that. As long as people have the radios, they will sometimes hit the BBC instead of tuning in their domestic broadcasting station.

DBS is a different kind of technology. I cannot see DBS succeeding only as an international broadcasting service. Who is going to buy the expensive equipment only for international radio broadcasting? We are not a primary activity. We are a secondary radio broadcasting and listening activity.

DBS would be the answer to the problem of national broadcasting in countries like Zaire, Peru, or Indonesia, if the technology and the sets were available. Then it could be both a national and international broadcasting medium. I see no sign of that happening now.

Q: Does the BBC World Service have any new programs planned?

Mytton: Well, in November of 1988 the BBC had the biggest shake-up of programs ever on the World Service. A whole spate of English programs were begun, including for the first time a whole hour news program.

In addition, we started new programs on business matters and changes in the presentation of programs. Our research showed that World Service had this image of being a little bit stuffy, and also a little bit clumsy in its presentation. A lot of people liked that -- or at least they liked its slowness.

It's important to remember that the BBC World Service in English is listened to by many people whose mother tongue is not English. So it's been a balancing act between sounding a bit old-fashioned and trying to sound a bit more like modern Britain, and at the same time not losing those listeners that we have because we've become too snappy, too rapid, and too quick fire.

It's a difficult thing to achieve. We hope to achieve it.

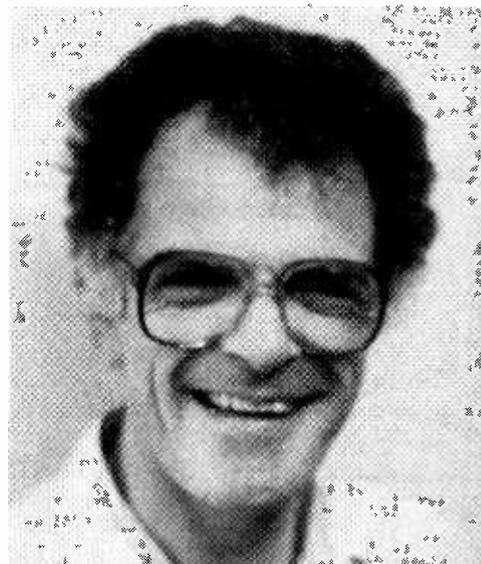
All the other languages are being subject to similar scrutiny in their programs. Are we doing the right kind of programs? Are we presenting in the right kind of way?

We are carefully examining audience research to decide if changes should be made in other language broadcasts as well. We're also paying attention to what other media are doing.

Q: Do letters from listeners influence such programming decisions?

Mytton: Yes, we especially welcome detailed and well-argued comments about programs. I would personally like to see a broader range of letters. We tend to get letters from people who tend to write letters.

I have a theory about this; people who write to the BBC just to ask for a program guide are a pretty good cross-section of our listeners, whereas people who write in with comments tend to be people who always want to make comments. I wish people who wrote in just for a program guide or schedule would add a few comments.



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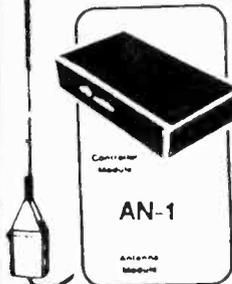
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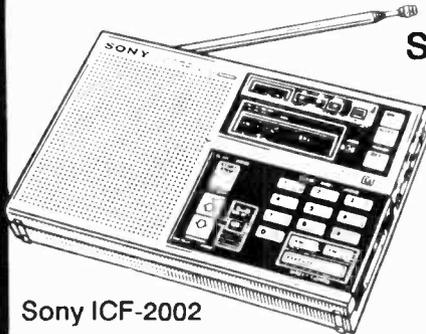
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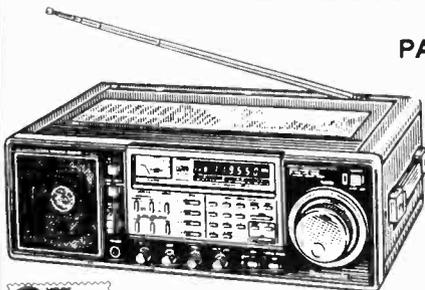
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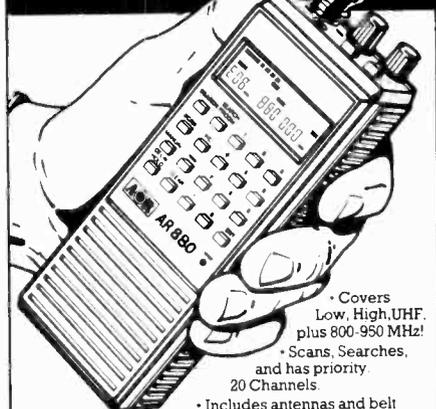
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KKN39:

by Al Zilman

Many utility shortwave listeners have heard the CW station KKN39 on 4956.5, 13387, and 17413.5 kHz. Although some have listed KKN39 as being located in Washington, D.C. (as KKN50 is at Remington, Virginia, 50 miles southwest of Washington), others have speculated that, based on propagation, KKN39 is in Florida.

In particular, mention has been made of a site just west of the Dade County Zoological Park/Gold Coast Railroad. This location off Coral Reef Drive, SW 152 Street, is also called the Richmond Naval Air Station. The property has a sign listing various military units as well as "USARCA/NCS."

Note that "USARCA" and "NCS" (National Communications System) have separate phone book listings. In fact, the phone book lists "NCS-Regional Communication Systems, Richmond Naval Air

Harry Baughn

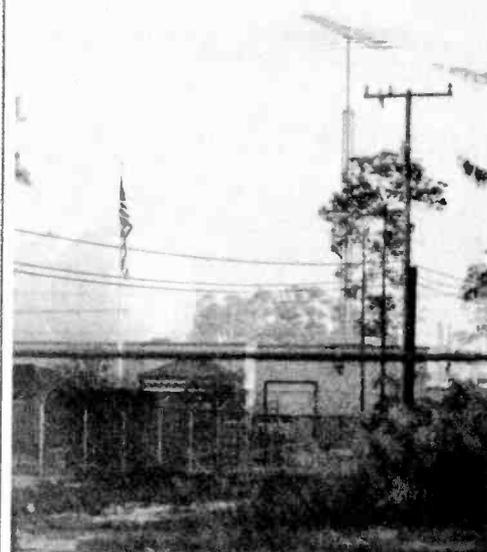
A Strange Coincidence

While on vacation in March, Harry and associate editor Rachel Baughn kept their eyes open for radio-related photo opportunities. They quickly discovered that Florida is a bonanza of monster antennas! Shortly after snapping several shots of a huge array from AT&T, they happened upon a National Communications System facility just south of the intersection of 94 and 997 with several eye-catching antenna towers.

Speaking with the private security guards on both the outgoing and return trips uncovered tidbits of information. One guard admitted his ignorance as to the primary purpose of the installation -- and he wanted to keep it that way -- but, he said, they "use computers a lot," (as opposed to voice transmissions?) in communications directed toward South America. He also said the facility was only two or three years old, and that two more towers were yet to be added to the array.

Another guard indicated that, although it was an Army facility, the majority of personnel were civilian, and that it was a transmitting site; a receiving site being located elsewhere to avoid interference. Personnel were present at the site around the clock.

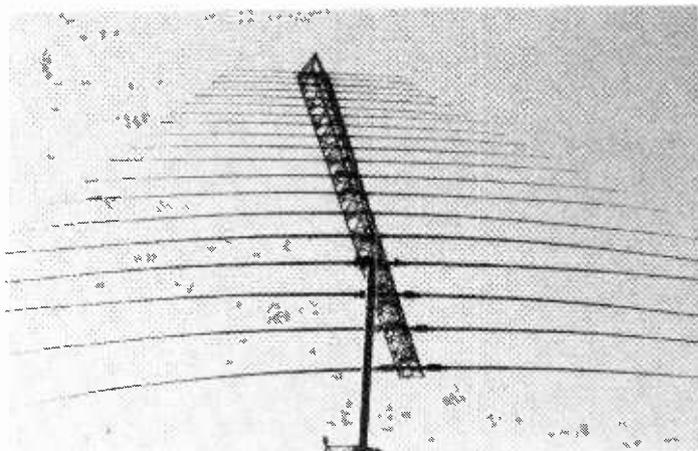
Imagine the shock of recognition when Rachel returned to the office to find that that very same site had been identified as State Department KKN39! As Dave Jones will tell you in "Federal File," it pays to be prepared to capture the unexpected, wherever you may be!



NCS/Richmond NAS - Not KKN39 after all, but probably the receive facility

A Federal Mystery is Resolved

Log periodic at KKN39 (Krome Ave)



Station" (KKN50 at Remington, Virginia, and its receive site/satellite facility at Brandy Station, Virginia both have NCS signs).

The NCS/Richmond NAS facility has various HF antennas, including several log periodics, and two satellite domes. (There is also a USAF radar dome on the property.) The tall structure at the Gold Coast Railroad museum has many VHF/UHF antennas, but perhaps only the parabolic microwave dish on it belongs to the NCS activity -- more on this in a moment.

But where is KKN39? At the NCS/Richmond NAS facility described above, the signal levels of KKN39 were a rock steady S9 on 13387 kHz regardless of time of day using a short antenna. Experience with that particular setup would indicate that KKN39 was about five to 15 miles away. (After that, the signal drops off to

unimpressive levels until one is several hundred miles away.)

This author then initiated a successful "fox hunt" that found the transmitter facility. It is about 1.5 miles south of US 41, SR 90, SW Eighth Street, Tamiami Trail on Krome Avenue, SR 997, SW 177th Street, old SR 27. (Most major Miami streets have several names causing confusion with different maps. In fact, the Dade County phone book map mistakenly refers to Krome Avenue as 977th Street.)

This is seven miles northwest of the NCS/Richmond NAS site and about 15 miles west of downtown Miami. The sign says "Transmitter Facility, Regional Communications Activity, National Communications System, U.S. Army," and KKN39 signal levels were 60 dB over S9 (full scale).

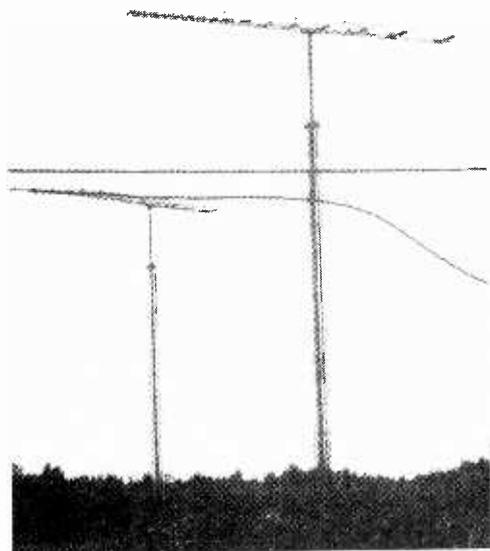
This site has various HF antennas, including log periodics, and is surrounded by a barbed-wire topped fence. A parabolic microwave dish showed it to be the other end of the NCS/Richmond NAS link. (It now appears that the NCS/Richmond NAS facility is the HF receive/satellite facility.)

No "numbers transmissions" were found to originate from this facility. In fact, it is at a distance from Cuba that would make it a poor choice as an HF facility to hit Cuba -- it is too close for any but the lower HF frequencies.

Monitoring of the common five digit Spanish broadcast in the Miami area indicated that they were not local and were consistent with a Cuban source.

Can anyone precisely locate KRH50? Is it actually London?

mt



KKN39 transmitting log periodic antennas



A "conical antenna" at KKN39

Choosing the Proper TV Antenna

by Bob Grove WA4PYQ



A high gain VHF antenna may make use of both log-periodic and Yagi beam principles.

VHF-TV: CHANNELS 2-13

As television stations proliferated in the 1950s, rooftops all over the city mushroomed with VHF-TV antennas -- usually the conical array or "Lazy X", designed for broadband 54-216 MHz response. Later, as rural and fringe areas struggled to receive these stations, higher gain arrays were concocted. Most common was the Yagi-Uda array, or Yagi "beam".

The Yagi classically comprises three parallel elements; a central "driven" element to which the feedline is connected; a slightly longer rear reflector; and a slightly shorter forward director. Additional directors provide increased gain and directivity.

Since Yagis are typically very narrow bandwidth, working on just one 6-MHz-wide TV channel, it was often necessary to stack Yagis for additional channels. This led to the popularity of the broadband log periodic dipole array (LPDA). Its characteristic trapezoid outline of graduated-length elements is interconnected by a zig-zag "shoelace" pattern of aluminum wire -- its phasing harness.

It is possible to combine the advantages of both types of antennas. A log periodic may have parasitic elements of varying lengths spaced along the boom to direct and reflect additional signal strength.

UHF-TV: CHANNELS 14-83

At UHF-TV frequencies (470-806 MHz), large reflector surfaces focus their

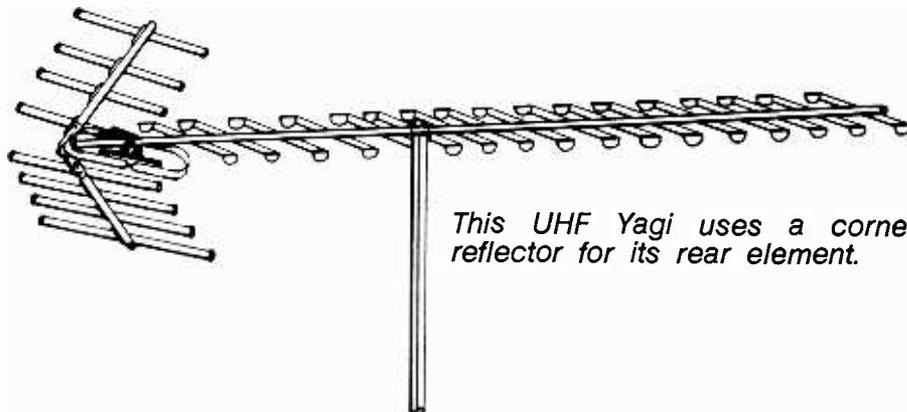
collected signals into small dipole antennas. The parabolic dish, corner reflector and bowtie-screen combination are the main contenders.

As with VHF antennas, manufacturers often combine UHF techniques; for example, a dish or corner reflector may be focused into a Yagi for additional gain or directivity.

ROTATORS

Unless you are interested in looking at one specific direction with your antenna, you will probably want to consider turning it to favor surrounding cities with competitive programming.

Due to their horizontal polarization, TV antennas don't endure as much wind loading as vertically-polarized VHF/UHF ham antennas; they do, however, suffer more ice loading.



This UHF Yagi uses a corner reflector for its rear element.

Rotators commonly use small motors coupled to high-ratio gear boxes to build up their torque at slow speeds. Some models employ replaceable sacrificial gears which crumble under overload to save the motor. Thermal circuit breakers may also be used to interrupt the voltage line when the motor has been stressed.

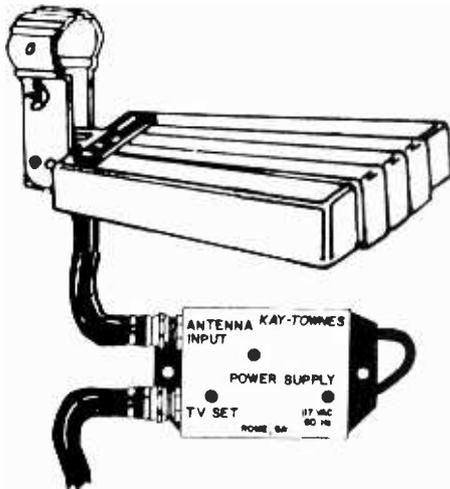
Be sure that you select a rotator that is strong enough for the antenna you have selected for your TV reception. This is especially important if you will be stacking antennas for different channels

PREAMPS

As with scanner monitoring, preamplifiers must be chosen on a basis of low noise and immunity to strong-signal overload. Not all preamps are equal.

Mast-mounted ("head end") preamps are theoretically superior because they can amplify the received signal before any loss occurs in the download. They are, however, vulnerable to burnout from nearby lightning strokes and deterioration from the weather.

If you are planning to feed several outlets you may wish to consider a distribution amplifier. Remember, each splitter divides the signal in half (3 dB signal reduction).



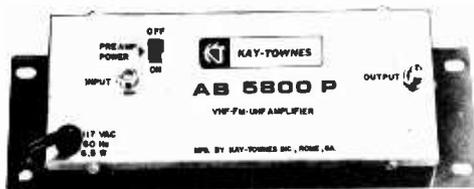
The outdoor preamp is powered from indoors by a separate power supply.

LOCATION

Any antenna should be high and clear of major obstacles in its signal path. If you can see the horizon over rooftops, you're probably high enough. Keep away from electrical power lines (avoiding electrocution and electrical noise) and large metallic masses like aluminum siding or air conditioning ductwork.

LEAD-IN

Rather than running 300 ohm twin-lead all the way to the TV set, use a high quality RG-6/U coaxial cable coupled to the antenna through a VHF/UHF balun transformer. New 300 ohm ribbon is the lowest-loss transmission line, but once it gets wet -- especially with age as it cracks in sunlight and loads with corrosive salts -- it is the lossiest! Short, interconnecting lengths of twin-lead between the antenna and mast-mounted preamp are acceptable.



A distribution amplifier may be necessary for multiple sets.

GALAXY ELECTRONICS

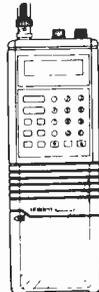
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ICOM R71-A	100khz-30mhz, Digital, Memorys 849.00
ICOM R-7000	25-2,000mhz, 100 Memorys 1,049.00
YAESU FRG-8800	150khz, 30mhz, Memorys, Scans 649.00
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SOURCES

Buy your antenna system from a reputable dealer. Check the warranties to be sure you are protected in case of failure. Is the antenna flimsy or rugged? Will the outside preamp withstand weather and nearby lightning strokes? Does it have a low noise figure and wide dynamic range? Are there traps available to remove undesirable local broadcasters which may produce interference? Not all

these questions apply to every installation, but be aware.

Some antenna manufacturers private-label their products for major clients such as Radio Shack (made by Antenna Craft and TDP). We know one manufacturer, Kay-Townes, who custom-manufactures the popular Grove Scanner Beam and Omni antennas.

Because of their reputation for quality merchandise, friendly service and compet-

itive prices, we decided to test several Kay-Townes' TV products as well. Prices are manufacturer's recommended retail.

CP36 VHF-TV ANTENNA (\$148.84)

Measuring 15 feet long and sporting 24 elements, this husky Kay-Townes VHF-TV/FM combination antenna utilizes tandem booms for rigidity when suspended from a mastpipe. Highly directional and designed for deepest fringe channel 2 through 13 and FM broadcast reception. 300 ohm feedpoint.

SBS-1432 UHF-TV ANTENNA (\$54.99)

Essentially a Yagi with a corner reflector for a rear element, the Super Band Spanner, as this antenna has come to be known, has 14 director elements for razor-sharp directivity and enhanced gain. Like the CP36, it has a 300 ohm feedpoint impedance.

SSK-3237 PREAMPLIFIER (\$84.85)

This "booster" offers the highest gain and lowest noise in the industry and will withstand signal levels up to at least 20,000 microvolts. With gain of up to 23 dB and a noise figure at a low 3 dB, this preamp, connected to appropriate splitters, can feed up to 4 TV sets.

Dual VHF/UHF 300 ohm inputs match separate antennas, and a 75 ohm output connects directly to a coaxial cable download.

Lightning protected by dual diodes and a shunt coil, the 3237 includes a remote power supply with voltage surge protection. An FM trap is incorporated to avoid TV signal interference from FM broadcasters.

VHF amplification is automatically gain controlled to prevent overload in strong signal locations.

AB5800P INDOOR AMPLIFIER (\$92.84)

While high gain preamplifiers do a superb job for up to three or four TV sets, if you are planning a master antenna system (MATV) for a dwelling or other large building, multiple outlets will quickly use up the tiny signal voltages. You will need a distribution amplifier.

The AB5800P has an internal AC-operated power supply which is also capable of powering up a remote preamp through the coax. Featuring standard type F coax fittings for input and output, the amp measures an average of 5 dB noise figure with VHF gain of 14 dB (16 dB UHF).

This rugged amplifier is capable of accepting up to 150,000 microvolts of signal at VHF, outputting up to 61 dBmV. If you aren't in the far fringe, the AB5800P can stand alone as a preamp and distribution amplifier for up to six or eight TV sets. Used in tandem with a masthead preamp like the SSK-3237, you can run up to 14 sets!

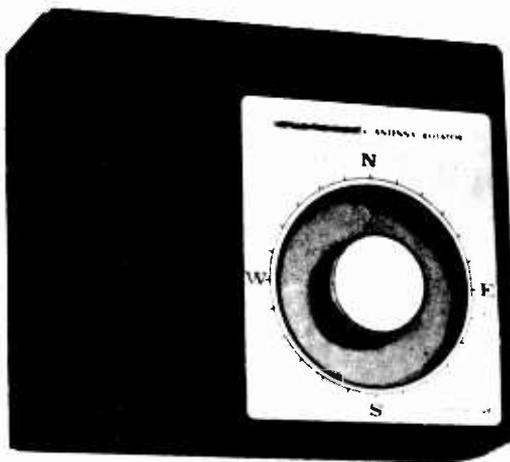
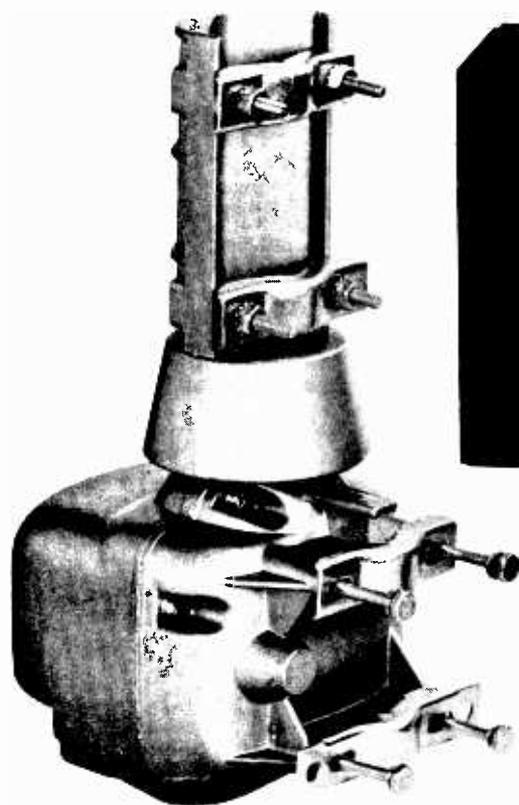
KT-500 ROTATOR (\$59.95)

Looking for a powerful, low cost rotator? The KT-500 will provide 200 pound-inches of torque for the largest TV antennas, and operates smoothly without the annoying "clunk-clunk" steppers found in competitive control units. The control knob rotates through a 360 degree arc with a compass-type legend on the panel for recognition.

Powered by 120 VAC, 50/60 Hz and UL listed, a three-wire cable is required to send 18 VAC to the rotator motor from the controller. Rotation time is 65 seconds and the motor housing will accommodate 1-1/8" to 1-3/4" mast diameter and an antenna weight of almost 100 pounds!



There are many excellent values on the market for the serious TV and FM DXer. Your dealer can provide details of systems and components with which he is familiar. If you would like the name of a Kay-Townes dealer in your area, or if you are a dealer looking for a reliable source of TV and FM antennas and accessories, contact Kay-Townes at PO Box 593, Rome, Georgia 30161 or phone 1-404-291-9871.



A high-torque rotator with a compass-type control unit comes in handy with directional antennas.

TV DX ...

Off to a Roaring Start

Karl Zuk is not an easy man to impress when it comes to TV. As an engineer at ABC, he's seen just about everything. Still, when we talked on the phone, he absolutely bubbled with enthusiasm. "I turned on the TV last night and watched a PBS show on channel 3. That's crazy because there is no PBS station on channel 3 in New York. The station I was watching came from Nebraska!"

MT editor Larry Miller monitors communications for a living and for fun so it's a 24 hour a day job. But despite all the things he's heard, he still loves to tell people about his TV DX experiences. "Just the other day I sat down and watched a documentary on tornados; 45 minutes of non-fading, full-color, local-quality signal. At the end, the station ID'd as WPBT, Miami. I watched it in Philadelphia! Now that's exciting."

Normally, this phenomenon -- the reception of unintended, long-distance TV signals -- does not get under way in earnest until early summer. This year, however, with many propagation indicators going off scale, TV DX season got under way early. The best, it is almost certain, is yet to come.

Although your location is a determining factor in how many "short hop" stations you can see, it is not uncommon for TV signals to "skip" a couple of hundred miles. Viewers in Philadelphia, for example, often have the chance to see New York (100 miles), Baltimore (96 miles) and Washington, D.C. (133 miles) TV. Reception of stations from these areas is not predictable but it is relatively commonplace.

What really gets the blood pumping is something called E skip reception. E skip occurs when the E layer of the ionosphere becomes highly ionized and TV signals are scattered off it like billiard balls taking off on the break. When condi-

tions are right, reception of signals from as far away as 1,200 and 1,500 miles are possible.

So what kind of equipment do you need to take part in the fun? A 800 foot tower mounted at the top of Mount Mitsubishi? An antenna that's bigger than your house? A top-of-the-line TV with a 4-digit price tag? No.

For the most part, TV DX is nondiscriminatory -- it doesn't care if you're rich or poor. Says Miller, "I've got some of my best TV DX on one of those \$49.00 black and white Korean cheapies. My kids broke off the telescopic antenna so I use a set of rabbit ears. Very un-chic but very effective."

Jeff Plotkin, writing in *Popular Communications*, is also a fan of rabbit ear antennas but mounts his on a camera tripod. "This allows me to rotate the antenna through 360 degrees, tilt it up and down, and make various adjustments to the antenna's angle."

Jeff's results also testify to the "you don't have to be equipment-rich to TV

DX" theory, although he recommends late model Sony TVs "since they have a very good tuner with a hot front end."

Still, an outside antenna and a rotor can be helpful in pinpointing a signal (See preceding antenna review) and many DXers spend considerable time debating the relative worth of such equipment in the snagging of long-distance TV DX.

Location isn't necessarily a handicap either, as Plotkin's logbook testifies. "I live in the metropolitan New York area... approximately 20 miles from the World Trade Center, the originating point of New York City's local TV stations."

So you obviously don't have to be camped out in an open field in Kansas for this to happen to you -- although the more open channels you have, the better your chances.

TV DX is most likely to be found on the VHF channels although UHF also has the potential to be seen far from their intended target. Generally starting on the low channels -- 2 is always a good indicator -- it can reach to and sometimes beyond channel 6.

Look for unusual defects in the picture of your lowest local channel. These can appear as horizontal "rips" in the picture or more subtly as a sort of herringbone pattern. In any case, anything unusual is a tip that something is up and that you should begin exploring.

When you do see this, tune up to the nearest unused channel. And wait. Adjust the antenna. And wait. Play around with the antenna. And wait. Patience and luck. Patience and luck. Fortunately, because of the fact that we're at the peak of the sunspot cycle, there'll be a lot less need for patience and a lot more opportunity for amazement.



When a picture appears on an open channel, chances are it's skip!



Shortwave Broadcasting

Glenn Hauser

Box 1684 - MT

Enid, OK 73702

ABU DHABI UAE Radio announces its new English service is dedicated to enlightening the West about Islam and Arab cultures, and they seem to be doing it in a noninflammatory way, 2200-2400 UTC on 6170, 9595 (or 9597) and 11965. (Bill Dvorak, WI. *Review of International Broadcasting*)

ASCENSION Two new 250 kW transmitters and four new high-gain antennas are being added to the BBC relay site. Tests may start in May, with full operation by September. (*Waveguide*, via William Westenhover, *DX Listening Digest*)

AUSTRALIA Radio Australia reviews pop music of the past, emphasizing Australian artists, on "Try to Remember," Wednesday 0130, Thursday 1930, Sunday 1030, Tuesday 1530 -- a different year in order each week, with 1955 on April 26, 1989.

"Taim Bilong Masta" surveys Australia's role as administrator of Papua New Guinea for almost 70 years, Thursday 0730, Friday 1530, Sunday 0930, Tuesday 0230, Wednesday 2030. A two-parter on earthquakes and volcanos airs the weeks of April 27 and May 4. (via Bruce MacGibbon, RIB)

AUSTRIA Radio Austria International at 0000-0400 is on 9870 and 13730, and via Canada at 0500-0700 on 6015. (Herbert Aichele, *Sweden Calling DXers*) See also CANADA.

BRAZIL Radio Cancao Nova now uses three shortwave transmitters, heard at 2300 past 0030 on 4825, 6105, and new 9675. (Ernie Behr, Ontario, *NASWA Listener's Notebook*)

Trans World Radio plans to build medium and shortwave stations in Goiania. (Cesar Higa, *SCDX*) Radio e Televisao Sentinela da Amazonia, in Obidos, Para, has a construction permit for 1 kW on 3265 (Claudio Moraes, *SW Info*)

BULGARIA Radio Sofia is running two contests: One on the United Anti-Fascist Front in World War II and Bulgaria's international prestige, with a September 19 postmark deadline; the other on postal history, deadline May 31.

Prizes in the first are a visit to Bulgaria or souvenirs; in the second, stamps. Write the station or listen for further details. (via Kevin Klein, *World of Radio*)

BURMA Radio Kawthulei, The Karen clandestine, plans to resume transmissions after a four-year break. Previous frequency was 9775. (Sarah Weerakoon, *Union of Asian DXers*)

CANADA Contrary to last month's info, RCI's new relay via Xi'an, China, is on 9535 and 11795, in Japanese at 1330-1400; also on 15435 and 11955 in English at 1300-1330, when the Yamata, Japan, relay is also used on 17810 and 15270. Yamata's remaining schedule: 1330-1400 Russian, and 1400-1430 Ukrainian on 6150; 1930-2000 Russian on 9650; 2200-2230 English on 15440, 11705; 2230-2300 French on 11705.

The new Vienna relay is on 11730 at 0300-0400, 15275 at 0400-0500, with English at 0300-0330 and 0400-0430 weekdays, 0300-0400 weekends, the remainder in French.

RCI, Sackville, is also back on 13 meters after a long absence, 21545 Monday-Saturday 1330-1600, daily 1600-1800, including English at 1445 and 1615. (*World of Radio*) "SWL Digest" via Austria UTC Saturday between 0300 and 0400, repeated Wednesday after 0400. (William Westenhover, *DXLD*)

CHINA Here's why Heilongjiang PBS, 4840, has a reputation as being tough to QSL -- the station I and many others thought was this, is really Haixia Zhe Sheng, Voice of the Strait. (Jean Burnell, Newfoundland, *CIDX Messenger*) See also CANADA.

COLOMBIA Official holidays for the rest of 1989, which may have a bearing on shortwave programming and extended

schedules: May 8 and 29; June 5; July 3 and 20; August 7 and 21; October 16; November 6 and 13; December 8 and 25. (Jaime Londono Valbuena, Tolima, *Play-DX*)

COSTA RICA Radio for Peace International has become the only Western Hemisphere station on 11 meters, and the only station in the world on that band after 1600 UTC -- 25945 kHz has been operating weekdays 1400-1700, parallel 7375; 2100-2400 and weekends 1800-2400 parallel 21563. Weeknights 0100-0400 also on 21560 and 13663.

CUBA Congratulations to Radio Rebelde, whose 710 kHz outlet set up to block the drug-money-supported "wacky" WAQI, Radio Mambi in Miami, radiates an eleventh harmonic strong enough to be heard in Japan at 1000 by Nobuyoshi Aoi of Radio Nuevo Mundo, on precisely 7809.81 kHz -- not to be confused with RRI Merauke, Indonesia, on a measly second harmonic, 7809.80!

DENMARK is likely to become a country without shortwave as the outmoded Herstedvester transmitter closes down and external services go out via Norway. Get it while you can.

The March schedule, perhaps partially valid until May 6, included 25850 during our mornings, 15165 afternoons, 11845 and 9595 evenings -- one at a time. (via Stig Hartvig Nielsen, *WOR*)

ECUADOR HCJB has interrupted its North American release in English for half an hour in Japanese, daily at 0430 on 15155, 11775, 9720. The super-campy "Unshackled" is heard UTC Saturdays at 0330. (via Kraig Krist, *WOR*) See also NETHERLANDS ANTILLES.

FRANCE Radio France Internationale added another half-hour in English, at 1400 to India on 17695. (Bob Zilmer, NM, *DX Spread*) Could this be via China?

GUAM High Adventure never could get a final go-ahead from authorities in Singapore or Philippines, but they have from this U.S. territory, for a shortwave site to evangelize China. Construction can begin once another \$100,000 is collected. (*WOR*)

KVOH in Los Angeles also intends to commission a second transmitter this year beamed toward Asia. (Ray Greet, Radio Australia Japanese *DX Time*) See also ISRAEL.

GUATEMALA Union Radio, 5980 kHz, program schedule through June, all in Spanish, shows: Monday-Friday 1155-1500, Monday-Thursday 2355-0205 Tuesday-Friday, Friday 2055-0205 Saturday, Saturday 1045-0200 Sunday, Sunday 1155-1545, including *Guatemala DX* Sunday at 1500-1515. (via Rowland Archer, *WOR*)

The TGMUA DX program is "Union DX," Sundays at 1535, produced by the Guatemala DX Club, which offers special numbered QSLs for correct reports to Radio Adventista Mundial, Apartado Postal 51-C, 01915 Guatemala. And TGMUA is not on the air after 1600. (Edgar A. Oliva M., Guatemala, *DXLD*) Frequency usually in the 5981-5982 area.

INDIA All India Radio wants to broadcast to the large Indian communities in California and Florida, but has been unable to find adequate relay exchange facilities. India lost out to China in a relay deal with France. (*Times of India* via *Asian DX Review*)

IRAN [non!] A station calling itself "Radio Tehran, Voice of the Islamic Revolution of Iran," has been heard within 1 kHz of Iran itself on 9022 at 0930-1015 reading extracts from *Satanic Verses*. (*SCDX*)

IRAQ Radio Baghdad in English at 0230-0417 is on 9515 and new 11880. (Bruce MacGibbon, *DXS*, and Ernie Behr, *NASWA LN*) Probably one hour earlier during DST.

IRELANDS Voice of the Republic of Ireland, heard testing Fridays at 2100 on 6135, claiming 2 kW and a second transmitter on 27830. (Anthony Gallegger, Ireland, *SCDX*) And the only shortwave hobby pirate in Northern Ireland for a sesquidecade is Rock Radio International, 6272.5, Sunday 1000-1500; no politics. (John Campbell, Radio Netherlands *Media Network*)

ISRAEL [?] King of Hope, 6280, resumed broadcasting after several weeks off. Some reports say it has moved across the border from southern Lebanon to Israel. (*SCDX*) The High Adventure flyer quoted under Guam also says that Voice of Hope stations have started a move "out of Lebanon's war zone," without specifying Israel, though George Otis was photographed on their new "promised land" with an Israeli colonel.

JORDAN English from Amman is on new 13655 at 0500-0900. (Bryan Clark, New Zealand, Radio Australia *Communicator*) Also until 1415, then switching to 9560. (Edwin Southwell, England, *SCDX*)

The Arab heard on 10000 kHz mixed with time signals is Jordan, with a spur 165 kHz above 9835, just like the plus/minus 165 kHz spurs from 11810 last month. (Bob Padula, Australia, *DXLD*)

MEXICO La Poderosa NX, Mazatlan, Sinaloa, was heard at 1235 on 2580 kHz, the second harmonic of 1290. (Glenn Hauser, Austin, TX)

MONGOLIA Contrary to schedule last month, Ulaanbaatar not heard on 21770. (Kunihiro Nishida and Shigenori Aoki, Asian Broadcasting Institute via *NASWA LN*) But the 12015 kHz transmitter puts out many spurs at multiples of plus and minus 24.2 kHz, from 11942.2 to 12087.6. (Tetsuya Kondo, *ibid.*) 12015 blocked by Chinese station, but clear on 11990, in English at 1215. (Richard A D'Angelo, PA, *DXS*)

MOROCCO English from Rabat heard at 1602-1632 on 17595, with news until 1606, then music, and at 1619 a VOA production in Special English, "Words and Their Stories," about expressions tied to the word "dead;" after 1620 interference from Belgium on same frequency. (Kraig Krist, VA, *DXLD*)

NETHERLANDS ANTILLES Radio Nederland is still jamming 31 meters with noisy spurs from 9590 and 9715, but now plus and minus 40 kHz. Spurs noted since 1987, but the station continues to ignore the problem. (Ernie Behr, Ontario, *NASWA LN*)

Those great tacky, organ, anguished radio plays from the Pacific Garden Mission in Chicago, "Unshackled," are not only on HCJB but also TWR, Saturdays at 1330 on 11815 and 15345. (*WOR*)

PERU Radio Frecuencia Lider, Bambamarca, can only broadcast between 2300 and 0500 UTC, when the local electricity supply is turned on -- folk music until 0100, then message service, 0200 musical requests, 0300 romantic music, 0400 musical variety. (Oscar Peralta Rojas, secretary, and Valentin Peralta Diaz, owner, RFL, via Rowland Archer, NC)

No frequency given but originally reported on 4418 by Pedro F. Arrunategui; and in *Pampas DXing* by Rafael Rojas Foinquinos, Lima, on 4415.

A new station in the town of Siria in the Apurimac Valley is Estacion Siria, heard on 4830 at 2130 and 2330 with dedications. (Rojas, *ibid.*)

Radio Tarma, OCX4E on 4775, operates 1000-1400 and 2000-0500 except Sundays at 1200-0500. (Julian Anerson, *Pampas DXing*)

SOMALIA Hargeisa, 7120, is regularly heard on harmonics 14240 and 21360 from 1200 past 1700. (Sarath Weerakoon, Sri Lanka, Union of Asian DXers)

SPAIN Spanish National Radio has been using 15110 for English at 0000, 0200, and 0500, along with 9630. (Bruce MacGibbon, *DXS*)

SRI LANKA A new clandestine for the election was Voice of Tamil, 0130-0215 and 1030-1115 in Tamil only within 5 kHz of 7000. (*SCDX*) On 6993, by the Eelam National Democratic Liberation Frong. (Victor Goonetillede, Sri Lanka, *RNMN*)

SWITZERLAND Red Cross Broadcasting Service will be active the following weeks: April 30, May 28, June 25, July 30, August 27. English to North America goes out the following UTC Tuesdays and Fridays at 0310-0327 on 6135, 9725, 9885, and 12035. (via Kevin Klein, *WOR*)



TAHITI RFO on 11822 instead of 11825 at 0318 with island music. (Bruce MacGibbon, OR, *DXS*) Moved down to 11822.7 to avoid interference, but now wiped out by Cuba on 11820; 0430 island music, 0600 French news parallel 15170.8. (Ernie Behr, *NASWA LN*)

TONGA TBC is active on 5030 kHz, with news in English relayed from Radio Australia at 0700 but mostly in the local language except for some ads and educational programs in English; probably less than one kilowatt, about the same strength here as Solomons on 5020. (Douglas Doull, New Zealand, R Australia *Communicator*)

UKOGBANI BBC has a new transmission direct to western North America on 9915 at 2200-0530, beamed 320 degrees. (Bill Dvorak, WI, *DXLD*) See also IRELAND.

USA KGEI has been broadcasting in the Gypsy language, Romany, for more than a year, schedule unknown; also to be added on other FEBC stations in Seychelles, Saipan, Philippines. (Christian Zettl, Austria, *SCDX*)

WCSN gives studio tours Monday-Friday at 2 p.m. at the Christian Science Broadcasting Center in Boston. Visitors are also welcome at the sites in Maine and Saipan if given some advance notice. (*DX Ontario*)

WCSN and the new site in South Carolina, WSHB, have only one frequency in common on the schedule until May 7: 21640 from WCSN at 1600-2000, and from WSHB at 2000-2200. WCSN also uses 15580, 15390, 15300, 9870, 9850; WSHB also on 17555, 15205, 13760, 11980, 11930, 9495, 9455. (George Jacobs & Associates, *WOR*)

Plans for World News and Information Radio continue, with a proposed schedule of two-hour blocks containing NPR's "All Things Considered": 2200 to Brazil, 0000 Caribbean and Venezuela, 0200 Mexico, 0600 New Zealand, 0800 Australia, 1000 Japan, 1200 Philippines and Korea, 1400 Hong Kong, 1800 Middle East, 2000 Europe. (*WOR*)

VENEZUELA Radio Tachira, 4830, has an international mailbag program, "Domingo Internacional," UTC Sundays until 0300. (Don Moore, OH, *RCI SWL Digest*)

Your editor's broadcasts help keep you up to date on shortwave and other media: *World of Radio* is scheduled on WRNO, New Orleans: Thurs 1530 UTC (sometimes) on 11965; 2300 on 13720; UTC Sat 0300 on 6185; Sat 2330 on 13720; Sun 2030 on 15420. And on Radio for Peace Int'l, Costa Rica: Tues and Thurs 1700 on 25945, 7375; Tues 2300, Fri 2100, Sat and Sun 1800 and 2100 on 25945, 21563; UTC Wed 0300 and Sat 0100 on 21560, 13663.

A separate weekly DX report concludes each "SWL Digest" on Radio Canada Int'l: Sat 0307, 2107, 2137; Sun 0007, 0137, 2307; Tues 1233, 1907; Wed 0407. See schedule pages and CANADA on previous page.

Also sample your editor's own publications, which emphasize shortwave broadcasting -- *DX Listening Digest* and *Review of International Broadcasting*, \$2 each in North America, \$3 or 7 IRCs elsewhere. Subscriptions are \$21 each in North America, or both for \$40, from Glenn Hauser, Box 1684, Enid, OK 73702.



Shortwave Broadcasting

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Let other readers know what you're enjoying.

*Send your loggings to **Gayle Van Horn**
P.O. Box 1088, Gretna, LA 70053-1088*

English broadcast unless otherwise noted.

- 0015 UTC on 15115**
North Korea: Radio Pyongyang. Commentary in English on the political situation in Korea. Also monitored on 15160 kHz, but signal is barely audible. (Bob Hurley, Baltimore, MD) Monitored on 13650 kHz at 2300 UTC. (Mark Selden, Coral Gables, FL)
- 0023 UTC on 4588**
Argentina: Radio Rivadavia. Spanish. ID as "Rivadavia" at tune-in. Commercials and Spanish romantic ballads. Additional IDs at 0035 UTC, and possible lottery information at 0037. Near grayline condition at this time. Best reception in upper sideband. (Guy Atkins, Issaquah, WA)
- 0030 UTC on 5030**
Costa Rica: Radio Impacto. Spanish. North American pop tunes with Spanish lyrics. Station ID at 0053 and 0059 UTC. (Frank Mierzwinski, Mt. Penn, PA)
- 0035 UTC on 9630**
Spain: Spanish Foreign Radio. Report on Spaniards learning English by audio tapes. Parallel frequency 11880 kHz heard. (Bob Fraser, Cohasset, MA)
- 0040 UTC on 4889**
Ecuador: Radio Centinela del Sur: Spanish. Beautiful Andean ballads to station ID. Local commercials, station jingles, and program announcements for fair signal tonight. (Larry Van Horn, Gretna, LA)
- 0045 UTC on 4835**
Guatemala: Radio Tezulutlan. Spanish. Marimba music and religious prayers with hymns. Also monitored from 1145-1230 UTC on 4835 kHz. (Nick Terrence, Huntington, NY)
- 0052 UTC on 9925**
Belgium: BRT. Pop music and details on station contest. Address information and station ID at 0055 UTC. "This is the B.R.T., the voice of the Flemish community." Sign-off with brief organ music fanfare. Signal noted to be of low modulation level. (Guy Atkins, Issaquah, WA)
- 0101 UTC on 5055**
Costa Rica: Faro del Caribe. Spanish. Latin vocals with "Faro del Caribe" ID with mention also of Costa Rica. (Frank Mierzwinski, Mt. Penn, PA)
- 0115 UTC on 4820**
Honduras: Radio La Voz Evangelica. Spanish. Contemporary Christian music, evening gospel message, and ID. (John Bourgerois, Thibodaux, LA)
- 0120 UTC on 3310**
Bolivia: Radio San Miguel. (Tentative) Spanish. Two Bolivian folk tunes with chat among two announcers. No ID heard at the 0130 break however, signal was fading rapidly and may have just missed it. Will keep after this one! (Frank Hillton, Charleston, SC)
- 0125 UTC on 9475**
Egypt: Radio Cairo. Spanish programming with features and Egyptian music to 0159 UTC. English service intro with ID and international news. (Rod Pearson, St. Augustine, FL) Heard on 15210 kHz at 1900 UTC. (Loy W. Lee and Maywood DX Team, KY)
- 0130 UTC on 9875**
Austria: Radio Austria Int'l. American pop jazz of 1930s era and station ID. Continued monitoring to 0200 UTC. (Nick Terrence, Huntington, NY) (Bob Fraser, Cohasset, MA)
- 0147 UTC on 4825**
USSR: Radio Turkmen. (Tentative) Russian. Repetitive string instrumental music. Time-tips and Russian announcements. (Guy Atkins, Issaquah, WA)
- 0200 UTC on 9855**
Israel: KOL. "Israel News Magazine" show, followed by "Calling All Listeners" mallbag show at 0210 UTC. Signal faded on 9855 kHz, switching to parallel 9435 kHz improved for better reception. (Bob Hurley, Baltimore, MD) (Bob Fraser, Cohasset, MA)
- 0201 UTC on 11940**
Romania: Radio Bucharest. International and national news of Romania, with closing main points. Pop music interludes and station ID. Editorial on socialism. Co-channel interference with Radio Canada Int'l. Parallel frequency 11830 kHz fair. (John Bourgerois, Thibodaux, LA) (Harold Frogge, Midland, MI)
- 0210 UTC on 4970**
Venezuela: Radio Rumbos. Spanish. Beautiful piano instrumentals, and easy-listening Spanish solos, to canned "Rumbos" ID. (Frank Hillton, Charleston, SC) (Loy W. Lee and Maywoods DX Team, KY)
- 0211 UTC on 17730**
Brazil: Swiss Radio Int'l relay. Report on the Paris conference on chemical weapons, followed by sports report. (James Kline, Santa Monica, CA)
- 0214 UTC on 5010**
Madagascar: Radio Madagasikara. Malagasy. Native African and highlife music at tune-in. Announcements sounding like news briefs followed by clear "Radio Madagasikara" ID at 0230 UTC. More chat from announcer. Fair signal with interference; however, able to monitor continued music until 0250 UTC. (Frank Hillton, Charleston, SC)
- 0215 UTC on 4830**
Venezuela: Radio Tachira. Spanish. Pop/rock vocals, station time check and ID. Romantic Spanish ballads and U.S. pop tunes. (Frank Hillton, Charleston, SC) (Loy W. Lee and Maywoods DX Team, KY)
- 0232 UTC on 9600**
Portugal: Radio Portugal. News on the first Master's Degree awarded in Portugal. (George Neff, Tampa, FL) Monitored on 15250 kHz at 1930 UTC. (Loy W. Lee and Maywoods DX Team, KY)
- 0240 UTC on 9580**
South Africa: Radio RSA. Interview with South African winery operator. (Bob Hurley, Baltimore, MD)
- 0300 UTC on 5049**
Colombia: La Voz de Yopal. Spanish. Latin vocals and station ID at 0307 UTC. Strong signal interference! (Frank Mierzwinski, Mt. Penn, PA)
- 0300 UTC on 11695**
French Guiana: Radio Beijing relay. Mandarin Chinese. "Beijing Broadcast Station" ID into news. Language program, "Teaching Chinese," to English service at 0400 UTC. (Garie Halstead, Saint Albans, WV)
- 0310 UTC on 6210**
Japan: Radio Japan. National news of Japan and "Commentary" program on economic outlook. Interference from HCJB on 6205 kHz. (Harold Frogge, Midland, MI)
- 0320 UTC on 5040**
Venezuela: Radio Maturin. Spanish. Local time check and two commercials, for a bank and a market. Latin pop and instrumentals, with "Maturin" ID during breaks. (Frank Hillton, Charleston, SC)
- 0325 UTC on 11715**
China: Radio Beijing. Commentary on the Chinese tobacco industry. Noted that China is the world's largest producer of tobacco, with 200 million smokers. Government has enacted laws to restrict smoking in public places. Program ended at 0335 UTC. (Bob Hurley, Baltimore, MD) Monitored at 0302 UTC on 9770 kHz. (George Neff, Tampa, FL)
- 0327 UTC on 13645**
USSR: Radio Yerevan. Armenian. Following Radio Kiev broadcast at 0330 UTC. Five minute English brief of Communist Party news, and "So long, dear friends." (Chris Hulse, Eugene, OR)
- 0332 UTC on 3215**
South Africa: Radio Oranje. Afrikaans. Local commercials for beer and cigarettes. Station ID, time check, and 60s era pop music. (Frank Hillton, Charleston, SC)
- 0335 UTC on 11670**
France: Radio France Int'l. "Counterpoint" program, with discussion on Martin Luther King and the situation of today's black Americans. (Bob Hurley, Baltimore, MD) Audible on 25820 kHz at 1330-1345 UTC. (Frank Mierzwinski, Mt. Penn, PA)
- 0335 UTC on 17775**
United Arab Emirates. News and local weather report. "That's the news from UAE Radio in Dubai," at 0341 UTC. Request for reception reports into discussion on Arabic art. Poor to fair audio. (Guy Atkins, Issaquah, WA) "Through Western Eyes" program monitored in English on 11865 kHz at 1600 UTC. (Mary Knowlson, Beaver Falls, PA)
- 0345 UTC on 4820**
Botswana: Radio Botswana. Setswana/English. Cowbell/animal noise interval signal. National anthem and station ID. Religious message, followed by interview in English on national improvements for Botswana. (Rod Pearson, St. Augustine, FL)
- 0351 UTC on 9515**
Baghdad: Radio Baghdad. Feature discussion on international music festival and Iraqi music tunes. Station ID, easy-listening music to 0410 UTC editorial. Nice signal level! (Guy Atkins, Issaquah, WA)
- 0400 UTC on 4910**
Zambia: Zambia Broadcasting Service (ZBS). Brief commentary and native chanting. Lady with English news, followed by continued African music and occasional gospel vocals. (Harold Frogge, Midland, MI)

0425 UTC on 9637

Mozambique: (Tentative) Emissao de Sofala-Beira. Vernaculars. Native African music amid absolutely dreadful conditions! Male announcer with brief comments at 0430 UTC, although no clear ID discernible. Highlife music fading by 0435 UTC. (Frank Hillton, Charleston, SC)

0530 UTC on 9022

Iran: Voice of the Islamic Republic of Iran. (V.O.I.R.I.) Spanish. Interval signal, three gongs and ID. National anthem and opening announcement with frequency information and target areas, followed by Holy Koran recitations. (Garie Halstead, Saint Albans, WV)

0545 UTC on 7225

Nigeria: Voice of Nigeria. Station commentary and discussion on the unemployment problems and housing situation for the nation. Distinctive audio hum present, as always! (John Bougerois, Thibodaux, LA)

0613 UTC on 4915

Ghana: Ghana Broadcasting Corp. (GBC). Sports news concerning the Ghana Boxing Authority, asking all holders of National Titles to defend their crowns within two months. ID at 0615 UTC, and home news in Akan, one of many Ghanaian languages. (Garie Halstead, Saint Albans, WV) Monitored on 3366 kHz at 2140 UTC. (Loy W. Lee and Maywoods DX Team, KY)

0635 UTC on 4835

Mali: RTV Malienne. French. Childrens' chorus of native African songs. Announcements with local time check and ID included. DJ announcer format with music introductions for African highlife music program. Parallel frequency 4783 kHz not audible. (Frank Hillton, Charleston, SC)

0650 UTC on 11550

Tunisia: Radio Tunisienne. Arabic. News at the hour and discussion, sprinkled with Middle Eastern music. At least two hours of this format noted each night. (Chris Hulse, Eugene, OR)

0700 UTC on 4890

Senegal: ORT Du Senegal. French. News broadcast suffering from occasional poor audio and interference. World and national news, time check for Dakar and musical interludes. (John Bougerois, Thibodaux, LA)

0747 UTC on 6020

United States: Voice of America. Arabic. Service for North Africa with commentary on Sudan. Comments included indications that rebels had advanced to a town called Nasir near the border with Ethiopia. Parallel frequencies 9565 and 11840 kHz audible. (Garie Halstead, Saint Albans, WV) Thanks for the logs, Garie!-ed.

0918 UTC on 11780

New Zealand: Radio New Zealand. Station ID and folk music. Radio drama at 0930, parallel frequency 9850 kHz heard. (James Kline, Santa Monica, CA)

1020 UTC on 4910

Peru: Radio Tawantinsuyo. Spanish. Beautiful Peruvian yipping vocals. ID at 1030 UTC which sounded like "transmite Radio Twantinsuyo primera del pueblo." Local area commercials and continued Peruvian tunes. (Rod Pearson, St. Augustine, FL)

1022 UTC on 2310

Australia: VLBA-Alice Springs. "Scott Metal" and other music selections described as "rock n'roll western" from Sydney Top 10 List. Promotional for upcoming live TV broadcast. Good signal for this frequency and distance! (Jim Boehm, San Antonio, TX)

1035 UTC on 4980

Venezuela: Ecos del Torbes. Spanish. Latin tunes, announcements, and ID with station jingle. (George Neff, Tampa, FL)

1110 UTC on 5975

Colombia: Radio Macarena. Spanish. Latin music and commentary to ID at 1115 UTC. Music intros with comments. Fair signal this morning suffering from interference. (Mark Seiden, Coral Gables, FL)

1130 UTC on 3360

Guatemala: La Voz de Nahuala. Quiche. Native marimba music, and trumpet solos. Clear "La Voz de Nahuala" ID. (Betsy Robinson, Clinton, TN) Welcome, Betsy, hope you'll contribute again!-ed.

1200 UTC on 11945

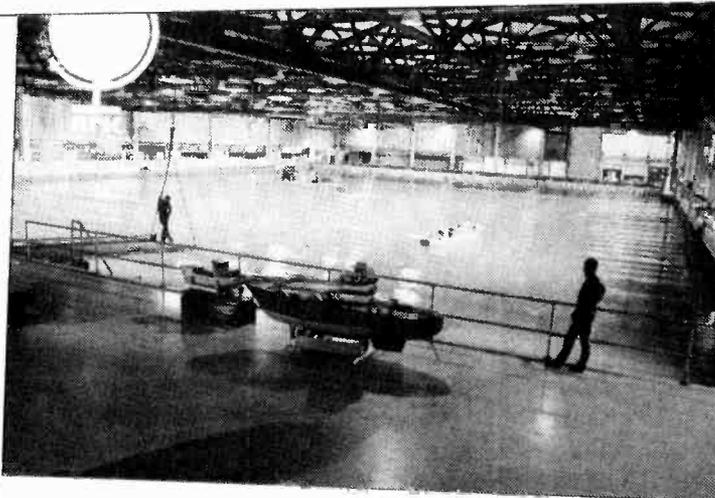
Finland: Radio Finland. "Northern Report" including news on neighbor Sweden's new budget. Weather report, press reviews and sports news. Parallel 15400 kHz announced, but not heard. (James Kline, Santa Monica, CA) (Nick Terrence, Huntington, NY)

1400 UTC on 21700

Norway: Radio Norway Int'l. Station ID, news and local weather; 1415-1417 UTC easy-listening music. Commentary on the "Childrens' Hour" radio program for kids. English service closing at 1430 UTC, suffering from considerable signal interference. (Bob Hurley, Baltimore, MD)

1648 UTC on 9560

Jordan: Radio Jordan. Pop music and male announcer to time tips at 1700 UTC. Local Amman and GMT time check, with station ID. Trumpet fanfare into news with an anti-Israeli slant. Monitored to 1805 UTC. (Guy Atkins, Issaquah, WA) English show heard on 9760 kHz, at 1950 UTC.



Radio Norway International sent this QSL to reader John Spencer Carson of Oklahoma

(Bob Hurley, Baltimore, MD)

1737 UTC on 11734

Zanzibar: Radio Tanzania. Swahili. Best signal ever heard! Male/female announcers with music of various African styles; mostly of Arabic rhythms. Mentions of "Tanzania Zanzibar" at 1745 and 1759 UTC. News items at 1800 with datelines Kinshasa, Mogadishu, and Havana. (Guy Atkins, Issaquah, WA) Great catch!-ed.

1809 UTC on 11665

Kuwait: Radio Kuwait. Commentary on the dangers of powdered milk used by mothers in Third World countries. Brief jazz interludes, and news of Prince Charles' financial assistance of parapsychology research. Station ID with time tips. (Guy Atkins, Issaquah, WA)

1910 UTC on 15215

Algeria: Radio Algeria. International news, with poor signal. (Bob Hurley, Baltimore, MD) Monitored on 17745 kHz at 1830 UTC in French. (Loy W. Lee and Maywoods DX Team, KY)

2010 UTC on 12085

Syria: Radio Damascus. News coverage on the Middle East to 2030 UTC. (Nick Terrence, Huntington, NY)

2050 UTC on 11620

India: All India Radio (AIR). "Press Review" feature on Punjab to instrumental music. Station ID and news of sponsored trip to Antartica. (Harold Frodge, Midland, MI) (Loy W. Lee and Maywoods DX Team, KY)

2100 UTC on 6240

Pirate: Voice of Tomorrow. Station ID as "When you hear the cry of the wolf, you're listening to the Voice of Tomorrow." Classical music to racial speech. (Harold Frodge, Midland, MI)

2100 UTC on 11910

Hungary: Radio Budapest. National news of military army officers, Hungarian Boy Scouts, and upcoming spring session of parliament. (Betsy Robinson, Clinton, TN)

2130 UTC on 5003

Equatorial Guinea: Radio Nacional. Spanish. ID at tune-in as "Radio Nacional de Guinea Ecuatorial Bata," and spiritual music. Occasional talk and ID, and African highlife tunes. (Rod Pearson, St. Augustine, FL)

2130 UTC on 7325

United Kingdom: BBC. "The Pleasure's Yours" musical request program. (Bob Fraser, Cohasset, MA)

2235 UTC on 7281

Iraq: Radio Baghdad. Arabic. Middle-eastern music with breaks for program announcements. Station ID at 2300 UTC as "Iraqiyya fi Baghdad." News headlines, and Holy Koran recitations at 2305 UTC. Station ID and sign-off at 2310 UTC. Did not hear their usual closing national anthem this time. (Stephen Price, Conemaugh, PA)

2300 UTC on 9800

USSR: (Lithuania) Radio Vilnius. Five minutes of English news; discussion on national census taking by U.N. rules. Report on the 1940 Soviet annexation of Lithuania, and "DX Club" mailbag show. Minimal signal interference from Radio Canada Int'l on 9755 kHz. Also monitored on 13645, 15180, and 15455 kHz, but all signals weak. (Bob Hurley, Baltimore, MD) Audible on 7400 kHz at 2305 UTC. (George Neff, Tampa, FL)

2355 UTC on 4845

Mauritania: RTV Mauritanie. Arabic. Islamic recitations to Arabic announcements at 0000 UTC. ID sounding like "Islamliyya Al-Mauritaniyya." Sign-off with brass-instrumental national anthem. (Guy Atkins, Issaquah, WA) (Loy W. Lee and Maywoods DX Team, KY)

Larry Van Horn
 P.O. Box 1088
 Gretna, LA 70053-1088

IFE: In-Flight Emergency!

One of our readers in New Hampshire recently passed along a very exciting intercept of a U.S. Air Force IFE (In Flight Emergency). While the frequencies he monitored are not in the shortwave range, there's little doubt that USAF HF frequencies were buzzing with activity during this serious emergency. Our New Hampshire reader writes:

"Since I live within 25 air miles of Pease Air Force Base, I monitor Pease's air and ground nets frequently on my scanner. Recently I heard the Pease Fire and Crash net mention that an in-flight emergency aircraft was due in and their estimated time of arrival (ETA) was one hour.

"The aircraft was an E-3A. It was apparently out of Tinker Air Force Base, Oklahoma, and headed overseas when all its internal hydraulics were lost. The aircraft was inbound to Pease from the Atlantic Ocean.

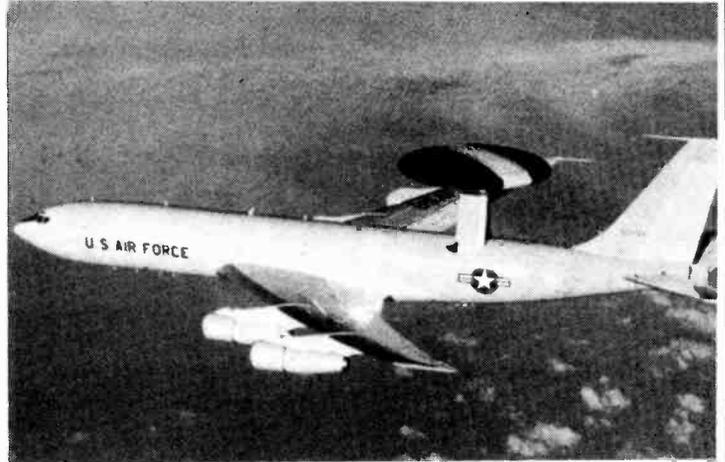
"On board the aircraft was the 28th Air Division Commander, a general, and two colonels. The aircraft's callsign was SPUN 51 for that evening.

"The aircraft arrived about 0620 UTC and after making one approach, it went around again. The aircraft landed about 0640 UTC and the landing gear had to be lowered manually. The aircraft finally stopped just 2,000 feet short of the end of the runway.

"After it stopped, hydraulic fluid was leaking heavily from the aircraft onto the aircraft's hot brakes and a fire broke out. The crew aboard the aircraft was evacuated using the emergency slides on the aircraft at 0643 UTC. The fire was extinguished within one to three minutes and everyone was evacuated safely.

"The Pease units did an excellent job of keeping a very dangerous situation under control. Too bad Pease is on the Secretary of Defense's list of bases to be closed. I would imagine, though, that the crew of SPUN 51 was glad that Pease was still an active base."

Our listener in New Hampshire reports that he was using two scanners to keep up with the radio traffic. The following



When the hydraulic system was lost on an E-3A, In-Flight Emergency frequencies came alive!

frequencies were monitored:

Fire and Crash	173.5875
Command Post	149.575
Pease Tower and SPUN 51	133.050

As I mentioned before, HF frequencies were surely active during this in-flight emergency. The U.S. Air Force Global Command Control System (GCCS) Stations are a great place to hang out during in-flight emergencies. Some of the best and most interesting aircraft traffic is passed on frequencies used by GCCS stations.

The U.S. Air Force GCCS provides air-to-ground HF radio communications between ground agencies and U.S. military aircraft for passing command and control information. Allied aircraft and other aircraft are also provided support.

Prior to October 1, 1983, the system was called the U.S. Air Force Aeronautical Station System. The biggest function of that old system was to provide air traffic control of military aircraft. On October 1, 1983, that function was turned over to civilian air traffic control authorities.

Recently, one of the stations that has been heard for a number of years, Scott AFB, Illinois, left the airwaves. Now there are only 14 GCCS stations worldwide on the air.

Since the air traffic control function is no longer done by these Air Force stations, GCCS channels have really quieted down. But I do not want to downplay the importance of these frequencies. U.S. Air Force outfits such as the Hurricane Hunters out of Keesler AFB, Mississippi, use GCCS frequencies to relay their vital weather data back to the National Hurricane Center in Miami.

All sorts of military and U.S. government aircraft utilize GCCS channels for phone patches, weather information, and command messages. Listeners familiar with SAC Foxtrot messages will also hear these cryptic messages being passed on this worldwide network.

Table 1 is a listing of all 14 U.S. Air Force GCCS station and their frequencies.

Table 1
USAF GCCS Stations and Frequencies

Albrook, Panama	18019, 15015, 11176, 6683, 3137
Andersen AFB, Guam	18002, 11176, 8967, 6738, 13201, 4721
Ascension Island, Aux AF	15015, 13244, 11176, 8993, 6753
Clark AB, Phillippines	-----
Manila FIR (N and E)	18002, 13201, 6738
Manila FIR (West)	8993, 23227, 11176
Indian Ocean	13201, 23227, 11176
Croughton, England	13214, 11176, 9011, 6750, 5703, 3067
Elmendorf AFB, Alaska	11176, 8989, 6738, 13201, 3081
Hickam AFB, Hawaii	18002, 13201, 11179, 8964, 6738, 4729
Incirklik AF, Turkey	23227, 15015, 13214, 11176, 6738, 3137
Lajes Field, Azores	13244, 11271, 8967, 6750, 4746, 3081
Loring AFB, Maine	13214, 11179, 8964, 6738, 3074
MacDill AFB, Florida	18019, 13244, 11246, 8993, 6750, 4746
McClellan AFB, Cal	18002, 13201, 11239, 8989, 6738, 3067
Thule AB, Greenland	13201, 8967, 6738
Yokota AB, Japan	18002, 13201, 11236, 8967, 6738, 4747

Rainbow Radio Identified

In several recent issues of *Monitoring Times'* Utility World column, I have listed quite a few loggings for a "Rainbow Radio." Up until now, I did not have any listings or information as to what "Rainbow Radio" was. Longtime Ute World logging reporter Bill Battles in New Hampshire has come to the rescue. Bill recently received a verification (QSL) from Rainbow Radio and has shared the reply that he received from the station with Utility World readers.

Rainbow Radio is the callsign used by Sea Link, Ltd, of St. John's, Newfoundland, Canada. It is a private radio company that provides ship and aircraft communications relays. The actual location is Tors Cove, a small, scenic community on the most easterly shoreline in North America. Nearby is the site of Marconi's first wireless radio overseas message. (This is quoting from their reply brochure.)

The main control center is nestled on 14 acres surrounded by trees and ocean. The building is 3600 square feet and it houses the station's operators. A four acre remote site at Bear Cove in Witless Bay (ten kilometers away) handles the surface wave system.

Transmitting equipment for the station was built by Rockwell Collins. The station's log periodic curtain and marine whip antennas were built by Valcom.

The marine side of Rainbow radio goes by the callsign of Tors Cove Radio. The surface wave system will support Group III FAX and 2400 baud data. The aircraft side of the station is fully integrated with international airline computer networks. It is also connected to the SITA network to allow message relays to any airport with hard copy at both ends.

Rainbow Radio can also send and receive up-to-date weather information to all major airports. The station has a phone patch as well as ICAO SELCAL capability.

The station uses ICOM R-71A receivers as backup monitors. They also use an ICOM M-700 marine transceiver and a Harris RF-3200 (1,000 watt PEP) transmitter as a backup.

Mr. Glenn R. Tobin is the Chief Operator for Rainbow Radio and for verification chasers the following mailing address should be sufficient:

Sea Link, Ltd.
P.O. Box 5754
St. John's, NFLD
Canada A1C 5X3

Operating frequencies for Tors Cove and Rainbow Radio are as follows:

TORS COVE RADIO	RAINBOW RADIO
Marine Calling Freq	Aeronautical Calling Freq
2487.0 kHz	3485.0 kHz
7460.0 kHz	5604.0 kHz
	8819.0 kHz
	13285.0 kHz
	VHF Air-to-ground Freq
	130.9 MHz

Bill and I have personally monitored Rainbow Radio on 13420.0 kHz. This frequency seems to be used as a phone patch frequency by Rainbow. This frequency is not listed in the information sent to Bill by the staff of Sea Link, LTD.

Another HF station that Bill has heard from Canada is Wardair Toronto Ops. The frequency most commonly heard is 13286 kHz. Bill would like for anyone who has heard them on

any other frequency or has any information on their HF radio operations to write to Utility World in care of the address in the masthead. I will forward the information to Bill and all of our Ute World readers as the information becomes available on Wardair.

What's New With SAC???

SAC military reporters have noticed what might be the beginnings of a wholesale change in the channel designators for the Strategic Air Command channels.

Bill Battles and others have reported SAC channels being referred to as "Whiskey" channels. Recently, Bill monitored 13247 kHz and heard it referred to as W-109. On 13247, Bill heard Freehand working Ore Mine on "Whiskey 109" in USB around 0024 UTC. Other designators heard mentioned include W-102, 104, and 105.

Anyone hearing any of these new "Whiskey" designators with frequencies are asked to record the frequency, designator, time, unit, and callsigns using these designators and send them to Utility World. I will compile all the information and when the picture becomes clear, will present it to all in this column.

"BRAVO 09???"

Utility station listening is always full of mysteries. Just about the time a mystery such as Rainbow Radio is solved, several more mysteries will crop up to take its place.

One such mystery is that of USCG scrambled HF air channel "Bravo 09." This mystery channel remains a mystery and several of our readers could really use some help finding it.

Also, the DEA has recently popped up in some unusual places. Several nights ago they were heard using 11494 kHz (SAC channel Lima). I agree with the monitor who reported the listing that, "This is strange." They were on for quite some time using their typical "Slingshot" and other tactical callsigns. The stations involved were passing radar position reports of targets to an intercepting aircraft.

The DEA/Customs folks have also been heard on 11073.5 kHz. Seems as though these folks are popping up like late spring flowers all over the HF spectrum. Listeners might also want to keep an eye on 11288 and 13312 kHz for these agencies' activities. This just goes to show that the government can use just about any frequency it wants for any agency.

From the Mailbag

Utility World reader Ken Beresford, in England, would like to know if a list of aircraft SELCAL codes exists and where such a list could be obtained. Well, Ken, I haven't heard of such a list but if any of our readers can help, please drop me a note so I can pass it on to Ken.

John Henault answers a query from several issues ago. Terry Colgan was wondering who the radio ID "Bandsaw Gulf" or "Golf" represented? According to John, that is the callsign for an E-3 AWACS aircraft. John could not find a reference for Guardian or some of the other callsigns mentioned by Terry in that column.

John believes that they were tactical in nature and probably changed like most do on a daily basis around 0001 UTC. I think that more than likely they are airborne command post tactical callsigns that you hear on SAC channels quite frequently. These aircraft pop up all over the band on different agencies' frequencies. Thanks for the background, John.

Utility World

U.S. Navy NAVCAMSLANT Schedule

Jim Boehm in San Antonio, Texas, has sent along the transmission schedule for U.S. Navy communication station NAM in Driver, Virginia. Jim says that NAM is a good place to camp out during hurricane emergencies.

"Monitoring this station's weather segments provides me with the best hurricane information I could obtain," Jim said. To boot, Jim says that the drill segments are super for those of you needing code practice for your amateur radio license.

The 0200 segment starts with code sent at five words per minute and ending up at 25 words per minute. By copying these practice messages, utility buffs can also get practice in copying unclassified Navy messages which will give the monitor practice in copying and recognizing Navy message formats.

Here is the schedule and frequencies for NAM:

Frequencies: 8090.0, 12135.0, 16180.0, 20225.0 kHz.

Mode: Morse Code (CW) simul-keyed on all frequencies.

Schedule

UTC	Broadcast	UTC	Broadcast
0000	Weather	1200	Weather
0100	NUKO/LCMP-2	1300	NUKO/LCMP-1
0200	Drill	1400	NUKO/LCMP-2
0300	Drill	1500	NAVAREA-IV
0400	Drill	1600	Hydrolant
0500	Drill	1700	Weather
0600	Drill	1800	NUKO/LCMP-1
0700	Drill	1900	NUKO/LCMP-2
0800	Hydrolant	2000	Weather
0900	NUKO/LCMP-1	2100	NAVAREA-IV
0000	Weather	2200	Weather
0100	Weather	2300	Weather

Well, that is about it for this month. Now it's time for your loggings from the Utility World. . . .

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

- 2096.5 KUY-Limited Coastal Station, Port Arthur, Texas, heard in USB at 1008 working "Zephur" tied off at Dock 20, Texas City, and "Marathon" at marker 124 inter-coastal waterway. (Jim Boehm, San Antonio, TX) *Nice to see you return, Jim. -ed.*
- 2405.0 5IC calling MZR and NCA -- unidentified, heard in CW at 1048. At 1056 MZR sent a long series of Vs with a single ID. Nothing more heard after 1100. (Boehm, TX)
- 2626.0 U.S. Navy tactical link 11 -- Tactical data HF relay heard at 0952.
- 2754.4 CKN-Canadian Forces Radio, Vancouver, BC, Canada, heard sending CW at 0951 with a V marker for C13E broadcast. (Boehm, TX)
- 2815.0 DR7-Unidentified. CW heard at 0324 until 0414. When frequency quieted down heard "VVV VVV VVV DR& DR& DR&" with brief intervals between transmissions. (Boehm, TX)
- 4035.0 Mike Foxtrot working Sierra Sierra with a SAC type EAM broadcast in USB at 0634. (Bill Battles, East Kingston, NH) *Welcome back, Bill, thanks for the great logs this month. -ed.*
- 4041.0 U.S. Navy MARS stations NNOHRC/XIH/INW/QEN/VZS all heard transmitting in USB at 2220. (Harold Frodge, Midland, MI)
- 4373.0 Unidentified station k"AX" working an unknown station in USB at 0337. (Frodge, MI)
- 4416.3 Unidentified station "LU" sending an alpha-numeric message at 0336 in USB. (Frodge, MI)
- 4630.0 Female English 4/5 digit number station heard at 0333. (Frodge, MI)
- 5335.0 RDM78-Tbilisi Meteo, Georgian SSR, with coded synoptic weather reports for the Soviet Union at 0332. RTTY 425/50. (Sam Ricks, Philadelphia, PA) *Welcome again to the column, Sam. As always, your Soviet contributions are most appreciated. -ed.*
- 5598.0 Airliner "Jordanian 271" heard using USB at 0637 repeating back his oceanic clearance to New York Radio. Route of flight will take the aircraft from HENCH direct to Bermuda, airway blue 646 to EXTER, Bahama route three lime to Birmini. This is a scheduled flight from

Vienna to Miami. (Garie Halstead, Saint Albans, WV) *Welcome back, Garie. Thanks for the great logs. -ed.*

- 5657.0 UXUC heard in CW at 0726 calling CQ (a general call for any station-ed.) then sent an aviation weather message (repeated twice) from 877. The 877 trinome is believed to be a destination for a particular airport. Message mentioned SNEG (Russian for snow) and a temperature of minus 35. At 0731 UXDF was heard with weather from 707 in CW with abbreviated weather terms VID BOLEE 10 (visibility more than 10 km). The conditions sound a bit Siberian (brrrrrr-a bit-ed!!). The polar flutter I heard on the signal probably confirms this probable location. (Halstead, WV)
- 5879.0 70C-Khormaksar Aeradio, Aden, South Yemen, heard with RYs at 0341. RTTY 425/50R. (Ricks, PA)
- 6269.6 UVEH-Pavel Vavilov, Soviet ice strengthened bulk carrier, with traffic for Murmansk Radio via UAT Moscow Radio at 0315. In the Sargasso Sea, Mid-Atlantic enroute to Riga. RTTY 170/50. (Ricks, PA)
- 6280.0 Heard at 0416 a female English five-digit number station. (Frodge, MI)
- 6784.0 Female English 3/2 digit number station heard at 2126. Very poor reception. (Frodge, MI)
- 6825.0 Female Spanish five-digit number station heard at 0308. (Frodge, MI)
- 6955.0 Female English 3/2 digit number station heard at 0320 with a prefix of 110. (Frodge, MI)
- 6961.0 USCG group Key West heard in the clear/DVP traffic also heard on this frequency in USB at 0056. (This may be one of the Bravo frequencies for CG law enforcement ops). (Battles, NH)
- 6965.0 Male English 3/2 digit number station heard at 0417. (Frodge, MI)
- 7535.0 USS John F. Kennedy (CV-67) working Norfolk Seaset in USB at 1502. USS Saipan working Norfolk Seaset at 1550 in USB. (Battles, NH) *Interesting. -ed.*
- 8101.0 Stringer working Valhalla with 369 message of eight groups in USB at 2334. (Battles, NH) *SAC channel Alpha Papa. -ed.*
- 8153.0 Transmitting in USB-FOB13 repeating voice announcements telling A523 to shift to guard frequency 4929 for "real world" contact point as a link up for the exercise control group at 0305. (Bob Grove, Brasstown, NC) *Well, well, the boss checks in with an interesting Intercept. I really don't know who these folks are, any help from our readers? -ed.*
- 8348.0 UMFV-Soviet Hydromet weather research ship, NIS Professor Zubov, heard with coded weather for RNO-Moscow Arctic/Antarctic Meteo Radio at 0143. RTTY 170/50. (Ricks, PA)
- 8378.0 YTSK-A vessel of Yugoslavian registry, the "Hercegovina," heard using CW at 0541 with three messages for "YUR." All messages in Serbo-Croatian (studying a new language, Garie? -ed.). Last message gives a female name indicating she is okay and going to Lake Charles. (Halstead, WV)
- 8378.5 UYDO-Soviet M/V Karaganda heard sending CW at 0527 and working VCS with an OBS message for Halifax Meteo. The vessel was located southwest of the Azores. (Halstead, WV)

- 8395.0 UEWA-Soviet M/V Nikolay Tulpin heard working HPP in CW at 0615 with a message for Cristobal. Message requested ten liters of Xylene for an apparent engine problem. (Halstead, WV)
- 8404.0 UFGJ-Soviet vessel Narimanov heard in CW at 0623 with a message for Baku. Message advised PRIBYLI WHOD BOSFOR (approaching the entrance to the Bosphorus straits). I believe the vessel was working a shore station at Askrahan on the Caspian Sea. (Halstead, WV)
- 8417.0 UZZV-Kosmonaut Georgi Dobrovolski, Soviet spaceflight tracking ship with "blind" traffic for all "IKI vessels," in CW at 0313. IKI is the Russian acronym for Institute for Space Research. (Ricks, PA)
- 8842.0 Aeroflot 435, aircraft registration number 86474 heard in CW at 0647 working COL in Havana. Gave an ETA (QRE) as 0704 for Luanda, Angola. (Halstead, WV)
- 8936.0 Skyways N707 working Berne Radio, Switzerland, with a food order in USB at 0708. (Battles, NH) *This is a Swissair company channel. -ed.*
- 8989.0 MAC 70022 working McClellan GCCS AFB, California, for a radio check at 1603. McChord AFB weather broadcasted at 1606, then a Skyking broadcast from Elemendorf AFB, AK at 1613 with the operator stifling a yawn, audibly fumbling with the microphone, stifling another yawn, then even another. And, oops, a fourth and most blatant yawn. Where's Juan Valdez to bring on the coffee IV, ay? (Chris Hulse, Eugene, OR)
- 9023.0 Bandsaw Juliett (AWACS aircraft) working Oakgrove (NORAD SE) and Dragnet Uniform at 2112 in USB during tactical maneuvers near Florida Keys. NORAD air refueling operation. Also see 11186. (Larry Riffle, Key West, FL) *Welcome to the column, Larry. Glad you could join the crowd. -ed.*
- Big Daddy Oscar 90 calling Bigfoot at 1720 in USB. Huh?? (Hulse, OR) *Ah-huh. -ed.*
- 10196.0 Zero, One and Three in communications and advised to go to correct window frequency of 10195.0 in USB at 1844. (Sounded like a Tactical Canadian net.) (Battles, NH) *Might also be the bunch from FEMA, Bill. This is right around channel 27. -ed.*
- 10478.0 XY, XR, ZU, and UK heard conducting radio checks in USB at 2048. Also heard in USB at 2108 several tac calls called by Golf Bravo followed by an EAM message type traffic. (Battles-NH)
- 11045.0 Unidentified tactical net heard with air operations traffic at 2042 in USB. (Battles, NH)
- 11060.0 HQ1 working G7P in USB at 1947. (Female operator advised a male operator that she had a surprise for him, but they would have to go to RTTY as it couldn't be put out over voice. She also asked him if he missed her -- answer YES!) Could this be the Love Connection? (Battles, NH) *Probably not, Bill. Sounds more like a long-distance Navy Newlywed Game. -ed.*
- 11141.0 Unidentified units calling EASTCOM in LSB. This same group was heard later in the evening on 6830 LSB with RTTY setups, etc. (USN??) at 2131. (Battles, NH) *No, I think this one is USAF. The 11 MHz is Norad and the 6 MHz channel is a Mystic Star channel. -ed.*
- 11186.0 Spartan (USS Lexington) working HOTPAD and BLUEGHOST (NAS Key West) from 1200 to 2400 in USB during tactical maneuvers near the Florida Keys. Also see 9023. (Riffle, FL)
- 11246.0 TAC COM 40 working MacDill with a very strange phone patch from Airborne Battle Staff in reference to WARGAMES. They made some comment about *Allens* in USB at 2108. (Battles, NH) *Wonder who we were fighting this time, maybe Khadiffi is really from outer space!!! -ed.*
- 11300.0 Airliner Trans-Arabian 901 heard in USB at 0606 working Khartoum with a position report over Mike Lima (Malakal). Gave ETA for Khartoum as 0655.
- Middle East 375 heard in USB at 0442 working Jeddah requesting actual weather and giving a Jeddah ETA as 0528. Heard later at 0506 working Khartoum reporting over Papa Sierra Delta (Port Sudan).
- Kenyan 1136 heard in USB at 0541 working Cairo with an estimate for Sierra Mike Lima (Abu Simbel) advising it had departed Mombasa, Kenya. (Halstead, WV)
- 11306.0 Caljet ZE working an unidentified aero operator with a phone patch to Gatwick at 0141 using USB. The pilot said Gatwick was "very broken" as he inquired about a Cuban overflight. His current location was Montego Bay, Jamaica. The pilot remarked that nothing was working down there (i.e. phones). I heard Gatwick but they were not audible due to the same break up the pilot was hearing and due to the operator's accent. (Chris Hulse, Hoomee, OR)
- 11312.0 Crossbow 2 called by Green Truck in USB at 1734. (Battles, NH)
- 11494.0 Omaha 69 working Hammer with a radar track of the "target" aircraft in USB at 0100. (Noted Hammer's 2-tone roger beep same as that used by Slingshot. I believe this was Custom's traffic on SAC Lima channel -- new twist??) (Battles, NH) *Well, Bill, sure looks like Customs on SAC Lima, are they getting weird or what? -ed.*
- 12133.0 Speedbird 217 over Gander, Newfoundland, Canada, with a phone patch to GKX51, Portishead Radio, England in USB at 2119. (Ricks, PA)
- 12135.0 NAM-U.S. Navy Communications Station, Driver, Virginia, with a NAVAREA IV warning in CW at 2100. (Ricks, PA)
- 12506.5 UFNO, AMSB Kastlits, Soviet Purga class ocean-going tug assigned to Zapryba trawler fleet, with traffic to Klapeda Fisheries Radio at 0038. Refueling at Las Palmas, Canary Islands. RTTY 170/50. (Ricks, PA)
- 12524.0 UIVZ-NIS Kosmonaut Vladislav Volkov, Soviet spaceflight tracking ship with zone forecast at 0331. Zone forecasts are the planned tracking ship positions for the next 50 orbits of the Soviet MIR orbiting space station. RTTY 170/50. (Ricks, PA)
- 12525.0 UIVZ-NIS Kosmonaut Vladislav Volkov, Soviet spaceflight tracking ship heard sending look up angles for a Cosmos series satellite at 0309. RTTY 170/50. (Ricks, PA) *I am curious, Sam, if you still have notes on this one, which Cosmos satellite were they referring to? -ed.*
- 12600.0 9VNJ-M/V Marilyn O. of Singapore registry heard in CW at 1507 working NMN with an AMVER message. Vessel's port of departure was Abaco Light (Bahamas) and port of destination is Key West. Heard many Rhumb line references. (Halstead, WV) *Rhumb lines are points on a mariner's compass. -ed.*
- 13112.2 NMO-USCG communications station, Honolulu, Hawaii, heard at 1804 in USB with a weather broadcast; good signal over some other radiotelephone comms causing interference. (Hulse, OR)
- 13217.0 SAM 26000 working Andrews AFB, Maryland, at 1433 in USB. 26000 was enroute from Maine to Washington, DC along with Air Force One. (Riffle, FL) *The old SAM backup aircraft trick. -ed.*
- 13247.0 Freehand working Ore Mine on "Whiskey 109" with EAM traffic in USB at 0024. (Other Whiskey Idents referred to lately on SAC channels are W-102, 104, and 105. Anybody else heard or figured out these channel Idents?) *Not here, Bill, any help readers? SAC must be an MT subscriber!! -ed.*
- Fort McCoy, Wisconsin, calling Andrews from mobile units in USB at 2010. (Andrews was on LSB working SAM 27000 then switched to a new frequency and Ft. McCoy continued to call for approximately one hour with no results.) (Battles, NH) *Some weird things are going on on this frequency, might be interesting to watch for a while. -ed.*
- 14356.0 GFL24-Bracknell Meteo, England, with coded ship reports. These are surface weather reports at 2013. RTTY 425/50R. (Ricks, PA)
- 14384.5 VXV9-Canadian Forces CFARS station Golan Heights, Syria, with traffic for VZ9 and CIW608 Canadian Forces stations in USB at 2021. (Ricks, PA)
- 15680.0 Navy 460 reporting position and operations to (Andy) Andrews AFB, Maryland, in USB at 2045. (Ricks, PA)
- 16700.0 UKKI-NIS Geolog Fersman, Soviet Research vessel with traffic for Providenya Radio at 0021. Position west of Clipperton Island, a French possession in the North Pacific off Mexico. RTTY 170/50. (Ricks, PA)
- 16705.0 UNJY-Konstantin Dushenov, a 4500 ton Soviet stern trawling factory ship heard with coded weather for the Murmansk weather station via Murmansk Fisheries Radio at 0133. Pendant number is MA-0059. Was entering the Panama Canal. RTTY 170/50. (Ricks, PA)
- 18666.0 Alias working Panther 17A. (garbled) 510 and 460 at 1709 in USB. Heard only Alias working during the half hour period, all comms heavily coded. Would be interesting to learn the lingo. (Hulse, OR) *This is a DEA channel and that's probably why it's coded to many folks listening, including the wrong crowd. -ed.*
- 20885.0 US Military Assistance Group-Echo 21 working Fox 4 with diplomatic phone patch traffic in LSB at 2035. (Battles, NH)
- 22707.6 WLO-Mobile Radio, Alabama, working the Atlantic Bay/Sovereign of the Seas/Song of America with phone patch traffic at 2036 in USB. Duplex channel parallel with 22111.6. (Hulse, OR)
- 23403.0 Alias working Flint 620 -- Alias advised to use this channel as primary and Hotel as secondary. In USB at 1620. (Battles, NY) *This one is Romeo and Hotel is 18666 for DEA. -ed.*

The Scanning Report

Bob Kay

P.O. Box 173
Prospect Park, PA 19076

Scanning Secrets

As a carpenter, my father raised five sons by working with his hands. Of the five, I was the instigator. I lived to cause trouble. There was nothing more rewarding than watching my brothers being scolded as I meekly watched from the sidelines.

The dinner table was my favorite area to raise havoc. I could deliver a shin busting kick without moving the upper part of my body. As soon as the injured party began bawling, I'd quickly set the blame onto another brother and then watch as they all got scolded.

Exactly why my father started taking on odd jobs in addition to his regular job, I don't know. Maybe he figured that my mother needed a break. At any rate, he started dragging me along. However, I wasn't interested in learning how to hang a door, miter a corner, replace a window, or panel a room. I wouldn't need all that. I was going to grow up and be rich.

Whenever I made those ridiculously stupid remarks, my dad would just laugh and keep on working. "A good helper always keeps one step ahead of the craftsman," he would say. That simply meant that I was supposed to hand him the next tool without his having to ask.

Usually, I'd be sitting on my rear and my mind would be a million miles away. "Pay attention, boy," he often remarked. "If you learn a trade, you can always make a buck."

That was nearly twenty-five years ago. And while I never did become a full-fledged carpenter, I made quite a few



One top ten scanning secret: To lock out moisture, wrap your antenna connection with electrical tape and brush on a coat or two of urethane.

bucks hanging doors, replacing windows and paneling rooms.

So what does all this have to do with scanning? Actually quite a lot. During a recent visit, my dad remarked that he had taught me all the "trade secrets." "Most tradesmen won't share them, because they take so long to learn," he said.

His comment started me thinking. Were there "trade secrets" in scanning? My dad seemed to think so. "You probably do them without even knowing it," he said. "To you, they may seem trivial and insignificant. But to the novice, they can be of real value."

Not long after that conversation, I relocated to a new house. As I went about, installing a new scanning shack, I made mental notes of everything I did. To my surprise, there were certain methods that I used to perform routine tasks. And my dad was right; to me, they seemed trivial -- hardly worth mentioning, much less "secret."

At any rate, here are my Top Ten Secret Scanning Tips:

1. Clean your PL 259, F, and BNC connectors. That includes the connector on your antenna as well as the chassis connector on your radio.
To get inside a connector, use a Q-tip moistened with electrical cleaner. Radio Shack sells a "Cleaner and Degreaser" Catalog No. 64-2322 that works well. Keeping your connectors clean guarantees that every little whimper of a signal will find its way to your scanner radio.
2. Lubricate your connectors. But don't get carried away. A very light coating of WD-40 displaces moisture and especially helps when connecting threaded "F" connectors.
Some folks will substitute CRC for this purpose, but I prefer WD-40 because it doesn't leave behind an excessively oily residue. Regardless of your preference, remember to oil lightly, very lightly.
3. Waterproof your outside antenna connection with plastic electrical tape and urethane. After tightly wrapping the connector with electrical tape, brush on a few coats of outdoor urethane. The coating locks out moisture and prevents the tape end from coming loose.
Another good choice would be a marine spar varnish. This varnish is specially made to perform in wet conditions aboard boats. But don't buy a gallon. A pint is much cheaper and it will last several seasons.
4. Remember to provide a "drip loop" where the coax enters the house. Otherwise, the rain or melting snow will run along the cable and may seep into the walls of your home.
5. Install new cable every two years. Some hobbyists prefer to do this once a year -- usually during the spring. Here in the northeast, a yearly change is a good idea. After a year of being exposed to the elements, most coax in this part of the country should at least be checked very closely, if not entirely replaced.

6. Leave some "Slack" in the "Shack." When installing new cable, leave about two or three feet of excess in the shack. This allows for movement of the scanner radio on the table top and it also permits several "mistakes" when preparing coax for connectors.

7. Separate AC power cords from antenna coax. Don't run power lines adjacent to or near antenna coax. Power cords can generate noise that may be picked up by the coax and delivered to your scanner radio.

Power cords can also short out, instantly burn a hole into your coax, and introduce 115 volts into your scanner's antenna connector. Rigs that have been "fried" in this manner cannot be repaired.

8. Test your knowledge. Reach behind your multiple scanner set-up, grab a wire and identify it in less than five seconds. Can't do it? Well that's about four seconds more than you'll get if something does go wrong.

By labeling all the wires, an emergency can quickly be identified and corrected without having to call the fire department. Labeling also adds a professional appearance to your shack.

9. Have an emergency power source for at least one scanner radio. When the lights in your town go out, there won't be time to hunt around for two six volt lantern batteries or for that old car battery. Have an alternate power source available and ready to go at all times. This is especially true during the thunderstorm season.

10. Safety is paramount. Don't climb without a safety belt. Sure, I know what you are thinking, "You've been on that old roof so many times, you could climb it blind-folded." I felt the same way until I stepped on a loose shingle and went sliding down my three story roof.

There's a funny thing about roof shingles. They seem to provide positive footing until one starts sliding down them. I did everything in the world to slow my descent, but nothing worked. When my heels were about to slide over the edge, the rope that I had tied onto my safety belt suddenly stopped my descent.

During the accident, I had forgotten that I had the safety belt on. I had purchased it at a flea market for two bucks and I was wearing it more out of curiosity than for safety. When I realized that a two dollar belt and a length of K-Mart rope tied to the chimney had saved my life, I vowed never to climb without a safety belt again.

Anyone have a few scanning secrets of their own that they would like to share? If so, please send them along so I can list them in the pages of the Scanning Report.

Treasure Hunting in MT

Still trying to locate last month's treasure? If so, you better hurry. This month is the last for this particular hunt. In June, we start another one with different prizes.

For anyone that missed last month's clues, here they are again:

1. Open the September issue of *Monitoring Times*.
2. Locate the frequency for the *Roanoke Times* newspaper

that was provided by Howard Weaver.

3. Subtract 417.340 MHz from that frequency.
4. The resulting answer is a very popular frequency among scanner buffs. What common household device uses this frequency?
5. Be sure to send an SASE with your answer to P.O. Box 173, Prospect Park, PA 19076.

For providing the correct answer, I'll send you a very handy scanning aid. Good luck!

Reader Frequency Exchange

Monitoring the FBI is Arthur P. Heely's cup of tea. Arthur would like to inform everyone that in eastern Connecticut, he hears the FBI operating on 163.8875, 414.575, and 167.7125. Arthur also noted an FBI repeater operating on 167.425.

Although he has been trying for years, Bert Morton hasn't been able to come up with a frequency list for Rutland, Vermont. Bert is interested in all types of frequencies between 29 and 800 MHz.

And here's more good news for the folks living in the New England area. Tom Holleran wrote in and gave the following confirmed frequencies for the New York and Connecticut area:

49.80/49.90	Rhode Island National Guard
251.90/252.80/287.50	Air National Guard
	Rescue and Recovery
349.70	National Guard Bradley Field-Hartford
393.70	National Guard A-10 and Helo's
	(informal talk)

A reader who calls himself "S.G." wants to enter a correction. S.G. indicated that the following frequencies do not belong to the Boston, Massachusetts, Police: 856.7125/857.7125 856.7375/857.7375 856.9625/857.9625

S.G. points out that the above frequencies, which appeared in the December 1988 Scanning Report, are used by the Boston Metro Police. S.G. indicated that the Metro Police patrol highways, expressways, and parks that belong to the Metropolitan District Commission. Has everyone made that correction in their logs? Ok, let's move along.

From way down in the land of Dixie, Mark Ray asked if anyone had a frequency listing for Berrien County, Georgia.

Moving west, John Hays checked in with a request for the Palm Springs Aerial Tramway frequencies. Using a PRO 2004 and Pro 32, John also indicated that he likes to hang around the baby monitor band on 49.0 MHz.

While the rest of the world may be on a diet kick, Kevin Jackson has been riding around and logging fast food frequencies. Here are some of his recent loggings:

467.825, 457.60	Burger King
30.840, 154.57	Hardee's
460.8875	Taco Bell

Kevin would also appreciate other confirmed fast food frequencies from scanner buffs.

Readers are invited to send their frequency loggings and requests to the Frequency Exchange, P.O. Box 173, Prospect Park, PA 19076. Please indicate if your name and address can be passed on to other interested scanner listeners.

Scanning Shortwave

In central New York, there is a shortwave listener's net operating on 147.105 MHz on Friday nights at 8:00 p.m. Control of the net is handled by N2DCI, John Starsberg of Clay, New York.

Hot Scanning From Hot Springs

Jeff Weston sent in the following frequencies for Hot Springs, Arkansas, and the surrounding area:

37.54	Arkansas Power and Light
44.62	Hope State Police
44.74	Hot Springs State Police
151.010	Highway Patrol
151.385	Arkansas Game and Fish Commission
151.460	Forestry Division
155.415	Hot Springs local police
166.325	Hot springs National Park

Jeff also asked if someone could send him a scanner recording of the New York City police. Although I can certainly appreciate Jeff's desire to hear big city action, the Communications Act of 1934 prohibits scanner listeners from swapping taped recordings. Sorry, Jeff.

Scanner Baby Sitting

There's a lot of fun in making unattended tape recordings of your favorite scanner frequencies. When using a voice activated recorder, my biggest complaint was the "dead space" between transmissions. Most voice activated units simply waste too much tape.

Since I already had a good quality tape player, I went looking for a separate unit that would turn my player on and off with lightning speed. I didn't want any dead space and I wouldn't tolerate a slow start time that missed some of the initial action.

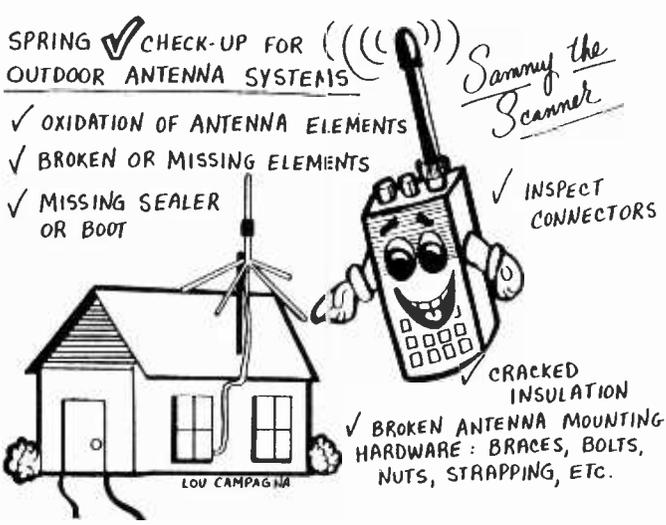
SPRING ✓ CHECK-UP FOR ((((()))
 OUTDOOR ANTENNA SYSTEMS

✓ OXIDATION OF ANTENNA ELEMENTS
 ✓ BROKEN OR MISSING ELEMENTS
 ✓ MISSING SEALER OR BOOT

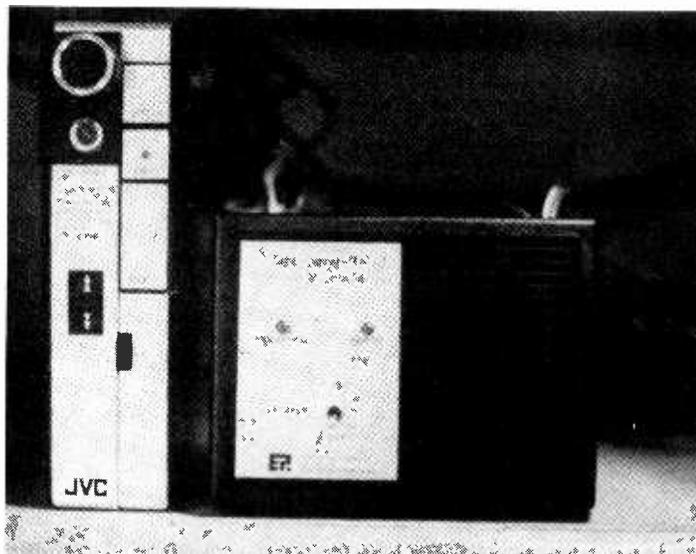
Sammy the Scanner

✓ INSPECT CONNECTORS

✓ CRACKED INSULATION
 ✓ BROKEN ANTENNA MOUNTING HARDWARE: BRACES, BOLTS, NUTS, STRAPPING, ETC.



LOU CAMPAGNA



The Tape Saver (TS-1), by Electron Processing controls a cassette tape player

Electron Processing, P.O. Box 708, Medford, New York, responded to my request by providing their Tape Saver, TS-1. The TS-1 is a small black box that operates off 115 VAC. The remaining three cables connect in the following manner: One cable plugs into the scanner's extension speaker jack or headphone jack. The second cable connects to the Mic Input of the recorder and the third cable is connected to the remote control jack (REM) of the recorder.

Operation was simple and straightforward. After it baby sat my scanner overnight, I played the tape back the next morning and was impressed. The TS-1 fired up, recorded every word and then shut down right behind the last word. No missed action and no wasted tape.

The unit also featured an adjustable "hang time." If it hadn't shut down quickly, I could have simply turned a potentiometer located inside the black plastic case. Overall, I liked it.

I didn't like the small front panel speaker that allowed the monitoring of my scanner without having to unplug the cable from the extension or headphone jack. Since the TS-1 would not work when plugged into my scanner radio's "tape monitor" jack, I was forced to listen through the aforementioned 1-1/2 inch speaker.

Electron Processing did offer "detailed modification instructions" for anyone desiring to change the unit's sensitivity. Since I didn't send for the instructions, I can't say if they could be accomplished by someone without a degree in electronics.

Overall, the TS-1 worked beautifully for unattended recording when you're sleeping or away from the shack. I easily captured seven hours of reasonably active scanning on a 90 minute tape.

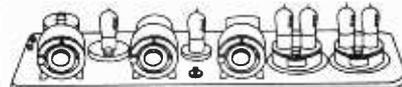
The TS-1 retails for \$49.95. To order one for your shack or to obtain more information, the phone number is 516-764-9798.

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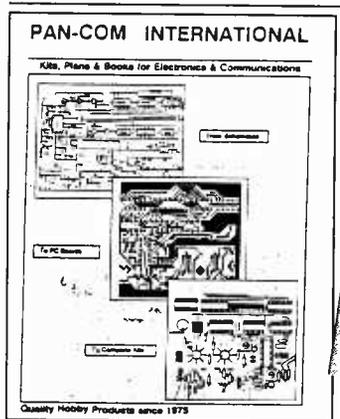
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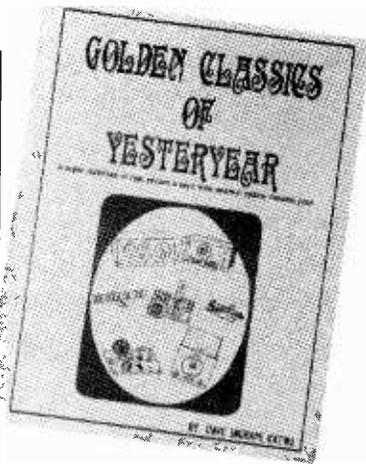
Ever want to build an FM broadcast transmitter? How about a satellite dish antenna? Or a converter so that you can tune in on all those *Lowfers that Monitoring Times* "Below 500 kHz" columnist Joe Woodlock writes about?

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How about an active antenna for VHF? A QRP transmitter -- for 32 bucks? A shortwave preselector? FM SCA decoders? (Remember March's article on FM SCA?)

This is some fun stuff. Prices are low. Quality of plans and kits is high.

Send for the catalogue. It's available for \$1.00 from Pan-Com International, P.O. Box 130, Paradise, California 95967-0130.



Golden Age of Ham

They were the best of times and the worst of times. Young men, most with more time than money, scavenged Depression-era America for dead radio receivers and, with little more than ingenuity, turned them into transmitters that challenged the ionosphere with 10 watts.

The bands boomed with DX action -- India, China, Liberia, Australia and many, many other areas rolled in with phenomenal signal strength. These were the "golden" days of amateur radio, days that are gone, regrettably, not only in terms of time but in terms of spirit.

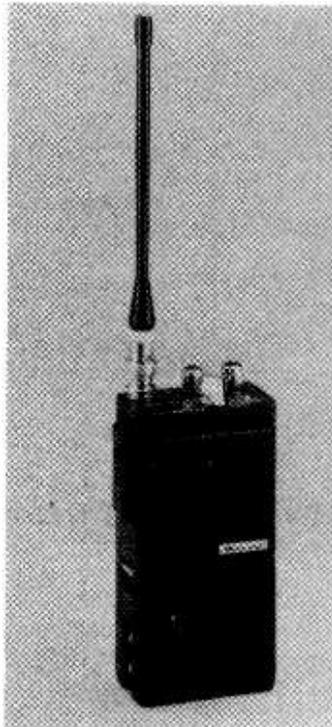
In *Golden Classics of Yesteryear*, Dave Ingram takes you on a ride back into time, back to when now-illegal spark rigs blasted their crude signals across enormous swaths of the radio spectrum, through the years of National and Hammarlunds and the

1940s and 50s.

It is a lighthearted romp, one that the author readily admits is not a precise historical document. It is a story of unique and often forgotten "collectors specials" that you can build, rigs that Ingram says are "hotter'n peppers" and can "chase everything from DX to young single girls."

If you've ever wondered why old timers wax nostalgic over the old days of ham radio, this is a book for you. If you're a ham whose less than enthused about his hobby, this book will put some spark back into your transmitter.

Golden Age is published by MFJ Enterprises and is available from your favorite radio store.

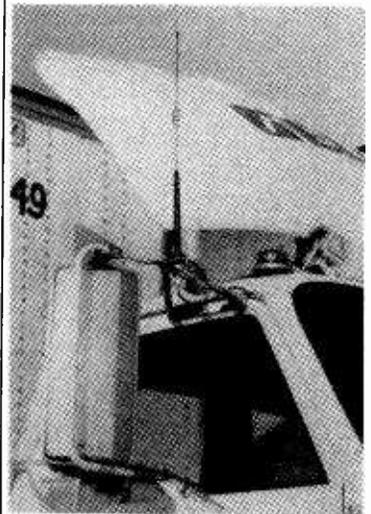


New Midland UHF Portable

Midland LMR has introduced a compact new UHF portable specifically designed to provide rugged, basic portable radio communications at an economical cost. The new 70-243 has a one-piece die-cast chassis and stainless-steel

front and back. RF output is 5 watts, tunable to 2 watts. Users can choose up to four crystal-controlled channels between 450 and 470 MHz.

The 70-243 is about 5 inches high by 2-1/2 inches wide by 1-1/2 inches deep and weighs some 22 ounces without antenna. For more information, call Midland LMR at 1-800-643-5263, extension 1690.



New Cellular Antenna for Trucks

A new mirror or side body mount antenna, model ASPD913, designed for trucks, vans and motorhomes, is now available from The Antenna Specialists Co. The high performance antenna, originally designed in cooperation with Bell Laboratories, provides omnidirectional coverage in any clear mounting location.

Just 24 inches long, the antenna is ground-plane-independent, allowing installation on horizontal or vertical mirror supports or the side of a cab.

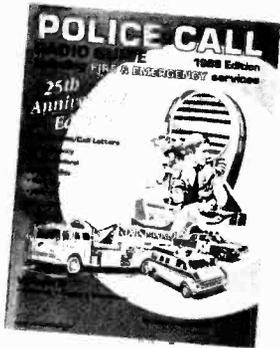
The ASPD913 comes with a 17' RG-58/U cable and mini-UHF male (ASPD913M) or TNC male (ASPD913T) installed.

For more information contact The Antenna Specialist Company, 30500 Bruce Indus-

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trial Parkway, Cleveland, OH 44139-3996.



Police Call Radio Guide

For 25 years Gene Hughes' *Police Call* Directory has been recognized as the leading source of public safety frequencies nationwide. Concentrating on police, fire and ambulance listings for state, local and federal agencies, these volumes have evolved to the 1989 edition which includes forestry, aircraft and railroads as well.

Under constant computer-base revision, *Police Call* is conveniently organized alphabetically by location, then followed by a frequency cross-reference. An appendix of frequencies and allocations by the FCC is a handy guide for understanding the spectrum.

Published in nine volumes, the concise format emphasizes listings in the 30-50, 151-174, 450-470 and 806-861 MHz bands.

Police Call is available for

To have your new product or book considered for review in *Monitoring Times*, send it to Editor, 140 Dog Branch Road, Brasstown, NC 28902.

\$7.95 plus \$2 shipping from Grove Enterprises, PO Box 98, Brasstown, NC 28902 or phone 1-800-438-8155. Also available from Radio Shack stores and the publisher at 239 Deer Hill Rd., Lebanon, NJ 08833.



Dallas/Ft. Worth Frequency List

Since its skimpy beginnings as a scanner frequency newsletter several years ago, this sixth edition by Ken Winters has really grown!

Originally concentrating on Dallas/Ft. Worth regional entries -- and that is still its primary strength -- the book now includes wide area monitoring information, much of it nationwide, including shortwave as well as VHF/UHF.

Over 5600 frequency entries include everything from VLF cave explorers and U.S. Navy submarine communications to microwave relays and radar. It is certainly the widest-frequency-coverage directory in publication!

The girth of listings is ambitious. Where else will you find such entries as the resonant frequency of planet Earth (7.6 Hz), cave radio Molephone (102.4 kHz), Goodyear blimp ground

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operations 161.640 MHz), Bobby Allison's NASCAR frequency (469.3125 MHz) or NASA's TDRS satellite downlink (2205/2217 MHz)?

Clearly, listings are not confined to the usual police, fire and BBC pap, but include sensitive federal government and esoterica as well. Quite an eye-ful for the spectrum connoisseur.

\$19.95 from Basic Computer Services, PO Box 14193, Arlington, TX 76094-1193.

EGE Changes Hands

EGE, Inc, the Woodbridge, Virginia-based radio store has been purchased by HRO, Inc. The Woodbridge store, along with a Salem, New Hampshire, business, will become part of the Ham Radio Outlet

chain, now totalling nine stores nationwide. All EGE personnel will become employees of HRO.

Correction

In our October 1988 column in which we reviewed *Tune in on Telephone Calls* by Tom Kneitel, editor of *Popular Communications*, we incorrectly stated that the book contains complete cellular frequencies.

Only the basic cellular band limits are given. A representative sample of conventional VHF and UHF telephone frequencies by city and state, however, is given.

Reader Greg Diltz brought this to our attention and enclosed a form letter from the publisher, CRB Research, which states: "...all transactions are final ... we do not offer refunds or exchanges."

The Tenacity Factor

As Old Uncle Skip travels through the monitoring world, I like to think that I work hard to stay in touch with the "Silent Majority" of our shared hobby. I feel I try to keep the interest level up when the wallet runs dry.

You can check out the pages of any of the "club" magazines and newsletters and read about some guy who confirmed a contact with Radio Nibi Nibi on the far side of the planet thanks to his kilobuck listening post. All too many folks who read these exploits begin to believe that you can solve all the problems of the monitoring hobby by throwing money around.

By the way, have I not mentioned on several occasions that Old Uncle Skip finds quite a few of the multidollar DXers to be rather boring? Instead, I enjoy hanging out with those hobbyists who are still getting a rush from hearing their first fifty or so countries. These people tend to have a gleam in their eye instead of a dull stare. They tend to be people who are wringing out modest equipment to its limits and beyond to hear just about everything the guy with the supershack is hearing.

Maybe I get such a kick out of the "regular" listener because, on the whole, I find them to be a very happy group of people who seem to be having gobs of fun.

Get to the point, Skip!!!

I think what I see in the common garden variety of monitoring person that I tend to miss in the high price tag DXer is a large dose of **Tenacity**.

Tenacity is defined, in part, as persistence, determination, stubbornness, and several other pseudo-verbs best left out of a family magazine.

Old Uncle Skip has often given advice about what to look for when purchasing equipment. I have talked about how to examine a particular radio's vital statistics to get the most bang for your buck. Howsoever, you will never find the Tenacity Factor listed on any rig's spec sheet. A modest rig supported by a high tenacity factor will make it possible to hear just about anything flying through the ether.

Tenacity can be measured in the number of hours of static you are willing to endure to have some long-sought station rise out of the muck. It is logged in the number of times you re-report a contact to extract a QSL. Tenacity can also be described as the NUT that connects the shack chair to the radio! It is what you are willing to put into the equation through blood, sweat, and tears.

Over the years, Old Uncle Skip has discovered the mathematics behind the Tenacity Factor. Tenacity appears to bow to the law of Inverse Proportions. It seems that the more tenacity you can inject into your system, the less money you will require for hardware.

Put another way, if you are bored stiff with your hobby, you will need to inject large quantities of cash into the equation to make up for your lack of tenacity. As stated in Uncle Skip's Radio Axioms: $Tenacity + \$\$\$ = QSL$

So what'samatter, Bunkey? You say you are short on cash and you want to know how to get your tenacity tuned up? No problem, Sport. If you are reading *Monitoring Times* cover to cover, you are already shoring up your tenacity rating. Uncle Skip has always found that the best way to get your tenacity revved up is to learn something new!!! Hit the books, ask around, listen to folks on the air. Soak up some radio savvy, and you will begin to listen smart.

But don't believe everything you hear. Contrary to popular belief, you don't need a megastation to get the job done. You see, compadre, the radio spectrum is a mysterious and amazing thing. It is full of quirks, anomalies, irregularities and occasional technical botch ups. Take these events, sprinkle them generously with tenacity and you will be turning up signals the so-called experts only dream about.

But far be it for me to leave you hanging in the breeze. Maybe if we take a quick look at some examples of tenacity in action, you can get in the groove. So let the horns blow and the drums roll as *MT* presents:

Uncle Skip's Guide to Tenacious Radio Practices

Lowfers

Below the 550 kHz end of the "standard" AM Broadcast band lies a land occupied almost exclusively by tenacious types. Lowfers monitor and even operate in the 1750 meter band. You can monitor all manner of aeronautical and maritime beacons. There is also quite a bit of military activity. Between 150 and 175 kHz you can go digging for Ground Wave Emergency Network (GWEN) signals.

While quite a few available receivers will tune down into this realm, you may find it necessary to construct or purchase a converter to get in on the fun. If you want to be really tenacious, you can brew up a transmitter for legal, unlicensed operation in the 160-190 kHz



ICOM America

Radio at its tenacious best as 25,000 hams take their equipment to the field to demonstrate emergency operations

band. You are limited to 1 watt and a fifty foot antenna.

Experimentation abounds on the baseband. Since the equipment is either surplus, cheap, or homebrewed, there is not a lot of room for ego. If you want to give the lower world a whirl you might want to start by reviewing "DeMaw's Workbench" in the December 1988 issue of *MT*. You might also drop a line to The Longwave Club of America, 45 Wildflower Road, Levittown, Pennsylvania 19057.

County Hunting

Everyone who gravitates to county hunting goes through the same basic ritual. For many years they think it's kind of silly. Then, one day when they have nothing better to do, they tune across 14336 kHz USB and listen to "those crazy county hunters" shouting at each other through QRM to contact one of the 3075 counties in the good old U.S. of A. If they are hams, they will find themselves volunteering their home county to folks on the net.

Before they know it, they have their rigs locked on to the net and can't quite seem to find an excuse to twist the dial away in hopes of hearing that missing county. It takes even the most dedicated county hunter several years to get them all, but a Worked All Counties award hanging in your shack is the ultimate statement of tenacity in the ham radio world.

With prevailing conditions, you can go county hunting with low power and a basic

antenna. Many of the people playing this game are operating mobile so everyone on the net works together to help one another achieve every opportunity to make a contact. If you want to play the game, just tune in to 14336 kHz. It won't take you long to get hooked.

Field Day

Every June over 25,000 amateur radio operators take their equipment outside in an effort to demonstrate ham radio's great tradition of being able to set up for emergency operations.

The majority of the over 1,700 stations utilize emergency power and antennas erected "on site." You will run across folks operating using solar power, with antennas strung through trees by bow and arrow. High power, low power, and, when Murphy's Law strikes, no power.

It's radio at its tenacious best. A friend of mine once brought the lady he was courting out to our club's field day site. He went on to explain to her that we were all involved in this contest with folks all over North America. She asked him "Who's winning?" My friend replied, "I've been doing this for ten years and I never thought to ask!"

This YL clearly requires a tenacity adjustment. Give a listen on 24-25 June this year. You'll hear radio tenacity at its best.

Homebrewing

In many ways this has become an easy hobby. You simply decide what you want to listen to and then thumb through a few catalogs until you see a rig that suits your fancy. Believe it or not, there are still quite a few folks who get a kick out of "rolling their own" radio gear. Granted, what you come up with might not look as slick and sophisticated as the latest offering from the Orient, but there is no reason on earth why it can't perform just as well on the air, that is, if you add a little tenacity to the project.

Start off with the projects you see here in the pages of *MT*. You will find that many of the principles of electronics you found so elusive in the past will make perfectly good sense once you have wired a few simple circuits.

If you keep at it, it won't be long before you are constructing more difficult projects out of books found in libraries or perhaps *The ARRL Handbook*. Hang in there, Ace! Some folks have more fun building equipment than using it.

Scanner DXing

VHF/UHF Scanning is another aspect of the hobby that can become a bit weak in the tenacity department. It's easy to get into a rut, monitoring the same handful of frequencies day in and day out. Stir in some tenacity and you can begin to listen for stations that are hundreds of miles beyond your normal scanning practices.

The addition of a low-noise preamplifier and a good directional antenna will get you started in grand style. You will quickly learn to take advantage of weather conditions that create atmospheric "ducts" that serve to channel VHF signals over long distances. Meteor showers can also create conditions in the ionosphere that make for almost unimaginable signal distances.

On the high bands, tenacity often translates into being in the right place at the right time, but the reward will be a log book full of real DX. Keep an eye on Bob Kay's "Scanning Report" here in *MT* for the latest information on this tenacious radio habit.

Radio Restoration

Things move along pretty fast in the radio world. In less than some lifetimes, we have gone from spark gaps to integrated circuits. Along the way some truly beautiful equipment has come and gone. But like most things in life that have some antiquity, there are folks who appreciate and collect old radios.

The process of moving from blowing the dust off some old box you



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- Sony ICF-2010\$318
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- Sony Pro-80\$350
- RACAL RA-6790 (GM)/R-2174 CALL
- Realistic PRO-2004 Scanner\$389
- 3TF7 Ballast Tube - Brand New!\$40
- Bearcat BC-200XLT - w/Cellular restoration\$275

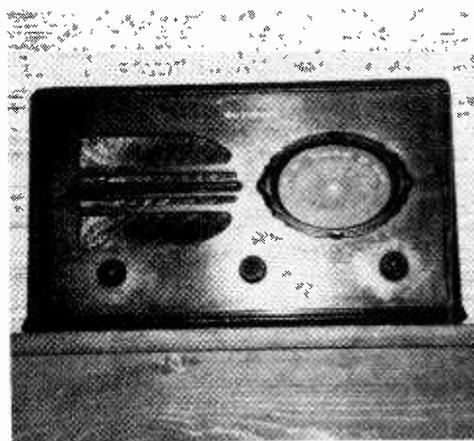
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found at a garage sale to a finished (and refinished) radio is long and difficult. Scrounging for components and materials requires a very tenacious person. But a fully restored 1930 Philco Cathedral radio will impress even you nonradio friends.

TENACITY RULES!!!

While we have taken an all too brief look at some of the more tenacious aspects of the monitoring hobby, I hope it will serve to fire up the imagination and get folks to expand their radio horizons. None of these examples of radio tenacity require a particularly well stocked checkbook. Remember, the tenacity factor can override the cash factor most any day of the week. You can detect radio signals with a telephone speaker and an old razor blade IF YOU HAVE ENOUGH TENACITY!!!



Radio restoration can be long and difficult, requiring a great deal of tenacity. But folks will be impressed!

Your Scanner -- Don't leave home without it!

The sound cuts through the cold night air, metal against metal. Two hinges scream out in pain as the wind repeatedly slams the wooden screen door against its frame.

Here in Angel Fork, Alaska, the snow still fights a losing battle to smother the blue and pink crocuses that push their way through to spring. Giving support to those struggling little flowers is the warm, yellow light that streams out into the darkness from the windows of the Clark family cottage. Let's look inside and have a listen as the family gathers 'round the energy-efficient, non-polluting Navaho Tradesman woodstove.

"Well, kids," says Dad, dressed in a flannel shirt and home-made leather pants, "I know you're all looking forward to summer vacation. As usual, your earth-mother has made plans for us to spend two weeks at the Wild Cow Nudist Camp in Appleton, Wisconsin."



Harry Baughn

Forgetting to pack the scanner is like going to the beach in the rain... You're missing half the fun -- like getting to monitor beach security!

There is a pregnant pause. This year, everyone frowns at the good news. But it's not the destination that has the rest of the Clark family upset. It's just that last year, the whole vacation was ruined when Dad forgot to pack the scanner!

Sparkle, the youngest of the children, looks up at Dad sadly. A single tear spills down her cheek. "Promise you won't forget the scanner?"

Take a lesson from the Clark family. Remember the scanner.

Traveling without at least *one* scanner is kind of like going to the beach in the rain: Sure, you're still at the beach but all the pretty girls are inside and you've missed half the fun. Inevitably, when the scanner is left behind, a major event occurs that makes the news at six and eleven.

The remedy, of course, is to ensure that packing your trusty hand-held receives the same sort of attention as does your toothbrush.

The first item of business is to develop a scanner travel plan. Examine a good map or road atlas of the area(s) you plan to visit. Generate a list of federal buildings, facilities, and military installations in the general vicinity. Don't leave out anything.

The "Murphy's Law" of scanning is that the one federal agency, branch, bureau or department that you do not include in your list will be the one to be most active during the trip. So the first goal is to avoid Murphy.

While drafting the scanner travel plan, consider how you'll be getting from point "A" to point "B." A trip in a personal vehicle will require plans quite different from the ones you'll make when traveling by air. If you will be traveling by air, decide whether you'll have access to a rental vehicle once you arrive at your destination.

Either way, examine the entire route and make a list of major facilities and cities enroute. Add these to the list generated for the destination area or create a separate list. Consider, too, all federal or

military entities within a 50 or 100 mile radius of where you are staying. When traveling by air and arriving at your destination with no access to a vehicle, just concentrate on the immediate area with your list.

The second phase of the plan is to research data and frequencies for the agencies and installations on your list(s). The second phase is not as easy as the first because the local book store or the AAA do not have available scanner frequency directories or source guides. Still, sources for federal and military data are plentiful. These come in three categories -- magazines like *Monitoring Times*, scanner clubs, and frequency directories.

Each source offers material that may not necessarily be duplicated by the other sources. Most serious VHF/UHF federal and military monitors have access to at least publication from each of the three source types listed above. Yearly indices, like the one published each December in *MT* (Reprints are available for \$2.00 and an SASE) provide a quick method to hone in on the frequencies you need.

The researching of data and frequencies for the list may be performed in two phases -- an initial phase before the travel has started, like packing your suitcase, and a second phase when the destination is reached. The initial phase data is available from the three source types listed in the previous paragraph.

Beyond *Monitoring Times* are the scanner clubs that have federal or military columns which were highlighted in the December 1988 Federal File column. The club columns provide various agency and military profiles as well as useful and interesting tidbits of data. Sorting through back issues of their newsletters, data for the scanner plan list may be found.

If you are not a member of the club, you may be able to purchase back issues for your reference. Another alternative is to contact the column editor for assistance.

Remember, when contacting the column editors to include an SASE and to allow ample time for their response. Also, keep your request reasonable -- do not just

state "send everything you have for Pigs-knuckle." Additionally, send along with your request some data from your previous travels or local data which may be of interest to the editor.

The third source of data are scanner frequency directories. The "What's New" column in *Monitoring Times* publishes reviews of the available federal and military directories. Review the reviews and find the directory best suited for your journey.

Also, do not overlook the *Police Call* scanner directories available at your local Radio Shack. Each edition contains a federal government section. Ask at the counter for their local print out. Most Radio Shacks have one and it is usually free.

An additional source of data is the telephone book. Some public libraries have telephone directories for larger cities -- hopefully the ones through which you will be traveling. The blue page section (in some directories) or white page section (in others) will list federal agencies and military locations in the city.

The listing of agencies will confirm if a local office exists, which, of course, greatly increases the probability of interception. Agencies which are not listed may still be candidates as the office may be located in a nearby city.

Once all the data has been obtained and reference material is at hand, it is organization time. Organization is essential to making the most out of the mounds of data you have collected. Use a steno pad or notebook to generate lists of agencies and their locations.

Organize them alphabetically and create separate pages for each agency and military branch or installation. The reason for multiple pages is to allow for the entering of frequencies from data sources and for notes from monitoring activities.

Using the data sources, create frequency lists for each agency and note any channel numbers given, or other similar data, along with the frequencies in the notebook. A numeric ascending order of frequencies is generally the easiest to work with in planning and monitoring stages.

When the creating of the frequency lists

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are completed, generate a scanner channel plan. The channel plan should list the scanner channel number, frequency, and user notes (agency, base or mobile, channel number, etc.). Organize the programming of the scanner into banks.

The first bank should contain the main repeater or operational frequencies from most of the agencies on your list. The other banks should contain a detailed frequency profile for a given agency.

Always keep the first bank enabled and when activity is heard on a frequency for a given agency, then also enable the bank where more frequencies for that agency are located. When monitoring a radio transmission, just note the channel number and use it as a reference to zero in on what is being monitored. The channel number is

easier to reference than the frequency, and also quicker.

Keep notes on all transmissions such as unit or channel numbers, type of transmission (repeater, simplex, or mobile), activity of the channel, and brief notes on the conversation.

By planning the scanner trip ahead of time, you will be better organized and prepared. The preparation and organization will also pay off with the family since you will not be spending time in your motel room or relative's house searching through frequency directories, magazines, and maps instead of spending time with them. Preparation and organization will also provide you with a more enjoyable monitoring experience.



Murphy's Law guarantees that the excitement will happen when you're unprepared. So when the snack bar burns down at the beach, be ready, Freddy!

Harry Baughn

New York: City of Opportunity

Having at least in part fled from North America for the last few columns, perhaps it is time to return and this month have a look at some of the many possibilities offered from the state of New York.

For the sake of limited space, and to avoid boredom, the U.S. Coast Guard has been omitted from these listings. We will start with a look at various medium and high frequency stations which are all upper sideband and in kilohertz.

The frequencies below are largely towing or oil companies and as such can provide some interesting listening. In both cases the business is such that destinations

change quickly as cargos are sold. Towing companies can provide interesting listening as not only is the dispatching of tugs heard, but also discussions regarding problems in handling a tow or effecting salvage.

The Coast Guard can easily be heard on 2182 and 2237 kHz as well as on other frequencies. The most prominent are the group stations at Shinnecock and Rockaway. Coast Guard stations generally use high powered transmitters and are relatively easily heard.

The stations in the following list will usually use less powerful transmitters and prove to be more of a challenge to hear.

Although sometimes thought of as being in New York, Ocean Gate Radio is located in New Jersey, and therefore is not listed.

Next column will continue a look at the VHF stations which are to be found in New York. The state offers a great variety of stations and for those living in, or traveling to that area, a scanner would provide some interesting material.

As always, your comments and suggestions are welcome. Good listening until next time.



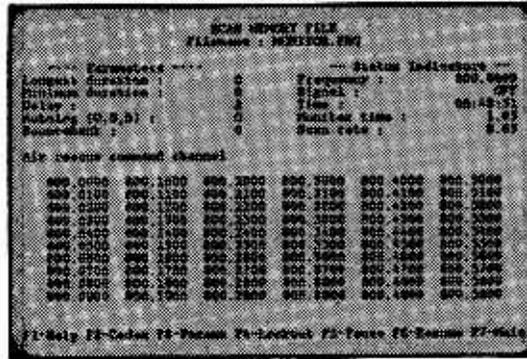
Frequency	Callsign	Station	Location
2096.5	KEJ 765	Poling Transportation	Staten Island
2096.5	KOM	Griffith Marine Navigation	New Rochelle
2096.5	WBV	Moran Towing and Transportation	Port Richmond
2096.5	WQA 289	Bouchard Transportation	Hicksville
2096.5	WQB 850	Wexler/Aprea Fishing Company	East Marion
2096.5	WQB 892	Worldwide Electronics	Staten Island
2182	KEJ 765	Poling Transportation	Staten Island
2182	KOM	Griffith Marine Navigation	New Rochelle
2182	WBL	Kenilworth Electronics	Martinsville
2182	WBV	Moran Towing and Transportation	Port Richmond
2182	WOX	New York Telephone	Sag Harbor
2182	WQA 289	Bouchard Transportation	Hicksville
2182	WQB 850	Wexler/Aprea Fishing Company	East Marion
2182	WQB 892	Worldwide Electronics	Staten Island
2514	WBL	Kenilworth Electronics	Martinsville
2522	WOX	New York Telephone	Sag Harbor
2550	WBL	Kenilworth Electronics	Martinsville
2582	WBL	Kenilworth Electronics	Martinsville
2590	WOX	New York Telephone	Sag Harbor
4125	KBP 360	Mobil Oil Telecom Ltd.	New York
4125	KOM	Griffith Marine Navigation	New Rochelle
4125	WBV	Moran Towing and Transportation	Port Richmond
4125	WDA	W. James Delsner	Oyster Bay
4125	WQB 892	Worldwide Electronics	Staten Island
4143.6	KEJ 765	Poling Transportation	Staten Island
4143.6	KOM	Griffith Marine Navigation	New Rochelle
4143.6	WDA	W. James Delsner	Oyster Bay
4143.6	WQB 448	Precision Valve Corporation	Yonkers
4143.6	WQB 850	Wexler/Aprea Fishing Company	East Marion
4143.6	WRV 405	Turecamo Coastal & Harbor Towing	Staten Island
4410.1	WBL	Kenilworth Electronics	Martinsville
4419.4	WDA	W. James Delsner	Oyster Bay
4419.4	WQA 289	Bouchard Transportation	Hicksville
6218.6	KBP 360	Mobil Oil Telecom Ltd.	New York
6218.6	WDA	W. James Delsner	Oyster Bay
6218.6	WQA 863	Centaur Industries	Roslyn Heights
6218.6	WQB 892	Worldwide Electronics	Staten Island
6221.6	KOM	Griffith Marine Navigation	New Rochelle
6221.6	WBV	Moran Towing and Transportation	Port Richmond
6221.6	WDA	W. James Delsner	Oyster Bay
6248.6	WQB 448	Precision Valve Company	Yonkers
6521.9	WDA	W. James Delsner	Oyster Bay
6521.9	WQA 289	Bouchard Transportation	Hicksville
8291.1	KEJ 765	Poling Transportation	Staten Island



Harry Baughn

Tugs and oil freighters always provide plenty of activity for the monitor.

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8291.1	KOM	Griffith Marine Navigation	New Rochelle
8291.1	WDA	W. James Delsner	Oyster Bay
8291.1	WQB 448	Precision Valve Corporation	Yonkers
8291.1	WQB 892	Worldwide Electronics	Staten Island
8291.1	WRV 405	Turecamo Coastal & Harbor Towing	Staten Island
8294	KOM	Griffith Marine Navigation	New Rochelle
8294.2	KBP 360	Mobil Oil Telecom Ltd.	New York
8294.2	WBV	Moran Towing and Transportation	Port Richmond
8294.2	WDA	W. James Delsner	Oyster Bay
8294.2	WQA 863	Centaur Industries	Roslyn Heights
8796.4	WBL	Kenilworth Electronics	Martinsville
12429.2	KEJ 765	Poling Transportation	Staten Island
12429.2	WDA	W. James Delsner	Oyster Bay
12429.2	WQB 892	Worldwide Electronics	Staten Island
12432.3	KBP 360	Mobil Oil Telecom Ltd.	New York
12432.3	KOM	Griffith Marine Navigation	New Rochelle
12432.3	WBV	Moran Towing and Transportation	Port Richmond
12432.3	WDA	W. James Delsner	Oyster Bay
12432.3	WQB 448	Precision Valve Company	Yonkers
12432.3	WRV 405	Turecamo Coastal & Harbor Towing	Staten Island
12435.4	WDA	W. James Delsner	Oyster Bay
12535.4	WQA 289	Bouchard Transportation	Hicksville
16587.1	KOM	Griffith Marine Navigation	New Rochelle
16587.1	WDA	W. James Delsner	Oyster Bay
16587.1	WQB 448	Precision Valve Corporation	Yonkers
16587.1	WQB 892	Worldwide Electronics	Staten Island
16587.1	WRV 405	Turecamo Coastal & Harbor Towing	Staten Island
16590.2	KBP 360	Mobil Oil Telecom Ltd.	New York
16590.2	KEJ 765	Poling Transportation	Staten Island
16590.2	KOM	Griffith Marine Navigation	New Rochelle
16590.2	WBV	Moran Towing and Transportation	Port Richmond
16590.2	WDA	W. James Delsner	Oyster Bay
16593.3	WDA	W. James Delsner	Oyster Bay
16953.3	WQA 289	Bouchard Transportation	Hicksville
22124	KBP 360	Mobil Oil Telecom Ltd.	New York
22124	WDA	W. James Delsner	Oyster Bay
22124	WQB 892	Worldwide Electronics	Staten Island
22127.1	KEJ 765	Poling Transportation	Staten Island
22127.1	KOM	Griffith Marine Navigation	New Rochelle
22127.1	WDA	W. James Delsner	Oyster Bay
22127.1	WQB 448	Precision Valve Corporation	Yonkers
22127.1	WRV 405	Turecamo Coastal & Harbor Towing	Staten Island
22130.2	KOM	Griffith Marine Navigation	New Rochelle
22130.2	WBV	Moran Towing and Transportation	Port Richmond
*2130.2	WDA	W. James Delsner	Oyster Bay
22133.3	WDA	W. James Delsner	Oyster Bay
22136.4	WDA	W. James Delsner	Oyster Bay
22136.4	WQA 289	Bouchard Transportation	Hicksville

Mobiling Ten Meter Style

Hams love operating their radios. In fact most of them love it so much they can't stand being away from the rig. They suffer whenever they are unable to yak into a microphone, manipulate a Morse key, or in some manner send their voices or thoughts to some far off friend.

VHF/UHF?

Large numbers of the hams have mobile rigs in their car. Most of these rigs are VHF or UHF FM type of units and allow us to keep in touch with our local (20 to 100 mile radius) friends. To be sure, this is a lot of fun but it is not the reason most of us got into ham radio -- we want to talk to the ham on the other side of the earth, or at least the other side of the country.

Few of us could see the sense of investing a kilo-buck or more for a rig to use in our car. And who would want one of those big floppy antennas bouncing around on the back of the family buggy?

The advent of Novice enhancement prompted several companies to produce compact, inexpensive SSB, CW rigs that are ideal for mobile use. And with propagation being what it is, any of us can get on ten meters with a simple CB antenna and talk to the world just like real hams! To boot, the cost is usually less than the average VHF FM only rig.

If you drive any distance to work, having a rig in the car can make a big difference in the way you look at the drive to and from the button factory. I drive one hour each way, and until I got a Uniden in the car, dreaded the daily two hours of driving.

Now that I can chat with folks all over the world I greet the drive with enthusiasm and cheerily jump into the car each morning (True, I don't want to get out of it when I get to work, but I force myself).

Equipment

One of the biggest things to hit ham radio in many a year was the Uniden 2510. With this little rig, anyone can have a ten meter mobile rig in the car at a price that is affordable. On the heels of the 2510 came Radio Shack with their HTX-100, another excellent ten meter mobile rig. Prices for these rigs are extremely reasonable (\$220 to \$270). They are one of the best bargains in ham radio today!

Don't let the idea of 25 watts into a loaded whip discourage you. I worked all continents within four days of installing the 2510 and Wilson 1000 antenna. Many QSO's are hour long solid rag chews, and DX contacts are easily made.

On phone, operation is much like it is at your home station. Remember if you use one of the

popular 25 watts units, it is better to answer calls than to call CQ. Although calling CQ does work, a lot of the time you run into a problem when a station that is too weak replies. Then it is a fight to complete a QSO and a lot of the pleasure is lost. Call the strong stations and enjoy your mobiling.

Desk for the Mobile

The biggest problem I had was keeping accurate records. The problem can be solved fairly easily, though. Here is how I did it.

Obtain a cardboard carton (or make one from wood) that is about 12x15x2 inches. Open the 12 inch side and reinforce the sides by gluing two pieces of cardboard 15 inches long and wide enough to butt against the top and bottom of the carton.

Now punch a hole on the right side of the box (12 inch side) about half inch from the edges; You are going to tie a string to this hole to attach your black crayon to. Use a spring type paper clip or clothes pin to attach a tablet to the top of the box, and you have an operating desk.

Now when you make a contact, you can write down the call and name and other pertinent data with the crayon in large letters that will let you read it at a glance. Jot down the time and when the QSO is done. Tear off the sheet of paper and shove it into the box.

You Gotta Be Kidding?

My mobile desk also serves as a base for my hand key which I use for mobile CW. I used double sided tape and stuck the key down in a comfortable spot (a leg key with a strap or clip is a good alternative to the key on a box).

CW is my favorite mode and I enjoy mobile CW a great deal. As always, it's the mode to use when you want to get through, and will provide QSO's when no one will reply to you on SSB. Twenty-five watts of CW is a lot more equal than 25 watts of phone!

The question I am asked most is, "How hard is it to copy?" Well, if you can copy 15 to 20 wpm solid, it is simple enough to copy a station in your head. The major problem with copying in your head is poor operators.

If a station is sending sloppy Morse, I terminate the contact at once. But good clean CW at speeds up to 35 or 40 WPM can easily be copied in your head with just a little practice (get the practice at the home station and not in the car!) All you need do is make the same call, name, report and time comments on the log that you do for phone.

The Ten Meter Mobile Antenna

There are many different antenna arrangements to use for your mobile station. Best, but least desirable is a fender-mounted 1/4 wave whip. This antenna will provide the user with consistently good results although most of us do not like the idea of punching a 1 1/4 inch hole in the fender of the car.

The bumper mount is an alternative to punching a hole and works almost as well. The bumper mount is a strap or chain that fastens around the auto's bumper, and with a standard ball attached to it, permits use of a 1/4 wave whip. Unfortunately, many modern cars will not accept the strap on bumper mount.

A recent development has been a mount that allows attaching a standard ball mount to a trailer hitch; it is a sturdy mount and seems to do a superb job.

Likewise, a good loaded whip mounted in the center of the roof will do an excellent job for you. It is quite easy to modify a CB antenna to work on ten meters. If the antenna is center loaded usually you must remove a turn or two from the loading coil to get the antenna to operate on ten meters. The same is true for short base loaded antennas.

However if the antenna is four or five feet long and loaded at the base, usually all that is required is to trim an inch or two off the whip till the SWR falls to a reasonable level in the portion of ten meters you desire. Avoid the short loaded whips, they do not work well at all.

The best place to mount a loaded whip is the center of the roof of the vehicle. The best mount is the type that requires drilling a hole in the body of the car. This will provide a good ground and ensure decent results.

A second type of mount is the clip on gutter or trunk type. This mount will clip the whip to the rain gutter or trunk lip of the vehicle. Generally speaking the trunk lip is ok, but the rain gutter mount is least desirable of all. Another clip on mount for loaded antennas is the popular mirror mount; They work, but I advise against using them unless all else is impossible.

The third and perhaps most popular is the Magnetic mount antenna. Several are on the market for ten meters. The experience I have had with these antennas indicates that they do an excellent job. Especially the Wilson 1000!

The Great Northwest Pennsylvania Canoe Expedition!

Keep the dates of May 27th through 30th in mind. N3IK and at least one other amateur will be heading down the west branch of the Susquehanna river in western Pennsylvania. The expedition route is through beautiful wilderness and several difficult to work counties. Each night will see us camped on a different river island where the HW-9 will be put into operation.

During daylight most operation will be on ten meter ssb. Preferred frequencies of operation will be between 28430 to 28450. Some CW activity on 28040 to 28060 is also anticipated. Night time will find us on 80 and 40 meters CW only (unless someone has a battery operated all mode rig). Frequencies to watch will be 3560 and 3705 on 80, 7040 +/- 5 on 40. Time permit-

ting we will also operate 20 meters at about 14060 and 15 meters at 21060 and 21110.

A special QSL will be sent to all who send a report. SWL's are encouraged to participate and will receive something a bit different in the way of a memento of the trip in addition to the QSL. Send cards and reports to my home address listed above.

Special Event Station AE9K

The W/K ARC of Greater Milwaukee will operate AEK (A)stronomical (E)xploation, to commemorate National Astronomy Day from the dedication ceremonies of the Nichols Astronomical Observatory.

Operation will be from 1400Z May 13 to 0600Z May 14 on these suggested frequencies: CW, 30 KHz up from bottom of band. Phone 1850, 3850, 7250, 14250, 21350, 28450 MHz. Packet on 14509 MHz. SASE for special QSL to Nichols Observatory, 3885 Pioneer Rd., Richfield, Wisconsin 53706. SWL's are also invited to participate.

U4MIR Active

The low activity of U3MIR has been replaced by an extremely active U4MIR. Alexander is active frequently on the normal 145.550 simplex FM frequency as well as 145.650 at times. Alexander does not speak English well, but he works hard at it.

To help matters give your call sign in standard ICAO phonetics (don't use cute phonetics!), speak slowly and be patient. Send QSL's to Boris Stepanov, UW3AX, P.O. Box 679 Moscow 107207, USSR.

28,850

I ran across a lot of very interesting activity on my way home from work last week on the frequency of 28,850. Reports of solar activities, flux levels and various other propagation phenomena was being discussed by a large number of stations and reports of DX stations and frequencies they were active on.

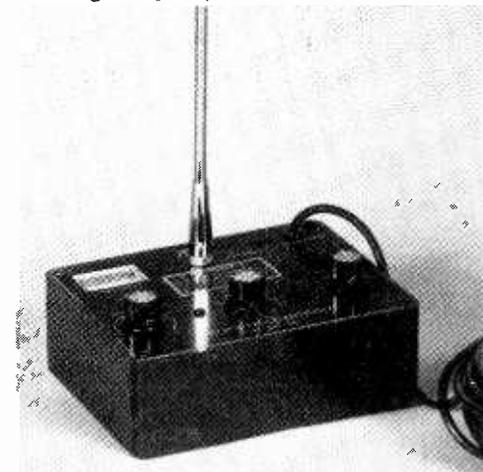
Turned out this is the club frequency for SMIRK (Six Meter International Radio Klub). Loads of interesting info about what was happening on the six meter band was being exchanged. With the intense solar activity six is coming to life and lots of good DX can be worked. If you want to keep on top of the action, tune this frequency.

I also have a complete list of 6 meter beacon stations around the world. It is too lengthy to list here, but an SASE and one buck will get you a copy. Send all requests to my home address.

Neat Compact Antenna

As ever, I am on the look out for decent antenna systems for those of us who cannot put up the ultimate.

Recently I saw an MFJ ad for a HF portable antenna (MFJ-1621). Knowing the quality of MFJ accessories, I shot off an order for one of these units. What I received was a sturdy plastic case with a loading coil enclosed in it, as well as a field strength meter, band and loading controls. Attached to the box was 50 feet of high quality 50 ohm coax. A five foot telescoping whip mounts on top of the case (see photo).



MFJ's portable 1621 antenna

According to the manual, the antenna works from 40 through 10 meters. It did not take long to set it up in my back yard (on the

ground) and run the coax into the shack. Tune up was a breeze and in a few minutes I was active on 40 meters. Stations all over the eastern half of the U.S. were worked with ease with signal reports of S3 to 7 received in return -- not bad for only putting 50 watts into the antenna.

Results on 20 were most pleasing with stations in Europe, South America and the western U.S. responding. 15 and 10 meters provided QSO's to wherever the band was open to.

True, reports did not match my beam or long wire antennas, but they were quite satisfactory and proved the 1621 to be worthwhile for the guy who can't erect a full size wire.

I did not use any radials during the initial tests, but felt it would be beneficial to do so. Stretching a 50 foot hunk of bell wire on the ground and tuning it with the MFJ Artificial Ground (931) proved to be a big improvement on 40 meters. Signals would jump from S4 to S7 or 8 when the radial was switched in.

Installing the antenna in a modern apartment building proved that apartment buildings are not good locations for indoor antennas. It was extremely difficult to work stations from inside the apartment, and RFI was a problem. But as soon as the antenna was placed outside on a window ledge things improved considerably; however, local noise precluded any satisfactory tests.

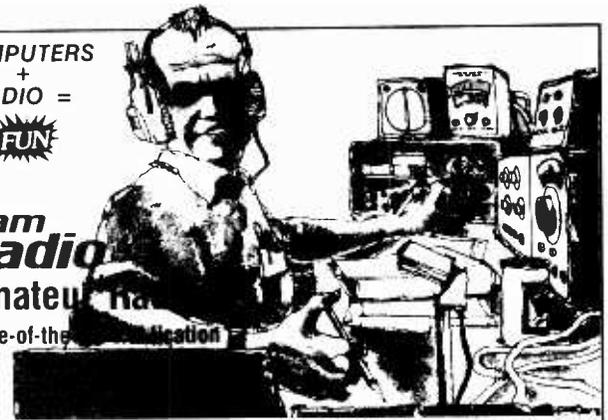
The next test was to put the antenna in the attic of a friend's home (antennas are excluded from his subdivision). The house has aluminum siding, so we did not know what to expect. What we got were great results! Contacts on 40 SSB were solid and the first that my friend had in several years since moving to this area. The antenna is now a permanent resident at his location and has allowed at least one ham to get on the air where antennas are forbidden.

The 1621 is available from MFJ Enterprises, Box 494, Miss. state, MS 39762, or call 800-647-1800 for a dealer near you.

See ya next month - 73 de N3IK

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In the past several issues of *Monitoring Times*, I talked about several exotic RTTY modes. The response was overwhelming! One reader said, "Your article about piccolo came with perfect timing. I have been hearing these strange signals but didn't know what they were."

I'm glad that we were helpful, Fred Smith (Chicago, Illinois). Sometimes RTTY is a mode that uses beeping sounds that can be foreign to some rooky listeners. In order to benefit from this hobby, it takes a keen ear and lots of patience.

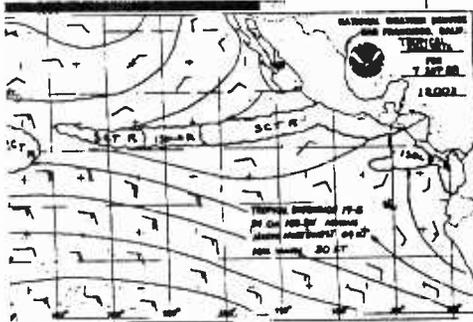
"Just the FAX, Ma'am!"

I've been so busy talking about RTTY, I forgot about FAX! This is one mode that has gained popularity in the last several years. Just about every manufacturer of RTTY gear offers FAX modes in their equipment. In fact, one could say that 1988 was the year of the FAX.

FAX is also gaining popularity in the business world. Every time I hear a commercial about a FAX unit on the local AM broadcast station, I stop and think, "I wonder if I can connect it to a shortwave receiver and copy the FAX on 8.08 MHz?" The FAX format is used on the "land lines," and so I'm told, it is different. However, someday I just might drag my Sony 2010 to work and connect it to the Ricoh FAX unit that's sitting on my secretary's desk!

The FAX picture shown below was sent in by Bob Perkins of Artesia, New Mexico. As you can see from the photo, Bob has a very sophisticated listening post. In order to obtain pictures of good quality, you need to put out some "bucks." I have to admit, even with my setup, I'm lacking a good printer.

The M-7000 from Universal Shortwave is the best choice for a demodulator. The Kantronics KAM or the AEA PK232 will give



Bob Perkins' FAX pic from USCG on 17.151.2 MHz, using the ICOM 761A and DES M-800 converter, and Epson LQ-800.

good results if an IBM PC clone is used with the software that's offered by either manufacturer. All of the units mentioned above require a printer that will handle graphics. The printer, for the most part, will determine the quality of the picture. You should only use the printer that is recommended by the manufacturer.

FAX uses a system that is similar to RTTY. It transmits tones but it doesn't have the "toodil loodil" sound. It sounds more like a broken record playing a tune from Twisted Sister! The shifting tone will have a distinct cadence.

On the shortwave bands, FM FAX can use four different drum speeds. They are 60, 90, 120, and 240 RPM. The drum speed is the actual speed that a drum, in commercial FAX units, is spinning. A piece of paper is attached to the drum.

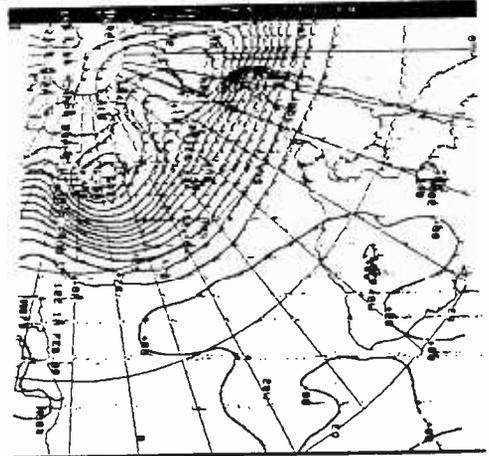
There is a pen that moves in little steps (which correspond to the cadence) and scans down the paper. The picture is created by the pen because an electronic circuit, which connects to the shortwave receiver, causes ink to flow on the paper. The ink spot corresponds to the space tone (black) and no ink spot corresponds to a mark (white). The simple two tone (black and white) system is used to print weather maps and text.

A more complicated system using shades of grey is used to print photographs. But I won't get into that because it's beyond the scope of this column. The only unit that can receive FAX photos and is reasonably priced for the SWL market is the Universal M-7000. The M-7000 can also receive the AM FAX pictures which are found on the orbiting weather satellites such as the ones used by NOAA.

Tune your VHF receiver to 137.5 MHz and set the M-7000 for FAX AM, 120 speed, positive, 576 IOC, AGC on, left to right and grey (picture) mode. Connect the M-7000 to the speaker output (you'll need an external speaker to monitor the audio) and set the R71 to FM narrow. Then wait for the satellite to make an orbital pass (you'll hear a clicking or wooshing sound). Press the R3n button on the M-7000 and you should get what looks



reading rtty



My attempt at copying NAM Norfolk, VA, on 8.08 MHz using a Star NX-10 printer and the M7000.

like a cloud cover photo directly from the satellite.

The orbital pass will take about ten minutes which will be enough time to get most of the picture. This will be a good project for you (the reader) to send in and I'll make sure that it gets printed in a future issue! ZCZC

NOA Weather Satellites

137.5 and 137.62 VHF

NOTE: Black and white pictures are sent during the day and infrared at night.

Shortwave FAX

122.50	CFH	HALIFAX	NOVA SCOTIA
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3357.00	NAM	NORFOLK	VIRGINIA
4271.00	CFH	HALIFAX	NOVA SCOTIA
5100.00	AXM32	CANBERRA	AUSTRALIA
5890.00	RVB	TASHKENT	USSR
6436.40	GZZ	NORTHWOOD	UNITED KINGDOM
7931.50			BUENOS AIRES (photo)
8080.00	NAM	NORFOLK	VIRGINIA
8185.00	FP18B	PARIS	FRANCE
9220.00	RTB	NOVOSIBIRSK	USSR
13550.00	ZKLF	AUCKLAND	NEW ZEALAND
14692.00	JMJ4	TOKYO	JAPAN

NOTE: For a complete list, see the *Shortwave Directory* by Bob Grove

Here is a list of RTTY/FAX manufacturers and dealers:

AEA 2006 196th SW Lynwood, WA 98036 Phone: 206-775-7373	Kantronics 1202 E. 23 St. Lawrence, KS 66046 Phone: 913-842-7745
Grove Enterprises 140 Dog Branch Road Brasstown, NC 28902 800-438-8155	MFJ Enterprises, Inc. P.O. Box 494 Mississippi State, MS 39762 Phone: 601-323-5869
Heathkit Company P.O. Box 8589 Benton Harbor, MI 49022 Phone: 800-253-0570	Universal Shortwave 1280 Aida Drive Reynoldsburg, OH 43068 Phone: 800-431-3939

Sorting Through 158 Channels

The other night I traveled through the Clarke Belt to see if there were any significant changes. I came upon quite a few, starting with Spacenet 2-11. SelectTV recently moved here from S1-9 and is still on the air after countless rumors to the contrary. Instead, the three Telstar channels which were cable pay-per-view and VCII encrypted have unceremoniously disappeared.

Channel 21 -- The United States Information Agency (USIA) is using this channel for a retransmission of C-SPAN and other specialized programs such as a course in American English.

Channel 7 -- The combined efforts of CNN and Telemundo are providing a Spanish language news service aimed at Latin American countries.

Satcom F2 -- The reborn PTL crowd is here raising money to the tune of over \$2,000 per minute. What if the U.S. treasury had its own channel?

Telstar 301 channels 2 and 7 (CBS) were scrambled with the audio in the clear. Word has it that sports backhauls for this network will not be scrambled. Also on this bird on channel 15 is CBS News Net International. American news stories are being fed here to Rupert Murdoch's Sky Channel.

On the SCPC front: As of January 1, Mutual Radio News has gone from analog SCPC on W4,3 to digital SCPC on F1. The move will disappoint SCPC fans as it leaves National Public Radio as the only big time radio network still using analog SCPC. Those looking for news with a less orthodox slant will enjoy the Pacifica Radio feeds daily on W4,3 as well. Also heard there since the first of the year has been KLFM-FM, Longbeach, California (U of C L.B), which has the best all-jazz format an aficionado could hope for.

Programming of Note

Telecommunications and Information Revolution is the title given one of the more fascinating half-hours on television. *TIR* is hosted by Jacob L. Trobe, Executive Director, Telecommunications in the Public Interest. If you guessed that this was a highly academic program populated by Ph.Ds, you're right. But if you thought it was over your head, you're wrong.

The program I'm reporting on had two guests, both of whom were Ph.Ds from the Center for Telecommunications and Information Studies at the graduate school of business, Columbia University. Among topics up for discussion were: Telco entry into cable television competition, status of DBS globally, regulatory role of government in nonbroadcast communications, and runaway profits from telecom takeovers.

You're right, this will never replace *Alf*. But if you have any interest in the subject of communications and want to hear the dispassionate opinions of astute media observers, then this is your show.

What About You?

Depending on your location, you can probably pick up six to ten over-the-air stations on your TV set. With cable you may get an additional 12 to 24 channels. For these purposes, the TV program guide in your Sunday paper or the little program

guide at the supermarket check-out counter will do nicely. However, trying to keep up with programming on the 150 plus channels on your dish is impossible without a special satellite TV program guide.

One such guide is *Satellite TV Week*. This guide is tabloid size (11" x 14 1/2") with pages numbering in the upper 60s. While the guide portion of the magazine is printed on newsprint (like *Monitoring Times*), six of the pages are glossy stock which allows for full color photos and program-oriented feature stories. Other "departments" are sprinkled throughout the guide.

Among these departments are: "Ask the Tech Editor," in which readers' technical questions are answered; "Recurring Feeds" in which individual syndicated shows are listed with their day, time and satellite/channel given and "Video and Audio" where 86 audio programmers and 158 video channels are listed in a comprehensive and



Trying to keep up with 150 programs is impossible without a program guide. Satellite TV Week publishes a guide, plus a couple of other useful tools. Sample several guides to find what suits you.

useful manner. There's even a "Lottery Feeds" listing so all you high rollers can actually be there when your winning number is called.

Choosing a satellite program guide is an important decision for every dish owner. Without one, it is impossible to figure out what to watch. You could stumble from bird to bird for days without ever finding what you are looking for. Which guide to buy is up to the needs of the individual. My advice is to write for samples of the guides you are interested in and compare them.

Here are some other tips: As with all magazine subscriptions, expect to wait up to six weeks before your sub starts. For that reason you may want to start your sub before you have actually installed your system. Subscription periods are typically for one year for which you can expect to pay about \$50.00. To speed things up, most publications have a toll-free number for credit card customers. It could save weeks on the start-up time.

Buyer's Guide, Too

The publisher of *Satellite TV Week* also offers two other publications of interest to

the home dish owner or person "just looking." The first is called *A Simplified Guide to Satellite Television* (Newly Revised Edition). The price is 1.50. The pamphlet was probably intended as a hand-out by dealers to prospective customers and a handy marketing tool for *STV Week*. As such, I'm sure it's effective.

The \$1.50 price tag is clearly designed to make you think you're getting something of value for free. But who wants a weenie when a Texas steak is on the table? Fortunately, the publisher also offers *Satellite TV Buyer's Guide 1989 Edition* for \$3.50 and it's worth every nickel. *Buyer's Guide* runs 100 pages long and is jammed with information from useful maps of satellite footprints to product reviews of integrated receiver decoders (IRDs). In addition, there are lots of items of interest including a glossary of TVRO terms, directory of TVRO dealers' associations, technical tips, and much more.

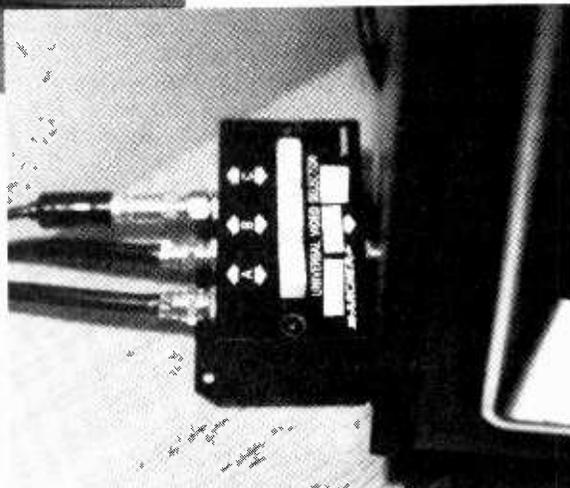
For more information on subscriptions to *Satellite TV Week* or the buyer's guide, write: *Satellite TV Week*, P.O. Box 308, Fortuna, CA 95540-9993. For credit card subscription purchases call 800-345-8876.



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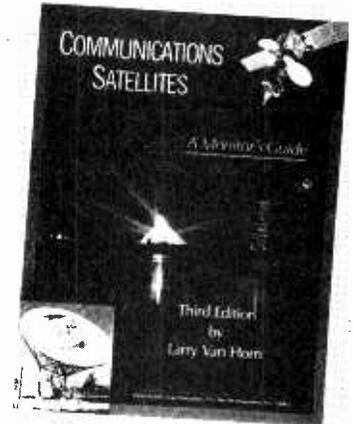
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The Angry Young Man, the Robot, and the FCC

When most people listen to the radio these days, they leave it merely with a sense of dissatisfaction. When Gary Gaulin listens to the radio, he leaves it angry. "It's wall-to-wall beer commercials and devil worship music," he says.

So incensed, Gary decided to create an oasis of radio morality in the community of Holyoke, Massachusetts, by starting his own FM radio station. He picked up a couple of radio magazines at the local library, bought some parts at the local Radio Shack and before long, station W I DON'T KNOW was born. W I DON'T KNOW is on the air 24 hours a day and has been since March of 1988.

From the outside, the studios of W I DON'T KNOW look like any other house in Elmwood. But inside is a tiny home-made transmitter that carries the station's signal up one end of Northampton Street and down the other. You're likely to lose it as you head downtown on Dwight street or South Street, though you may pick it up again in Fairview, Aldenville or parts of South Hadley.

"External antennas pick us up good, says Gary. "But if you're in a house, you won't get us because we don't put out enough power."

For now, the station is staffed by Gary and his wife Laurie, who divides her time between housework, caring for two children and plugging in station IDs when Gary is at work. When they both get tired of their station obligations, Mr. DJ takes over.

Mr. DJ, a robotic disc-spinner that's part Jameco computer, part compact disc player and part speech synthesizer, is like nothing you've heard before.

"Skrrrch -- FOR ALL YOU YUPIES OUT THERE," says Mr. DJ, "WHO LISTEN TO STCC-FM BECAUSE YOU LIKE THE MUSIC, BUT WHEN I SAY" -- Skrrrch -- "ALL THE LEAVES ARE GONE/AND THE SKY IS GREY/I WENT FOR A WALK/ON A WINTER'S DAY" -- Skrrrch -- "IS THE ANNIVERSARY OF THE RAISING OF THE FLAG ON IWO JIMA. REMEMBER THAT PICTURE, DAN? WHAT WAS THE NAME OF THE MOUNTAIN? ... WWWWWWRRRONG. IT'S MOUNT SURABACHI. THAT MEANS THE JACKPOT'S GOING TO GROW, DAN." -- Skrrrch.

Then it's into a recording by Tangerine Dream, selected by Mr. DJ.

"It takes all the songs that are on the CD cartridge, and it shuffles it up like a deck of cards," says Gary, who considers Mr. DJ a machine -- he won't call it "he" the way Laurie does. "Then it announces every song before it plays it."

Gary punches a few keys on the computer and Mr. DJ introduces *Rock Lobster* by the B-52s. The robot rocker sounds something like a Cylon warrior from the old TV show, *Battlestar Galactica*.

Aside from the steely-voiced Mr. DJ, W I

DON'T KNOW is run like any other radio station. IDs, for example, are given every 15 minutes.

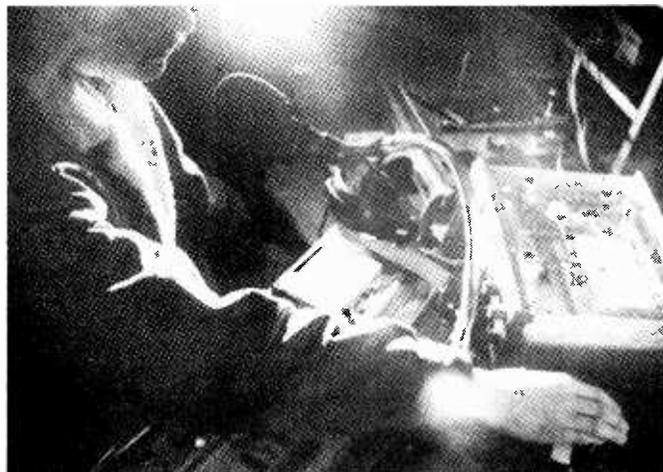
Gary begins to type again, inputting weather and news reports, phonetically spelled for ease of electronic elocution, that Mr. DJ will read each hour:

"THE EYEATOLA HO MAINEE," begins Mr. DJ, "REALLY DID IT THIS TIME. WHAT A PERFECT EXAMPLE OF RELIGIOUS FANATICISM... MOST ISLAMIC PEOPLE ARE NOT CRAZY LIKE HOMAINEY. IT'S JUST THAT HOMAINEY TALKS TO GOD EVERY DAY LIKE THE TV EVANGELISTS AND HE CHANGES THE RELIGION AS HE GOES.

"ALL IMPORTANT ANNOUNCEMENTS LIKE THIS ARE REE PEETED HOWERLY. THANK YOU."

Gary Gaulin
promises,
"When we hit
the big time,
no beer
commercials!"

Holyoke Transcript-
Telegram: Alspaugh



The music on W I DON'T KNOW is every bit as unusual, an eclectic mix of tunes ranging from the mind-bending teen anthems of Twisted Sister to marches by John Philip Sousa. "One of our intents is to play music that is good, that's lively, but won't screw up their heads," says Gary. If he thinks a lyric might be misinterpreted, he'll go on the air with an explanation.

"The object of our station is to be the first educational music station," he says. "Where the commercials used to be, we put in positive, educational messages."

Gary takes his radio and his mission very seriously. "If you don't think that all these ads aren't raising our kids to be alcoholics, you'd better think again. When we hit the big time," he promises, "no beer commercials!" Meanwhile, the studio monitor blasts out Cindy Lauper's *Money Changes Everything*.

Despite his lack of a license, Gaulin insists that he isn't a pirate. "We're not fooling around. I know all about the regulations. Our

power is so low that the FCC could fly their planes over my house all day long and they'd never find us we're so small."

He says that reports that the F.C.C. was trying to find W I DON'T KNOW don't worry him. He's not even trying to hide. In fact, one time he even called the F.C.C. to run a computer search for the cleanest local frequency. The nearest competition he was able to find was WBBS in Great Barrington, a little more than a kilometer away.

But again, there's little to worry about. That sort of thing, he says, is a technicality that can be sorted out with the F.C.C. in the licensing procedure. It's his landlady and his mother who are his biggest problem.

Back at the New England office of the Federal Communications Commission, enforcement officer Victor Tagliaferro was hearing rumors of a strange little station operating on 105.3 MHz. One morning, Tagliaferro decided to get in his car and head for Holyoke.

There on Interstate 91, he began to detect W I DON'T KNOW. He followed the fading signal down Northampton street, locating Gaulin's house "within 15 minutes."

At about that time, Gaulin was on his way home from lunch, perhaps to do a little tinkering on his transmitter. It was then that he spotted a man on Martin Street, aiming an electronic direction finder at his attic.

"I knew what was in his hands. It was a homing device and he had it pointed right at my antenna, Gaulin said. "I went into the house, wolfed down a tuna fish sandwich and waited for the knock at the door."

Before that knock came, however, Gary managed to make a phone call to the local paper. If the F.C.C. was going to start hauling his equipment out, by God, he wanted the whole world to know about it. The F.C.C., it turned out, had no intention of making a scene. Tagliaferro was polite but firm.

"He said that we should go off the air for the time being so as not to jeopardize the future,"

said Gary. "He said that our sound quality, by the way, was beautiful."

In an interview with the *Transcript-Telegram*, Victor Tagliaferro agreed, saying that "[Gaulin is] a very talented young man." Still, Tagliaferro had to be firm. "They can't operate, period. And they must shut off." "Unfortunately," laments 32 year old Gaulin, "our kit was built a little too good."

The story does not end on a completely down beat note, however. According to Tagliaferro, the Gaulin's may qualify for a low power license to fill the void on the FM band. But he will have to apply through the F.C.C.'s Washington, D.C. office. And that's got Gary and Laurie Gaulin at work once again, this time trying to raise community support in now FM-less Holyoke.

"We're going to start preparing for the big time," says Gaulin enthusiastically. "Probably the biggest message I want to get across to the kids is that you've got to keep learning. Then I want to promote

some kind of moral sense in a world where morals are easily lost or twisted."

Once again, Gaulin is "on the air" and the fine line between the man and his machine once again begins to b-b-b-lurr.

Bits and Pieces

Disc Jockey Mike McDonald thought he'd have a laugh by promising "the keys" to a new Porsche sports car to a lucky listener, but the joke turned out to be on him.

McDonald, of Chicago's WLS, offered the keys to the first person who could answer a question on the air. Thom Theobald did and McDonald told him, "You win the keys to the Porsche. I have absolutely no idea where the car is, but you get the keys."

Theobald, not one to laugh over such a thing, called his attorney who demanded the \$30,000 car from the station.

In the end, Theobald did get the Porsche. McDonald, not surprisingly, got the axe.

WGMS-AM in Bethesda, Maryland, hopes

to have their wind-damaged tower rebuilt by the end of this month. Back in December, a strong thunderstorm knocked down one of the station's four towers. WGMS was forced to convert its 5,000 watt daytime/1,000 watt nighttime directional signal to a weaker 1,000 watt daytime/250 watt nighttime signal.

None of this seemed to phase the station. As general Manager Michael Ferrel said, the weaker signal did not have a significant effect on listenership "because AM listeners make up a small portion of WGMS' audience."

Ever want to start your own AM or FM station? Read Pan-Com International's new chock-full-of-goodies catalogue and maybe you can. There's more details in the "What's New" section of this issue but suffice it to say that there are plans and kits for low cost, low power (20 watt AM and 10 watt FM) broadcast transmitters and some really excellent books.

The catalogue is one dollar from P.O. Box 130, Paradise, California 95967-0130. Tell 'em *Monitoring Times* sent you.

Mailbag

Ken Flannery, obviously a Dale Carnegie graduate, writes: "While I find American BandScan's monthly 'New Station Grants' section most helpful, I find you to be a dunderhead! People read this list to see if there are any new stations being planned for their community. So list them by community, not frequency!" Good idea, Ken.

David Dunn of Columbus, Ohio, writes in to say that he's purchased a DX-440 with digital readout "with which I am hoping to pick up AM stations across the Atlantic." Good luck, David! The way reception is going this year, anything is possible.

Cathy Turner of Yonkers, New York, herself a DXer of some repute, says that American BandScan is "good reading!" Regarding a recent column, she says, "I have mixed feelings about stations going talk. One

of the biggest disappointments in my life was relocating to the NYC area and finding my all-time favorite station from my teen years, WABC, had gone talk!"

New Station Grants

Over the past 30 days, the Federal Communications Commission granted 67 new stations in 32 states -- maybe one in your community. Check it out!

Alabama: 88.7 and 97.3-Dadeville and 99.9-Tuskegee, **Arkansas:** 93.3-El Dorado, **California:** 95.9-Barstow, 102.9-Cartago, 96.1-Morgan Hill and 100.3-Orange Grove, **Florida:** 98.7-Holmes Beach, 101.9-Springfield and 91.9-Vero Beach, **Georgia:** 105.9-Lakeland, **Idaho:** 94.5-Hayden, **Illinois:** 94.9-DeKalb and 100.5-Henry, **Indiana:** 107.7-Corydon and 101.5-Fort Branch, **Kentucky:** 106.7-Berea, 104.7-Hazard, 105.7-Manchester and 105.9-Whitley City, **Louisiana:** 104.7-Washington, **Maine:** 99.5-Pittsfield, **Michigan:** 90.1-Bay City and 95.9-Glen Arbor, **Minnesota:** 101.7-Crosby, **Mississippi:** 94.9-Holly Springs, 97.9-Wiggins and 93.7-Yazoo City, **Missouri:** 105.9-Ava, **Montana:** 97.9-Shelby and 96.5-Yellowstone, **New Hampshire:** 104.5-Conway, **New Jersey:** 96.1-Margate City, **New Mexico:** 91.5-Las Cruces, **New York:** 101.1-Fort Plain, **North Carolina:** 93.5-Wadesboro, **Ohio:** 103.5-Lancaster, 99.9-Uhrichsville and 97.5-Union City, **Pennsylvania:** 99.9-Avis, 88.5-Erie and 94.9-Port Allegany, **Rhode Island:** 102.7-Narragansett Pier, **South Carolina:** 100.7-Charleston, 100.3-Elloree, 103.5-Greenwood, 100.5-Marion and 105.9-St. Stephen, **South Dakota:** 97.1-Faith, **Tennessee:** 93.7-Huntingdon, **Texas:** 92.5-Abilene, 101.3-Cameron, 95.1-Friona, 96.1-Odessa, 97.5-Olney and 101.1-Port Isabel, **Utah:** 95.7-Delta, **Virginia:** 105.1-Bridgewater, 880-Dayton, 98.3-Elkton, 92.1-Ruckersville and 107.9-West Point, **Washington:** 1600-Dungeness, **West Virginia:** 1570-Elk Hills and 94.3-Fairmont, **Wisconsin:** 98.7-Mayville.

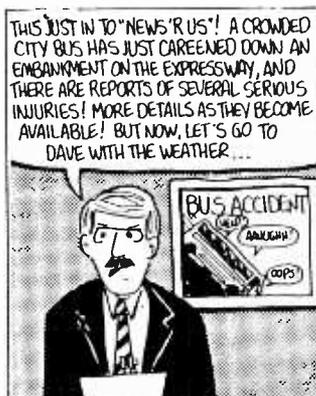
Also granted during the period was a booster, WKBE-FM1 on 94.7 out of Altoona, Pennsylvania, a translator, K208BP on 89.5, which relays KGTS out of Wenatchee, Washington, and a 60 watt synchronous transmitter, 970-WAMD in Hickory Hills, Maryland.

This up-to-the-minute information comes courtesy of the fine folk at *M Street Journal*. For more information on *M Street*, write them at P.O. Box 3568, Alexandria, Virginia 22302.



Credits: A very special thanks to The Holyoke *Transcript-Telegram* via W. Bacis, South Hadley, Massachusetts, *The Globe* via Hugh Miller, Seattle, Washington, *M Street Journal*, *Sun-Sentinel* via Bob Hess, Tamarac, Florida.

NEWSROOM



By Dave Prohaska



Those Battling Irish!

From the Netherlands, Ary Boender continues to give us an update on the Irish situation. After the order to shut down by December 31, at least eleven stations either continued broadcasting or returned to the air, defying the government. Among them was Radio Dublin. Indeed, a Radio Dublin short-wave broadcast was monitored here in central Florida in 1989 on 6910 kHz.

Apparently the Irish authorities see Radio Dublin as the "flagship pirate," because this is the station which seems to be receiving the most pressure. According to Ary, on orders from the government, Radio Dublin's electricity and telephone were both cut off. It quickly resumed transmissions with the aid of a generator.

However, even this venerable old pirate eventually gave up the fight. On February 9, Radio Dublin went silent. Whether it will return or not, no one can say, but for now it looks as if the pirates are losing and government winning.

While January saw several weeks of increased pirate activity, the situation in Ireland has now reversed. After Radio Dublin folded, only four stations were still broadcasting. These were Radio Star Country, Zee 103, Border Weekend Radio, and Northside Radio. By the time you read this, even they may be gone.

Other Europirate News

Gregg was one of over forty North American DXers who received QSLs from Scotland's Weekend Music Radio for their tests around Christmas and New Year's Day on 6312.7, 6317, and 15043. The station advises, "You haven't heard the last from Scotland!"

Here is an update on Radio Caroline from Ary Boender. Some QSLs are now being received from Apartado 146, 17250 Playa de Aro, Spain. The station now has a new medium wave service on 819 kHz. It is called the "Overnight Alternative" and operates every day but Saturday from 2200 to 0400 UTC. On Easter, Caroline celebrated its twenty-fifth birthday. The station continues to transmit at least some days on 6215 kHz.

Clandestine Things

A letter from Vito Echevarria arrived to remind us that there is in fact one Panamanian clandestine station operating in protest of the regime of General Noriega. It is Radio Constitucional. At the present its transmissions are limited to the FM band, but there is always the chance that medium-wave

or shortwave broadcasts could be planned for the future. The Noriega administration argues the station is operated by the CIA's Foreign Broadcast Information Service. There is a good possibility this is correct.

From Michigan, Harold Frodge writes with some nice loggings of Radio Venceremos, the station of the Marxist guerrillas in El Salvador. Harold logged it between 0201 and sign off at 0336 UTC. As is often typical of Venceremos, it was shifting frequencies between 6600 and 6665 while being "chased" by two other stations. One of these appears to have been a music jammer. It is possible the other may have been a black or phoney clandestine which sometimes shadows Venceremos in order to confuse listeners.

The WJDI Report

We previously related the success readers were having in hearing pirate WJDI on 1620 kHz. They obviously are also having success QSLing because Steve Rogovich, Tim Francisco, Jim Kalach, Ray Babecki, and Kevin Murray were all kind enough to send copies of the QSLs they received. Since Kevin's was the first to arrive we are reproducing it here. You certainly cannot fault WJDI for not giving enough technical details!

In connection with WJDI, Tim Francisco and Barry Diefenderfer also received something else. They got letters from the National Radio Club stating it is not a mail drop for WJDI or any other pirate, and despite the announcement of its address it could neither verify nor forward reports. Fortunately this is no problem. We previously reported that

WJDI was planning to establish a mail drop. You can now send reports or other correspondence to Box 142, Cottekill, New York 12419. They should be forwarded within a reasonable amount of time.

Meanwhile several more "Outer Limits" readers have logged WJDI. It was logged in Pennsylvania by Barry Rowan at 0408 UTC on 1620 kHz. In New Hampshire, Howard Kemp even got a phone call from the operator after sending a reception report!

The Voice of Elmer Fudd

Yes, it is hard to believe, but Norfolk, Virginia, talk-show host (WNIS 850 kHz) Pat Murphy sent along a tape of this one which he logged on 26806 kHz at 2100 with the "Uncle Stevie Show," some pretty zany songs, and other crazy stuff.

Elmer says to report reception to *Monitoring Times* (he cannot pronounce Santosuosso, but who can?), *PopCom*, and *ACE*. Elmer, we are grateful for readers' logs, as are the folks at *PopCom* and *ACE*. But please remember (and all other pirates, also), that commercial publications and radio clubs cannot function as mail drops. We would suggest you use one of the established ones, such as Box 5074, Hilo, Hawaii 96720, or set up one of your own. We can and do publish station addresses once we are made aware of them.

Other Pirates

In Connecticut, Jim Kalach bagged WKND on 6243 kHz at 0358 UTC. He reports the station was playing long versions, possibly bootleg, of songs by Neil Diamond and Neil Young. The station was lost at 0405, possibly because of technical difficulties. Jim would like to know if any of our readers have an address for WKND.



The Voice of Tomorrow is still around having been logged recently on 6241 at 2229 by Pat Murphy. Strangely enough, Barry Rowan heard them commenting, "Everyday we are sending more of our boys to Vietnam," and wonders if they are playing tapes that old.

Those who have heard VOT know it is both anti-Semitic and racist, so it is not surprising they had a broadcast on Martin Luther King, Jr. Day. Ohio's Fraser Bonnett heard that broadcast on 7410 at 2018 UTC.

Both Fraser and New York's Cathy Turner have logged Radio Angeline on 7425 kHz around 1850. Fraser notes the announcer wished everyone good luck in the coming year, 1984, while Cathy remarks on apparent attempts to copy the famous style of Radio Clandestine. Most likely this was another "historic tape," rather than the reactivation of a pirate that was known to be broadcasting several years ago.

Fraser and Cathy also report reception of WENJ on 7415 between 2100 and 2400. This station does use the Hilo mail drop noted previously. Strangely enough, while monitoring WENJ, Fraser heard someone break in over the signal announcing, "This is the FCC."

WJDI is one pirate that welcomes reports from listeners, as one of its intentions is to give the SWL an uncommon station to log in his book. WJDI even provided a picture of the inside of the studio!

WJDI 1620 KHZ

MR. KEVIN D. MURRAY,

THIS LETTER WILL VERIFY THE RECEPTION OF "PIRATE" RADIO STATION W J D I OPERATING ON 1620 KILOHERTZ WITH AN OUTPUT POWER OF 1000 "CLEAR" WATTS. RADIO STATION W J D I AT THE TIME YOU RECEIVED OUR SIGNAL WAS ON THE AIR FOR EQUIPMENT TESTING PURPOSES. DURING THE MONTH OF JAN 1989 WE HAVE BEEN TESTING OUR NORTH / SOUTH DIRECTIONAL ANTENNA SYSTEM. THIS ANTENNA HAS VERY DIRECTIONAL PROPERTIES TO THE NORTH AND SOUTH AND HAS GIVEN US ALMOST 1000 MILES OF COVERAGE.

WE WOULD LIKE TO GIVE OUR TRANSMITTER LOCATION BUT FOR OBVIOUS REASONS WE KNOW IT WOULD CAUSE THE DEMISE OF W J D I AND MANY MONTHS OF WORK BUT, THE GENERAL LOCATION IS 100 MILES NORTH OF NEW YORK CITY. THE TRANSMITTER WAS DESIGNED AND BUILT BY MYSELF FOR THE STATION AND WILL OPERATE ANY FREQUENCY FROM 1400 KILOHERTZ TO 32 MEGAHERTZ. THE MAIN PURPOSE OF W J D I IS TO ADD SOME NEW LIFE TO THE BROADCAST BAND DX HOBBY AND TO GIVE THE GENERAL SHORT WAVE LISTENER AN UNCOMMON STATION TO "LOG" IN HIS BOOK. TODAY I HAVE NOTED MANY "PIRATE" SBC STATIONS BUT, ONLY A FEW OF US RUN MORE THAN A FEW WATTS. ENCLOSED IS A PHOTO OF OUR " TRANSMITTER AND STUDIO OF W J D I ". IT HAS BEEN A PLEASURE ANSWERING YOUR LETTER AND I HOPE TO HEAR FROM YOU AGAIN.

Don CHIEF ENGINEER

TECHNICAL TRANSMITTER AND ANTENNA SYSTEM INFORMATION

FREQUENCY:	1620 KILOHERTZ
POWER OUTPUT:	1000 WATTS NOM., 1500 MAX
ANTENNA:	290' SLOPING "T" FED WITH RG 214 50 OHM COAX
GROUND RADIALS:	4500' OF RADIALS. 45 RADIALS OF #14 COPPER 100' EACH
RF AMPLIFIER:	A SINGLE 4-1000 TETRODE
MODULATORS:	A PAIR OF #10 TRIODES CLASS "B"
PLATE VOLTAGE:	4000 VDC ON RF FINAL, 3000 VDC ON #10 MODULATORS
PLATE CURRENT:	375 MILLS ON 4-1000, 300 PEAK ON MODULATORS
SCREEN VOLTAGE:	500 VDC FROM FIXED SUPPLY
SCREEN CURRENT:	150 MILLS TYP
GRID DRIVE:	20 WATTS NOM FOR 35 TO 40 MILLS GRID CURRENT.
POWER SUPPLY:	3000 VDC 500 MA AND 4000 VDC @ 1 AMP
AUDIO DRIVER:	DYNAKIT 70 AMP (30 WATTS NOM.)
RF DRIVER:	6L6 CRYSTAL WITH AN #07 RF OUTPUT.

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A Bit of Numbers Intrigue

There is a great deal more to this story than we can report here, but perhaps just a hint may be enough to get you doing some research on your own. Some months ago we reported that an anonymous reader in Florida had sent us loggings of oral CW numbers heard on 13377 kHz. An expert -- we could say professional -- monitor, these bizarre

transmissions had him amazed. Why would anyone use such a method?

After this was published, others, especially Maine's Dave White, went to work. Dave monitored oral CW, but he also logged regular CW as well as a good deal of five-digit English numbers transmissions in the vicinity of the frequency. There was also some plain text in both English and Swahili.

References to the "horn of Africa" area (Ethiopia and Somalia) would indicate that the stations involved were concerned with that region. There was mention of one clandestine transmitter as well as occasional usage of Italian. Italy was once the colonial power in Somalia and occupied Ethiopia during part of World War II.

Another matter of interest was the appearance of alleged State Department station KKN39 in the midst of some of this traffic as well as other stations which may have the same purpose as KKN39.

This is by no means the first time KKN39 has seemed to have had a "friendly relationship" with numbers stations. Nor is Dave the only one hearing KKN39 in that general vicinity. In New York, Leo Schmidlin logged them with a powerful signal on 13387. It was so strong, in fact, that the USB transmission came in on LSB with almost equal strength.

And that could get us pondering how many transmitter locations such "State Department" stations as KKN39 and KKN44 (allegedly Monrovia, Liberia) really have. Perhaps their name is Legion.

But all this still leaves us with one nagging, unanswered question -- why oral CW? Our thanks to Dave White, Leo Schmidlin, John Demmitt, and our anonymous contributor for their escorting us to radio's Twilight Zone.

A Beacon Away Keeps Interference at Bay

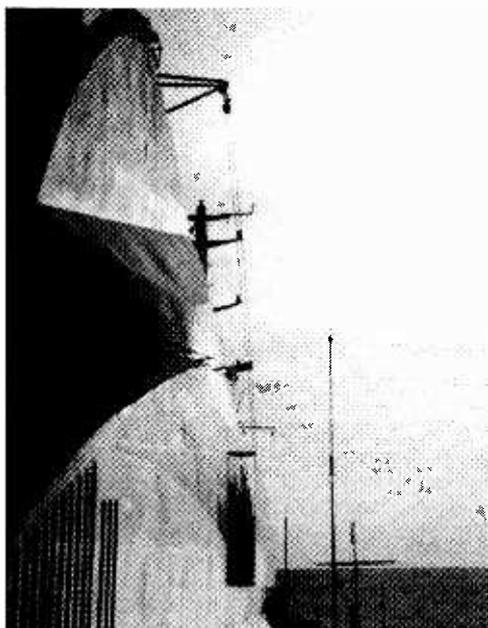
I suppose that many of you have heard P-T-P transmissions that began, "This is a test transmission...etc." The purpose here is to give the receiving station an opportunity to adjust its receiver to best copy the coming transmission.

Once in a very great while a marine coastal station will conduct a test for a short period of time (a few days or a few weeks) to see if they are reaching out to the areas of open sea that they wish to cover.

There are also test transmissions by beacons in the low frequencies. Obviously, they are not for the purpose of receiver adjustment. Nor are they intended to test coverage area. The concern is interference.

On other frequency bands, interference causes irritation or resentment. Here the problem is much more severe. If a plane or a ship is using a beacon for direction finding or homing, interference from another beacon could cause the plane or ship to head in the wrong direction and this might result in an accident. Therefore, the tests are run to see if there is such interference with other existing beacons.

Interference is a concern even before



Harry Baughn

If a ship or plane is using a beacon for direction-finding, interference could cause it to head in the wrong direction

the beacon goes on the air. Authorization for a new beacon on a particular frequency is a slow process. Authorities review how near the new beacon is to other beacons on that same frequency, and to beacons on adjoining frequencies.

The intent is to prohibit new beacons on the same frequency within about 300 miles or so of existing beacons. Distances to beacons on nearby frequencies are also evaluated. While this sounds a little severe, it is also beneficial to the proposed new beacon. If the new beacon could interfere with existing beacons, it is equally likely that the existing beacons could interfere with the new one.

If there is some uncertainty, the new beacon may be given temporary permission to operate on the frequency for a short period of time to see if there will be problems.

This happened in Kenosha, Wisconsin, about a year or so ago. Beacon PKW/338 went off the air for a day and then appeared on 389 for a couple of days. It returned to 338 and went completely silent about a week later. At this time, a new beacon appeared on 338. This was HE from Sheboygan, Wisconsin. It wasn't until September that PKW returned to 389. By mid-October, it completed the transition by changing to EN.

It should be pointed out that there is a difference between a two-letter and a three-letter ID for an aeronautical beacon. A three-letter beacon is an NDB, or nondirectional beacon. It is used for direction finding to the airport. Many three-letter NDBs use the same ID as the official airport identifier.

However, if the physical location of the beacon is changed more than a very small distance, it is required to change to a new ID. This prevents errors in using the beacon for location, when it isn't where an old book or map shows the (old) location.

The two-letter beacon is a marker beacon. Most will be LOM markers, Locator Outer Marker. This is a runway marker that pilots use to line up with a specific runway while still some distance from the airport. A large airport may have several LOMs, differing in ID and frequency. Middle Markers (LMM) are

generally being eliminated in the U.S. and few remain in the low frequency band.

Thus, the test of PKW on 389 was apparently to check for interference before the conversion to EN was approved.

Initializing

Another kind of testing also exists. This is the test of a new beacon as it is being installed. This is more to answer the question "Will it work?" than concern for interference. This sometimes provides interesting and unusual receptions.

Larry Mindel of Waunakee, Wisconsin, has had a couple of experiences along these lines. A couple of years ago, he was listening to a new beacon, CWF/418, when it suddenly changed to CW. This was a new beacon being installed at Lake Charles, Louisiana. It was to be a two-letter LOM, but they were using the airport identifier (CWF) as the ID while testing the new beacon. Larry was listening at the moment they switched over to the official ID it still uses.

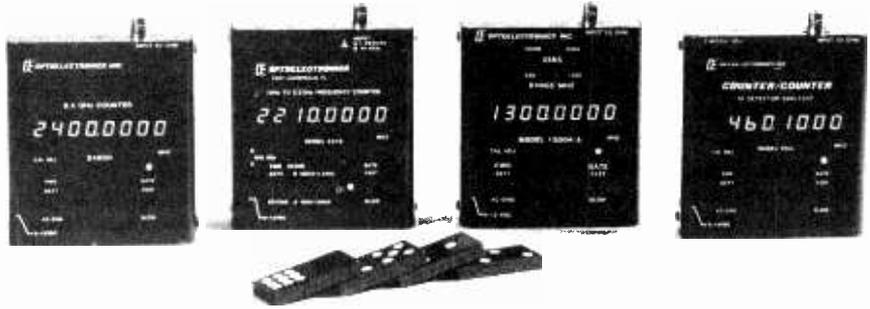
More recently, Larry heard YKF on 335. With the "Y" at the beginning and the long tone after the ID, it was apparently Canadian. Ken Stryker, the Unidentified Beacons Editor of LWCA, noted that KF was the ID of Waterloo/Wellington, Ontario.

Some years ago, Canada put a "Y" in front of many two-letter identifiers to create a similarity in Canadian beacon IDs. With this in mind, Ken talked to the airport people in Waterloo. They were testing a new beacon, but were supposed to be testing without any ID (carrier only). They have not been reported since, although testing of the carrier may still be going on.

If you live in the eastern part of the country, here is your chance to listen in on some testing in your area. Montauk Point, New York, is a light station operating a sequenced marine beacon, MP/286. This has been operating as SQ3, coming on for one minute at two minutes past the hour and every six minutes thereafter.

They have been testing continuous operation on 293 during the silent period on 286. In other words, they are on 293 for five minutes and off for one (while on 286).

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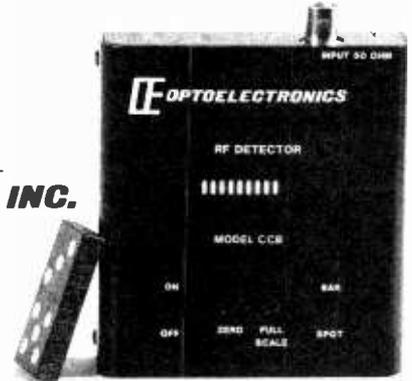
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1 KHz	< 5 mv	NA	NA	NA	NA
100 MHz	< 3 mv	< 1 mv	< 3 mv	< .5 mv	< 5 mv
450 MHz	< 3 mv	< 5 mv	< 3 mv	< 1 mv	< 5 mv
850 MHz	< 3 mv	< 20 mv	< 5 mv	NA	< 5 mv
1.3 GHz	< 7 mv	< 100 mv	< 7 mv	NA	< 10 mv
2.2 GHz	< 30 mv	NA	< 30 mv	NA	< 30 mv

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During May, they are scheduled to operate full time on 293 and not be on 286 at all.

You can check what they are testing. There is apparently some concern whether Montauk Point will interfere with the Breton Reef Light beacon on 295. This Rhode Island marine beacon uses the ID of BR. Listen to both frequencies and see whether you can hear both beacons.

This seems to be an early move in converting eastern marine beacons from sequenced to continuous. The Great Lakes conversion was a year ago, and Canadian Pacific area marine beacons began changing late last summer.

Letters to the LOWFER

Bill Kile of Oxnard, California writes in with a simple request. "Being that most of the transmissions audible below 500 kHz use Morse Code, could you run a 'clip and save' Morse code table?" No problem, Bill. And what a good suggestion.

While letters predominate in LF station identifications, you will hear numbers from time to time, especially with private beacons. And, if you're not familiar with Morse code, don't let that stop you from enjoying this challenging, exciting form of DXing. Just get yourself a cassette machine and tape record everything you hear. By playing it back (as many times as necessary) and consulting our handy "clip and save" Morse code chart, you'll be able to identify LF stations like a pro!



Morse Table

Letters

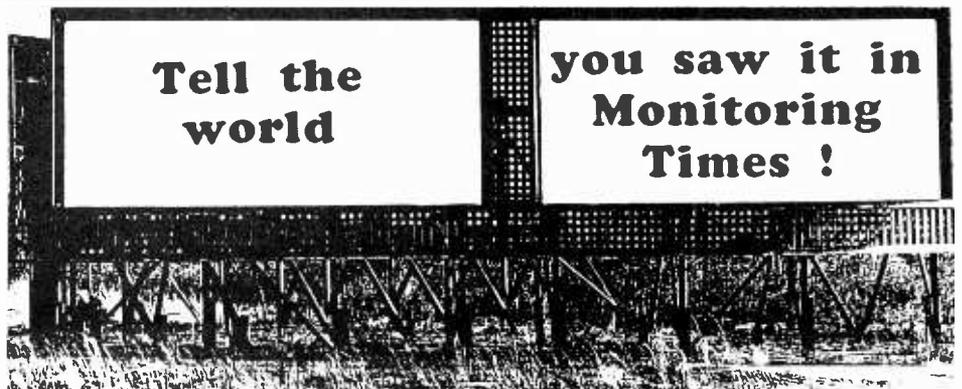
T	dah
U	di-di-dah
V	di-di-di-dah
W	di-dah-dah
X	dah-di-di-dah
Y	dah-di-dah-dah
Z	dah-dah-di-dit
A	di-dah
B	dah-di-di-dit
C	dah-di-dah-dit
D	dah-di-dit
E	dit
F	di-di-dah-dit
G	dah-dah-dit
H	di-di-di-dit
I	di-dit
J	di-dah-dah-dah
K	dah-di-dah
L	di-dah-di-dit
M	dah-dah
N	dah-dit
O	dah-dah-dah
P	di-dah-dah-dit
Q	dah-dah-di-dah
R	di-dah-dit
S	di-di-dit

Numbers

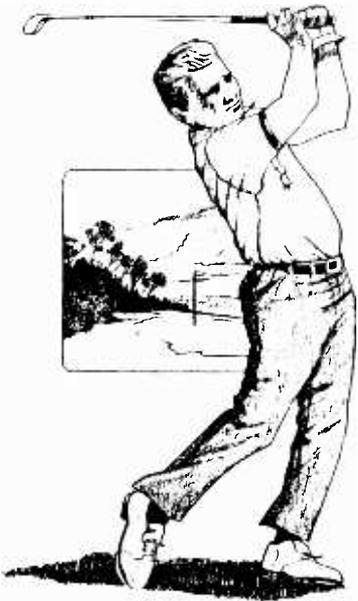
1	di-dah-dah-dah-dah
2	di-di-dah-dah-dah
3	di-di-di-dah-dah
4	di-di-di-di-dah
5	di-di-di-di-dit
6	dah-di-di-di-dit
7	dah-dah-di-di-dit
8	dah-dah-dah-di-dit
9	dah-dah-dah-dah-dit
0	dah-dah-dah-dah-dah

Tell the world

you saw it in Monitoring Times !



consumer electronics



Airballs

Golf, as a TV sport, often leaves a lot to be desired. You know, long periods of silence followed by interminable periods of boredom. If you're standing behind the ropes at a tournament, however, wondering what's going on at the other 17 holes, it can be even worse.

Fortunately for those who like to attend such events, the PGA Tour and the Sports Band Network, a Dallas-based radio service, is bringing golf play-by-play to the fairways.

According to *Golf* magazine, at 20 events this year, fans can rent a radio receiver headset for three dollars. The headset will be able to pick up reports of action elsewhere on the course.

Sports bands will have play-by-play reporters walking with the last four or five groups, two anchors to set the scene plus live and taped interviews. Broadcasts run Friday, Saturday and Sunday

from the first tee shot to the last putt. The FM signal can only be picked up on the course, the clubhouse

and hospitality tents.

Development of the service comes after a three-year test run at six different events. Not unexpectedly, there is no word on what frequencies are used.

Radar: Gotcha' Now

Evading police radar is almost a national past time. Police change the bands; radar detectors quickly catch up. States make them illegal. Manufacturers make them smaller.

And on and on it goes — until now. International Measurement and Control Company (IMCC) says they can end the war once and for all.

According to New York *Times* business technology writer Philip E. Ross, IMCC

has developed a laser speed detector that emits infrared light invisible to humans — and radar detectors.

Moreover, its pencil-thin beam is so precise that it can pick out a single car up to a third of a mile away, separating it from the herd far more easily than with radar, whose broad beam can take in several cars at a time.

In final form, the speed gun will weigh 4 pounds and measure 3 by 5 by 7 inches, making it easy enough to aim. The new laser speed gun, which was developed out of related surveying and military range finding technology, should be in use by the end of the summer.

"I ran it once, and if it proves to be as accurate as it appears, it could be a useful tool," said Brian Traynor of the National Highway Traffic Safety Administration.

But, says author Ross, there are drawbacks. The laser's precision comes at the price of mobility. The beam must be shot from a standstill position, keeping police from roaming the roads.

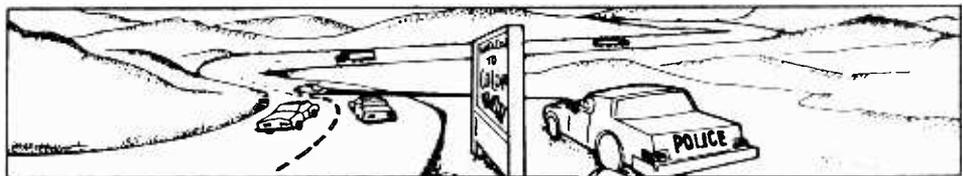
Another disadvantage is the unit's high price, projected at \$3,000 to \$3,500 — more than triple that of most mobile radar units. Still, several law enforcement experts appear to regard the machine as a useful threat with which to chasten habitual speeders made arrogant by their dashboard detectors.

"It is my understanding," says James J. Baxter, president of Citizens for Rational Traffic Laws, Inc., "that the private enterprise system has already developed a countermeasure."

But price would be a factor in a laser-radar detector, as well. While Baxter predicts the use of jammers that "return signals showing whatever speed the driver wishes," in the end the cost might be too much for such units to become as widely used as radar detectors.

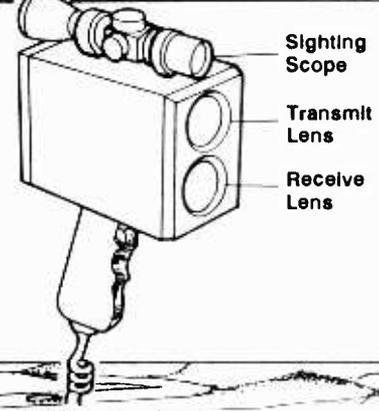
"You'd basically have to put a laser diode in the instrument and several receivers on the front and back of the car," said David Williams, president of IMCC. "I'd guess that this kind of detector would run at least \$1,500."

LASER SPEED GUN DETECTION



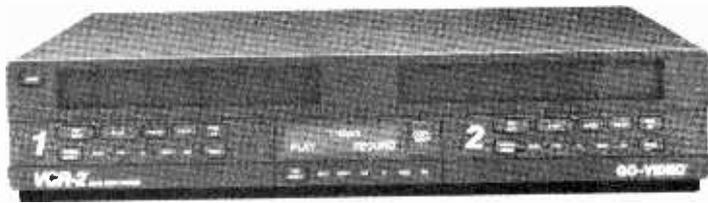
Using Lasers to Catch Speeders

Radar has been the foremost technology in a highway patrol's arsenal against speeders. Now a laser gun has been developed that is invisible to radar detectors and promises to pinpoint speeders more accurately. It locates the delinquent driver with a laser beam no wider than 4 feet at a distance of 1,000 feet. An radar beam is 120 feet wide at a distance of only 10 feet. An expanding radar beam hits several cars at once; the laser beam hits only one car.



RADAR DETECTION





Dual Deck VCR Ready to Roll

After years of legal wrangling, Go-Video, Inc. is about to release their dual-deck videocassette recorder system. The unit, which the manufacturer says will retail for under \$1,000, should be in stores in time for Christmas sales. The unit will be produced by Samsung Electronics Company, Ltd., a South Korean firm.

The Go-Video VCR-2 lets users copy and edit the contents of one videocassette onto another, tape two programs at the same time or watch a video while taping a television show.

In order to win the approval of the motion Picture Association of America, Go-Video had to agree to include a device that would prevent the copying of any prerecorded videocassette encoded with a special signal.

Still unclear is whether consumers will be willing to part with nearly \$1,000 for the unit. Says Steve Schwartz, associate editor at *Twice* magazine, which covers the consumer electronics industry, "It might just be cheaper to buy two VCRs."



Full-Size Digital-Ready Headphones

Azden corporation has announced the release of the DSR-DM90, their top-of-the-line full-size digital-ready headphones.

According to company literature, in order "to take full advantage of the improved dynamics of digital recording, you need a headphone incorporating the latest 'State-of-the-Art' materials and construction techniques."

All Azden digital units boast "slightly different characteristics" to suit individual tastes and comfortable fit.

The DR-DM90 Digital Monitor delivers the bass response of an "enclosed" type headset without the weight and produces "sizzling highs and a full warm midrange."

Speaker Unit: Dynamic type * Impedance: 32 ohms * Sensitivity: 105dB/mW * Maximum Input: 800 mV * Frequency Response: 4~26,000Hz * Cord length: 3m * Plug: 3.5 mini (Gold-plated) * Weight: (without

cord): 140g.

For more information, write to Azden corporation, 147 New Hyde Park Road, Franklin Square, New York, 11010.

Travel Tips for Trouble Spots

Flying into Kathmandu this week? Spending a week studying sand on the Chad-Libya border? Before you do, write down this number: 202-647-5225. It's the State Department's new round-the-clock hot line for international travelers.

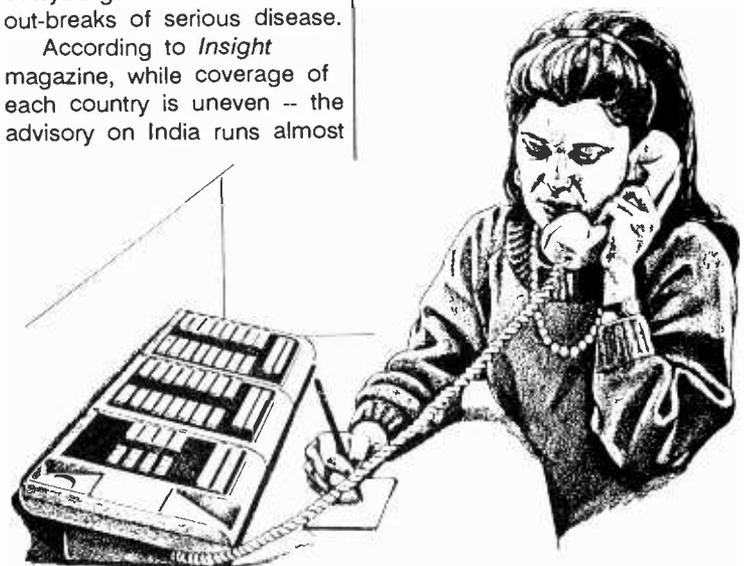
Ring it up and get up-to-the-minute advisories on potentially troublesome destinations. You can find out about the strictly enforced currency laws of Ghana, medical service in the Soviet Union, and even the mountain peaks of India that should be avoided because of ongoing armed clashes with Pakistanis.

The advisories cover everything from civil strife to out-breaks of serious disease.

According to *Insight* magazine, while coverage of each country is uneven -- the advisory on India runs almost

five minutes while the warning on Burma says only that "in the wake of disturbances in Burma, the State Department advises against travel to Burma at this time" -- it is still an improvement over the old system.

Prior to the advent of the computerized telephone system, written travel advisories were sent by mail. Calls to the center were handled by one of three operators who often had to set down the phone while searching for the appropriate report.



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program

guide

Sunday

May 7, 14, 21, 28

- 0030 BBC: Composer of the Month. Profiles and music of famous composers.
- 0030 Radio Australia: Anything Goes. John Anderson with a musical smorgasbord.
- 0101 BBC: Play of the Week. Hour-long drama selections.
- 0113 Radio Australia: Boomerang. Answers to listener enquiries about Radio Australia.
- 0130 Radio Australia: At Your Request. Dick Paterson plays listener requests.
- 0130 Radio Austria International: Report from Austria. A magazine program, covering all aspects of Austrian life and events in the news.
- 0202 Radio Cairo: Egyptian Music. Traditional Egyptian music selections.
- 0209 BBC: British Press Review. Survey of editorial opinion in the British press.
- 0212 Radio RSA: P.O. Box 4559. Reception reports and questions on Africa from listeners.
- 0215 BBC: Reading. A serialized story or novel, as adapted for radio.
- 0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
- 0230 Radio Australia: Communicator. Report on developments in the communications world.
- 0240 Radio RSA: Saturday RSA. Weekly magazine program with music and travel.
- 0245 Radio Cairo: Listeners' Mail. Comments from Radio Cairo listeners.
- 0252 Radio RSA: Amateur Radio Spectrum. Discussion on the different aspects of the amateur radio hobby.
- 0313 Radio Australia: Music of Radio Australia. Selections by Radio Australia announcers.
- 0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
- 0330 BBC: Screenplay. A quiz show on the movies, as hosted by Iain Johnston.
- 0330 Radio Australia: Unsung Heroes and Heroines. A look at extraordinary but little-known Australians.
- 0345 Radio Australia: Music of Radio Australia. See S 0313.
- 0430 BBC: Sing Gospel! Developments in contemporary religious music.
- 0430 Radio Australia: Arts Roundabout. Arts in Australia, past and present.
- 0445 BBC: Worldbrief. A 15-minute roundup of the week's news headlines and other events.
- 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.

- 0513 Radio Australia: Music of Radio Australia. See S 0313.
- 0530 BBC: Financial Review. A look back at the financial week.
- 0530 Radio Australia: At Your Request. See S 0130.
- 0530 Radio Austria International: Report from Austria. See S 0130.
- 0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
- 0545 BBC: Letter from America. Alstair Cooke's distinctly British view of America.
- 0630 BBC: Jazz for the Asking. A jazz music request show.
- 0630 Radio Australia: Education Now. Primary school students discuss their education.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: You Asked for It. Listener questions about Australia.
- 0730 BBC: From Our Own Correspondent. See S 0315.
- 0730 Radio Australia: Communicator. See S 0230.
- 0730 Radio Austria International: Report from Austria. See S 0130.
- 0745 BBC: Book Choice. Short reviews of current or future best-sellers.
- 0750 BBC: Waveguide. How to hear the BBC better.
- 1113 Radio Australia: Music of Radio Australia. See S 0313.
- 1115 BBC: From Our Own Correspondent. See S 0315.
- 1130 BBC: Composer of the Month. See S 0030.
- 1130 Radio Australia: International Top Hits. John Anderson with the week's big sounds.
- 1130 Radio Austria International: Austrian Short-wave Panorama. Developments in communications and DX news.
- 1201 BBC: Play of the Week. See S 0101.
- 1230 Radio Australia: Communicator. See S 0230.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Smith's Weekly. Keith Smith's potpourri of news and views.
- 1330 BBC: Sports Roundup. The day's sports news.
- 1330 Radio Australia: Sports Results. Reports from Australian and international sporting events.
- 1330 Radio Austria International: Report from Austria. See S 0130.
- 1345 BBC: Worldbrief. See S 0445.
- 1345 Radio Australia: Music of Radio Australia. See S 0313.
- 1401 BBC: Feature. Programming on various subjects.
- 1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
- 1430 Radio Australia: Innovations. Australian

MT Program Team

**Kannon Shanmugam,
Program Manager**

*4412 Tumberry Drive
Lawrence, KS 66046*

Jim Frimmel, TX

Dale Vanderpoel, FL

inventions, innovative practices and processes.

- 1430 Radio Austria International: Austrian Short-wave Panorama. See S 1130.
- 1513 Radio Australia: Music of Radio Australia. See S 0313.
- 1515 BBC: Concert Hall. A program of classical music from the world's great concert halls.
- 1530 Radio Australia: Matters of Faith. Doctrines and beliefs of the Pacific basin.
- 1615 BBC: Feature. Programming on various subjects.
- 1630 Radio Australia: Music of Radio Australia. See S 0313.
- 1630 Radio Austria International: Report from Austria. See S 0130.
- 1645 BBC: Letter from America. See S 0545.



John Adams of HCJB's English Service

- 1645 Radio Australia: Sports Results. See S 1330.
- 2300 Radio Vilnius: Sunday Mailbag Program. Answers to listener letters and questions about Radio Vilnius and Lithuania.
- 2309 BBC: Book Choice. See S 0745.
- 2310 Radio Vilnius: Sunday Special. A focus on the people and customs of Lithuania.
- 2313 Radio Australia: Music of Radio Australia. See S 0313.
- 2315 BBC: Letter from America. See S 0545.

LEGEND

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

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

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
- * All days are in UTC. Remember that if you are listening in North

American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 8:01 pm [EDT] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

program

guide

- 2330 BBC: Feature. See S 1401.
- 2330 Radio Australia: Monitor. News about scientific, medical, and technological developments.

Monday

May 1, 8, 15, 22, 29

- 0030 BBC: In Praise of God. A half-hour program of worship.
- 0030 Radio Australia: Music of Radio Australia. See S 0313.
- 0101 BBC: Opera of the Week. An introduction to opera, with excerpts from several operas.
- 0113 Radio Australia: Window on Australia. A look at people and places all over the nation.
- 0130 Radio Australia: This Australia. Documentaries about the land "down under".
- 0130 Radio Austria International: Report from Austria. See S 0130.
- 0145 BBC: Chopin Collection. A look at the classical pianist and composer Chopin.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
- 0230 BBC: Science in Action. The latest in scientific developments.
- 0230 Radio Australia: International Country Music. The latest country chart makers and top albums.
- 0313 Radio Australia: Music of Radio Australia. See S 0313.
- 0315 BBC: Food and Drink. A look at nutritional consumption and changing eating habits.
- 0330 BBC: Anything Goes. See S 1430.
- 0330 Radio Australia: Sports Results. See S 1330.
- 0345 Radio Australia: Music of Radio Australia. See S 0313.
- 0425 Radio Australia: Propagation Report. Mike Bird with the shortwave weather report.
- 0430 BBC: Reading. A serialized story or novel, as adapted for radio.
- 0430 Radio Australia: AgrNews. News and information about agricultural and primary industries.
- 0445 BBC: Nature Now. Information about flora, fauna, and natural resources.
- 0445 Radio Australia: Music of Radio Australia. See S 0313.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0313.
- 0530 BBC: Waveguide. See S 0750.
- 0530 Radio Australia: Southern Cross Sketches. Barry Seeber examines and documents changes in Australia since European

- settlement.
- 0530 Radio Austria International: Report from Austria. See S 0130.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
- 0630 BBC: Feature. See S 1401.
- 0630 Radio Australia: Pacific Sunrise. Business and export developments in the Pacific.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Window on Australia. See M 0113.
- 0730 BBC: Feature. See S 1615.
- 0730 Radio Australia: Along the Mighty Murray.



John Amis presents "Music Now," with excerpts of today's classical music. "Music Now" airs on the BBC World Service Thursdays at 2315 UTC, with a rerun at 1515 UTC on Fridays.

- People, places, and events encountered along Australia's greatest river.
- 0730 Radio Austria International: Report from Austria. See S 0130.
- 1113 Radio Australia: Window on Australia. See M 0113.
- 1115 BBC: Tech Talk. What's new in the world of engineering.
- 1130 BBC: The Ken Bruce Show. See S 0230.
- 1130 Radio Australia: Soundabout. Contemporary music for young people.
- 1130 Radio Austria International: Report from

- Austria. See S 0130.
- 1215 BBC: My Music. A quiz show on - you guessed it - music!
- 1225 Radio Australia: Propagation Report. See M 0425.
- 1230 Radio Australia: Education Now. See S 0630.
- 1245 BBC: Sports Roundup. See S 1330.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1313 Radio Australia: Music of Radio Australia. See S 0313.
- 1330 BBC: Feature. See S 1615.
- 1330 Radio Australia: Sports Results. See S 1330.
- 1330 Radio Austria International: Report from Austria. See S 0130.
- 1345 Radio Australia: Book Readings. Serialized readings from popular books.
- 1405 BBC: Outlook. An excellent magazine (i.e., covering everything!) program.
- 1425 Radio Australia: Stock Exchange Report. Financial news from the Pacific.
- 1430 Radio Australia: Music of Radio Australia. See S 0313.
- 1430 Radio Austria International: Report from Austria. See S 0130.
- 1445 BBC: Reading. See S 0215.
- 1513 Radio Australia: Window on Australia. See M 0113.
- 1515 BBC: Opera of the Week. See M 0101.
- 1530 Radio Australia: Monitor. See S 2330.
- 1606 WCSN: News Focus. In-depth news analyses focusing on major stories in the news.
- 1615 BBC: Reading. See M 0430.
- 1625 Radio Australia: Stock Exchange Report. See M 1425.
- 1627 Radio Australia: Propagation Report. See M 0425.
- 1630 BBC: Tech Talk. See M 1115.
- 1630 Radio Australia: Music of Radio Australia. See S 0313.
- 1630 Radio Austria International: Report from Austria. See S 0130.
- 1634 WCSN: Conversations. Informal discussions with people from many walks of life.
- 1645 BBC: The World Today. News analysis on a selected location or event in the news.
- 1645 Radio Australia: Sports Results. See S 1330.
- 1647 WCSN: Music. Featured music from around the world.
- 2306 KYOI: Kaleidoscope. News features and special segments on a variety of topics.
- 2306 WCSN: Kaleidoscope. News features and special segments on a variety of topics.
- 2309 BBC: Commentary. Background to the news from a wide range of specialists.
- 2313 Radio Australia: Music of Radio Australia. See S 0313.
- 2315 BBC: The Learning World. An international

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

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

We invite listeners and stations to send program information to the program manager.

- 0000 BBC: Newsdesk
- 0000 Kol Israel: News
- 0000 KVOH: UPI Radio News
- 0000 KYOI: News [M-F]
- 0000 Radio Australia: International Report
- 0000 Radio Canada Int'l: News [S-M]
- 0000 Radio Canada Int'l: World at Six [T-A]
- 0000 Radio Moscow: News
- 0000 Spanish Foreign Radio: News
- 0000 Voice of America: News
- 0000 WCSN: News [T-F]
- 0030 KVOH: UPI Headline News
- 0030 Radio Canada Int'l: As It Happens [T-A]
- 0030 Radio Canada Int'l: News [S]
- 0030 Radio Kiev: News
- 0030 Radio Moscow (World Service): News in Brief [M]
- 0030 Radio Netherlands: News [T-S]
- 0030 Voice of America (Special English): News
- 0030 WCSN: News [T-F]
- 0045 Radio Berlin International: News
- 0051 Spanish Foreign Radio: News Summary
- 0100 BBC: News Summary
- 0100 Deutsche Welle: World News
- 0100 Kol Israel: News
- 0100 KVOH: UPI Radio News [T-A]
- 0100 KYOI: News [M-F]
- 0100 Radio Australia: World and Australian News
- 0100 Radio Berlin International: News
- 0100 Radio Canada Int'l: News [S-M]
- 0100 Radio Japan: News [M-A]
- 0100 Radio Moscow: News
- 0100 Radio Prague: News
- 0100 Radiotelevisione Italiana: News
- 0100 Spanish Foreign Radio: News
- 0100 Voice of America: News
- 0100 WCSN: News [T-F]
- 0130 KVOH: UPI Headline News [T-A]

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- 2330 survey of education around the world. BBC: Multitrack 1: Top 20. What's hot on the British pop music charts.
- 2330 Radio Australia: Arts Roundabout. See S 0430.
- 2336 KYOI: Letterbox. Staff members respond to listener letters.
- 2336 WCSN: Letterbox. Staff members respond to listener letters.

Tuesday

May 2, 9, 16, 23, 30

- 0000 Radio Luxembourg: Pop Music. Typical DJ chatter and pop tunes.
- 0006 WCSN: News Focus. See M 1606.
- 0012 Spanish Foreign Radio: Panorama. A magazine program focusing on everything that's happening in Spain.
- 0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
- 0030 Radio Australia: Music of Radio Australia. See S 0313.
- 0033 Spanish Foreign Radio: Music Feature. A look at original Spanish music performed by local groups.
- 0034 WCSN: Young Ideas. A program for teenage listeners, featuring news, features, music, and ideas.
- 0046 Spanish Foreign Radio: Learn Spanish. A course in Spanish with English commentary.
- 0047 WCSN: Music. See M 1647.
- 0054 Spanish Foreign Radio: Music Shorts. A variety of different instrumental music.
- 0101 BBC: Outlook. See M 1405.
- 0106 WCSN: Kaleidoscope. See M 2306.
- 0112 Spanish Foreign Radio: Panorama. See T 0012.
- 0113 Radio Australia: Window on Australia. See M 0113.
- 0113 Radio Prague: Newsview. Commentary on current news items in Czechoslovakia.
- 0122 Radio Prague: Folk Music Section. Traditional folk music from the Slovak region.
- 0125 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
- 0126 Radio Prague: Introducing Czechoslovakia. Different facets of work and life in Czechoslovakia.
- 0130 BBC: Short Story. Brief tales written by BBC listeners.
- 0130 Radio Australia: Education Now. See S 0630.
- 0130 Radio Austria International: Report from Austria. See S 0130.

- 0130 Radio Prague: Sports Round-Up. Full coverage of European sports, and sports commentaries.
- 0133 Radio Prague: Meet the People. Questions from listeners are posed to guests in the studio.
- 0133 Spanish Foreign Radio: Music Feature. See T 0033.
- 0136 WCSN: Letterbox. See M 2336.
- 0139 Radio Prague: The World Federation of Trade Unions Calling. Reports on business dealings and trade unions.
- 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
- 0146 Spanish Foreign Radio: Learn Spanish. See T 0046.

- 0313 Radio Prague: Newsview. See T 0113.
- 0315 BBC: The World Today. See M 1645.
- 0322 Radio Prague: Folk Music Section. See T 0122.
- 0326 Radio Prague: Introducing Czechoslovakia. See T 0126.
- 0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
- 0330 Radio Australia: Sports Results. See S 1330.
- 0330 Radio Prague: Sports Round-Up. See T 0130.
- 0333 Radio Prague: Meet the People. See T 0133.
- 0336 WCSN: Letterbox. See M 2336.
- 0339 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
- 0342 Radio Finland: Press Review. A look at the Finnish press.

Staff members on the English Service at Radio Sweden



- 0149 Radio Prague: Interview Time. Interviews with tourists visiting Czechoslovakia.
- 0154 Spanish Foreign Radio: Music Shorts. See T 0054.
- 0206 WCSN: News Focus. See M 1606.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
- 0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
- 0230 Radio Australia: Taim Blong Masta. Australia's involvement with Papua New Guinea over the last 100 years.
- 0234 WCSN: Young Ideas. See T 0034.
- 0247 WCSN: Music. See M 1647.
- 0306 WCSN: Kaleidoscope. See M 2306.
- 0313 Radio Australia: Music of Radio Australia. See S 0313.

- 0345 Radio Australia: Music of Radio Australia. See S 0313.
- 0345 Radio Finland: Airmail. An audience response feature, with listeners' comments and questions.
- 0349 Radio Prague: Interview Time. See T 0149.
- 0406 WCSN: News Focus. See M 1606.
- 0425 Radio Australia: Propagation Report. See M 0425.
- 0430 BBC: The Learning World. See M 2315.
- 0430 Radio Australia: Business Horizons. Business and trade in Australia and neighboring regions.
- 0434 WCSN: Young Ideas. See T 0034.
- 0445 BBC: New Ideas. A radio shop window for new products and inventions.
- 0445 Radio Australia: Music of Radio Australia. See S 0313.
- 0447 WCSN: Music. See M 1647.
- 0455 BBC: Book Choice. See S 0745.

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- 0130 Radio Moscow (World Service): News in Brief
- 0130 WCSN: News [T-F]
- 0149 Radio Veritas Asia: World News [M-F]
- 0151 Spanish Foreign Radio: News Summary
- 0152 Radio Veritas Asia: World News [A]
- 0153 Radio Prague: News Wrap-Up
- 0200 BBC: World News
- 0200 Deutsche Welle: World News
- 0200 KVOH: UPI Radio News [T-A]
- 0200 KYOI: News [M-F]
- 0200 Radio Australia: International Report
- 0200 Radio Berlin International: News
- 0200 Radio Canada Int'l: As It Happens [T-A]
- 0200 Radio Moscow: News
- 0200 Radio RSA: News
- 0200 Swiss Radio International: News
- 0200 Voice of America: News

- 0200 Voice of Free China: News and Commentary
- 0200 WCSN: News [T-F]
- 0215 BBC (South Asia): Newsreel
- 0215 Radio Cairo: News
- 0230 KVOH: UPI Headline News [T-A]
- 0230 Radio Moscow (World Service): News in Brief [S-M]
- 0230 Radio Portugal: News [T-A]
- 0230 WCSN: News [T-F]
- 0245 Radio Berlin International: News
- 0300 BBC: World News
- 0300 Deutsche Welle: World News
- 0300 KVOH: UPI Radio News [T-A]
- 0300 KYOI: News [M-F]
- 0300 Radio Australia: World and Australian News
- 0300 Radio Beijing: News
- 0300 Radio Berlin International: News
- 0300 Radio Japan: News [M-A]

- 0300 Radio Moscow: News
- 0300 Radio Prague: News
- 0300 Voice of America: News
- 0300 Voice of Free China: News and Commentary
- 0300 WCSN: News [T-F]
- 0309 BBC: News About Britain
- 0309 Radio Beijing: News About China
- 0315 Radio Cairo: News
- 0330 KVOH: UPI Headline News [T-A]
- 0330 Radio Finland (Northern Report) [T-A]
- 0330 Radio Moscow (World Service): News in Brief [S]
- 0330 Radio Netherlands: News [T-S]
- 0330 WCSN: News [T-F]
- 0350 Radiotelevisione Italiana: News
- 0353 Radio Prague: News Wrap-Up
- 0400 BBC: Newsdesk
- 0400 Deutsche Welle: World News
- 0400 Kol Israel: News

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0506 WCSN: Kaleidoscope. See M 2306.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0513 Radio Australia: Music of Radio Australia. See S 0313.
 0527 Radio Finland: Press Review. See T 0342.
 0530 BBC: Financial News. See T 0125.
 0530 Radio Austria International: Report from Austria. See S 0130.
 0536 WCSN: Letterbox. See M 2336.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0606 WCSN: News Focus. See M 1606.
 0630 BBC: Ackers Away. A trip into the "uncharted waters of music and merriment".
 0630 Radio Australia: Music of Radio Australia. See S 0313.
 0634 WCSN: Young Ideas. See T 0034.
 0647 WCSN: Music. See M 1647.
 0706 WCSN: Kaleidoscope. See M 2306.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0713 Radio Australia: Window on Australia. See M 0113.
 0730 BBC: Europe's World. See T 0145.
 0730 Radio Australia: Monitor. See S 2330.
 0730 Radio Austria International: Report from Austria. See S 0130.
 0736 WCSN: Letterbox. See M 2336.
 0742 Radio Finland: Press Review. See T 0342.
 0745 BBC: Network UK. See T 0215.
 0745 Radio Finland: Airmail. See T 0345.
 1106 KYOI: Kaleidoscope. See M 2306.
 1113 Radio Australia: Window on Australia. See M 0113.
 1115 BBC: Waveguide. See S 0750.
 1125 BBC: Book Choice. See S 0745.
 1130 BBC: Megamix. See T 0030.
 1130 Radio Australia: Soundabout. See M 1130.
 1130 Radio Austria International: Report from Austria. See S 0130.
 1136 KYOI: Letterbox. See M 2336.
 1206 KYOI: News Focus. In-depth news analyses focusing on major stories in the news.
 1212 Radio Finland: Press Review. See T 0342.
 1215 BBC: Multitrack 1: Top 20. See M 2330.
 1215 Radio Finland: Airmail. See T 0345.
 1225 Radio Australia: Propagation Report. See M 0425.
 1230 Radio Australia: Unsung Heroes and Heroines. See S 0330.
 1234 KYOI: Young Ideas. A program for teenage listeners, featuring news, features, music, and ideas.
 1245 BBC: Sports Roundup. See S 1330.
 1247 KYOI: Music. Featured music from around the world.
 1306 KYOI: Kaleidoscope. See M 2306.
 1309 BBC: Twenty-Four Hours. See S 0509.

1312 Radio Finland: Press Review. See T 0342.
 1313 Radio Australia: Music of Radio Australia. See S 0313.
 1315 Radio Finland: Airmail. See T 0345.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Australia: Sports Results. See S 1330.
 1330 Radio Austria International: Report from Austria. See S 0130.
 1336 KYOI: Letterbox. See M 2336.
 1345 BBC: Sing Gospel! See S 0430.
 1345 Radio Australia: Music of Radio Australia. See S 0313.
 1405 BBC: Outlook. See M 1405.
 1412 Radio Finland: Press Review. See T 0342.
 1415 Radio Finland: Airmail. See T 0345.
 1425 Radio Australia: Stock Exchange Report. See M 1425.
 1430 Radio Australia: Music of Radio Australia. See S 0313.
 1430 Radio Austria International: Report from Austria. See S 0130.
 1445 BBC: Chopin Collection. See M 0145.
 1513 Radio Australia: Window on Australia. See M 0113.
 1515 BBC: A Jolly Good Show. Dave Lee Travis presents your record requests and dedications in his own unique way, including the Album of the Month.
 1517 Radio Finland: Press Review. See T 0342.
 1520 Radio Finland: Airmail. See T 0345.

1530 Radio Australia: Try to Remember. A musical portrait of the last 50 years.
 1606 WCSN: News Focus. See M 1606.
 1615 BBC: Omnibus. A half-hour program on practically any topic.
 1625 Radio Australia: Stock Exchange Report. See M 1425.
 1627 Radio Australia: Propagation Report. See M 0425.
 1630 Radio Australia: Music of Radio Australia. See S 0313.
 1630 Radio Austria International: Report from Austria. See S 0130.
 1634 WCSN: Young Ideas. See T 0034.
 1645 BBC: The World Today. See M 1645.
 1645 Radio Australia: Sports Results. See S 1330.
 1647 WCSN: Music. See M 1647.
 2306 KYOI: Kaleidoscope. See M 2306.
 2306 WCSN: Kaleidoscope. See M 2306.
 2309 BBC: Commentary. See M 2309.
 2313 Radio Australia: Window on Australia. See M 0113.
 2315 BBC: Concert Hall. See S 1515.
 2330 Radio Australia: Smith's Weekly. See S 1313.
 2336 KYOI: Letterbox. See M 2336.
 2336 WCSN: Letterbox. See M 2336.

The "Yours and Mine" team at Radio RSA. The program is a request show, presenting everything from pop music to traditional African tunes. It can be heard daily at 1400 UTC.



0400 KYOI: News [M-F]
 0400 Radio Australia: International Report
 0400 Radio Berlin International: News
 0400 Radio Havana Cuba: Int'l News
 0400 Radio Moscow: News
 0400 Radio RSA: News
 0400 Swiss Radio International: News
 0400 Voice of America: News
 0400 WCSN: News [M-F]
 0425 Radiotelevisione Italiana: News
 0430 Radio Havana Cuba: News Update
 0430 Radio Moscow (World Service): News in Brief [S-M]
 0430 Radio Netherlands: News [M-A]
 0430 WCSN: News [T-F]
 0445 Radio Berlin International: News
 0500 BBC: World News
 0500 Deutsche Welle: World News
 0500 KYOI: News [M-F]
 0500 Radio Australia: World and Australian

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 0500 Radio Berlin International: News
 0500 Radio Japan: News [S-F]
 0500 Radio Moscow: News
 0500 Radio New Zealand International: News
 0500 Voice of America: News
 0500 WCSN: News [M-F]
 0515 Radio Finland: Northern Report [T-A]
 0530 Radio Moscow (World Service): News in Brief
 0530 WCSN: News [T-F]
 0600 BBC: Newsdesk
 0600 Deutsche Welle: World News
 0600 KYOI: News [M-F]
 0600 Radio Australia: International Report
 0600 Radio Korea: News
 0600 Radio Moscow: News
 0600 Voice of America: News
 0600 WCSN: News [M-F]
 0615 Radio Berlin International: News

0615 Radio Canada Int'l: News [M-F]
 0630 Radio Moscow (World Service): News in Brief [S]
 0630 Swiss Radio International: News
 0630 WCSN: News [T-F]
 0645 Radio Canada Int'l: News [M-F]
 0700 BBC: World News
 0700 BRT, Brussels: News [M-F]
 0700 KYOI: News [M-F]
 0700 Radio Australia: World and Australian News
 0700 Radio Japan: News [S-F]
 0700 Radio Moscow (World Service): News
 0700 Voice of Free China: News and Commentary
 0700 WCSN: News [M-F]
 0730 Radio Finland: Northern Report [T-A]
 0730 Radio Moscow (World Service): News in Brief [S-M]
 0730 Radio Netherlands: News [M-A]

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Wednesday

May 3, 10, 17, 24, 31

- 0006 WCSN: News Focus. See M 1606.
- 0030 BBC: Omnibus. See T 1615.
- 0030 Radio Australia: Music of Radio Australia. See S 0313.
- 0034 WCSN: Conversations. See M 1634.
- 0047 WCSN: Music. See M 1647.
- 0101 BBC: Outlook. See M 1405.
- 0106 WCSN: Kaleidoscope. See M 2306.
- 0113 Radio Australia: Window on Australia. See M 0113.
- 0125 BBC: Financial News. See T 0125.
- 0130 BBC: Help Yourself. A look at innovations in helping the disabled.
- 0130 Radio Australia: Try to Remember. See T 1530.
- 0130 Radio Austria International: Report from Austria. See S 0130.
- 0136 WCSN: Letterbox. See M 2336.
- 0145 BBC: Country Style. Uh oh - It's back! British country music! Hide the children!
- 0200 HCJB: Saludos Amigos. Ken McHarg presents letters from listeners worldwide.
- 0206 WCSN: News Focus. See M 1606.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Health Matters. See M 1115.
- 0230 BBC: Music. Details not available at press time.
- 0230 Radio Australia: Anything Goes. See S 0030.
- 0234 WCSN: Conversations. See M 1634.
- 0247 WCSN: Music. See M 1647.
- 0306 WCSN: Kaleidoscope. See M 2306.
- 0313 Radio Australia: Music of Radio Australia. See S 0313.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: Discovery. An in-depth look at scientific matters.
- 0330 Radio Australia: Sports Results. See S 1330.
- 0336 WCSN: Letterbox. See M 2336.
- 0342 Radio Finland: Press Review. See T 0342.
- 0345 Radio Australia: Music of Radio Australia. See S 0313.
- 0345 Radio Finland: Sports Fare. A feature on sports and off-hours activities.
- 0406 WCSN: News Focus. See M 1606.
- 0425 Radio Australia: Propagation Report. See M 0425.
- 0430 BBC: Business Matters. A weekly survey of commercial and financial news.
- 0430 Radio Australia: Smith's Weekly. See S 1313.
- 0434 WCSN: Conversations. See M 1634.
- 0445 BBC: Country Style. See W 0145.
- 0447 WCSN: Music. See M 1647.
- 0506 WCSN: Kaleidoscope. See M 2306.

- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0513 Radio Australia: Music of Radio Australia. See S 0313.
- 0527 Radio Finland: Press Review. See T 0342.
- 0530 BBC: Financial News. See T 0125.
- 0530 Radio Australia: Interaction. An exploration of the activities and experiences of multicultural Australia.
- 0530 Radio Austria International: Report from Austria. See S 0130.
- 0536 WCSN: Letterbox. See M 2336.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0606 WCSN: News Focus. See M 1606.
- 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
- 0630 Radio Australia: International Country Music. See M 0230.
- 0634 WCSN: Conversations. See M 1634.
- 0647 WCSN: Music. See M 1647.
- 0706 WCSN: Kaleidoscope. See M 2306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0713 Radio Australia: Window on Australia. See M 0113.
- 0730 BBC: Development '89. Aid and development issues.
- 0730 Radio Australia: Unsung Heroes and Heroines. See S 0330.
- 0730 Radio Austria International: Report from Austria. See S 0130.
- 0736 WCSN: Letterbox. See M 2336.
- 0742 Radio Finland: Press Review. See T 0342.
- 0745 Radio Finland: Sports Fare. See W 0345.
- 1106 KYOI: Kaleidoscope. See M 2306.
- 1113 Radio Australia: Window on Australia. See M 0113.
- 1115 BBC: Country Style. See W 0145.
- 1130 BBC: Meridian. See W 0630.
- 1130 Radio Australia: Soundabout. See M 1130.
- 1130 Radio Austria International: Report from Austria. See S 0130.
- 1136 KYOI: Letterbox. See M 2336.
- 1206 KYOI: News Focus. See T 1206.
- 1212 Radio Finland: Press Review. See T 0342.
- 1215 BBC: Feature. Programming on various subjects.
- 1215 Radio Finland: Sports Fare. See W 0345.
- 1225 BBC: The Farming World. Issues in agriculture.
- 1225 Radio Australia: Propagation Report. See M 0425.
- 1230 Radio Australia: Interaction. See W 0530.
- 1234 KYOI: Conversations. Informal discussions with people from many walks of life.
- 1245 BBC: Sports Roundup. See S 1330.
- 1247 KYOI: Music. See T 1247.
- 1306 KYOI: Kaleidoscope. See M 2306.



Karl Angsten writes for and occasionally presents "Arts on the Air" and "Microphone on Europe" for Deutsche Welle's English Service.

- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1312 Radio Finland: Press Review. See T 0342.
- 1313 Radio Australia: Music of Radio Australia. See S 0313.
- 1315 Radio Finland: Sports Fare. See W 0345.
- 1330 BBC: Development '89. See W 0730.
- 1330 Radio Australia: Sports Results. See S 1330.
- 1330 Radio Austria International: Report from Austria. See S 0130.
- 1336 KYOI: Letterbox. See M 2336.
- 1345 Radio Australia: Music of Radio Australia. See S 0313.
- 1405 BBC: Outlook. See M 1405.
- 1412 Radio Finland: Press Review. See T 0342.
- 1415 Radio Finland: Sports Fare. See W 0345.
- 1425 Radio Australia: Stock Exchange Report. See M 1425.
- 1430 Radio Australia: Music of Radio Australia. See S 0313.
- 1430 Radio Austria International: Report from Austria. See S 0130.
- 1445 BBC: Business Matters. See W 0430.
- 1513 Radio Australia: Window on Australia. See M 0113.
- 1515 BBC: The Learning World. See M 2315.
- 1517 Radio Finland: Press Review. See T 0342.
- 1520 Radio Finland: Sports Fare. See W 0345.
- 1530 BBC: After Henry. The story of three women after the death of one of their husbands (except 3rd: Two Cheers for April, a satirical look back at the month just past).
- 1530 Radio Australia: Along the Mighty Murray. See M 0730.

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- 0730 WCSN: News [T-F]
- 0745 Radio Berlin International: News
- 0800 BBC: World News
- 0800 KYOI: News [M-F]
- 0800 Radio Australia: International Report
- 0800 Radio Berlin International: News
- 0800 Radio Korea: News
- 0800 Radio Moscow (World Service): News
- 0830 Radio Moscow (World Service): News in Brief
- 0830 Radio Netherlands: News [M-A]
- 0830 Swiss Radio International: News
- 0900 BBC: World News
- 0900 BRT: Brussels: News [M-F]
- 0900 Deutsche Welle: World News
- 0900 KYOI: News [M-F]
- 0900 Radio Australia: World and Australian News

- 0900 Radio Finland: Northern Report [T-A]
- 0900 Radio Japan: News [S-F]
- 0900 Radio Moscow (World Service): News
- 0930 Radio Canada Int'l: News [M-F]
- 0930 Radio Finland: Northern Report [T-A]
- 0930 Radio Moscow (World Service): News in Brief [S-M]
- 1000 BBC: News Summary
- 1000 Kol Israel: News
- 1000 KYOI: News [M-F]
- 1000 Radio Australia: International Report
- 1000 Radio Berlin International: News
- 1000 Radio Moscow (World Service): News
- 1000 Radio New Zealand Int'l: News [M-F]
- 1000 Swiss Radio International: News
- 1000 Voice of America: News
- 1030 KYOI: News [T-F]
- 1030 Radio Moscow (World Service): News in Brief [S]
- 1030 Radio Netherlands: News [M-A]

- 1030 Voice of America (Special English): News [S]
- 1100 BBC: World News
- 1100 Deutsche Welle: World News
- 1100 KYOI: News [M-F]
- 1100 Radio Australia: World and Australian News
- 1100 Radio Berlin International: News
- 1100 Radio Japan: News [S-F]
- 1100 Radio Korea: News
- 1100 Radio Moscow (World Service): News
- 1100 Radio New Zealand Int'l: News
- 1100 Radio RSA: News
- 1100 Swiss Radio International: News
- 1100 Voice of America: News
- 1109 BBC: News About Britain
- 1130 KYOI: News [T-F]
- 1130 Radio Moscow (World Service): News in Brief [S-M]
- 1130 Radio Netherlands: News [M-A]

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- 1606 WGSN: News Focus. See M 1606.
- 1615 BBC: Ackers Away. See T 0630.
- 1625 Radio Australia: Stock Exchange Report. See M 1425.
- 1627 Radio Australia: Propagation Report. See M 0425.
- 1630 Radio Australia: Music of Radio Australia. See S 0313.
- 1630 Radio Austria International: Report from Austria. See S 0130.
- 1634 WGSN: Conversations. See M 1634.
- 1645 BBC: The World Today. See M 1645.
- 1645 Radio Australia: Sports Results. See S 1330.
- 1647 WGSN: Music. See M 1647.
- 2306 KYOI: Kaleidoscope. See M 2306.
- 2306 WGSN: Kaleidoscope. See M 2306.
- 2307 Voice of Turkey: Review of the Turkish Press. A look at what is being reported in the Turkish newspapers.
- 2309 BBC: Commentary. See M 2309.
- 2310 Voice of Turkey: Review of the Foreign Media. An insight into what is being reported in the media of other nations.
- 2313 Radio Australia: Music of Radio Australia. See S 0313.
- 2313 Voice of Turkey: Letterbox. The sights of and historical background to various attractions in Turkey.
- 2315 BBC: Food and Drink. See M 0315.
- 2330 BBC: Multitrack 2. Mitchell Johnson presents pop music and news.
- 2330 Radio Australia: You Asked For It. See S 0713.
- 2335 Voice of Turkey: Home in Turkey. A look at social reforms in Turkey, and the Turkish people.
- 2336 KYOI: Letterbox. See M 2336.
- 2336 WGSN: Letterbox. See M 2336.
- 2340 Voice of Turkey: Music. Upbeat, modern Turkish music.
- 2345 Radio Australia: Music of Radio Australia. See S 0313.

- 0040 Radio Kiev: Ukraine Today. A feature program focusing on local news, cultural events, and the people of the Ukraine.
- 0047 WGSN: Music. See M 1647.
- 0101 BBC: Outlook. See M 1405.
- 0106 WGSN: Kaleidoscope. See M 2306.
- 0125 BBC: Financial News. See T 0125.
- 0130 BBC: Waveguide. See S 0750.
- 0130 Radio Austria International: Report from Austria. See S 0130.
- 0136 WGSN: Letterbox. See M 2336.
- 0140 BBC: Book Choice. See S 0745.
- 0145 BBC: Society Today. A weekly look at the changes in Britain.
- 0206 WGSN: News Focus. See M 1606.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: Assignment. A weekly examination of a topical issue.
- 0234 WGSN: Young Ideas. See T 0034.
- 0247 WGSN: Music. See M 1647.
- 0306 WGSN: Kaleidoscope. See M 2306.
- 0313 Radio Beijing: Current Affairs. Background commentary on national news items, and a regular mini-feature.
- 0315 BBC: The World Today. See M 1645.
- 0330 BBC: My Music. See M 1215.
- 0335 Radio Beijing: Chinese Language Program. Lessons on proper Chinese grammar with commentary in English.
- 0336 WGSN: Letterbox. See M 2336.
- 0342 Radio Finland: Press Review. See T 0342.
- 0345 Radio Finland: Startling Finnish. A bad pun of a name for Finnish-language lessons.
- 0406 WGSN: News Focus. See M 1606.
- 0410 Radio Berlin International: Musical Interlude. Popular German songs.
- 0414 Radio Berlin International: Commentary. East German views are expressed on current happenings worldwide.
- 0423 Radio Berlin International: Pop Corner. Performances from top East German pop artists and reports on concerts.
- 0430 BBC: Society Today. See H 0145.
- 0430 Radio Berlin International: Question Time. An interview and commentary program with responses to listener letters.
- 0434 WGSN: Young Ideas. See T 0034.
- 0445 BBC: Andy Kershaw's World of Music. See M 0215.
- 0447 WGSN: Music. See M 1647.
- 0506 WGSN: Kaleidoscope. See M 2306.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0527 Radio Finland: Press Review. See T 0342.
- 0530 BBC: Financial News. See T 0125.
- 0530 Radio Austria International: Report from Austria. See S 0130.

- 0536 WGSN: Letterbox. See M 2336.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0606 WGSN: News Focus. See M 1606.
- 0630 BBC: They Made Our World. See W 1215.
- 0634 WGSN: Young Ideas. See T 0034.
- 0640 BBC: The Farming World. See W 1225.
- 0647 WGSN: Music. See M 1647.
- 0706 WGSN: Kaleidoscope. See M 2306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Write On... Paddy Feeny with correspondence and listeners' questions.
- 0730 Radio Austria International: Report from Austria. See S 0130.
- 0736 WGSN: Letterbox. See M 2336.
- 0742 Radio Finland: Press Review. See T 0342.
- 0745 BBC: Network UK. See T 0215.
- 0745 Radio Finland: Startling Finnish. See H 0345.
- 1106 KYOI: Kaleidoscope. See M 2306.
- 1115 BBC: New Ideas. See T 0445.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Drama. Details not announced at press time.
- 1130 Radio Austria International: Report from Austria. See S 0130.
- 1136 KYOI: Letterbox. See M 2336.
- 1206 KYOI: News Focus. See T 1206.

Thursday

May 4, 11, 18, 25

- 0006 WGSN: News Focus. See M 1606.
- 0030 BBC: After Henry (except 4th: Two Cheers for April). See W 1530.
- 0034 Radio Kiev: News Commentary. An editorial commentary on recent matters of interest to those in Kiev and the USSR.
- 0034 WGSN: Young Ideas. See T 0034.
- 0038 Radio Kiev: Political Commentary. A review of current political actions in the USSR and their effect on the nation.



Desley Blanch of Radio Australia's English Service

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| <ul style="list-style-type: none"> 1130 Voice of America (Special English): News [M-F] 1152 Radio RSA: News in Brief 1200 BBC: News Summary [S] 1200 BBC: Newsreel [M-A] 1200 KYOI: News [M-F] 1200 Radio Australia: International Report 1200 Radio Canada Int'l: News [M-A] 1200 Radio Finland: Northern Report [T-F] 1200 Radio Moscow (World Service): News 1200 Swiss Radio International: News 1200 Voice of America: News 1215 Radio Berlin International: News 1230 BRT, Brussels: News [M-S] 1230 KYOI: News [T-F] 1230 Radio Berlin International: News 1230 Radio Moscow (World Service): News in Brief 1300 BBC: World News 1300 KYOI: News [M-F] | <ul style="list-style-type: none"> 1300 Radio Australia: World and Australian News 1300 Radio Berlin International: News 1300 Radio Canada Int'l: World Report [M-F] 1300 Radio Finland: Northern Report [T-F] 1300 Radio Moscow (World Service): News 1300 Radio RSA: News 1300 Voice of America: News 1330 KYOI: News [T-F] 1330 Radio Moscow (World Service): News in Brief [S-M] 1330 Swiss Radio International: News 1330 Voice of America (Special English): News 1345 Radio Berlin International: News 1352 Radio RSA: News in Brief 1400 BBC: News Summary [A-S] 1400 BBC: World News [M-F] 1400 KYOI: News [M-F] 1400 Radio Australia: International Report | <ul style="list-style-type: none"> 1400 Radio Berlin International: News 1400 Radio Canada International: News [S] 1400 Radio Finland: Northern Report [T-A] 1400 Radio Japan: News [S-F] 1400 Radio Korea: News 1400 Radio Moscow (World Service): News 1400 Radio RSA: News 1400 Voice of America: News 1430 Radio Moscow (World Service): News in Brief [S] 1430 Radio Netherlands: News [M-A] 1500 BBC: Newsreel 1500 Deutsche Welle: World News 1500 KYOI: News [M-F] 1500 Radio Australia: World and Australian News 1500 Radio Japan: News [S-F] 1500 Radio Moscow (World Service): News 1500 Radio RSA: News 1500 Voice of America: News |
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program guide

- 1212 Radio Finland: Press Review. See T 0342.
 1215 BBC: Multitrack 2. See W 1830.
 1215 Radio Finland: Starting Finnish. See H 0345.
 1234 KYOI: Young Ideas. See T 1234.
 1245 BBC: Sports Roundup. See S 1330.
 1247 KYOI: Music. See T 1247.
 1306 KYOI: Kaleidoscope. See M 2306.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1312 Radio Finland: Press Review. See T 0342.
 1315 Radio Finland: Starting Finnish. See H 0345.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Austria International: Report from Austria. See S 0130.
 1336 KYOI: Letterbox. See M 2336.
 1345 BBC: Jazz Scene UK (4th, 18th) or Folk in Britain (11th, 25th). A look at jazz or folk music on the British Isles.
 1405 BBC: Outlook. See M 1405.
 1412 Radio Finland: Press Review. See T 0342.
 1415 Radio Finland: Starting Finnish. See H 0345.
 1430 Radio Austria International: Report from Austria. See S 0130.
 1445 BBC: Write On... See H 0730.
 1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
 1517 Radio Finland: Press Review. See T 0342.
 1520 Radio Finland: Starting Finnish. See H 0345.
 1606 WCSN: News Focus. See M 1606.
 1615 BBC: Assignment. See H 0230.
 1630 Radio Austria International: Report from Austria. See S 0130.
 1634 WCSN: Young Ideas. See T 0034.
 1645 BBC: The World Today. See M 1645.
 1647 WCSN: Music. See M 1647.
 2306 KYOI: Kaleidoscope. See M 2306.
 2306 WCSN: Kaleidoscope. See M 2306.
 2309 BBC: Commentary. See M 2309.
 2310 Voice of Turkey: Review of the Turkish Press. A roundup of current news items in the daily Turkish newspapers.
 2313 Voice of Turkey: Turkey - At the Threshold of the European Community. Commentary and a look at Turkey's economic situation.
 2315 BBC: Music Review. Edward Greenfield presents classical music developments from around the world.
 2324 Voice of Turkey: Music. Modern arrangements of traditional Turkish songs.
 2330 Voice of Turkey: Turkish Cuisine. History of the great variety of Turkish dishes.
 2336 KYOI: Letterbox. See M 2336.
 2336 Voice of Turkey: Songs of Love. Traditional Turkish love songs performed by local musicians.
 2336 WCSN: Letterbox. See M 2336.

Friday

May 5, 12, 19, 26

- 0006 WCSN: News Focus. See M 1606.
 0030 BBC: Adrian Boult. A look at the great British conductor (through 12th).
 0034 WCSN: Conversations. See M 1634.
 0047 WCSN: Music. See M 1647.
 0101 BBC: Outlook. See M 1405.
 0106 WCSN: Kaleidoscope. See M 2306.
 0113 Radio Prague: Newsview. See T 0113.
 0125 BBC: Financial News. See T 0125.
 0125 Radio Prague: Folk Music Section. See T 0122.
 0128 Radio Prague: Health and Medicine. A look at different aspects of health care in Czechoslovakia.
 0130 BBC: Jazz Scene UK (5th, 19th) or Folk in Britain (12th, 26th). See H 1345.
 0130 Radio Austria International: Report from Austria. See S 0130.
 0135 Radio Prague: Letter from Czechoslovakia. A program focusing on the real personal life in Czechoslovakia, and opinions of Czech Individuals.
 0136 WCSN: Letterbox. See M 2336.
 0140 Radio Prague: DX Chat. Reception reports and DX news.
 0145 BBC: Talking From... Profiles from Northern Ireland, Scotland, and Wales.
 0149 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
 0205 Radio Calro: Holy Koran Interpretation. Salman Rushdie, beware!
 0206 WCSN: News Focus. See M 1606.
 0209 BBC: British Press Review. See S 0209.
 0215 BBC: Seven Seas. A weekly program about ships and the sea.
 0230 BBC: Drama. See H 1130.
 0234 WCSN: Conversations. See M 1634.
 0247 WCSN: Music. See M 1647.
 0306 WCSN: Kaleidoscope. See M 2306.
 0313 Radio Prague: Newsview. See T 0113.
 0315 BBC: The World Today. See M 1645.
 0325 Radio Prague: Folk Music Section. See T 0122.
 0328 Radio Prague: Health and Medicine. See F 0128.
 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
 0335 Radio Prague: Letter from Czechoslovakia. See F 0135.
 0336 WCSN: Letterbox. See M 2336.
 0340 Radio Prague: DX Chat. See F 0140.
 0342 Radio Finland: Press Review. See T 0342.



Clarke

Barry Clarke from Radio Australia's English Service

- 0345 Radio Finland: Science Notebook. A review of developments in science.
 0349 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
 0406 WCSN: News Focus. See M 1606.
 0412 Radio Havana Cuba: Spotlight on Latin America. Analysis of issues affecting Latin America.
 0415 Radio Havana Cuba: Headliners. Views behind the stories making news this week.
 0420 Radio Havana Cuba: The Cuban Music Scene. Latin music from the island nation of Cuba.
 0430 BBC: Short Story. See T 0130.
 0434 WCSN: Conversations. See M 1634.
 0435 Radio Havana Cuba: Feature Report. Interviews with prominent figures on topics in the news.
 0443 Radio Havana Cuba: Kaleidoscope. Interviews with Cuban artists talking about their own contributions to Cuba's culture and the arts.
 0445 BBC: Jazz Scene UK (5th, 19th) or Folk in Britain (12th, 26th). See H 1345.
 0447 WCSN: Music. See M 1647.
 0450 Radio Havana Cuba: Contemporary Music Section. Music from popular international groups and Latin solo artists.
 0506 WCSN: Kaleidoscope. See M 2306.
 0509 BBC: Twenty-Four Hours. See S 0509.
 0527 Radio Finland: Press Review. See T 0342.
 0530 BBC: Financial News. See T 0125.
 0530 Radio Austria International: Report from

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- 1505 Radio Finland: Northern Report [T-A]
 1527 Radio Veritas Asia: World News [M-A]
 1530 BRT, Brussels: News [M-S]
 1530 Radio Moscow (World Service): News in Brief
 1530 Swiss Radio International: News
 1545 Radio Berlin International: News
 1545 Radio Canada International: News
 1552 Radio RSA: News in Brief
 1600 BBC: World News
 1600 Deutsche Welle: World News
 1600 Radio Australia: International Report
 1600 Radio Berlin International: News
 1600 Radio Korea: News
 1600 Radio Moscow (World Service): News
 1600 Voice of America: News
 1600 WCSN: News [M-F]
 1609 BBC: News About Britain

- 1630 Radio Moscow (World Service): News in Brief [S-M]
 1630 Radio Netherlands: News [M-A]
 1630 Voice of America (Special English): News
 1630 WCSN: News [M-F]
 1700 BBC: World News [S-F]
 1700 Kol Israel: News
 1700 Radio Australia: World and Australian News
 1700 Radio Japan: News [S-F]
 1700 Radio Moscow (World Service): News
 1700 Voice of America: News
 1700 WCSN: News [M-F]
 1715 Radio Berlin International: News
 1715 Radio Canada International: News
 1730 BRT, Brussels: News
 1730 Radio Berlin International: News
 1730 Radio Moscow (World Service): News in Brief [S]

- 1730 Radio New Zealand Int'l: News [S-F]
 1730 Swiss Radio International: News
 1730 WCSN: News [M-F]
 1800 BBC: Newsdesk
 1800 KYOI: News [M-F]
 1800 Radio Australia: International Report
 1800 Radio Canada International: News
 1800 Radio Korea: News
 1800 Radio Moscow (World Service): News
 1800 Radio New Zealand Int'l: News
 1800 Radio RSA: News
 1800 Voice of America: News
 1800 WCSN: News [M-F]
 1803 Radio Jamahiriya, Libya: Headlines
 1830 Radio Kuwait: News
 1830 Radio Moscow (World Service): News in Brief
 1830 Radio Netherlands: News [M-A]
 1830 Radio New Zealand Int'l: News [M-F]
 1830 Swiss Radio International: News

program

guide

- 0536 WGSN: Letterbox. See M 2336.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0606 WGSN: News Focus. See M 1606.
- 0630 BBC: Meridian. See W 0630.
- 0634 WGSN: Conversations. See M 1634.
- 0647 WGSN: Music. See M 1647.
- 0706 WGSN: Kaleidoscope. See M 2306.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Feature. Programming on various subjects.
- 0730 Radio Austria International: Report from Austria. See S 0130.
- 0736 WGSN: Letterbox. See M 2336.
- 0742 Radio Finland: Press Review. See T 0342.
- 0745 Radio Finland: Science Notebook. See F 0345.
- 1106 KYOI: Kaleidoscope. See M 2306.
- 1115 BBC: Talking From... See F 0145.
- 1130 BBC: Meridian. See W 0630.
- 1130 Radio Austria International: Report from Austria. See S 0130.
- 1136 KYOI: Letterbox. See M 2336.
- 1206 KYOI: News Focus. See T 1206.
- 1212 Radio Finland: Press Review. See T 0342.
- 1215 BBC: Feature. See F 0730.
- 1215 Radio Finland: Science Notebook. See F 0345.
- 1234 KYOI: Conversations. See W 1234.
- 1245 BBC: Sports Roundup. See S 1330.
- 1247 KYOI: Music. See T 1247.
- 1306 KYOI: Kaleidoscope. See M 2306.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1312 Radio Finland: Press Review. See T 0342.
- 1315 Radio Finland: Science Notebook. See F 0345.
- 1330 BBC: John Peel. See T 0330.

- 1330 Radio Austria International: Report from Austria. See S 0130.
- 1336 KYOI: Letterbox. See M 2336.
- 1405 BBC: Outlook. See M 1405.
- 1412 Radio Finland: Press Review. See T 0342.
- 1415 Radio Finland: Science Notebook. See F 0345.
- 1430 Radio Austria International: Report from Austria. See S 0130.
- 1445 BBC: Nature Now. See M 0445.
- 1515 BBC: Music Review. See H 2315.
- 1517 Radio Finland: Press Review. See T 0342.
- 1520 Radio Finland: Science Notebook. See F 0345.
- 1600 WGSN: News Focus. See M 1606.
- 1615 BBC: Science In Action. See M 0230.
- 1630 Radio Austria International: Report from Austria. See S 0130.
- 1634 WGSN: Conversations. See M 1634.
- 1645 BBC: The World Today. See M 1645.
- 1647 WGSN: Music. See M 1647.
- 2306 WGSN: Kaleidoscope. See M 2306.
- 2309 BBC: Commentary. See M 2309.
- 2315 BBC: From The Weeklies. A review of the British weekly press.
- 2330 BBC: Multitrack 3. Sarah Ward presents innovative and alternative rock music.
- 2336 WGSN: Letterbox. See M 2336.

- 0113 Radio Prague: Newsview. See T 0113.
- 0120 Radio Prague: The Week's Events in Czechoslovakia. A weekly news review of recent happenings in Czechoslovakia.
- 0125 BBC: Financial News. See T 0125.
- 0125 Radio Prague: The Arts in Czechoslovakia. A look at the cultural atmosphere in Czechoslovakia.
- 0130 BBC: Poetry of the Century. A look at poetry during the 20th century.
- 0130 Radio Austria International: Report from Austria. See S 0130.
- 0135 Radio Prague: North American Mailbag Program. Reception reports, musical requests, and listener letters.
- 0145 BBC: Book Choice. See S 0745.
- 0150 BBC: New Ideas. See T 0445.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: People and Politics. Background to the British political scene.
- 0242 Radio Portugal: Mailbag Program. Greetings to listeners worldwide and responses to listener letters.
- 0313 Radio Prague: Newsview. See T 0113.
- 0315 BBC: The World Today. See M 1645.
- 0320 Radio Prague: The Week's Events in Czechoslovakia. See A 0120.
- 0325 Radio Prague: The Arts in Czechoslovakia. See A 0125.
- 0330 BBC: The Vintage Chart Show. Past top ten hits with Jimmy Savile.
- 0335 Radio Prague: North American Mailbag Program. See A 0135.
- 0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
- 0445 BBC: Personal View. See A 0030.

Saturday

May 6, 13, 20, 27

- 0030 BBC: Personal View. Opinion on topical issues in British life.
- 0045 BBC: Recording of the Week. See M 0545.
- 0101 BBC: Outlook. See M 1405.



News staff at the BBC (from left): John Eidenow, Tudor Lomas, Nick Worrell, Kathryn Davies, Geoffrey Stern, and David Lay. Eidenow, Lomas, Davies, and Lay present "Twenttu-Four Hours," while Worrell and Stern present "Newshour."

- 1830 Voice of America (Special English): News
- 1830 WGSN: News [M-F]
- 1847 Radio Jamahiriya, Libya: News
- 1852 Radio RSA: News in Brief
- 1900 BBC: News Summary
- 1900 Deutsche Welle: World News
- 1900 Kol Israel: News
- 1900 KYOI: News [M-F]
- 1900 Radio Australia: World and Australian News
- 1900 Radio Canada Int'l: News [M-F]
- 1900 Radio Havana Cuba: International News
- 1900 Radio Japan: News
- 1900 Radio Moscow (World Service): News
- 1900 Radio New Zealand Int'l: News
- 1900 Radio RSA: News
- 1900 Voice of America: News
- 1900 WGSN: News [M-F]

- 1915 Radio Berlin International: News
- 1930 Radio Canada Int'l: News [M-F]
- 1930 Radio Finland: Northern Report [M-F]
- 1930 Radio Havana Cuba: News Update
- 1930 Radio Moscow (World Service): News in Brief [A-S]
- 1930 WGSN: News [M-F]
- 1935 Radiotelevisione Italiana: News
- 1945 Radio Berlin International: News
- 2000 BBC: World News
- 2000 KYOI: News [S-F]
- 2000 Radio Australia: International Report
- 2000 Radio Berlin International: News
- 2000 Radio Jordan: News
- 2000 Radio Moscow (World Service): News
- 2000 Radio New Zealand Int'l: News
- 2000 Radio RSA: News
- 2000 Voice of America: News
- 2000 WGSN: News [M-F]
- 2025 Radiotelevisione Italiana: News

- 2030 KYOI: News [M-H]
- 2030 Radio Korea: News
- 2030 Radio Moscow (World Service): News in Brief [S]
- 2030 Radio Netherlands: News [M-A]
- 2030 WGSN: News [M-F]
- 2052 Radio RSA: News in Brief
- 2100 BBC: News Summary
- 2100 BRT, Brussels: News
- 2100 Deutsche Welle: World News
- 2100 KVOH: UPI Radio News
- 2100 KYOI: News [S-F]
- 2100 Radio Australia: World and Australian News
- 2100 Radio Berlin International: News
- 2100 Radio Japan: News
- 2100 Radio Moscow (World Service): News
- 2100 Swiss Radio International: News
- 2100 Voice of America: News
- 2100 WGSN: News [M-F]

program guide



The staff at Radio RSA's "Africa Today," the station's flagship magazine program.

- | | | |
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| <p>0509 BBC: Twenty-Four Hours. See S 0509.
 0530 BBC: Financial News. See T 0125.
 0530 Radio Austria International: Report from Austria. See S 0130.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: The World Today. See M 1645.
 0630 BBC: Meridian. See W 0630.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0730 BBC: From The Weeklies. See F 2315.
 0730 Radio Austria International: Report from Austria. See S 0130.</p> | <p>0745 BBC: Network UK. See T 0215.
 1115 BBC: Poetry of the Century. See A 0130.
 1130 BBC: Meridian. See W 0630.
 1130 Radio Austria International: Austrian Coffee-table. A look at the arts, especially music.
 1215 BBC: Multitrack 3. See F 2330.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Network UK. See T 0215.
 1330 Radio Austria International: Report from Austria. See S 0130.</p> | <p>1345 BBC: Sportsworld. Paddy Feeny presents almost three hours of live sports.
 1401 BBC: Sportsworld (continued). See A 1345.
 1430 Radio Austria International: Austrian Coffee-table. See A 1130.
 1515 BBC: Sportsworld (continued). See A 1345.
 1615 BBC: Sportsworld (continued). See A 1345.
 1630 Radio Austria International: Report from Austria. See S 0130.
 2309 BBC: Book Choice. See S 0745.
 2315 BBC: A Jolly Good Show. See T 1515.</p> |
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| <p>2130 Kol Israel: News
 2130 KVOH: UPI Headline News
 2130 KYOI: News [M-H]
 2130 Radio Canada International: News
 2130 Radio Moscow (World Service): News in Brief
 2130 Swiss Radio International: News
 2130 WCSN: News [M-F]
 2200 BBC: Newshour
 2200 KVOH: UPI Radio News
 2200 KYOI: News [S-H]
 2200 Radio Australia: International Report
 2200 Radio Berlin International: News
 2200 Radio Canada International [Asia]: News [M-F]
 2200 Radio Canada International: News [A-S]
 2200 Radio Canada Int'l: World at Six [M-F]
 2200 Radio Finland: Northern Report [M-F]</p> | <p>2200 Radio Moscow (World Service): News
 2200 Radiotelevisione Italiana: News
 2200 Voice of America: News
 2200 Voice of Free China: News and Commentary
 2200 WCSN: News [M-F]
 2230 KVOH: UPI Headline News
 2230 KYOI: News [M-H]
 2230 Radio Canada Int'l: As It Happens [M-F]
 2230 Radio Moscow (World Service): News in Brief [A-S]
 2230 Radio Polonia: News
 2230 Voice of America (Special English): News
 2230 WCSN: News [M-F]
 2245 Radio Berlin International: News
 2300 BBC: World News
 2300 Kol Israel: News
 2300 KVOH: UPI Radio News</p> | <p>2300 KYOI: News [S-H]
 2300 Radio Australia: World and Australian News
 2300 Radio Berlin International: News
 2300 Radio Canada International: News
 2300 Radio Japan: News [S-F]
 2300 Radio Moscow: News
 2300 Radio New Zealand Int'l: News
 2300 Voice of America: News
 2300 Voice of Turkey: News
 2300 WCSN: News [M-F]
 2330 BRT, Brussels: News
 2330 KVOH: UPI Headline News
 2330 KYOI: News [M-H]
 2330 Radio Korea: News
 2330 Radio Moscow (World Service): News in Brief [A-S]
 2330 Radio New Zealand Int'l: News [S-H]
 2330 WCSN: News [M-F]
 2335 Voice of Greece: News [S]</p> |
|---|---|--|

frequency

section

MT Monitoring Team

Greg Jordan,
Frequency Manager

1855-I Franciscan Terrace
Winston-Salem, NC 27127

Joe Hanlon, PA

Bill Brinkley, CA

Pete Wahlquist, CA

Richard A. Keen, CO

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0015	Voice of Kampuchea, Phnom-Penh	9693	11938		
0000-0030	BBC, London, England	5975	6005	6175	7325
		9590	9915	11955	12095
		15260	15360	17875	
0000-0030	Kol Israel, Jerusalem	11605	15615	15640	
0000-0030	Radio Berlin Int'l, East Germany	6080	11890		
0000-0030	Radio Korea (South), Seoul	15575			
0000-0030	M Radio Norway Int'l, Oslo	9620	11845		
0000-0045	Radio Yugoslavia, Belgrade	5980	9620	11735	
0000-0045	WINB, Red Lion, Pennsylvania	15295			
0000-0050	Radio Pyongyang, North Korea	15115	15160		
0000-0055	Radio Beijing, PR China	9770	11715	15540	
0000-0100	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	
0000-0100	CBC Northern Quebec Service	6195	9625		
0000-0100	CBN, St. John's, Newfoundland	6160			
0000-0100	CBU, Vancouver, British Columbia	6160			
0000-0100	CFCF, Montreal, Quebec	6005			
0000-0100	CFCN, Calgary, Alberta	6030			
0000-0100	CHNS, Halifax, Nova Scotia	6130			
0000-0100	CKWX, Vancouver, British Columbia	6080			
0000-0100	CFRB, Toronto, Ontario	6070			
0000-0100	FEBC, Manila, Philippines	15445			
0000-0100	(US) Far East Network, Tokyo	3910			
0000-0100	KSDA, Guam	15125			
0000-0100	KVOH, Rancho Simi, California	17775			
0000-0100	KYOI, Saipan	15405			
0000-0100	Radio Australia, Melbourne	15140	15160	15240	15320
		17750	17795	21740	
0000-0100	Radio Baghdad, Iraq	9515	11775		
0000-0100	Radio Canada Int'l, Montreal	5960	9755		
0000-0100	Radio Havana Cuba	11820			
0000-0100	Radio Luxembourg	6090			
0000-0100	Radio Moscow	17850	17860	17880	21790
0000-0100	Radio Moscow N. America Service	7215	7310	9605	9685
		9720	11735	11750	17605
		17720	17700		
0000-0100	Radio New Zealand, Wellington	15150	17705		
0000-0100	Radio for Peace, Costa Rica	13665v			
0000-0100	Radio Thailand, Bangkok	9655	11905		
0000-0100	SBC Radio One, Singapore	5010	5052	11940	
0000-0100	Spanish Foreign Radio, Madrid	9630	15110		

0000-0100	T-S Superpower KUSW, Utah	15580			
0000-0100	Voice of America, Washington	5995	6130	9455	9775
		9815	11580	11695	11740
		15205	17820		
0000-0100	WCSN, Boston, Massachusetts	9850			
0000-0100	WHRI, Noblesville, Indiana	7365	9495		
0000-0100	WRNO, New Orleans, Louisiana	7355			
0000-0100	WSHB, Cyprus Creek, S. Carolina	11980			
0000-0100	WYFR, Oakland, California	5950	9505	15440	
0030-0045	BBC, London, England*	6195	7235	9570	11945
		15360	17875		
0030-0100	BBC, London, England	5975	6005	6175	7325
		9515	9580	9915	9590
		11955	12095	15260	
0030-0100	HCJB, Quito, Ecuador	9720	11775	15155	15250
0030-0100	Radio Austria Int'l, Vienna	9875	13730		
0030-0100	Radio Netherlands, Hilversum	6020	6165	15315	
0030-0100	SLBC, Colombo, Sri Lanka	6005	9720		
0035-0040	All India Radio, New Delhi	3925	4860		
0045-0100	Radio Korea (South), Seoul	15575			
0045-0100	A Radio New Zealand, Wellington	15150	17705		
0048-0100	WINB, Red Lion, Pennsylvania	15145			
0050-0100	Vatican Radio, Vatican City	6150	9605	11780	

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0103	S Port Moresby, Papua New Guinea	3295	4890	5960	5985
		6020	6040	6080	6140
		9520			
0100-0110	Vatican Radio, Vatican City	6150	9605	11780	
0100-0115	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	

LEGEND

- * The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- * In the space between the end time and the station name is the broadcast schedule.

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

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

- * [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- * The last entry on a line is the frequency. Codes here include "SSB" which indicates a Single Sideband transmission, and "V" for a frequency that varies. [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- * v after a frequency indicates that it varies
- * Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- * Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

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 (the are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

frequency

section

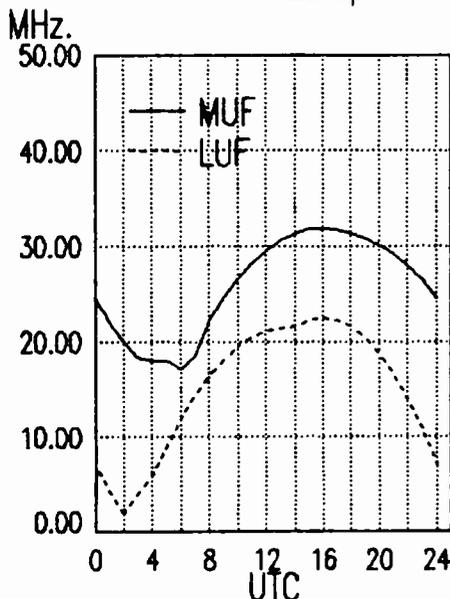
0100-0120	RAI, Rome, Italy	9575	11800		
0100-0130	Kol Israel, Jerusalem	11605	15615	15640	
0100-0130	W,A Radio Budapest, Hungary	6110	9520	9585	9835
		11910	15160		
0100-0130	Radio Canada Int'l, Montreal	9535	11895		
0100-0130	Radio Japan, Tokyo	17880			
0100-0130	Radio Netherlands, Hllversum	6020	6165	15315	
0100-0130	Laotian National Radio	7113v			
0100-0130	S,M WINB, Red Lion, Pennsylvania	15145			
0100-0150	Deutsche Welle, West Germany	6040	6085	6145	9565
		9735	11865		
0100-0150	Radio Baghdad, Iraq	6185	7250		
0100-0155	S Radio Austria Int'l, Vienna	9875	13730		
0100-0200	BBC, London, England	5975	6005	6175	7325
		9410	9590	9915	11955
		12095	15260	17815	
0100-0200	CBC Northern Quebec Service	6195	9625		
0100-0200	CBN, St. John's, Newfoundland	6160			
0100-0200	CBU, Vancouver, British Colombia	6160			
0100-0200	CFCF, Montreal, Quebec	6005			
0100-0200	CFCN, Calgary, Alberta	6030			
0100-0200	CHNS, Halifax, Nova Scotia	6130			
0100-0200	CKWX, Vancouver, British Colombia	6080			
0100-0200	CFRB, Toronto, Ontario	6070			
0100-0200	(US) Far East Network, Tokyo	3910			
0100-0200	FEBC, Manila, Philippines	15445			
0100-0200	HCJB, Quito, Ecuador	9720	11755	15155	15250
0100-0200	T-A KVOH, Rancho Simi, California	13695			
0100-0200	KYOI, Saipan	15405			
0100-0200	Radio Australia, Melbourne	15160	15180	15240	15320
		15395	17715	17795	
		17750	21740		
0100-0200	Radio Havana Cuba	11820	9655		
0100-0200	Radio Japan, Tokyo	5960	17810	17835	17845
0100-0200	Radio Luxembourg	6090			
0100-0200	Radio Moscow	9605	9685	9720	9820
		17720			
0100-0200	Radio Moscow, N. American Service	6000	6045	7215	7310
		9685	11735	11750	12050
		17700	17720	21530	
0100-0200	Radio New Zealand, Wellington	15150	17705		
0100-0200	Radio for Peace, Costa Rica	13665v			
0100-0200	Radio Prague, Czechoslovakia	5930	6055	7345	9540
		9625	11990		
0100-0200	Radio Thailand, Bangkok	9655	11905		

0100-0200	RAE, Buenos Aires, Argentina	9690			
0100-0200	SBC Radio One, Singapore	5010	5052	11940	
0100-0200	SLBC, Colombo, Sri Lanka	6005	9720	15425	
0100-0200	Spanish Foreign Radio, Madrid	9630	15110		
0100-0200	T-S Superpower KUSW, Utah	11695			
0100-0200	Voice of America, Washington	5995	6130	9455	9740
		9775	9815	11580	11740
		15205	17735	18157	USB
0100-0200	Voice of Indonesia, Jakarta	9680	11790		
0100-0200	Voice of Free China, Taiwan	5985	9680	11740	15345
0100-0200	WCSN, Boston, Massachusetts	9850			
0100-0200	WHRI, Noblesville, Indiana	7520	9495		
0100-0200	WRNO New Orleans, Louisiana	7355			
0100-0200	WSHB, Cyprus Creek, S. Carolina	11980			
0100-0200	WYFR, Oakland, California	5950	9505	9680	
0130-0140	T-S Voice of Greece, Athens	7430	9420	11645	
0130-0145	TWFR Radio Budapest, Hungary	6110	9520	9585	9835
		11910	15160		
0130-0200	S,M Radio Canada Int'l, Montreal	5960	9535	11845	11940
0130-0200	Radio Veritas Asia, Philippines	15330	15365		
0130-0200	WINB, Red Lion, Pennsylvania	15145			
0145-0200	Radio Berlin Int'l, East Germany	11785	11890		

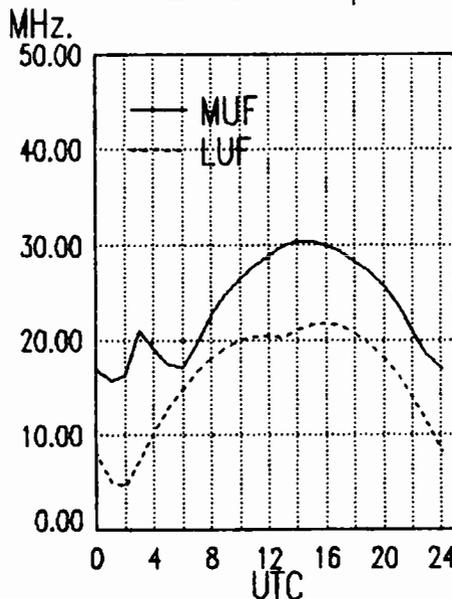
0200 UTC [10:00 PM EDT/7:00 PM PDT]

0200-0215	Vatican Radio, Vatican City	6145	7125	9650	
0200-0230	BBC, London, England	5975	6005	6175	7325
		9410	9515	9590	9915
		12095	15260	17815	
0200-0230	Burma Bcating Service, Rangoon	7185			
0200-0230	Radio Berlin Int'l, East Germany	11785	11890		
0200-0230	Radio Kiev, Ukrainian SSR	9860	13645	15240	15455
		17665			
0200-0230	Swiss Radio Int'l, Berne	6095	6135	9725	9885
		12035	17730		
0200-0250	Deutsche Welle, West Germany	6035	7285	9690	11945
0200-0250	Radio Baghdad, Iraq	6185	7250		
0200-0250	Radio Bras, Brasilia, Brazil	11745v			
0200-0255	Radio Bucharest, Romania	5990	6155	9510	9570
		11830	11940		
0200-0300	CBC Northern Quebec Service	6195	9625		
0200-0300	CBN, St. John's, Newfoundland	6160			
0200-0300	CBU, Vancouver, British Colombia	6160			

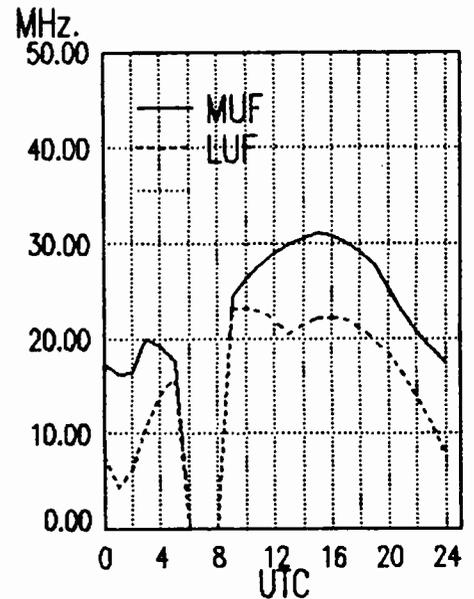
East Coast To
Western Europe



East Coast To
Eastern Europe



East Coast To
Middle East



frequency

section

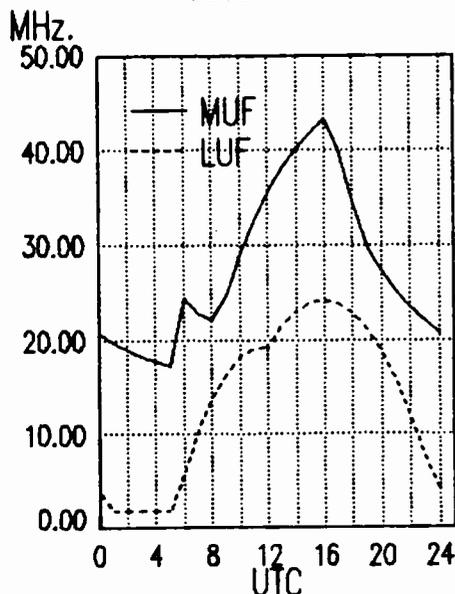
0300-0400	La Voz Evangelica, Honduras	4820			
0300-0400	Radio Australia, Melbourne	11945	15160	15240	15320
		15395	17715	17750	17795
		21740			
0300-0400 T-A	Radio Canada Int'l, Montreal	9755	11845	11940	
0300-0400	Radio for Peace, Costa Rica	13663v			
0300-0400	Radio Havana Cuba	9655	11820		
0300-0400	Radio Japan, Tokyo	5960	9720	9760	17765
		17765	17810	17835	
0300-0400	Radio Moscow, USSR	7215	7310	9605	9720
		11735	17810		
0300-0400	Radio Moscow World Service, USSR	17570	17655	17675	17825
		17890	21690	21790	
0300-0400	Radio Prague, Czechoslovakia	5930	6055	7345	9540
		9625	11990		
0300-0400	Radio Thailand, Bangkok	9655	11905		
0300-0400	SBC Radio One, Singapore	5010	5052	11940	
0300-0400	SLBC, Colombo, Sri Lanka	6005	9720	15425	
0300-0400 T-S	Superpower KUSW, Utah	11695			
0300-0400	Trans World Radio, Bonaire	9535	11930		
0300-0400	Voice of America, Washington	5995	6035	9280	9575
		11835			
0300-0400	Voice of Kenya, Nairobi	6045			
0300-0400	WCSN, Boston, Massachusetts	9850			
0300-0400	WHRI, Noblesville, Indiana	7400	9495		
0300-0400	WRNO, New Orleans, Louisiana	6185			
0300-0400	WSHB, Cyprus Creek, N. Carolina	9455			
0300-0400	WYFR Satellite Net, California	5950	9505	9555	
0310-0330	Vatican Radio, Vatican City	6150			
0313-0400	Radio France Int'l, Paris	3965	7135	9550	9790
		9800	11670	11700	11995
0330-0340 S-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
		6020	6040	6080	6140
		9520			
0330-0400	BBC, London, England	3955	5975	6005	6105
		6155	6175	6195	9410
		9915	12095	15420	17815
		6165	9590		
0330-0400	Radio Netherland, Hilversum	15145			
0330-0400 S,M	WINB, Red Lion, Pennsylvania	15150	17705		
0335-0400	Radio New Zealand, Wellington	9684			
0330-0400	Radio Tanzania, Dar es Salaam	7065	9760		
0330-0400	Radio Tirana, Albania	11705			
0330-0400	Radio Sweden, Stockholm	9640	11940	15435	17775
0330-0400	United Arab Emirates Radio				

0335-0340	All India Radio, New Delhi	3905	4860	9610	11830
		11870	11890	15305	
0340-0350 M-A	Voice of Greece, Athens	7430	9395	9420	
0345-0400	Radio Berlin Int'l, East Germany	9620	11785		
0350-0400	RAI, Rome, Italy	9710	11905	15330	

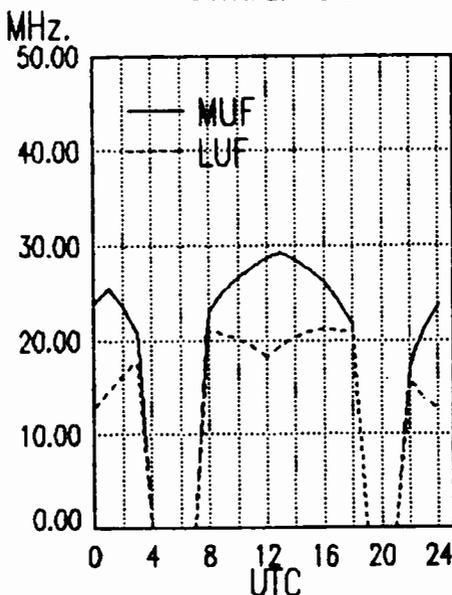
0400 UTC [12:00 AM EDT/9:00 PM PDT]

0400-0405	Radio Uganda, Kampala	4976	5026		
0400-0410	Radio Thailand, Bangkok	9655	11905		
0400-0410	RAI, Rome, Italy	6155	11905	15330	
0400-0415	Kol Israel, Jerusalem	9435	11588		
0400-0415	Radio RSA, South Africa	7295	9585	11900	
0400-0420	Radio Botswana, Gaborone	4820			
0400-0420 T-S	Radio Zambia, Lusaka	3345	6165		
0400-0425	Radio Bucharest, Romania	6155	9510	9570	11830
		11940			
0400-0425	Radio Netherland, Hilversum	6165	9590		
0400-0430	BBC, London, England	3955	5975	6005	6155
		6175	6195	7105	7160
		7185	7260	9410	9580
		9600	9915	12095	15420
0400-0430	La Voz Evangelica, Honduras	4820			
0400-0430 S,M	Radio Austria Int'l, Vienna	6015	6155		
0400-0430	Radio Berlin Int'l, East Germany	9620	11785		
0400-0430 M	Radio Norway Int'l, Oslo	9650	11750		
0400-0430	SLBC, Colombo, Sri Lanka	6005	9720	15425	
0400-0430	Radio Tanzania, Dar es Salaam	9684			
0400-0430	Swiss Radio Int'l, Berne	6135	9725	9885	12035
0400-0430	Trans World Radio, Bonaire	9535	11930		
0400-0430 S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0450	Deutsche Welle, West Germany	7150	7225	9565	9765
		11765			
0400-0450	Radio Pyongyang, North Korea	15160	15180		
0400-0455	Radio Beijing, PR China	9645	11695	11980	
0400-0500	CBC Northern Quebec Service	6195	9625		
0400-0500	CBN, St. John's, Newfoundland	6160			
0400-0500	CBU, Vancouver, British Columbia	6160			
0400-0500	CFCF, Montreal, Quebec	6005			
0400-0500	CFCN, Calgary, Alberta	6030			
0400-0500	CHNS, Halifax, Nova Scotia	6130			
0400-0500	CKWX, Vancouver, British Columbia	6080			
0400-0500	CFRB, Toronto, Ontario	6070			

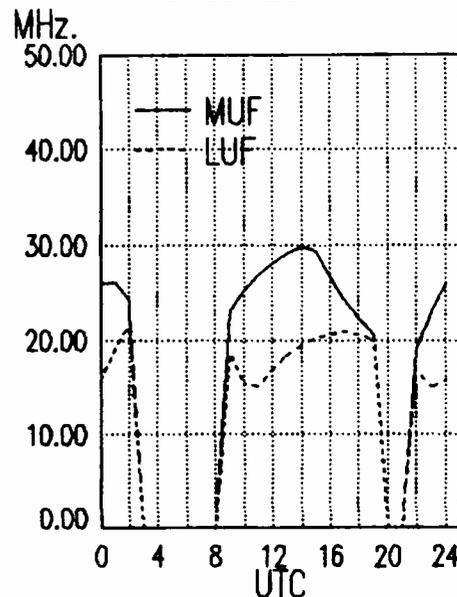
East Coast To South Africa



East Coast To Central Asia



East Coast To South East Asia



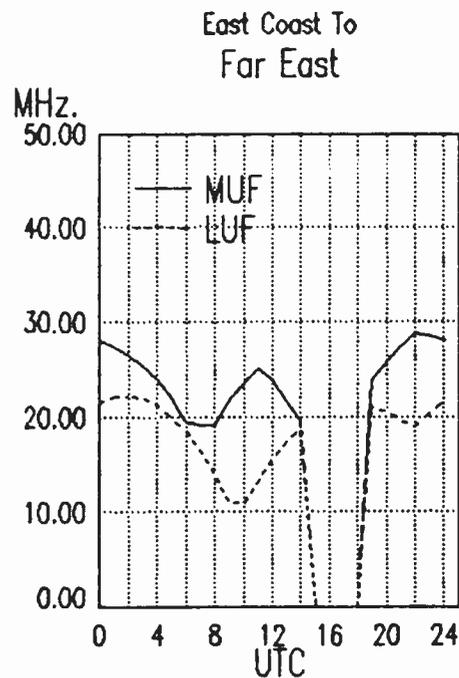
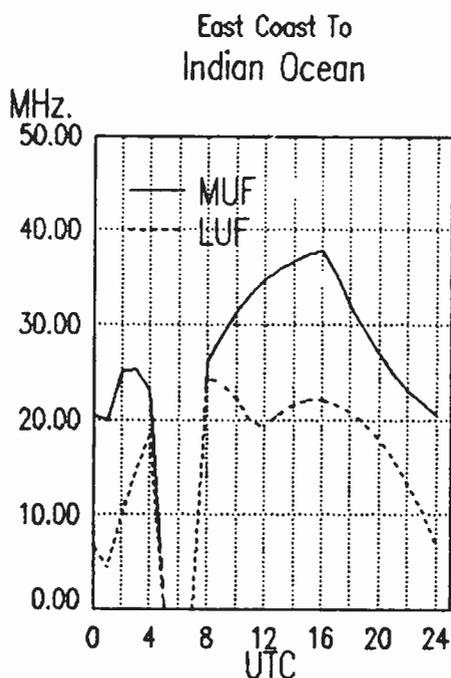
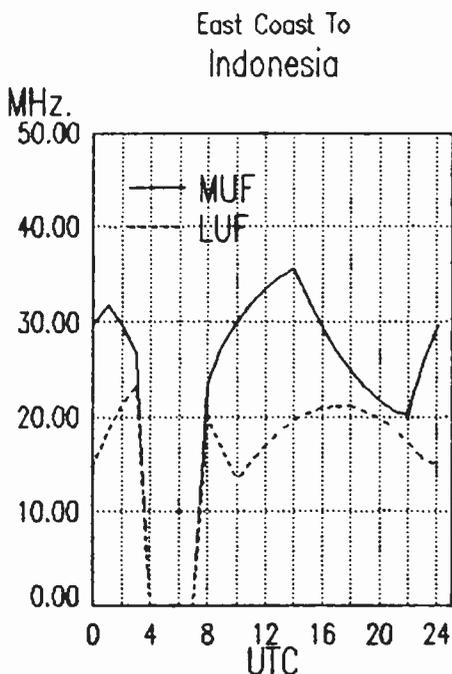
frequency

section

0400-0500	(US) Far East Network, Tokyo	3910	0500-0530	Trans World Radio, Swaziland	3205 5055 7210
0400-0500	FEBC, Manila, Philippines	11850	0500-0545	Radio Berlin Int'l, East Germany	5965 6115 9645 11810
0400-0500	KYOI, Saipan	17780			13610
0400-0500	Radio Australia, Melbourne	11910 15160 15240 15320	0500-0550	Deutsche Welle, West Germany	5960 6120 6130 9635
		17715 17795 21740			9700
0400-0500	Radio Finland, Helsinki	6120 9635 11715 15185	0500-0600	BBC, London, England	5975 6005 6155 6195
0400-0500	Radio Havana Cuba	5965 9655 11760 11820			9410 9510 9580 12095
0400-0500	Radio Moscow, USSR	7215 7310 13665 15425			15070 15120 15420 17815
		15455			17885
0400-0500	Radio New Zealand, Wellington	15150 17705	0500-0600	CBC Northern Quebec Service	6195 9625
0400-0500	Radio for Peace, Costa Rica	13660	0500-0600	CBU, Vancouver, British Columbia	6160
0400-0500	SBC Radio One, Singapore	5010 5052 11940	0500-0600	CFCF, Montreal, Quebec	6005
0400-0500 T-S	Superpower KUSW, Utah	9815	0500-0600	CFCN, Calgary, Alberta	6030
0400-0500	Voice of America, Washington	3980 5995 6035 7170	0500-0600	CHNS, Halifax, Nova Scotia	6130
		7200 7280 9575 11835	0500-0600	CKWX, Vancouver, British Columbia	6080
0400-0500	Voice of Kenya, Nairobi	6045	0500-0600	CFRB, Toronto, Ontario	6070
0400-0500V	Voice of Nicaragua, Managua	6100	0500-0600	(US) Far East Network, Tokyo	3910
0400-0500	WCSN, Boston, Massachusetts	9870	0500-0600	FEBC, Manila, Philippines	11850
0400-0500	WHRI, Noblesville, Indiana	7520 9495	0500-0600	HCJB, Quito, Ecuador	6230 9720 11775
0400-0500	WRNO, New Orleans, Louisiana	6185	0500-0600	KVOH, Rancho Simi, California	11960
0400-0500	WSHB, Cyprus Creek, S. Carolina	9455	0500-0600	KYOI, Saipan	17780
0400-0500	WYFR Satellite Net, California	5950 9520	0500-0600	Radio Australia, Melbourne	11910 15160 15240 15320
0425-0440	RAI, Rome, Italy	5990 7275			15395 17715 17750 17795
0430-0455	Radio Austria Int'l, Vienna	6015 6155 15410			21740
0430-0455	Radio Netherlands, Hilversum	9895 13700	0500-0600	Radio for Peace, Cost Rica	13660
0430-0500	BBC, London, England	3955 5975 6005 7185	0500-0600	Radio Havana Cuba	5965 9655 11760
		9410 9510 9580 9915	0500-0600	Radio Japan, Tokyo	15195 15270 17765 17825
		11945 12095 15070 15280	0500-0600	Radio Kuwait	15345
		15420 17815	0500-0600	Radio Moscow, USSR	7215 7310 7370 9765
0430-0500	BBC, London, England*	7210 9750 11945			12050 13665 15240 15425
0430-0500	Radio Tirana, Albania	9480 11835			15455 17665
0430-0500 S,M	Trans World Radio, Bonaire	9535 11930	0500-0600	Radio New Zealand, Wellington	15150 17705
0430-0500	Trans World Radio, Swaziland	3205 7205	0500-0600	Radio Thailand, Bangkok	9655 11905
0432-0500 A,M	FEBA, Seychelles	15325 17820 (Irr)	0500-0600 S,M	Radio Zambia, Lusaka	11880
			0500-0600	SBC Radio One, Singapore	5010 5052 11940
			0500-0600	Spanish Foreign Radio, Madrid	9630 15110
			0500-0600 A,S	Superpower KUSW, Utah	6175
			0500-0600 S	Swaziland Commercial Radio	6155 9705
			0500-0600	Voice of America, Washington	5995 6035 7170 7200
					7280 9540 9575 15205
			0500-0600	Voice of Kenya, Nairobi	6045
			0500-0600 IRR	Voice of Nicaragua, Managua	6100
			0500-0600	Voice of Nigeria, Lagos	7255 15120 15185
			0500-0600	WCSN, Boston, Massachusetts	9870
			0500-0600	WINB, Red Lion, Pennsylvania	15145

0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0510	Radio Lesotho, Maseru	4800
0500-0510 M-A	Radio Zambia, Lusaka	3345 6165
0500-0515	GBC, Accra, Ghana	4915
0500-0515	Vatican Radio, Vatican City	9645 15190
0500-0530 M	Radio Norway Int'l, Oslo	11745 15175
0500-0530 S,M	Trans World Radio, Bonaire	9535 11930



frequency

section

0500-0600	WHRI, Noblesville, Indiana	7520	9495
0500-0600	M-A WMLK, Bethel, Pennsylvania	9455	
0500-0600	WRNO, New Orleans, Louisiana	6185	
0500-0600	WSHB, Cyprus Creek, S. Carolina	9455	
0500-0600	WYFR Satellite Net, California	5950	11580 13695
0510-0520	Radio Botswana, Gaborone	3356	4820 7255
0515-0600	Radio Berlin Int'l, East Germany	15240	17775
0527-0600	F FEBA, Seychelles	17820	
0530-0545	BBC, London, England*	3990	6050 6140 7210
		9750	
0530-0555	Radio Austria Int'l, Vienna	6015	
0530-0555	Radio Bucharest, Romania	9640	11840 11940 15340
		15380	17720
0530-0600	Radio Tirana, Albania	7300	
0530-0600	Trans World Radio, Swaziland	5055	7210
0530-0600	UAE Radio, United Arab Emirates	15435	17775 21700
0545-0600	Radio Berlin Int'l, East Germany	15240	17800 21540 21645
0555-0600	Ghana Broadcasting Corp., Accra	4915	
0555-0600	Voice of Malaysia, Kuala Lumpur	6175	9750 15295

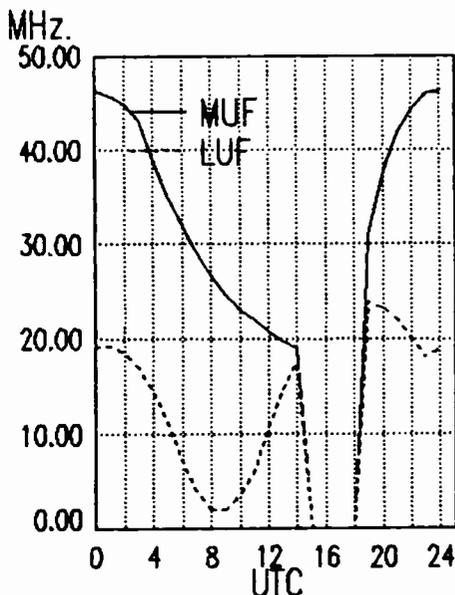
0600-0700	CFCN, Calgary, Alberta	6030	
0600-0700	CHNS, Halifax, Nova Scotia	6130	
0600-0700	CKWX, Vancouver, British Columbia	6080	
0600-0700	CFRB, Toronto, Ontario	6070	
0600-0700	HCJB, Quito, Ecuador	6230	9720 11775
0600-0700	(US) Far East Network, Tokyo	3910	
0600-0700	King of Hope, South Lebanon	6215	
0600-0700	KYOI, Saipan	17780	
0600-0700	Radio Havana Cuba	11835	
0600-0700	Radio Jordan, Amman	9560	
0600-0700	Radio Korea, Seoul, South Korea	6060	7275 9570
0600-0700	Radio Kuwait	15345	
0600-0700	Radio Moscow, USSR	11860	12010 12050 13665
0600-0700	Radio New Zealand, Wellington	15150	17705
0600-0700	A,S Radio Thailand, Bangkok	9655	11905
0600-0700	Radio Zambia, Lusaka	11880	
0600-0700	Radio 5, South Africa	11880	
0600-0700	SBC Radio One, Singapore	5010	5052 11940
0600-0700	S Superpower KUSW, Utah	6175	
0600-0700	Voice of America, Washington	5995	6035 6040 6080
		6125	7170 7200 7280
		7325	9530 9550 11805
		11915	11925

0600 UTC [2:00 AM EDT/11:00 PM PDT]

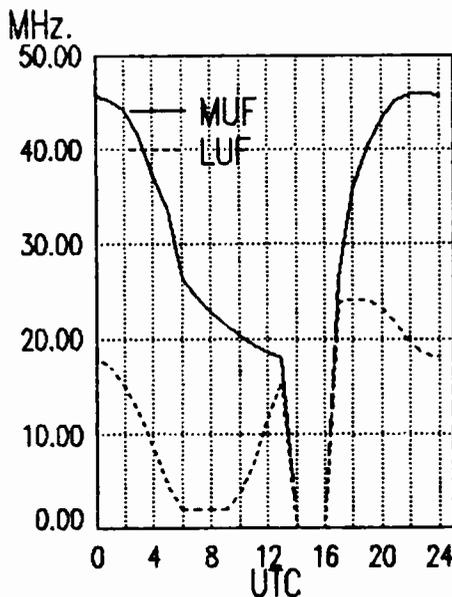
0600-0615	Radio Ghana, Accra	3366	4915
0600-0615	M-A Radio Zambia, Lusaka	6165	7235
0600-0620	Vatican Radio, Vatican City	6185	9645
0600-0630	F FEBA, Mahe, Seychelles	17820	
0600-0630	Laotian National Radio	7113	
0600-0630	Radio Australia, Melbourne	11910	15160 15240 15395
		17715	17750 21740
0600-0630	Radio Berlin Int'l, East Germany	15240	17880 21540 21645
0600-0630	Radio Tirana, Albania	7300	
0600-0630	Trans World Radio, Swaziland	6070	
0600-0630	Voice of Kenya, Nairobi	6045	
0600-0645	Radio Berlin Int'l, East Germany	5965	11810
0600-0645	S Radio Cameroon, Yaounde	4850	
0600-0650	Deutsche Welle, West Germany	11765	13790 15185 17875
0600-0650	Radio Pyongyang, North Korea	13650	15160 15180
0600-0700	BBC, London, England	5975	6005 6195 7105
		7150	7185 9410 9580
		9600	9640 11825 12095
		15070	15280
0600-0700	CBC Northern Quebec Service	6195	9625
0600-0700	CBU, Vancouver, British Columbia	6160	
0600-0700	CFCF, Montreal, Quebec	6005	

0600-0700	Voice of Asia, Taiwan	7285	
0600-0700	Voice of Free China, Taiwan	5985	
0600-0700	Voice of Malaysia, Kuala Lumpur	6175	9750 15295
0600-0700	Voice of Nicaragua, Managua	6100	
0600-0700	Voice of the Mediterranean	9765	
0600-0700	Voice of Nigeria, Lagos	15185	
0600-0700	WCSN, Boston, Massachusetts	9840	
0600-0700	WHRI, Noblesville, Indiana	6100	9495
0600-0700	M-A WMLK, Bethel, Pennsylvania	9455	
0600-0700	WSHB, Cyprus Creek, S. Carolina	9455	
0600-0700	WYFR, Oakland, California	11580	
0600-0700	WYFR Satellite Net, California	5950	6065 7355 9680
		9852.5	
0615-0630	M-F Radio Canada Int'l, Montreal	6055	6140 7155 9740
		9760	11840 15325
0615-0630	M-A Vatican Radio, Vatican City	15190	17730
0625-0700	Trans World Radio Monte Carlo	7105	
0630-0700	AWR, Forli, Italy	7125	
0630-0700	A CPBS-1, China*	11330	15550 15590 17605
0630-0700	Radio Australia, Melbourne	11945	15160 15240 15315
		15395	15425 17715 17750
		17795	

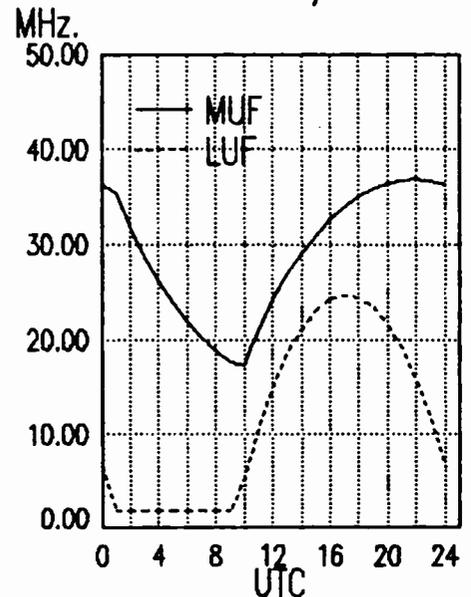
East Coast To
Australia



East Coast To
Pacific



East Coast To
Central America/Caribbean



frequency

section

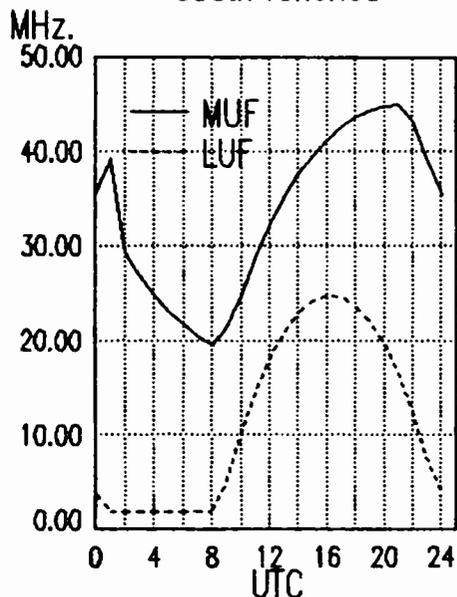
0630-0700	Radio Bucharest, Romania	21600			
0630-0700	Radio Finland, Helsinki	6120	9560	11755	15270
0630-0700	Radio Polonia, Warsaw, Poland	6135	7270	15120	
0630-0700	Radio Tirana, Albania	7205	9500		
0630-0700	Swiss Radio Int'l, Berne	3985	6165	9535	12030
		15430	17570		
0630-0700	Trans World Radio, Swaziland	5055	6070	7210	9725
0630-0700 A.S	Voice of Kenya, Nairobi	7270			
0645-0700	BBC, London, England*	6150	7260	11945	
0645-0700 M-F	Radio Canada Int'l, Montreal	6050	6140	7155	9740
		9760	11840	15325	
0645-0700	Radio Ghana, Accra	6130			
		11705	11800		
0645-0700	Radio Bucharest, Romania	11940	15250	15335	17790
		17805	21665		

0700-0800	(US) Far East Network, Tokyo	3910			
0700-0800	HCJB, Quito, Ecuador	6130	9610	9745	11835
		11925			
0700-0800	King of Hope, South Lebanon	6215			
0700-0800	KVOH, Rancho Simi, California	11960			
0700-0800	KYOI, Saipan	17780			
0700-0800	Radio Ghana, Accra	6130			
0700-0800	Radio Havana Cuba	11835			
0700-0800	Radio Japan, Tokyo	5990	15195	15270	15325
		17765	17810	21695	
0700-0800	Radio Jordan, Amman	11955			
0700-0800	Radio Korea, Seoul, South Korea	6060	7275	9570	
0700-0800	Radio Kuwait	15345			
0700-0800	Radio Moscow, USSR	7310	9580	9765	12050
		15460	15475	17810	
		9655	11905		
0700-0800 A.S	Radio Thailand, Bangkok	11940			
0700-0800	SBC-1, Singapore	9545			
0700-0800	Soloman Islands Broadcasting Corp	6135			
0700-0800 S	Superpower KUSW, Utah	7105			
0700-0800	Trans World Radio, Monte Carlo	6070	9725		
0700-0800	Trans World Radio, Swaziland	7270			
0700-0800 A.S	Voice of Kenya, Nairobi	6175	9750	15295	
0700-0800	Voice of Malaysia, Kuala Lumpur	15120	15185		
0700-0800	Voice of Nigeria, Lagos	9840			
0700-0800	WCSN, Boston, Massachusetts	6100	9495		
0700-0800	WHRI, Noblesville, Indiana	9455			
0700-0800 M-A	WMLK, Bethel, Pennsylvania	9455			
0700-0800	WSHB, Cyprus Creek, S. Carolina	6065	7355	9680	
0700-0800	WYFR, Oakland, California	9852.5			
0700-0800	WYFR Satellite Network	13670	15575		
0715-0730	Radio Korea, Seoul, South Korea	11725	15190		
0715-0730 M-A	Vatican Radio, Vatican City	15115	17785		
0715-0735 S	FEBA, Mahe, Seychelles	6040	7185	9730	21465
0715-0800 A.S	Radio Berlin Int'l, East Germany	21540			
		6248	9645	11740	
0720-0730 M-A	Vatican Radio, Vatican City	2310	[ML]		
0730-0800	ABC, Alice Springs, Australia	2485			
0730-0800	ABC, Katherine, Australia	2325	[ML]		
0730-0800	ABC, Tennant Creek, Australia	5955	9655	11720	15240
0730-0800	Radio Australia, Melbourne	11685	17840	21705	
0730-0800	Radio Prague, Czechoslovakia	5990	6010	6020	7110
0730-0735	All India Radio, New Delhi	7205	9610	9675	11850
		11935	15235	15250	17705
0730-0745	BBC, London, England*	3975	6010	7230	9915

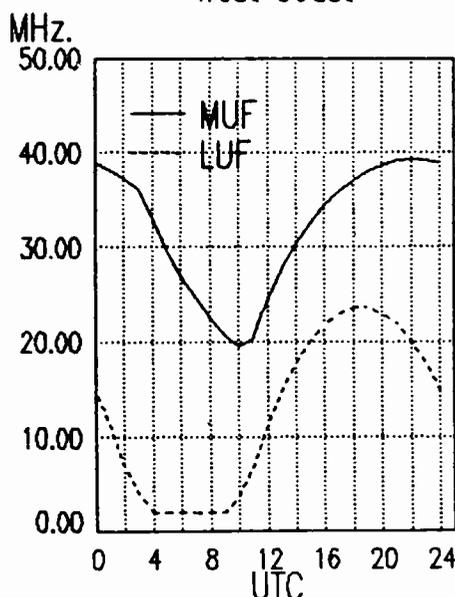
0700 UTC [3:00 AM EDT/12:00 PM PDT]

0700-0703	Port Moresby, Papua New Guinea	3925	4890	5960	5985
		6020	6040	6080	6140
		9520			
0700-0710	Radio Bucharest, Romania	11825	11940	15250	15335
		17790	17805	21665	
0700-0710	Radio Sierra Leone, Freetown	5980			
0700-0715	Radio Ghana (HS), Accra	3366	4915		
0700-0730	BBC, London, England	3955	5975	6195	7120
		7150	9410	9600	9640
		11860	12095	15070	15280
		15400	17815		
0700-0730	Burma Bcating Service, Rangoon	9730			
0700-0730	Radio Australia, Melbourne	9655	11720	15160	15240
		15395	17715	17750	
0700-0730	Radio Bucharest, Romania	21600			
0700-0730	Radio New Zealand, Wellington	12045	15150		
0700-0730 S	Radio Zambia, Lusaka	11880			
0700-0750	Radio Pyongyang, North Korea	15340	17795		
0700-0800	ABC, Perth, Australia	15425			
0700-0800	CBU, Vancouver, British Columbia	6160			
0700-0800	CFCF, Montreal, Quebec	6005			
0700-0800	CFCN, Calgary, Alberta	6030			
0700-0800	CHNS, Halifax, Nova Scotia	6130			
0700-0800	CKWX, Vancouver, British Columbia	6080			
0700-0800	CFRB, Toronto, Ontario	6070			
0700-0800	ELWA, Monrovia, Liberia	11830			

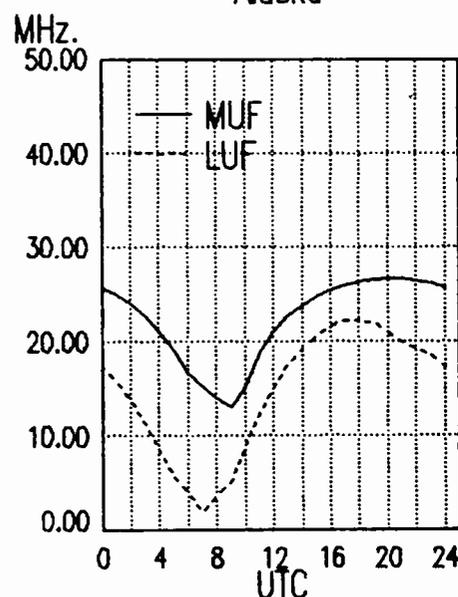
East Coast To South America



East Coast To West Coast



East Coast To Alaska



frequency

section

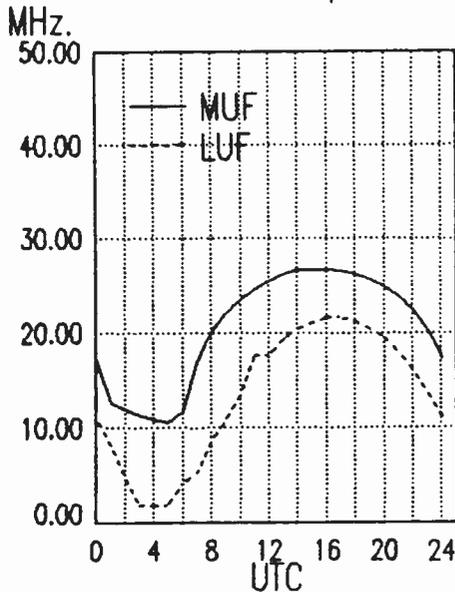
0730-0755	Radio Austria Int'l, Vienna	6155	13730	15410	21490
0730-0755	Radio Finland, Helsinki	6120	9560	11755	
0730-0800	AWR, Forli, Italy	7125			
0730-0800	BBC, London, England	3955	5975	7150	9410
		9600	9640	11860	12095
		15070	15280	15400	
0730-0800	Radio Netherland, Hilversum	9630	9715		
0730-0800	Radio Prague, Czechoslovakia	11685	17840	21705	
0730-0800	Swiss Radio Int'l, Berne	3985	6165	9535	
0740-0750	W Radio Free Europe, Munich*	5985	7115	9695	9725
		11895	15355		

0800 UTC [4:00 AM EDT/1:00 AM PDT]

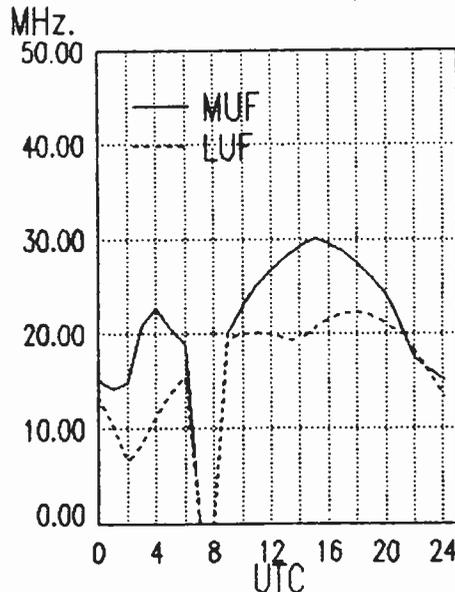
0800-0805	M-F Port Moresby, Papua New Guinea	3925	4890	5960	5985
		6020	6040	6080	6140
		9520			
0800-0805	Soloman Islands Broadcasting Corp	9545			
0800-0815	M-A Radio Zambia, Lusaka	6165	7235		
0800-0825	M-A Radio Finland, Helsinki	17795	21550		
0800-0825	Radio Netherland, Hilversum	9630	9715		
0800-0825	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830	HCJB, Quito, Ecuador	6130	6205	9745	
0800-0830	S Radio Austria Int'l, Vienna	6155	13730	15410	15450
0800-0830	Radio Bangladesh, Dhaka	12030	15525		
0800-0830	Radio Tirana, Albania	9500	11835		
0800-0830	Voice of Nigeria, Lagos	7255	15185		
0800-0830	Voice of Islam, Pakistan	15525	17870		
0800-0835	S FEBA, Mahe, Seychelles	15325	17785		
0800-0835	Trans World Radio, Swaziland	6070	9725		
0800-0840	Trans World Radio, Monte Carlo	7105			
0800-0850	Deutsche Welle, Koin, W. Germany	9770			
0800-0850	Radio Pyongyang, North Korea	9530	11830	15160	15180
0800-0900	ABC, Alice Springs, Australia	2310	[ML]		
0800-0900	ABC, Katherine, Australia	2485			
0800-0900	ABC, Perth, Australia	15425			
0800-0900	ABC, Tennant Creek, Australia	2325	[ML]		
0800-0900	AFAN, Antarctica	6010.5			
0800-0900	BBC, London, England	5975	9410	11860	
		12095			
		15070	15400	17815	15240
0800-0900	CBN, St. John's, Newfoundland	6160			
0800-0900	CBU, Vancouver, British Columbia	6160			

0800-0900	CFCF, Montreal, Quebec	6005			
0800-0900	CFCN, Calgary, Alberta	6030			
0800-0900	CHNS, Halifax, Nova Scotia	6130			
0800-0900	CKWX, Vancouver, British Columbia	6080			
0800-0900	CFRB, Toronto, Ontario	6070			
0800-0900	(US) Far East Network, Tokyo	3910			
0800-0900	King of Hope, South Lebanon	6215			
0800-0900	KNLS, Anhor Point, Alaska	6065			
0800-0900	KYOI, Saipan	11900			
0800-0900	Radio Australia, Melbourne	5995	9580	9655	9710
		11720	11770	17715	17750
0800-0900	Radio Jordan, Amman	11955			
0800-0900	Radio Moscow, USSR	7310	9760	11705	11745
		11900	12010	15135	15155
		15475	15230	15460	15520
		15540			
0800-0900	Radio for Peace, Costa Rica	12030			
0800-0900	SBC Radio One, Singapore	5010	5052	11940	
0800-0900	S Superpower KUSW, Utah	6135			
0800-0900	S Voice of Indonesia, Jakarta	11790	15105		
0800-0900	A,S Voice of Kenya, Nairobi	7270			
0800-0900	WHRI, Noblesville, Indiana	7355	9495		
0800-0900	WSHB, Cypress Creek, SC	17855			
0800-0900	WYFR, Oakland, California	9680	11580		
0800-0900	WYFR Satellite Network	6065			
0805-0900	KTWR, Guam	11805			
0815-0845	M-F Voice of America, Washington DC	7175	9575	9750	11710
		11915	15600	17715	21500
		[ML]			
0830-0840	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7160	7250
		7280	7295	9610	11850
		15235	15250	17705	
0830-0855	Radio Austria Int'l, Vienna	6155	13730	15410	15450
0830-0900	S Bhutan Bcasing Service, Thimpu	6035			
0830-0900	FEBC, Manila, Philippines	11850	15350		
0830-0900	HCJB, Quito, Ecuador	6130	9745		
0830-0900	Radio Beijing, China	9700	11755	15440	
0830-0855	Radio Finland, Helsinki	11855	15245		
0830-0900	Radio Netherlands, Hilversum	17575	21485		
0830-0900	Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900	Swiss Radio Int'l, Berne	9560	9885	13685	17830
		21695			
0830-0900	Voice of Nigeria, Lagos	7255	15120		

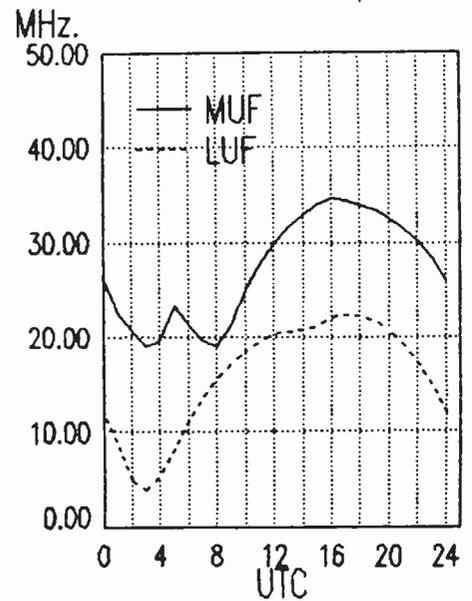
East Coast To
Arctic Europe



Midwest To
Eastern Europe



Midwest To
Western Europe



frequency

section

0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0840-0900	S-F	Trans World Radio, Monte Carlo	7105			
0845-0900		Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705

0900-1000		HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000		King of Hope, South Lebanon	6215			
0900-1000		KNLS, Anchor Point, Alaska	6065			
0900-1000		KTWR, Agana, Guam	11805			
0900-1000		KYOI, Saipan	11900			
0900-1000		Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000		Radio Australia, Melbourne	5995	6080	9580	9655
			9760	11720	11770	15415
			11840	11885	15270	17810
			17890			

0900-1000		Radio Japan, Tokyo				
0900-1000		Radio Korea, Seoul, South Korea	7550	13670		
0900-1000		Radio Moscow, USSR	9735	11705	11900	12010
			15475			

0900-1000		Radio for Peace, Costa Rica	13660			
0900-1000	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000		Radio Tanzania, Dar es Salaam	7165			
0900-1000		SBC Radio One, Singapore	5010	5052	11940	
0900-1000	S	Superpower KUSW, Utah	6135			
0900-1000		Voice of America, Washington	5985	6030	6130	11720
0900-1000		Voice of Kenya, Nairobi	7270			
0900-1000		Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000		WHRI, Noblesville, Indiana	7355	9495		
0900-1000		WSHB, Cypress Creek, S.C.	17855			
0900-1000		WYFR, Oakland, California	5950	11580		

0915-0930		Radio Korea, Seoul, South Korea	9570			
0915-0950	M-A	Radio Ulan Bator, Mongolia	9615	12015		
0930-0935		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
			9725	11955		

0930-0945		BBC, London, England*	9725	11955		
0930-1000		CBN, St. John's, Newfoundland	6160			
0930-1000		Radio Beijing, China	9700	11755	15440	
0930-1000		Radio Sweden Int'l, Stockholm	15390			
0945-1000		BBC, London, England*	5995	7180	9725	11955
0945-1000	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	

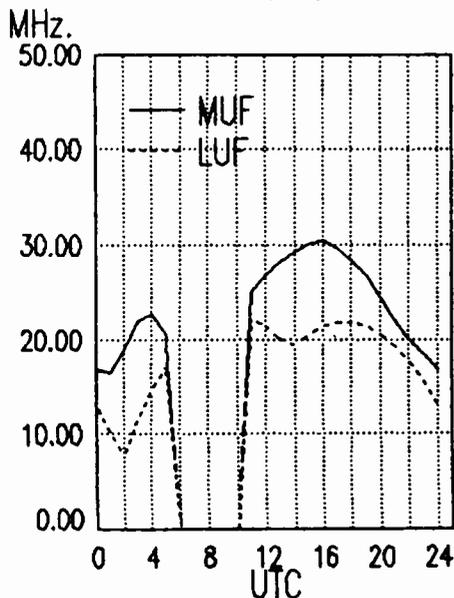
0900 UTC [5:00 AM EDT/2:00 AM PDT]

0900-0910		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0900-0910		Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0900-0910	S	Trans World Radio, Monte Carlo	7105			
0900-0910		Voice of Lebanon, Beirut	6548			
0900-0925		BRT, Brussels, Belgium	5915	17595	21810	26050
0900-0925		Radio Netherlands, Hilversum	17575	21485		
0900-0930		FEBC, Manila, Philippines	11850	15350		
0900-0930		Nippon Broadcasting Corp.	3925			
0900-0930		Radio Beijing, China	9700	11755		
0900-0930	A,S	Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0945	A,S	Radio Berlin Int'l, East Germany	21465	21540		
0900-0950		Deutsche Welle, West Germany	6160	9650	11785	11945
			17780	17875	21650	
0900-1000		ABC, Alice Springs, Australia	2310	[ML]		
0900-1000		ABC, Katherine, Australia	2485			
0900-1000		ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S	Adventist World Radio, Portugal	9670			
0900-1000		BBC, London, England	5975	7325	9410	9750
			9760	11750	11845	11860
			11955	12095	15070	15175
			15360	15400	17815	
0900-1000		CFCF, Montreal, Quebec	6005			
0900-1000		CFCN, Calgary, Alberta	6030			
0900-1000		CHNS, Halifax, Nova Scotia	6130			
0900-1000		CKWX, Vancouver, British Columbia	6080			
0900-1000		CFRB, Toronto, Ontario	6070			
0900-1000		(US) Far East Network, Tokyo	3910			

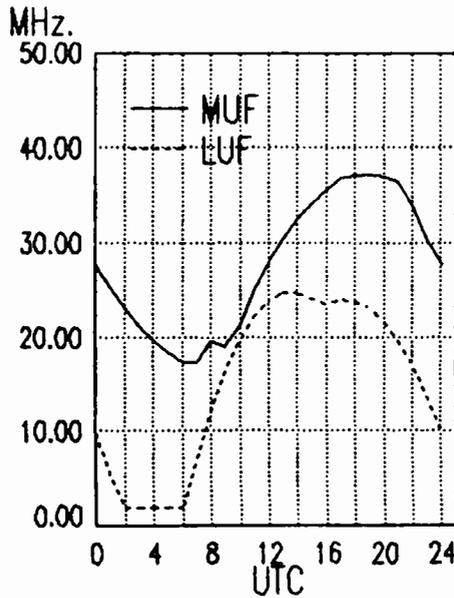
1000 UTC [6:00 AM EDT/3:00 AM PDT]

1000-1030		HCJB, Quito, Ecuador	6130	9745	11925	
1000-1030		Radio Afghanistan, Kabul	4450	6085	15435	17720
1000-1030		Radio Beijing, China	9700	11755	15440	
1000-1030	S	Radio Norway Int'l, Oslo	11850	15235	21705	25730

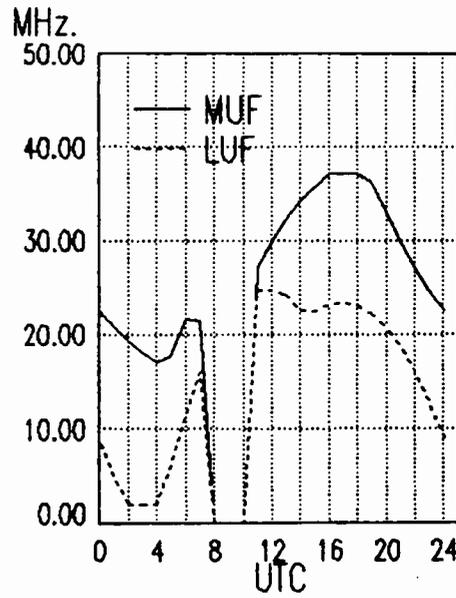
Midwest To Middle East



Midwest To West Africa



Midwest To Central Africa



MONITORING TIMES

May 1989

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frequency

section

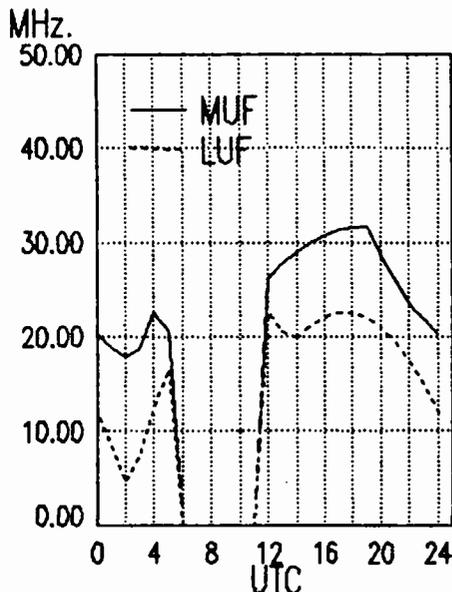
1000-1030	Radio Tanzania, Dar es Salaam	7165			
1000-1030	Swiss Radio Int'l, Berne	9560	9885	13685	17830
		21695			
1000-1030	Voice of Ethiopia, Addis Ababa	9560			
1000-1030	Voice of Vietnam, Hanoi	12010	15010		
1000-1055	A Trans World Radio, Monte Carlo	7105			
1000-1100	ABC, Alice Springs, Australia	2310	[ML]		
1000-1100	ABC, Katherine, Australia	2485			
1000-1100	ABC, Perth, Australia	9610			
1000-1100	ABC, Tennant Creek, Australia	2325	[ML]		
1000-1100	All India Radio, New Delhi	11860	11915	15130	15335
		17387	11785		
1000-1100	BBC, London, England	9410	9740	11750	11845
		12095	15070	15175	15360
		17705	17790	17830	18080
		21710	21470	25750	
1000-1100	CBN, St. John's, Newfoundland	6160			
1000-1100	CFCF, Montreal, Quebec	6005			
1000-1100	CFCN, Calgary, Alberta	6030			
1000-1100	CHNS, Halifax, Nova Scotia	6130			
1000-1100	CKWX, Vancouver, British Columbia	6080			
1000-1100	CFRB, Toronto, Ontario	6070			
1000-1100	(US) Far East Network, Tokyo	3910			
1000-1100	KSDA, Guam	9465			
1000-1100	KTWR, Agana, Guam	11805			
1000-1100	KYOI, Saipan	11900			
1000-1100	Radio Afghanistan, Kabul	15435	17720		
1000-1100	Radio Australia, Melbourne	5955	7205	9580	9600
		9655	9770	15415	
1000-1100	Radio Moscow, USSR	9705	9780	9875	11705
		11900	15140	15420	15475
		15595			
1000-1100	Radio New Zealand, Wellington	9850	11780		
1000-1100	S Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
1000-1100	SBC Radio One, Singapore	5010	5052	11940	
1000-1100	S Superpower KUSW, Utah	6135			
1000-1100	Voice of America, Washington	6030	5985	6165	9590
		11720	15425		
1000-1100	Voice of Kenya, Nairobi	7270			
1000-1100	Voice of Nigeria, Lagos	7255	15120		
1000-1100	WHRI, Noblesville, Indiana	7355			
1000-1100	WSHB, Cyprus Creek, S. Carolina	9495			
1000-1100	WYFR, Oakland, California	5950			
1005-1010	Radio Pakistan, Islamabad	15606	17660		
1030-1040	Voice of Asia, Taiwan	5980			

1030-1045	A Radio Budapest, Hungary	7220	9585	9835	11910
		15160	15220		
1030-1055	Radio Austria Int'l, Vienna	15450	21490		
1030-1100	BBC, London, England*	7180	9660	9725	
1030-1100	HCJB, Quito, Ecuador	6130	11925		
1030-1100	Radio Netherlands, Hilversum	6020	9675		
1030-1100	A,S Radio Tanzania, Dar es Salaam	7165			
1030-1100	SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]
1030-1100	UAE Radio, United Arab Emirates	15435	17865	21605	
1030-1100	Voice of America, Washington*	11965			
1040-1050	H Radio Free Europe, Munich*	7115	9695	9725	
		11895	15355		
1040-1050	M-A Voice of Greece, Athens	11645	15630		
1045-1100	S Radio Budapest, Hungary	7220	9585	9835	11910
		15160	15220		
1045-1100	M-A Radio Prague, Czechoslovakia	6055	7345	9505	
1055-1100	S Trans World Radio, Monte Carlo	7105			

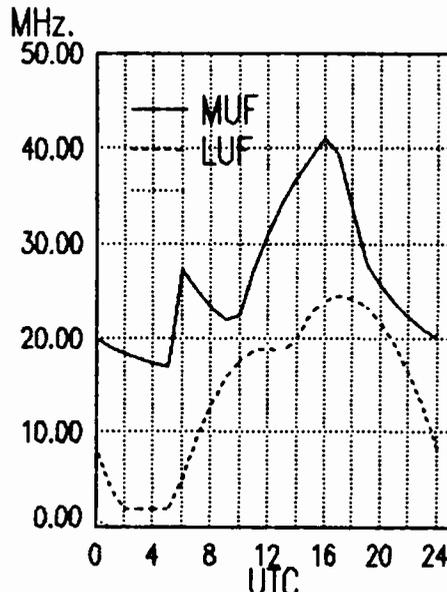
1100 UTC [7:00 AM EDT/4:00 AM PDT]

1100-1105	Radio Pakistan, Islamabad	6090	7290		
1100-1105	A Port Moresby, Papua New Guinea	3295	4890	5960	5985
		6020	6040	6080	6140
		9520			
1100-1110	S Port Moresby, Papua New Guinea	3295	4890	5960	5985
		6020	6040	6080	6140
		9520			
1100-1115	Radio New Zealand, Wellington	9850	11780		
1100-1120	Radio Pakistan, Islamabad	15606	17660		
1100-1125	Radio Netherland, Hilversum	6020	9675		
1100-1130	BBC, London, England*	7120			
1100-1130	HCJB, Quito, Ecuador	6130	11925		
1100-1130	Kol Israel, Jerusalem	11585	15650	17575	21760
1100-1130	KTWR, Guam*	9820	11665		
1100-1130	S Radio Austria Int'l, Vienna	13730	15450		
1100-1130	Radio Finland, Helsinki	11945	15400		
1100-1130	Radio Mozambique, Maputo	9525	11818	11835	
1100-1130	SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]
1100-1130	Swiss Radio Int'l, Berne	11935	13635	15570	17830
1100-1130	Voice of Vietnam, Hanoi	12010	15010		
1100-1150	Deutsche Welle, West Germany	15410	17765	17800	21600
1100-1150	Radio Pyongyang, North Korea	9600	9977	11735	
1100-1155	Radio Beijing, China	9665			
1100-1200	ABC, Alice Springs, Australia	2310	[ML]		

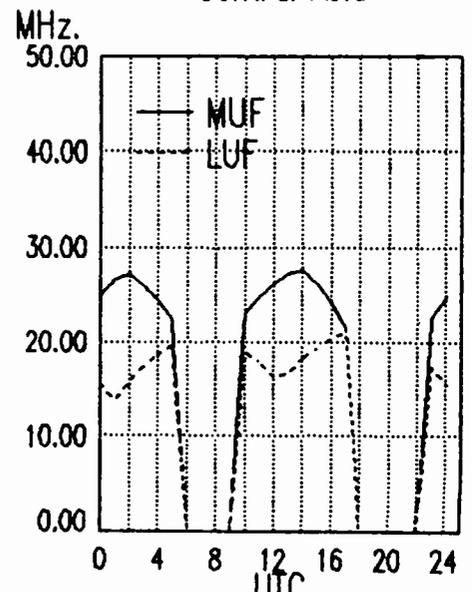
Midwest To East Africa



Midwest To South Africa



Midwest To Central Asia



frequency

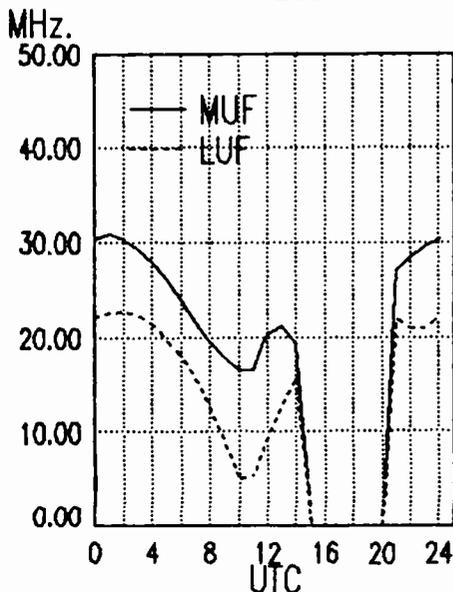
section

1200-1300	CFCF, Montreal, Quebec	6005			
1200-1300	CFCN, Calgary, Alberta	6030			
1200-1300	CHNS, Halifax, Nova Scotia	6130			
1200-1300	CKWX, Vancouver, British Columbia	6080			
1200-1300	CFRB, Toronto, Ontario	6070			
1200-1300	(US) Far East Network, Tokyo	3910			
1200-1300	HCJB, Quito, Ecuador	11740	15115	17890	
1200-1300	KYOI, Salpan	11900			
1200-1300	Radio Australia, Melbourne	5995	6060	7205	7215
		9580	9770	11800	
1200-1300	Radio Moscow, USSR	9600	15475	15490	15540
		15595	15560	17645	17700
		17810	21800		
1200-1300 A,S	Radio Tanzania, Dar es Salaam	7165			
1200-1300	SBC Radio One, Singapore	5010	5052	11940	
1200-1300 S	Superpower KUSW, Utah	6130			
1200-1300	Trans World Radio, Bonaire	11815	15345		
1200-1300	Trans World Radio, Sri Lanka	11920			
1200-1300	Voice of America, Washington	6110	9760	15160	15425
1200-1300	Voice of Kenya, Nairobi	7270			
1200-1300	Voice of Nigeria, Lagos	7255	15120		
1200-1300	WCSN, Boston, Massachusetts	9495			
1200-1300	WHRI, Noblesville, Indiana	7520	11790		
1200-1300	WSHB, Cyprus Creek, S. Carolina	13760			
1200-1300	WYFR, Oakland, California	5950	7355	9680	
1215-1245	Radio Korea, Seoul, South Korea	7275	11740		
1215-1300	Radio Berlin Int'l, East Germany	15240			
1215-1300	Radio Cairo, Egypt	17595			
1230-1235	All India Radio, New Delhi	3905	4800	4920	7280
		9565	9615	11735	15120
1230-1255 M-A	BRT, Brussels, Belgium	17555	21815		
1230-1300	BBC, London, England*	6125	7255	6195	9635
		9660	11780	12040	15270
		15390	15435	17695	
1230-1300	Radio Bangladesh, Dhaka	15195	17710		
1230-1300	Radio Sweden, Stockholm	9565	17815	21570	
1240-1250 M	Radio Free Europe, Munich*	5985	7115	9695	9725
		11895	15355		
1245-1300	Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1245-1300	Radio France Int'l, Paris	9805	11670	15365	15155
		17720	21645		
1235-1245	Voice of Greece, Athens	11645	15630	17565	

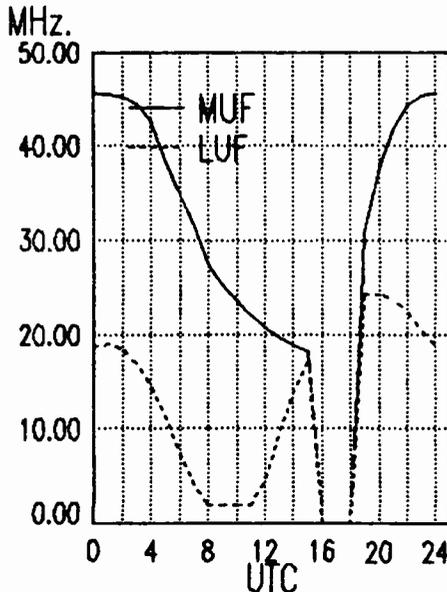
1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1305	Port Moresby, Papua New Guinea	3295	4890	5960	5980
		6020	6040	6080	6140
		9520			
1300-1310	Radio France Int'l, Paris	11670	15155	15365	17720
		21645			
1300-1325	Radio Bucharest, Romania	9690	11940	15405	17720
1300-1330	BBC, London, England	5995	6195	7180	9515
		9740	11750	11775	12095
		15070	15310	15420	17790
		17885	18080	21470	21710
		25750			
1300-1330	Radio Cairo, Egypt	17595			
1300-1330	Radio Ghana, Accra	4915	7295		
1300-1330	Radio Moscow, USSR	11840			
		11900	15225	15420	15475
1300-1330 S	Radio Norway Int'l, Oslo	6035	9590	15310	21705
1300-1330	Trans World Radio, Sri Lanka	11920			
1300-1330	Voice of Kenya, Nairobi	7270			
1300-1332 A,S	Trans World Radio, Bonaire	11815	15345		
1300-1350	Radio Pyongyang, North Korea	9325	9345	9555	9600
		11335	11735		
1300-1355	Radio Beijing, China	11600	11660	11755	15280
		15455			
1300-1400	ABC, Alice Springs, Australia	2310	[ML]		
1300-1400	ABC, Katherine, Australia	2485			
1300-1400	ABC, Tennant Creek, Australia	2325	[ML]		
1300-1400	CBC Northern Quebec Service	9625	11720		
1300-1400	CBN, St. John's, Newfoundland	6160			
1300-1400	CBU, Vancouver, British Columbia	6160			
1300-1400	CFCF, Montreal, Quebec	6005			
1300-1400	CFCN, Calgary, Alberta	6030			
1300-1400	CHNS, Halifax, Nova Scotia	6130			
1300-1400	CKWX, Vancouver, British Columbia	6080			
1300-1400	CFRB, Toronto, Ontario	6070			
1300-1400 S	ELWA, Monrovia, Liberia	11830			
1300-1400	(US) Far East Network, Tokyo	3910			
1300-1400	FEBC, Manila, Philippines	11850			
1300-1400	HCJB, Quito, Ecuador	11740	15115	17890	
1300-1400	KNLS, Anchor Point, Alaska	7355			
1300-1400	KYOI, Salpan	11900			
1300-1400	Radio Australia, Melbourne	5995	6060	6080	7205
		9580			

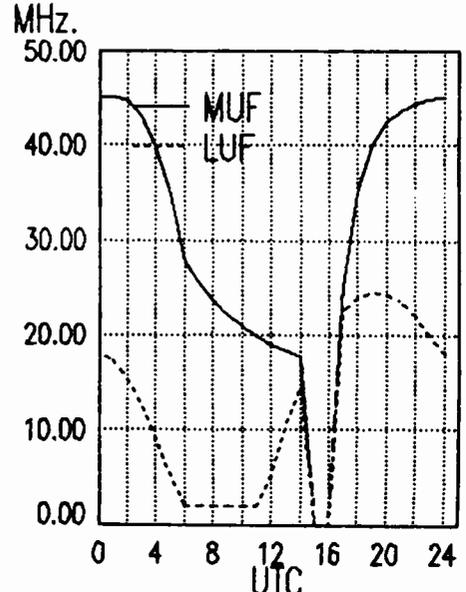
Midwest To Far East



Midwest To Australia



Midwest To Pacific



frequency

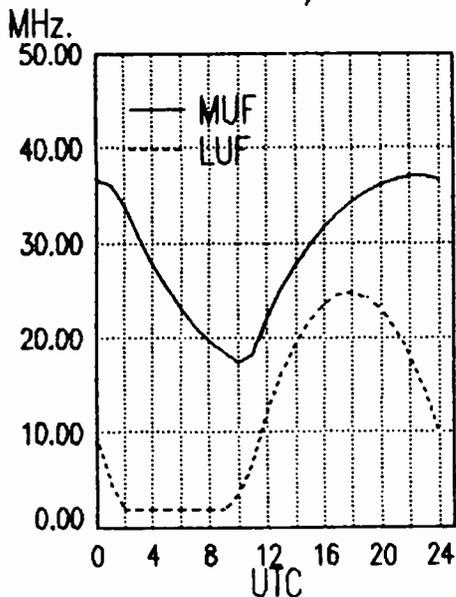
section

1300-1400	M-F	Radio Canada Int'l, Montreal	9625	11720	11955	17820	1400-1430	Radio Polonia, Warsaw, Poland	6095	7285
1300-1400		Radio Jordan, Amman	9560				1400-1430	Radio Sweden, Stockholm	15345	17815
1300-1400		Radio Korea (South), Seoul	9750	15575			1400-1430	Radio Tirana, Albania	9500	11985
1300-1400		Radio RSA, South Africa	17755	21590			1400-1430	Voice of Ethiopia, Addis Ababa	9550	11710
1300-1400	A,S	Radio Tanzania, Dar es Salaam	7165				1400-1450	T Radio Free Europe, Munich*	5985	7115
1300-1400		SBC Radio One, Singapore	5010	5052	11940				7695	9725
1300-1400	S	Superpower KUSW, Utah	6130				1400-1450	Radio Pyongyang, North Korea	6576	11735
1300-1400		Voice of America, Washington	6110	9760	11715	15160	1400-1455	Radio Beijing, China	7405	11600
			15425				1400-1500	ABC, Katherine, Australia	2485	15165
1300-1400		Voice of Malaysia	7295				1400-1500	ABC, Perth, Australia	9610	
1300-1400		Voice of Nigeria, Lagos	7255	15120			1400-1500	Adventist World Radio, Italy	7275	
1300-1400		WCSN, Boston, Massachusetts	5980				1400-1500	All India Radio, New Delhi	9545	11810
1300-1400		WHRI, Noblesville, Indiana	9455	11790			1400-1500	BBC, London, England	5995	6195
1300-1400		WSHB, Cyprus Creek, S. Carolina	9495						7180	9740
1300-1400		WYFR, Oakland, California	5950	6010	9680	13695			9750	11750
			15055	15365					12095	15070
1330-1345		Radio Korea, Seoul, South Korea	7275	11740			1400-1500	CBN, St. John's, Newfoundland	6160	25750
1330-1400		BBC, London, England	5995	6195	7180	9410	1400-1500	CBC Northern Quebec Service	9625	11720
			9740	11750	15140	15310	1400-1500	M-A CBU, Vancouver, British Columbia	6160	
			17790	17885	18080	21470	1400-1500	CFCF, Montreal, Quebec	6005	
			21710	25750			1400-1500	CFCN, Calgary, Alberta	6030	
1330-1400		All India Radio, New Delhi	9545	10330	11810	15335	1400-1500	CHNS, Halifax, Nova Scotia	6130	
1330-1400		Laotian National Radio	7113				1400-1500	CKWX, Vancouver, British Columbia	6080	
1330-1400	S	Radio Finland, Helsinki	11945	15400			1400-1500	CFRB, Toronto, Ontario	6070	
1330-1400		Radio Moscow, USSR	11840	13680	13710	15420	1400-1500	S ELWA, Monrovia, Liberia	11830	
			15475	15595	15560	17645	1400-1500	(US) Far East Network, Tokyo	3910	
1330-1400		Radio Tashkent, Uzbek, USSR	5945	9540	9600	11785	1400-1500	FEBC, Manila, Philippines	9670	11850
			15455				1400-1500	HCJB, Quito, Ecuador	11740	15115
1330-1400		Swiss Radio Int'l, Berne	11695	13635	15135	15570	1400-1500	KYOI, Saipan	11900	
			17830	21695			1400-1500	Radio Australia, Melbourne	5995	6035
1330-1400		UAE Radio, United Arab Emirates	15435	17865	21605				6060	6080
1330-1400		Voice of Islamic Republic Iran	9525	9685	9770		1400-1500	S Radio Canada Int'l, Montreal	9625	11720
1330-1400		Voice of Kenya, Nairobi	6100				1400-1500	Radio Japan, Tokyo	9505	9695
1330-1400		Voice of Turkey, Ankara	17785				1400-1500	Radio Korea, Seoul	9570	9750
1330-1400		Voice of Vietnam, Hanoi	12010	15010			1400-1500	Radio Moscow, USSR	11840	15540
1332-1400	A	Trans World Radio, Bonaire	11815	15345			1400-1500	Radio RSA, South Africa	11925	21535
							1400-1500	A,S Radio Tanzania, Dar es Salaam	7165	21590
							1400-1500	SBC Radio One, Singapore	5010	5052
							1400-1500	S Superpower KUSW, Utah	9850	11940
							1400-1500	Voice of America, Washington	6110	9645
									9700	9760
									11920	15160
							1400-1500	Voice of Kenya, Nairobi	6100	15205
							1400-1500	Voice of Malaysia, Kuala Lumpur	4950	
							1400-1500	Voice of Mediterranean, Malta	11925	
							1400-1500	Voice of Nigeria, Lagos	7255	

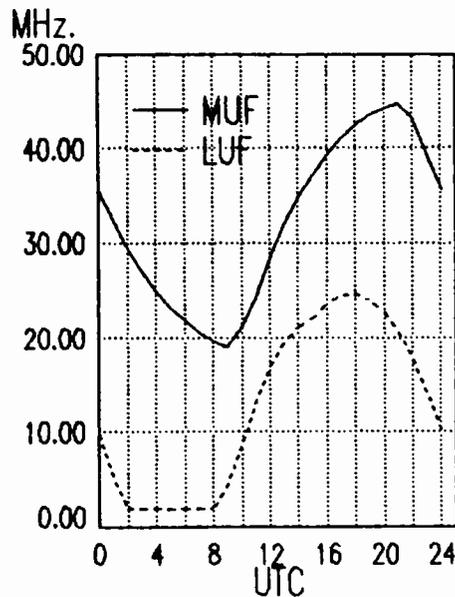
1400 UTC [10:00 AM EDT/7:00 AM PDT]

1400-1427		Voice of Nigeria, Lagos	15120
1400-1430		ABC, Alice Springs, Australia	2310 [ML]
1400-1430		ABC, Tennant Creek, Australia	2325 [ML]
1400-1430		Radio Finland, Helsinki	9560 11715 11850 15185
1400-1430	S	Radio Norway Int'l, Oslo	15190 21705 25730

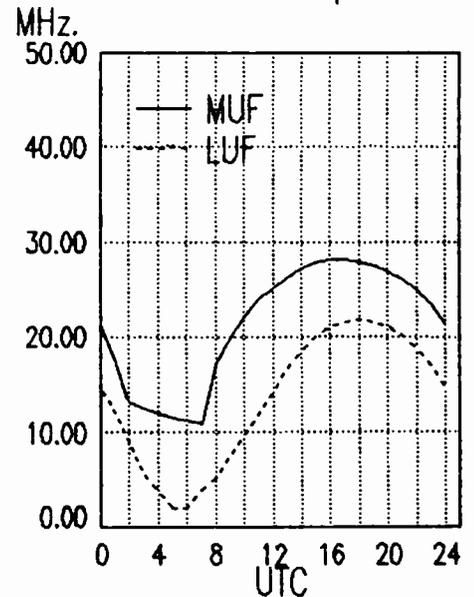
Midwest To
Central America/Caribbean



Midwest To
South America



Midwest To
Arctic Europe



MONITORING TIMES

May 1989

79

frequency

section

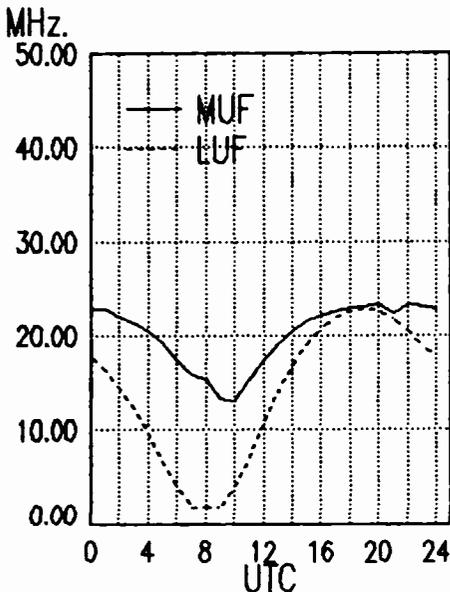
1400-1500	WCSN, Boston, Massachusetts	15580
1400-1500	WHRI, Noblesville, Indiana	9455 11790
1400-1500	WSHB, Cyprus Creek, S. Carolina	13760
1400-1500	WYFR, Oakland, California	5950 9600 11830 17612.5
1400-1500	WYFR Satellite Net, California	13695 15375
1415-1420	Radio Nepal, Kathmandu	3230 5005
1430-1500 F	ABC, Alice Springs, Australia	2310 [ML]
1430-1500 F	ABC, Tennant Creek, Australia	2325 [ML]
1430-1500	Burma Broadcasting Service	5985
1430-1500	King of Hope, Southern Lebanon	6280
1430-1500	KTWR, Agana, Guam	9780
1430-1500	Radio Australia, Melbourne	6060 9580
1430-1500	Radio Netherland, Hilversum	5955 13770 15150 17575
1430-1500	Radio Prague, Czechoslovakia	17605
		9605 11685 13715 15110
		17705 21505
1430-1500	Radio Sofia, Bulgaria	7245 9740 11735
1445-1500	Radio Berlin Int'l, East Germany	15240 17880
1445-1500 M-A	Radio Ulan Bator, Mongolia	9575 15305

1500-1600 F	ABC, Tennant Creek, Australia	2325 [ML]
1500-1600	AWR, Alajuela, Costa Rica	15460
1500-1600	Burma Broadcasting Service	5985
1500-1600	CBC Northern Quebec Service	9625 11720
1500-1600	CBN, St. John's, Newfoundland	6160
1500-1600	CBU, Vancouver, British Columbia	6160
1500-1600	CFCF, Montreal, Quebec	6005
1500-1600	CFCN, Calgary, Alberta	6030
1500-1600	CHNS, Halifax, Nova Scotia	6130
1500-1600	CKWX, Vancouver, British Columbia	6080
1500-1600	CFRB, Toronto, Ontario	6070
1500-1600 S	ELWA, Monrovia, Liberia	11830
1500-1600	(US) Far East Network, Tokyo	3910
1500-1600	FEBC, Manila, Philippines	11850
1500-1600	HCJB, Quito, Ecuador	11740 15115 17890
1500-1600	King of Hope, Southern Lebanon	6280
1500-1600	KNLS, Anchor Point, Alaska	7355
1500-1600	KTWR, Agana, Guam	11650
1500-1600	KYOI, Saipan	11900
1500-1600	Radio Australia, Melbourne	5995 6035 6060 6080
		7205 7215 9580
1500-1600 S	Radio Canada Int'l, Montreal	9625 11720 11955 17820
1500-1600	Radio Japan, Tokyo	9505 11815 15140 21700
1500-1600	Radio Jordan, Amman	9560
1500-1600	Radio Korea (South), Seoul	9870
1500-1600	Radio Moscow, USSR	5980 9795 11840 11900
		15475 15540 15560 17665
		17810 17820
1500-1600	Radio RSA, South Africa	11925 21535 21590 25790
1500-1600	SBC Radio One, Singapore	5010 5052 11940
1500-1600	SLBC, Sri Lanka	9720
1500-1600 S	Superpower KUSW, Utah	9850
1500-1600	Voice of America, Washington	6110 9575 9645 9700
		9760 15205
1500-1600	Voice of Ethiopia, Addis Ababa	7165 9560
1500-1600	Voice of Indonesia, Jakarta	11790 15150
1500-1600	Voice of Kenya, Nairobi	6100
1500-1600	Voice of Malaysia, Kuala Lumpur	4950
1500-1600	Voice of Mediterranean, Malta	11925
1500-1600	Voice of Nigeria, Lagos	7255 11770
1500-1600	WCSN, Boston, Massachusetts	15580
1500-1600	WHRI, Noblesville, Indiana	15105 21840
1500-1600 S	WRNO, New Orleans, Louisiana	11965
1500-1600	WSHB, Cyprus Creek, S. Carolina	13760
1500-1600	WYFR, Oakland, California	5950 9600 17612.5

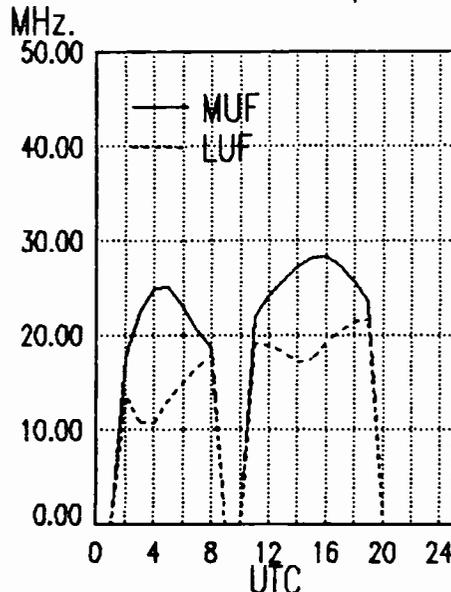
1500 UTC [11:00 AM EDT/8:00 AM PDT]

1500-1505	Africa No. 1, Gabon	7200 15200
1500-1510	Vatican Radio, Vatican City	11960 15090 17870
1500-1515	BBC, London, England	5995 6195 7180 9410
		9515 9740 11750 12095
		15070 15140 15260 15310
		17885 18080 21470 21710
1500-1515	FEBA, Mahe, Seychelles	15325
1500-1520	Radio Ulan Bator, Mongolia	9575 15305
1500-1525	Radio Bucharest, Romania	9510 9690 11775 11940
		15250 15335
1500-1525	Radio Netherland, Hilversum	5955 13770 15150 17575
		17605
1500-1530	Radio Berlin Int'l, East Germany	15240 17880
1500-1530	Radio Sofia, Bulgaria	9560 11735 15310
1500-1530 A,S	Radio Tanzania, Dar es Salaam	7165
1500-1530	Radio Veritas Asia, Philippines	9770 15215
1500-1550	Deutsche Welle, West Germany	9735 11965 17810 21600
1500-1550	Radio Pyongyang, North Korea	6576 9325 9345 9640
		9977
1500-1555	Radio Beijing, China	11600 15165
1500-1600 F	ABC, Alice Springs, Australia	2310 [ML]
1500-1600	ABC, Perth, Australia	9610

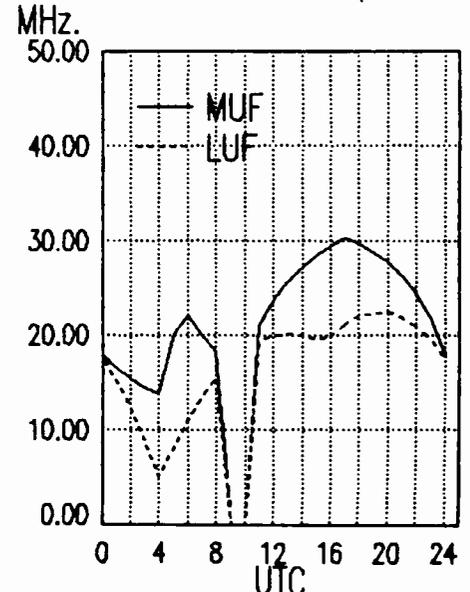
Midwest To
Alaska



West Coast To
Eastern Europe



West Coast To
Western Europe

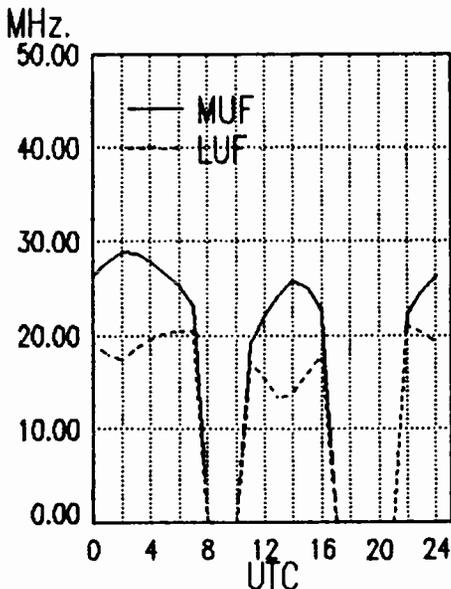


frequency

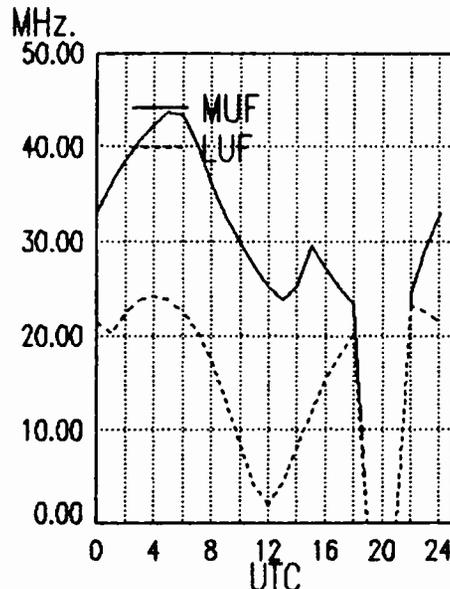
section

1600-1700	Voice of America, Washington, DC	9575 9645 9760 15205 15410 15445 15580 15600 17785 17800 17870		1700-1800	Radio Jordan, Amman	9560	
1600-1700	WCSN, Boston, MA	21640		1700-1800	Radio Korea, Seoul, South Korea	5975 9870 15575	
1600-1700	WHRI, Noblesville, Indiana	15105 21840		1700-1800 M-F	Radio Malabo, Equatorial Guinea	9553 [ML]	
1600-1700	WRNO, New Orleans, Louisiana	15420		1700-1800	Radio Moscow, USSR	9540 9755 9795 9825 9895 11730 11840 12010 12050 15475 17570	
1600-1700	WYFR, Oakland, California	9600 15440 17612.5 21525		1700-1800	Radio Riyadh, Saudi Arabia	9705 9720	
1600-1700	WYFR Satellite Network	11830 13695 15375 21615		1700-1800	Radio Tanzania, Dar es Salaam	9684	
1600-1700	Radio Zambia, Lusaka	9580		1700-1800	Radio Zambia, Lusaka	9580	
1615-1630	Voice of Vietnam, Hanoi	11750		1700-1800	RTM Morocco	17815	
1630-1700	Radio Netherlands, Hilversum	6020 15570		1700-1800	SBC Radio One, Singapore	5052 11940	
1630-1700	RTM Morocco	17595 17815		1700-1800	Superpower KUSW, Utah	15650	
1645-1700	Radio Korea (South), Seoul	5975 7275 9870		1700-1800 A,S	Swaziland Commercial Radio	6155	
1700 UTC [1:00 PM EDT/10:00 AM PDT]				1700-1800	Voice of Africa, Egypt	15255	
1700-1705	Radio Uganda, Kampala	4976 5026		1700-1800	Voice of America, Washington	6110 9575 9645 9760 11760 11920 15205 15410 15445 15580 15600 17785 17800 17870	
1700-1715	Kol Israel, Jerusalem	9385 11585 13750		1700-1800	Voice of Kenya, Nairobi	6100	
1700-1715 M-A	Voice of Namibia (Angola)	11955		1700-1800	Voice of Nigeria, Lagos	11770	
1700-1725	Radio Netherland, Hilversum	6020 15570		1700-1800	WCSN, Boston, Massachusetts	21640	
1700-1730	Radio Australia, Melbourne	5995 6060 6080 7205 9580		1700-1800	WHRI, Noblesville, Indiana	13760 15105	
1700-1730	Radio Japan, Tokyo	9695 9535 11815		1700-1800	WINB, Red Lion, Pennsylvania	15295	
1700-1730 S	Radio Norway Int'l, Oslo	15220 21705		1700-1800 S-F	WMLK, Bethel, Pennsylvania	9465	
1700-1730	SLBC, Colombo, Sri Lanka	11800		1700-1800	WRNO, Louisiana	15420	
1700-1745	BBC, London, England	9410 9515 9740 11750 11775 12095 15070 15260 15400 17885 21470		1700-1800	WYFR Satellite Net	11830 13695	
1700-1750	Radio Pyongyang, North Korea	7290 9345 9640 9977		1700-1800	WYFR, Okeechobee, Florida	11855 15375 17750	
1700-1755	Radio Beijing, China	9570 9750 11600		1715-1730	Radio Canada Int'l, Montreal	5995 7235 15325 17820	
1700-1800 F	ABC, Alice Springs, Australia	2310 [ML]		1715-1745	BBC, London, England*	3975 6185 7165	
1700-1800	ABC, Tennant Creek, Australia	2325 [ML]		1718-1800	Radio Pakistan, Islamabad	6210	
1700-1800	AWR Africa, Gabon	9625		1725-1740	Radio Suriname Int'l, Paramibo	17835v	
1700-1800	CBC Northern Quebec Service	9625 11720		1725-1800	Radio New Zealand, Wellington	11780 15150	
1700-1800	CBN, St. John's, Newfoundland	6160		1730-1735	All India Radio, New Delhi	4640 4860 4920 6160 7412 9950	
1700-1800	CBU, Vancouver, British Columbia	6160		1730-1755	BRT, Brussels, Belgium	5915 11695	
1700-1800	CFCF, Montreal, Quebec	6005		1730-1755	Radio Austria Int'l, Vienna	5945 6155 12010 13730	
1700-1800	CFCN, Calgary, Alberta	6030		1730-1755	Radio Bucharest, Romania	7105 9530 9685 11790 11940 15270 15340	
1700-1800	CHNS, Halifax, Nova Scotia	6130		1730-1800	Radio Australia, Melbourne	5995 6035 6060 6080 7205 9580	
1700-1800	CKWX, Vancouver, British Columbia	6080		1730-1800	Radio Berlin Int'l, East Germany	9665 13610 15145 15255	
1700-1800	CFRB, Toronto, Ontario	6070		1730-1800	Radio Polonia, Warsaw, Poland	6135 9540	
1700-1800	(US) Far East Network, Tokyo	3910		1730-1800	Radio Prague, Czechoslovakia	9605 11685 11990 13715 15110 21505	
1700-1800	Radio Havana Cuba	11920		1730-1800	RAE, Buenos Aires, Argentina	15345	

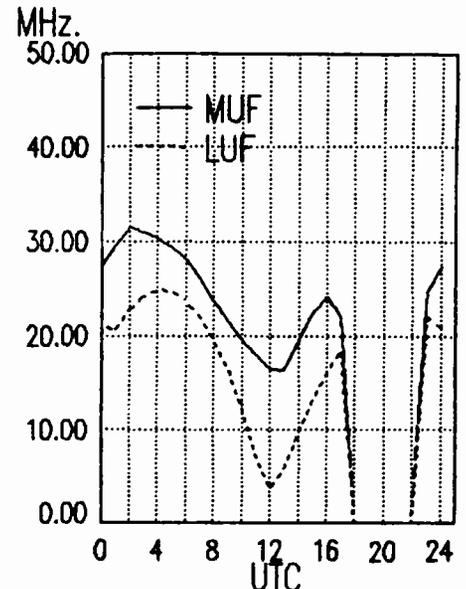
West Coast To
Central Asia



West Coast To
Indonesia



West Coast To
South East Asia



frequency

section

1730-1800	Swiss Radio Int'l, Berne	3985	6165	9535
1734-1800	FEBA, Mahe, Seychelles	11810		
1745-1800	BBC, London, England	9410	9740	11750 12095
		15070	15400	17885 21470

1800-1900	Radio Jamahiriya, Libya	15450
1800-1900	Radio Jordan, Amman	9560
1800-1900	Radio Kuwait, Kuwait	11665
1800-1900	Radio Malabo, Equatorial Guinea	9553v [ML]
1800-1900	Radio Moscow, USSR	9755 9825 9895 11730
		11840 12050 15475 17570

1800-1900	Radio New Zealand, Wellington	11780	15150
1800-1900	Radio Riyadh, Saudi Arabia	9705	9720
1800-1900	Radio Tanzania, Dar es Salaam	9684	
1800-1900	Radio Zambia, Lusaka	9580	
1800-1900	Superpower KUSW, Utah	15650	
1800-1900 A,S	Swaziland Commercial Radio	6155	
1800-1900	Voice of America, Washington	9575 9760 11760 11800	
		15205 15410 15445 15580	
		15600 17785 17800 17870	
		21485	

1800-1900	Voice of Ethiopia	9662
1800-1900	Voice of Kenya, Nairobi	6100
1800-1900	Voice of Nigeria, Lagos	11770 15120
1800-1900	WCSN, Boston, Massachusetts	21640
1800-1900	WHRI, Noblesville, Indiana	13760 17830
1800-1900	WINB, Red Lion, Pennsylvania	15295
1800-1900 S-F	WMLK, Bethel, Pennsylvania	9465
1800-1900	WRNO, New Orleans, Louisiana	15420
1800-1900	WYFR, Oakland, California	11580 11855 15375
1800-1900	WYFR Satellite Net, California	11830 13695
1815-1900	Radio Bangladesh, Dhaka	6240 7505 11510 15510
1830-1855	Radio Austria Int'l, Vienna	5945 6155 12010 13730
1800-1855	Radio Polonia, Warsaw, Poland	5995 6135 7125 7285
		9525 11840
		9870 15575
		5915 11695
		7325 9410 9740 11750
		12095 15070 15400 17885
		9665 13610 15145 15255
		3265 4855 9618
		6020 15175 17605 21685
		7245 9560 11735 15310
		9885 11955
		11645 12045 15630
		4950
		4833 4900 7125
		7412 11620

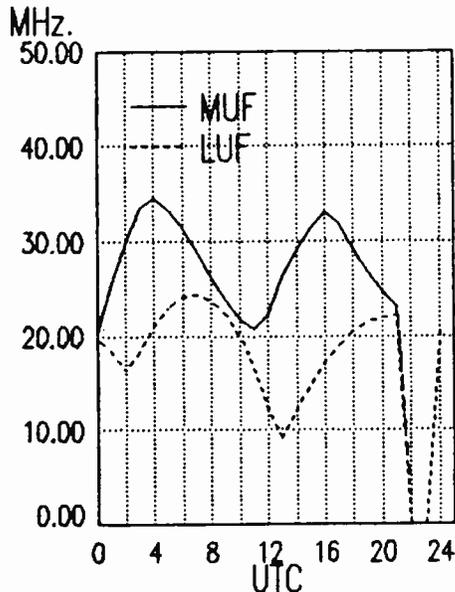
1815-1830	Radio Korea, Seoul, South Korea	9870 15575
1830-1855	BRT Brussels, Belgium	5915 11695
1830-1900	BBC, London, England	7325 9410 9740 11750
		12095 15070 15400 17885
		9665 13610 15145 15255
		3265 4855 9618
		6020 15175 17605 21685
		7245 9560 11735 15310
		9885 11955
		11645 12045 15630
		4950
		4833 4900 7125
		7412 11620

1830-1900	Radio Berlin Int'l, E. Germany	9665 13610 15145 15255
1830-1900 MWF	Radio Mozambique, Maputo	3265 4855 9618
1830-1900	Radio Netherland, Hilversum	6020 15175 17605 21685
1830-1900	Radio Sofia, Bulgaria	7245 9560 11735 15310
1830-1900	Swiss Radio International, Berne	9885 11955
1840-1850 M-A	Voice of Greece, Athens	11645 12045 15630
1840-1900	Radio Senegal, Dakar	4950
1845-1855	Radio Nacional, Conaky, Guinea	4833 4900 7125
1845-1900	All India Radio, New Delhi	7412 11620

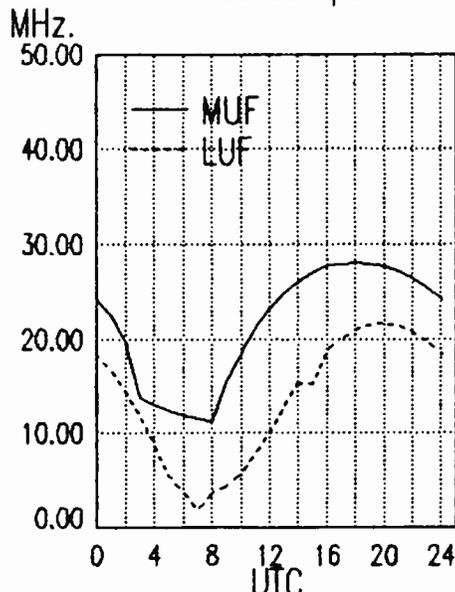
1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805 A	SBC Radio One, Singapore	11940
1800-1815	Radio Cameroon, Yaounde	3970 4750 4795 4850
		5010
1800-1815	SLBC, Colombo, Sri Lanka	11800
1800-1825 A,S	FEBA, Mahe, Seychelles	11760
1800-1825	Radio Prague, Czechoslovakia	5930 7345 9605 11685
		11990 13715 15110 21505
		15345
1800-1825	RAE, Buenos Aires, Argentina	7325 9410 9740 12095
1800-1830	BBC, London, England	15070 15400 15420 17885
		4835 5995
1800-1830 S	Radio Bamako, Mali	15260 17820
1800-1830 M-F	Radio Canada Int'l, Montreal	3265 4855 9618
1800-1830	Radio Mozambique, Maputo	3265 4855 9618
1800-1830	Radio Sweden, Stockholm	6065 11845
1800-1830	Voice of Africa, Egypt	15255
1800-1830	Voice of Vietnam, Hanoi	9840 12020
1800-1845	Radio Abidjan, Ivory Coast	11920
1800-1845	Trans World Radio, Swaziland	9525
1800-1850	Radio Bras, Brasilia, Brazil	15265
1800-1856	Radio RSA, South Africa	15365 17795 21535
1800-1900 F	ABC, Alice Springs, Australia	2310 [ML]
1800-1900 F	ABC, Tennant Creek, Australia	2325 [ML]
1800-1900	All India Radio, New Delhi	11935 15360
1800-1900	CBC Northern Quebec Service	9625 11720
1800-1900	CBN, St. John's, Newfoundland	6160
1800-1900	CBU, Vancouver, British Columbia	6160
1800-1900	CFCF, Montreal, Quebec	6005
1800-1900	CFCN, Calgary, Alberta	6030
1800-1900	CHNS, Halifax, Nova Scotia	6130
1800-1900	CKWX, Vancouver, British Columbia	6080
1800-1900	CFRB, Toronto, Ontario	6070
1800-1900	(US) Far East Network, Tokyo	3910
1800-1900	KNLS, Anchor Point, Alaska	7355
1800-1900	KYOI, Saipan	9455
1800-1900	Radio Australia, Melbourne	5995 6035 6060 6080
		7205 7215 9580
1800-1900 A,S	Radio Canada Int'l, Montreal	15260 17820

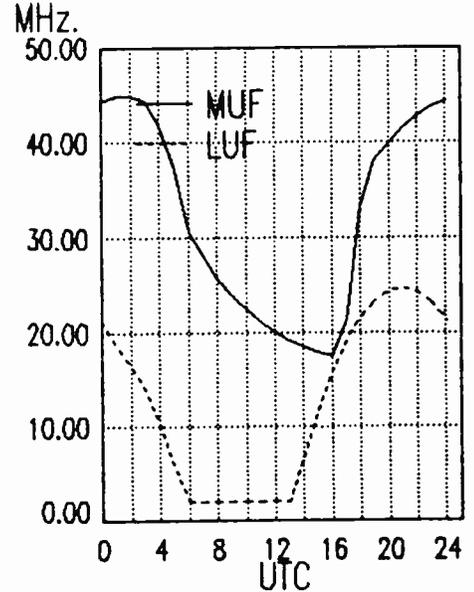
West Coast To Indian Ocean



West Coast To Arctic Europe



West Coast To Pacific



frequency

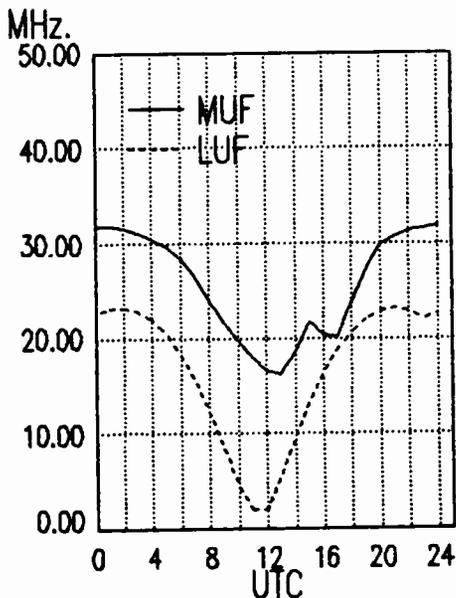
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1900 UTC [3:00 PM EDT/12:00 PM PDT]

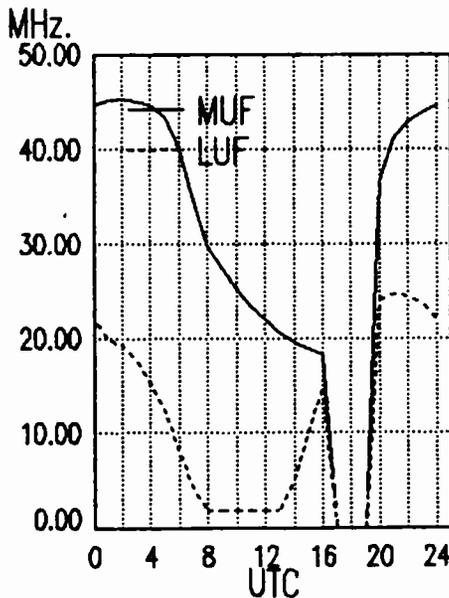
1900-1903	Africa No. 1, Gabon	15475			
1900-1905	M-A Vatican Radio, Vatican City	6190	6248	7250	9645
1900-1915	Radio Bangladesh, Dhaka	6240	7505	11510	
1900-1915	Radio Tanzania, Dar es Salaam	9684			
1900-1925	Radio Netherland, Hilversum	6020	17605	21685	
1900-1925	Voice of Islamic Republic Iran	9695			
1900-1930	F ABC, Alice Springs, Australia	2310	[ML]		
1900-1930	F ABC, Tennant Creek, Australia	2325	[ML]		
1900-1930	Kol Israel, Jerusalem	12077	13750	15640	
1900-1930	Radio Afghanistan, Kabul	7160	7310	9640	
1900-1930	Radio Berlin Int'l, East Germany	9665	11920	15255	
1900-1930	Radio Japan, Tokyo	9505	11705		
1900-1930	S Radio Norway Int'l, Oslo	9590	15220	21705	
1900-1930	M-F Radio Portugal, Lisbon	11740	11870	15250	
1900-1930	Radio Sofia, Bulgaria	7245	9560	11735	15310
1900-1930	Voice of Vietnam, Hanoi	9840	12020		
1900-1950	Deutsche Welle, Köln, W. Germany	9745	11810	13790	15390
1900-1955	Radio Beijing, China	6860	9470		
1900-2000	All India Radio, New Delhi	7412	11620	11935	15360
1900-2000	BBC, London, England	9410	9740	12095	15070
		15400	17885		
1900-2000	CBC Northern Quebec Service	9625	11720		
1900-2000	CBN, St. John's, Newfoundland	6160			
1900-2000	CBU, Vancouver, British Columbia	6160			
1900-2000	CFCF, Montreal, Quebec	6005			
1900-2000	CFCN, Calgary, Alberta	6030			
1900-2000	CHNS, Halifax, Nova Scotia	6130			
1900-2000	CKWX, Vancouver, British Columbia	6080			
1900-2000	CFRB, Toronto, Ontario	6070			
1900-2000	(US) Far East Network, Tokyo	3910			
1900-2000	HCJB, Quito, Ecuador	15270	17790	21470	
1900-2000	KYOI, Salpan	9455			
1900-2000	Radio Algiers, Algeria	9509	9685	15215	17745
1900-2000	Radio Australia, Melbourne	6035	6060	6080	7205
		7215	9580		
1900-2000	Radio Ghana, Accra	6130			
1900-2000	Radio Havana Cuba	11800	11950		
1900-2000	Radio Jordan, Amman	9560			
1900-2000	Radio Korea, Seoul, South Korea	9870	15575		
1900-2000	Radio Kuwait, Kuwait	11665			
1900-2000	M-A Radio Malabo, Equatorial Guinea	9553	[ML]		

1900-2000	Radio Moscow, USSR	5905	6030	7150	7170
		9540	9755	9765	9825
		9875	11840	15135	17570
1900-2000	Radio Moscow British Service	7240	7350	9450	9695
1900-2000	Radio New Zealand, Wellington	11780	15150		
1900-2000	Radio Prague, Czechoslovakia	5930	7345		
1900-2000	Radio Riyadh, Saudi Arabia	9705	9720		
1900-2000	Radio RSA, South Africa	7295	15365	17795	21590
1900-2000	Radio Zambia, Lusaka	9580			
1900-2000	Spanish Foreign Radio, Madrid	11790	15375	15395	
1900-2000	Superpower KUSW, Utah	15650			
1900-2000	A,S Swaziland Commercial Radio	6155			
1900-2000	Trans World Radio Swaziland	3205			
1900-2000	Voice of America, Washington	9700	9760	11760	15205
		15445	15580	15600	17740
		17785	17800	17870	
		9595			
1900-2000	Voice of Ethiopia, Addis Ababa	6100			
1900-2000	Voice of Kenya, Nairobi	7255	11770		
1900-2000	Voice of Nigeria, Lagos	21640			
1900-2000	WCSN, Boston, Massachusetts	13760	17830		
1900-2000	WHRI, Noblesville, Indiana	15295			
1900-2000	WINB, Red Lion, Pennsylvania	9465			
1900-2000	S-F WMLK, Bethel, Pennsylvania	15420			
1900-2000	WRNO, New Orleans, Louisiana	11855	15566	17845	
1900-2000	WYFR, Oakland, California	11830	13695	15375	
1900-2000	WYFR Satellite Net, California	3356	4820		
1910-1920	Radio Botswana, Gaborone	9665	13610	15255	
1915-2000	Radio Berlin Int'l, East Germany	7430	9395	9425	
1920-1930	M-A Voice of Greece, Athens	5047			
1930-1940	Radio Togo, Lome	2485			
1930-2000	ABC, Katherine, Australia	6955	7480	9440	
1930-2000	Radio Beijing, China	7145	9690	9750	11940
1930-2000	Radio Bucharest, Romania	9555	11945	15325	17875
1930-2000	M-F Radio Canada Int'l, Montreal	6080	9022		
1930-2000	Voice of Republic of Iran	15185			
1930-2000	WINB, Red Lion, Pennsylvania	7275	7290	9575	
1935-1955	RAI, Rome, Italy	9575	11870		
1940-2000	M-A Radio Ulan Bator, Mongolia	9755	11860		
1945-2000	All India Radio, New Delhi	6190	7250	9645	
1950-2000	Vatican Radio, Vatican City				

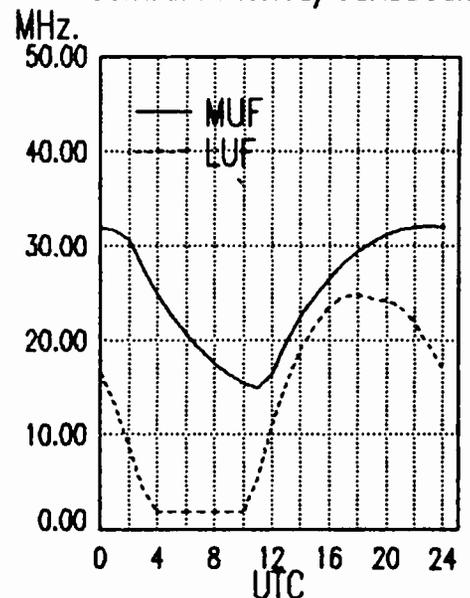
West Coast To Far East



West Coast To Australia



West Coast To Central America/Caribbean



frequency

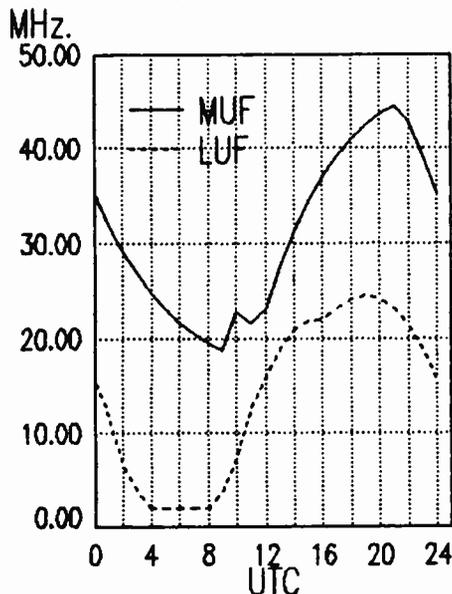
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2000 UTC [4:00 PM EDT/1:00 PM PDT]

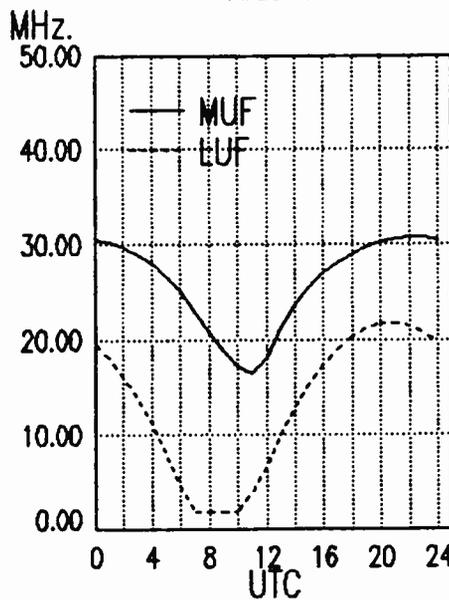
2000-2005	S-F	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
2000-2005		Radio Zambia, Lusaka	3345	6165		
2000-2010	A	Radio Zambia, Lusaka	3345	6165		
2000-2010		Voice of Kenya, Nairobi	6100			
2000-2015		Radio Togo, Lome	3220	5047		
2000-2015	M-A	Radio Ulan Bator, Mongolia	9575	11870		
2000-2015		Trans World Radio, Swaziland	3205			
2000-2025		Radio Beijing, China	6955	7480	9440	9745
			11715			
2000-2025		Radio Bucharest, Romania	5990	6105	7145	7195
			9570	9690	11940	
2000-2030		Radio Australia, Melbourne	6035	7205	7215	9580
			9620			
2000-2030		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
2000-2030		Radio Ghana, Nairobi	3366	4915		
2000-2030		Radio Norway International, Oslo	15310	17780		
2000-2030		Radio Polonia, Warsaw, Poland	7125	7145	9525	
2000-2030		Swaziland Commercial Radio	6155			
2000-2030		Voice of Nigeria, Lagos	7255			
2000-2030		Voice of Republic of Iran	6080	9022		
2000-2045		All India Radio, New Delhi	7412	9755	9910	11620
			11860			
2000-2050		Radio Pyongyang, North Korea	6576	9345	9640	9977
2000-2050		Voice of Turkey, Ankara	9825			
2000-2056		Radio RSA, South Africa	7295	15365	17795	
2000-2100	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2000-2100		ABC, Katherine, Australia	2485			
2000-2100	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2000-2030		BBC, London, England	5975	6180	6195	7325
			9410	9740	11785	11820
			12095	15070	15260	15400
			17760	17885		
2000-2100		CBC Northern Quebec Service	9625	11720		
2000-2100		CBN, St. John's, Newfoundland	6160			
2000-2100		CBU, Vancouver, British Columbia	6160			
2000-2100		CFCF, Montreal, Quebec	6005			
2000-2100		CFCN, Calgary, Alberta	6030			
2000-2100		CHNS, Halifax, Nova Scotia	6130			
2000-2100		CKWX, Vancouver, British Columbia	6080			

2000-2100		CFRB, Toronto, Ontario	6070			
2000-2100		(US) Far East Network, Tokyo	3910			
2000-2100		King of Hope, Southern Lebanon	6280			
2000-2100		KYOI, Salpan	9465			
2000-2100		Radio Baghdad, Iraq	7280			
2000-2100		Radio Havana Cuba	11800	11950		
2000-2100		Radio Jordan, Amman	9560			
2000-2100		Radio Kuwait, Kuwait	11665			
2000-2100		Radio Malabo, Equatorial Guinea	9553v			
2000-2100		Radio Moscow, USSR	9765	9755	9825	9875
			11840	15135	15405	
2000-2100		Radio New Zealand, Wellington	12050	15150		
2000-2100		Radio for Peace, Costa Rica	21555			
2000-2100		Radio Riyadh, Saudi Arabia	9705	9720		
2000-2100		Radio Zambia, Lusaka	9580			
2000-2100		Superpower KUSW, Utah	15650			
2000-2100		Voice of America, Washington	9700	9760	11760	15205
			15410	15445	15580	15600
			17785	17800	17870	
2000-2100		Voice of Nigeria, Lagos	11770			
2000-2100		WCSN, Boston, Massachusetts	15390			
2000-2100		WHRI, Noblesville, Indiana	13760	17830		
2000-2100		WINB, Red Lion, Pennsylvania	15185			
2000-2100	S-F	WMLK, Bethel, Pennsylvania	9465			
2000-2100		WRNO, New Orleans, Louisiana	15420			
2000-2100		WSHB, Cyprus Creek, S. Carolina	21640			
2000-2100		WYFR, Oakland, California	9455	11855	15566	17612.5
2000-2100	M-A	WYFR Satellite Net, California	11830	13695	15375	
2005-2100		Radio Damascus, Syria	9950	12085		
2010-2100	A,S	Voice of Kenya, Nairobi	6100			
2015-2100		ELWA, Monrovia, Liberia	11830			
2025-2045		RAI, Rome, Italy	6165	9575		
2030-2055		Radio Polonia, Warsaw, Poland	6095	7285		
2030-2100		BBC, London, England	5975	7325	9410	11750
			11920	12095	15070	15260
			15400	17760	17885	
2030-2100		Radio Australia, Melbourne	9580	9620		
2030-2100		Radio Beijing, China	6955	7480	9440	9745
			11790			
2030-2100		Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100		Radio Netherland, Hilversum	9860	13700	15560	
2030-2100		Radio Sofia, Bulgaria	7115	7155	9700	11720
2030-2100		Radio Tirana, Albania	9480	11835		
2030-2100		Voice of Africa, Cairo, Egypt	15375			
2030-2100		Voice of Vietnam, Hanoi	9840	12020	15010	

West Coast To South America



West Coast To Alaska



DID WE MISS SOMETHING?

Let us know your corrections and additions by sending them to frequency manager Greg Jordan at 1855-I Franciscan Terrace, Winston-Salem, NC 27127.

Send your special QSLs or good photocopies to share with other monitors as we have space. We'll copy and return them to you within the month. Send to QSL, P.O. Box 98, Brasstown, NC 28902.

frequency

section

2045-2100	All India Radio, New Delhi	7412	9550	9910	11620
		11715			
2045-2100	IBRA Radio, Malta	7110			
2045-2100	Vatican Radio, Vatican City	9625	11700	11695	15120

2100 UTC [5:00 PM EDT/2:00 PM PDT]

2100-2105	Radio Damascus, Syria	9950	12085		
2100-2105	Radio Zambia, Lusaka	3345	6165		
2100-2110	Vatican Radio, Vatican City	6190	7250	9645	
2100-2110 A,S	Voice of Kenya, Nairobi	6100			
2100-2115	IBRA Radio, Malta	7110			
2100-2125	BRT, Brussels, Belgium	5915	9925		
2100-2125	Radio Beijing, China	6955	7480	9440	9745
		11790			
2100-2125	Radio Bucharest, Romania	5990	6105	7145	7195
		9690	11940		
2100-2125	Radio Finland, Heisinki	6120	9670	11755	
2100-2125	Radio Netherland, Hilversum	9860	13700	15560	
2100-2130 S	Radio Austria Int'l, Vienna	5945	6155	9585	9870
2100-2130	Radio Budapest, Hungary	6110	9535	9535	11910
		15160			
2100-2130	Radio Japan, Tokyo	11815	11945	15230	17810
		17890			
2100-2130	Radio Korea, Seoul, South Korea	6480	7550	15575	
2100-2130	Radio Sweden, Stockholm	6065	9655		
2100-2130	Swiss Radio Int'l, Berne	9885	13635	15570	
2100-2135	ELWA, Monrovia, Liberia	11830			
2100-2145	Radio Yugoslavia, Belgrade	5980	7130	9620	9660
2100-2145	WYFR, Oakland, California	5950	9455	11855	17612
		17845			
2100-2150	Radio Baghdad, Iraq	7280			
2100-2200	WYFR Satellite Net	11830	13695	15375	
2100-2150	Deutsche Welle, West Germany	7130	9765	13780	
2100-2155	Radio Beijing, China	6860	9470	9860	
2100-2200 M-A	ABC, Alice Springs, Australia	2310	[ML]		
2100-2200	ABC, Katherine, Australia	2485			
2100-2200 M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2100-2200	All India Radio, New Delhi	7412	9910	11620	11715
2100-2200	BBC, London, England	3995	5975	6005	6175
		6180	7325	9410	12095
		15070	15260	15400	17760
		17885			

2100-2200	CBC Northern Quebec Service	9625	11720		
2100-2200	CBN, St. John's, Newfoundland	6160			
2100-2200	CBU, Vancouver, British Columbia	6160			
2100-2200	CFCF, Montreal, Quebec	6005			
2100-2200	CFCN, Calgary, Alberta	6030			
2100-2200	CHNS, Halifax, Nova Scotia	6130			
2100-2200	CKWX, Vancouver, British Columbia	6080			
2100-2200	CFRB, Toronto, Ontario	6070			
2100-2200	(US) Far East Network, Tokyo	3910			
2100-2200	King of Hope, Southern Lebanon	6280			
2100-2200	KSDA, Agat, Guam	7365	15125		
2100-2200	KVOH, Rancho Simi, California	17775			
2100-2200	KYOI, Saipan	9465			
2100-2200	Radio Australia, Melbourne	15160	15240	15395	17795
2100-2200	Radio Jordan, Amman	9560			
2100-2200	Radio Moscow, USSR	5905	6055	7150	7170
		7290	9505	9515	9590
		9620	9685	9730	9765
		9780	9790	9800	9825
		9840	9875	11840	12030
		12050	15405	15425	17655
2100-2200 A,S	Radio Malabo, Equatorial Guinea	9552.5			
2100-2200	Radio for Peace, Costa Rica	21555			
2100-2200 A,S	Radio Zambia, Lusaka	9580			
2100-2200	Spanish Foreign Radio, Madrid	11790	15280		
2100-2200 M-A	Superpower KUSW, Utah	15650			
2100-2200	Voice of Africa, Cairo, Egypt	15280			
2100-2200	Voice of America, Washington	9700	9760	11760	15205
		15410	15445	15580	15600
		17785	17800	17870	
2100-2200	Voice of Free China, Taiwan	9852.5	11805		
2100-2200	Voice of Nigeria, Lagos	15120			
2100-2200	WCSN, Boston, Massachusetts	15390			
2100-2200	WHRI, Noblesville, Indiana	9770	17830		
2100-2200	WRNO, New Orleans, Louisiana	15420			
2100-2200	WSHB, Cyprus Creek, S. Carolina	21640			
2103-2200	WINB, Red Lion, Pennsylvania	15185			
2110-2200	Radio Damascus, Syria	9950	12085		
2115-2200	Radio Cairo, Egypt	9900			
2125-2155 S	Radio Austria Int'l, Vienna	9870			
2130-2145	BBC, London, England*	5965	7160		
2130-2200	BBC, London, England*	6030	7230	9635	
2130-2200	HCJB, Quito, Ecuador	15270	17790	21470	
2130-2200	Kol Israel, Jerusalem	9010	9435	11605	
2130-2200 A,S	Radio Canada Int'l, Montreal	11880	15150	17820	



QSL's from Hugh Hawkins' (San Antonio) collection: Radio Yugoslavia, Radio New Zealand, and Radio Praha

frequency

section

2130-2200	Radio Sofia, Bulgaria	9700	11720
2130-2200	Radio Vilnius, Lithuanian SSR	6100	
2135-2150 S-F	ELWA, Monrovia, Liberia	11830	
2145-2200	Radio Berlin Int'l, East Germany	6125	9730
2150-2200 M-F	ELWA, Monrovia, Liberia	11830	

2230-2300	Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300	Radio Sweden, Stockholm	11925	SSB		
2230-2300	Radio Tirana, Albania	7215	9480		
2230-2300	Swiss Radio Int'l, Berne	6190			
2245-2300	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745		
2245-2300	BBC, London, England	3955	5975	6175	6195
		7325	9410	9570	9590
		9915	11785	11945	12095
		15260	15400	17875	

2200 UTC [6:00 PM EDT/3:00 PM PDT]

2200-2205 M-F	ELWA, Monrovia, Liberia	3993	11830
2200-2205	Radio Damascus, Syria	9950	12085
2200-2210 M-H	Port Moresby, Papua New Guinea	3925	4890 5960 5985
		6020	6040 6080 6140
		9520	
		5980	

2200-2210	Radio Sierra Leone, Freetown	2310	[ML]
2200-2215 M-A	ABC, Alice Springs, Australia	2325	[ML]
2200-2215 M-A	ABC, Tennant Creek, Australia	5965	7160
2200-2215	BBC, London, England*	9640	11740 15120
2200-2215 M-F	Voice of America, Washington	5990	9710
2200-2225	RAI, Rome, Italy	6015	9615 11830
2200-2225	Vatican Radio, Vatican City	2485	
2200-2230	ABC, Katherine, Australia	7412	9550 9910 11620
2200-2230	All India Radio, New Delhi	11715	

2200-2230	CBC Northern Quebec Service	6195	9625 11720
2200-2230 S	KGEL, San Francisco, California	15280	
2200-2230 S	Radio Austria Int'l, Vienna	9870	11780
2200-2230	Radio Beijing, China	3985	6165
2200-2230	Radio Berlin Int'l, East Germany	6125	9730
2200-2230	Radio Jordan, Amman	9560	
2200-2230 S	Radio Norway Int'l, Oslo	9605	11850
2200-2230	Radio Prague, Czechoslovakia	6055	
2200-2230	Radio Vilnius, Lithuanian SSR	9765	9860 13645 15180
		15455	
2200-2245	BBC, London, England	3955	5975 6175 6180
		6195	7325 9410 9590
		9915	11920 12095 15070
		15260	15400

2200-2245	Radio Cairo, Egypt	9900	
2200-2250	Voice of Turkey, Ankara	7160	9445 9680
2200-2255	RAE, Buenos Aires, Argentina	11710	15345
2200-2300	CBN, St. John's, Newfoundland	6160	
2200-2300	CBU, Vancouver, British Columbia	6160	
2200-2300	CFCF, Montreal, Quebec	6005	
2200-2300	CFCN, Calgary, Alberta	6030	
2200-2300	CHNS, Halifax, Nova Scotia	6130	
2200-2300	CKWX, Vancouver, British Columbia	6080	
2200-2300	CFRB, Toronto, Ontario	6070	
2200-2300	(US) Far East Network, Tokyo	3910	
2200-2300	King of Hope, Southern Lebanon	6280	
2200-2300	KVOH, Rancho Simi, California	17775	
2200-2300	KYOI, Saipan	15405	
2200-2300	Radio Australia, Melbourne	15160	15240 15320 15395
		17795	21740

2200-2300	Radio Canada Int'l, Montreal	9760	11945
2200-2300	Radio for Peace, Costa Rica	13665	
2200-2300	Radio Havana Cuba	7140	
2200-2300	Radio Moscow, USSR	9685	9720 9780 11690
		11735	17570 17605 17700

2200-2300	Radio Moscow North American Svc	7215	7310 9720 11735
		17720	17700
2200-2300	Radio Sofia, Bulgaria	9700	11720
2200-2300	SBC Radio One, Singapore	5010	5052 11940
2200-2300 M-A	Superpower KUSW, Utah	15580	
2200-2300	Voice of America, Washington	11760	15185 15290 15305
		15320	17735 17740 17820
		18157	USB

2200-2300	Voice of the UAE, Abu Dhabi	6170	9595 11965
2200-2300	WCSN, Boston, Massachusetts	15300	
2200-2300	WHRI, Noblesville, Indiana	13760	17830
2200-2300	WINB, Red Lion, Pennsylvania	15185	
2200-2300	WRNO, New Orleans, Louisiana	13720	
2200-2300	WSHB, Cypress Creek, S. Carolina	15205	
2200-2300	WYFR, Oakland, California	5950	9505 15440
2215-2230	BBC, London, England*	11820	15390
2230-2300 A,S	CBC Northern Quebec Service	9625	11720
2230-2300	Radio Austria Int'l, Vienna	9870	11780
2230-2300	Radio Mediterran, Malta	6110	

2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2315	BBC, London, England	3955	5975	6175	6195
		7325	9410	9590	9915
		11945	12095	15070	15260
2300-2330	Kol Israel, Jerusalem	11605	15640		
2300-2330	Radio Canada Int'l, Montreal	5960	9755		
2300-2350	Radio Pyongyang, North Korea	13650			
2300-0000	Radio Luxembourg	6090			
2300-2330	Radio Mediterran, Malta	6110			
2300-2330	Radio Sofia, Bulgaria	9700	11720		
2300-2330	Superpower KUSW, Utah	15580			
2300-2345	WINB, Red Lion, Pennsylvania	15185			
2300-2345	WYFR, Oakland, California	5950	9505	15170	
2300-0000	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745		

2300-0000	CBC Northern Quebec Service	6195	9625
2300-0000	CBN, St. John's, Newfoundland	6160	
2300-0000	CBU, Vancouver, British Columbia	6160	
2300-0000	CFCF, Montreal, Quebec	6005	
2300-0000	CFCN, Calgary, Alberta	6030	
2300-0000	CHNS, Halifax, Nova Scotia	6130	
2300-0000	CKWX, Vancouver, British Columbia	6080	
2300-0000	CFRB, Toronto, Ontario	6070	
2300-0000	(US) Far East Network, Tokyo	3910	
2300-0000	KVOH, Rancho Simi, California	17775	
2300-0000	KYOI, Saipan	15405	
2300-0000	Radio Australia, Melbourne	15160	15240 15320 15395
		17795	21740

2300-0000	Radio for Peace, Costa Rica	21555	
2300-0000	Radio Japan, Tokyo	11800	15195 17810
2300-0000	Radio Moscow	7295	7440 9625 9790
		9840	11690 15420 17570
		17655	21790

2300-0000	Radio Moscow, (N. American Svc)	7215	7310 9410 9605
		9685	9720 11735 11750
		12050	17700 17720
2300-0000	Radio Polonia, Warsaw	5995	6135 7125 7270
2300-0000	Radio Thailand, Bangkok	9655	11905
2300-0000	Voice of America, Washington, DC	15290	17735 17820 18157
		USB	

2300-0000	Voice of the UAE,	6170	9595 11965
2300-0000	WCSN, Boston, Massachusetts	15300	
2300-0000	WHRI, Noblesville, Indiana	9770	17830
2300-0000	WRNO, New Orleans, Louisiana	13720	
2300-0000	WSHB, Cypress Creek, S.C.	15205	
2315-2330	BBC, London, England*	11820	15390
2315-0000	BBC, London, England	5975	6005 6175 6195
		7325	9515 9590 9915
		11945	12095 15260 15435
		17875	

2330-0000 M-A	Radio Budapest, Hungary	6110	9520 9585 9835
		11910	15160
2330-0000	Radio Kiev, Ukrainian SSR	9765	13240 13645 15180
		15455	17665

2330-0000	Radio Korea, Seoul, South Korea	15575	
2330-0000	Radio Tirana, Albania	7065	9760v
2330-0000	Voice of Vietnam, Hanoi	9840	12020 15010
2330-2355 M-A	BRT, Brussels, Belgium	9925	
2335-2345 M-A	Voice of Greece, Athens	7430	9905
2345-0000	BBC, London, England*	3915	6080 7180 9580
2345-0000	Radio Berlin Int'l, East Germany	6080	11890
2348-0000	WINB, Red Lion, Pennsylvania	15145	

Tunemaster Classic Radio

Readers of the February "Sharper Image" catalog can hardly help but to have noticed that the opening item - splashed on a five-page cover and color foldout -- is a multi-band tabletop set with a distinctly unusual design. Called the Tunemaster, it's billed as a visual replica of a 1940's-era European radio, the Sonora Excellence 301 -- a model with unique styling that recalls Art Deco's more uninhibited moments.

Brightly Colored Nostalgia

In fact, it is a replica of sorts, but not quite exact. The shape of the top appears to have been altered slightly, a piece of chrome substituted for the original Bakelite moulding, and the original black color changed to a sock-it-to-me metallic red paint similar to that found on customized 1949 Mercurys that once cruised the streets of southern California.

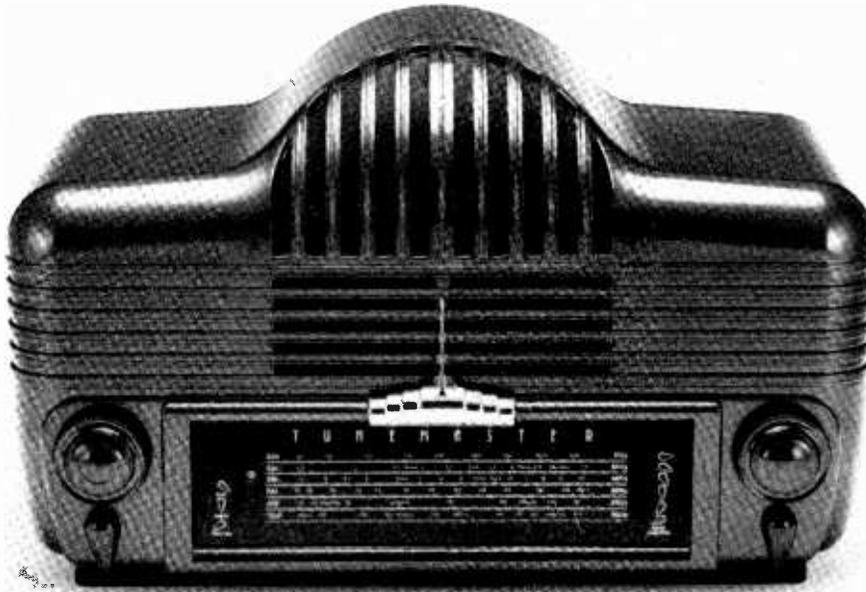
If this doesn't quite meet with your taste, there's also a version in white. This version should keep its original appearance longer than the red, inasmuch as the plastic underneath the paint is light-colored.

There's no question but that this is a most unusual radio. In its razzleberry red incarnation, the Tunemaster is nothing if not a conversation piece. Everybody -- but everybody -- takes notice of it.

Catalog Makes Lofty Claims

This radio -- which you can have for \$205.50, including shipping -- is supposed to be more than a pretty face. "We set out to create a radio with performance and features to match its exceptional design," the catalog points out.

"First, the sound must be true high fidelity. Next, it must have multiple bands to take advantage of the boom in shortwave listening... And every jack and convenience feature ever wished for on a radio." Added to these glowing promises is a special writeup highlighting the delights of world band listening.



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For \$200, you expect a pretty good world band radio. After all, for a bit less you can get a Magnavox D2935, Radio Shack DX-440 or Sangean ATS-803A -- all fine sets that receive a rating of "good" in the 1989 *Passport to World Band Radio*. So it's comforting to find that the Tunemaster has such features as a dial light, tone control, tuning knob and BFO.

Additionally, there's a fused ac power supply, even though the set as such has no UL approval. Also, in addition to shortwave coverage from roughly 2.3-21.5 MHz -- missing, incredibly, is much of the 13 meter band -- there's coverage of AM, FM and VHF from 110-137 and 144-164 MHz.

Actual Performance Disappointing

Unfortunately, that's about the end of the pluses, for the Hong-Kong-made Tunemaster is otherwise a dreadful performer that makes use of low-cost, out-of-date technology.

To begin with, there's no synthesized circuitry, which by now is commonplace among world band models in this price range. That means the Tunemaster has no programmable channel memories or keypad tuning.

There's no digital readout, either. In fact, there's not even a reasonable analog readout. The upshot is that, for example,

the entire 16 meter band is covered by less than 1/4 inch on the tuning dial and the FM band on our unit was woefully misaligned. (For example, a station on 90.0 MHz would appear on the dial at 92.5 MHz.) And as if to underscore the novel nature of the Tunemaster, the manufacturer has designated the 6-6.5 MHz range as "hams!" So much for "convenience features."

Even then, the tuning knob doesn't necessarily require a safecracker's touch -- there is, after all, a rudimentary fine-tuning knob which you can grope for on the

back of the set. It does, however, require that you put up with the spongy response of the tuning knob, which turns an archaic string-and-pulley arrangement that gives this control all the "feel" of a soggy marshmallow.

World band performance isn't much better than the features. Adjacent-channel selectivity is truly mediocre, as is image rejection, thanks to the set's low-cost single-conversion circuitry.

World band sensitivity with the built-in antenna is moot, as there is no built-in antenna for that band; this is, after all, a tabletop model. With an external antenna, overloading -- a garbled mishmash of wanted and unwanted stations, all audible at the same time -- is the order of the day, and there isn't so much as an attenuator to cope with the mess.

The result of all these collective shortcomings is a tiring aural assault on the hapless listener's ears. World band stations are difficult to locate on the dial, hard to receive intelligibly, and unpleasant to hear when they are audible.

The Tunemaster is promoted as being able to receive ham radio transmissions, thanks to its BFO. Alas, the BFO's signal is not clean. Too, while the set is not terribly drift, it's not really stable, either. The combination is such that reception of ham - or utility -- SSB signals is marginal.

Much is made of the Tunemaster's

"first-rate sound." "In fact," the catalog boasts, "we know of no table model for less than \$400 with sound that compares to Tunemaster's." That's quite a claim, given the excellent sound you can get from Proton and KLH table radios, among many others that cost less than the Tunemaster.

In fact, the Tunemaster's speaker, with a 4-1/4" cone and large magnet, and sealed speaker enclosure are of superior quality by world band standards. On FM -- provided a powerful outboard antenna is not used -- the quality of the sound can be pleasant, indeed.

Even then, the Tunemaster's audio on FM can come across as being distorted when a sufficiently strong outboard antenna, such as might be used for short-wave listening, is used. On world band the audio quality is quite reasonable, but nothing special.

The Tunemaster could be dismissed as a joke in questionable taste were it not for the fact that untold numbers of Americans are going to buy it and wonder why anybody would wish to suffer through anything so awful as shortwave listening.

The Sharper Image knows better. It once sold the General Electric World Monitor II, a very nice set that was priced

comparably to the Tunemaster. More recently, they sold a Sangean portable under the Emerson label that also was a poor performer, but at least cost considerably less.

With the introduction of the Tunemaster, The Sharper Image has unwittingly earned its name. *Caveat emptor.*



You can hear Larry Magne's equipment reviews the first Saturday of each month, plus *Passport* editors Don Jensen and Tony Jones on the third Saturday, over Radio Canada. For North America, SWL Digest is heard at 8:10 PM ET on 5960 and 9535 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

Passport's "RDI White Paper" equipment reports exhaustive tests of communications receivers and advanced portables. These reports are available in the US from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland. A catalogue of these reports may be obtained by sending a self-addressed stamped envelope to International Broadcasting Services, Ltd., Box 300M, Penn's Park PA 18943 USA.

Call 1-800-344-4444 for Sharper Image free catalog

ICOM to Introduce Costly New Superset

If you have six thousand or so dollars to spare, you may be interested in ICOM's forthcoming IC-R9000 receiver. This gilt-edged entry, patterned after the ICOM IC-781 transceiver introduced last year, has just about everything imaginable to gladden a transistorized heart. For example, there's a spectrum display so you can see the signal strength and fade patterns of stations on and around the frequency to which the radio is tuned. And it tunes all the way from 100 kHz to 1999.8 MHz.

I've played with the IC-781 only once, while visiting Universal Shortwave's showroom in Ohio. But it would seem as if the '9000 will have quite a few performance characteristics and features of interest to devoted radio monitors. However, what it apparently won't have is synchronous detection -- a glaring omission in a world band receiver costing nearly as much as an automobile.

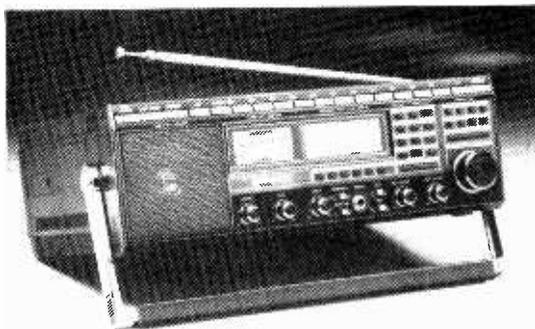
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AOR AR2515 Wide Coverage Scanner

Ace Communications of Indianapolis undertook a very ambitious project when they decided to upgrade the popular AR2002 scanner. Was it worth the effort? Let's take a look and see.

The AR2515 looks very much like an AR2002; in fact the first units were made by modifying existing 2002s. But unlike the 2002 the 2515 has continuous -- no gap -- frequency coverage from 5 through 1500 MHz and nearly 2000 memory channels! A total of 16 separate search ranges may be called up selectively or sequentially and scan and search speeds reach 36 increments per second.

Labor-intensive Programming

But there's a price to pay for all this capability: the 2515 is cumbersome to program. It has no defaults so you have to do its thinking for it. It won't write over previous entries, so they must be deleted before new information can be keyed in.

For example, to program a search range on a Bearcat scanner, you simply press frequency, limit, frequency, limit, and

you're ready to search. On the 2515 you must press bank number, select bank, select frequency, delete, select frequency, delete, shift, mode, shift, increment, frequency, add, frequency, add ... THEN you're ready to scan!

Similarly, to enter a scan frequency on a Bearcat, you simply press frequency and enter; on the 2515 you press bank number, select frequency, shift, link, select frequency, delete, shift, mode, frequency, add!

Fortunately, there are some shortcuts for "scratchpad" memory -- temporary frequency entries for monitoring which aren't to be saved -- if the mode or step increment doesn't have to be changed.

So how long would it take you to load your favorite frequencies into the 2515's 1984 memory channels? Even if you had the procedure down pat, it would probably take you 20-30 hours -- non-stop! The scanner comes fully pre-programmed from the factory with favorite public safety frequencies already in memory to make the job easier.

Computer Control

The AR2515 has an RS232C port on the rear apron. The manual includes a chapter on interface and commands. Documentation is provided to allow external control of all keyboard commands.

Banks

Scan frequencies are entered into any of 62 32-channel memory banks; an additional 16 banks are reserved for search ranges. While ANY frequency range within the radio's capability can be programmed into ANY scan or search bank, it is recommended that frequencies be closely spaced.

The reason for this is that for a scanner's circuitry to fully lock on to each frequency during scan or search functions, there is a time delay. The wider the steps, the longer the delay. To help reduce this delay, the microprocessor automatically sorts the frequencies in descending order.

This descending order of scan frequencies takes some getting used to when manually rotating the main tuning knob. As the knob is rotated clockwise, frequencies scroll lower on the display! A counter-clockwise rotation produces the frequencies to ascend upward. Since both are backwards by convention, perhaps the manufacturer will see fit to reverse the wiring for us creatures of habit.

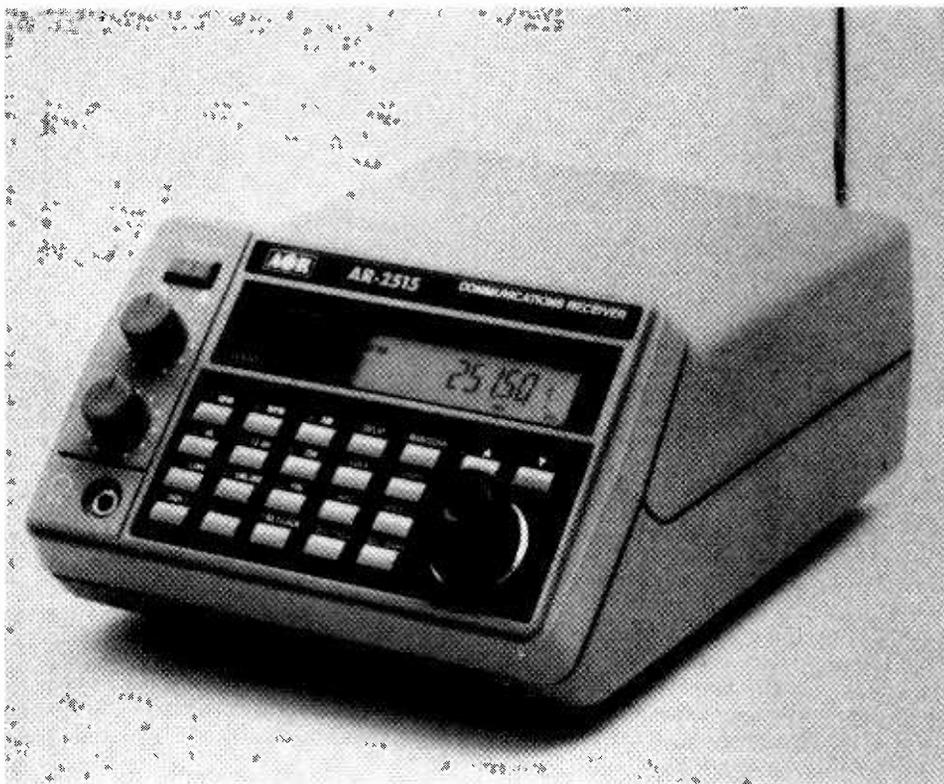
Sensitivity

The AR2515 was set alongside an ICOM R7000 for signal strength comparison. An experimental scanner antenna was attached through Grove RG6/U cable to a Grove PRE-3 preamplifier whose dual outputs fed both radios simultaneously. Sensitivity in all VHF/ UHF frequency ranges was virtually identical.

A ten-segment LED light bar shows relative signal strength.

Selectivity

Rejection of adjacent channel interference was about the same as the R7000. Since channel spacing is rarely narrower than 25 kHz in the VHF and UHF ranges, this poses no particular problem. But the 2515 is designed to go down into the short-wave bands as well, where 10 kHz broadcast spacing is the rule and 5 kHz is



AR2515 Specifications at a Glance

Frequency coverage	5-1500 MHz continuous
Modes	AM, FM narrow, FM wide (selectable)
Scan/search speed	Up to 36 channels per second
Memory capacity	1984 channels (62 banks, selectable)
Search capacity	16 separate ranges, selectable
Sensitivity (uV)	0.35 NFM, 1.0 WFM, 2-3 shortwave AM
IF scheme (MHz)	750 1st, 45.03 2nd, 5.5 WFM, 455 kHz AM/NFM
Search increments	5, 12.5, 25 kHz
Power required	12 VDC @ 350 mA
Antenna connector	BNC (one for all ranges)
Display	LCD
S-meter	Ten-segment LED light bar
Audio output	1 W 0% THD, internal speaker (ext. jack)
Size	3-1/4"H x 5-1/2"W x 8"D
Weight	2 lbs, 10 oz

commonly found.

While audio quality is exceptionally crisp with such wide bandwidth, adjacent channel interference is prominent. Weak signals are totally muted by adjacent channel powerhouses. No external devices can correct this selectivity deficiency.

SSB Reception

An external BFO (optional accessory) can be plugged into the AR2515 for monitoring single sideband or CW stations. As with AM reception, however, crowded band conditions in the shortwave spectrum will result in considerable interference while trying to weed out closely-spaced stations.

Antennas

A single BNC connector allows attachment of a telescoping whip (included), but this is only useful on close, strong signals. Switching between two outdoor antennas -- a wideband scanner antenna for VHF/UHF and a wire at least 25 feet long for shortwave -- is definitely recommended.

Some General Observations

It is difficult to find fault with an initial entry of an innovative receiver with such wide frequency coverage and massive memory capacity. Certainly, home experimenters are bound to come up with even more useful modifications for this scanner. Nonetheless, there are some shortcomings worth noting.

A prominent background hum through the speaker and a high-pitched whine are probably a combination of AC hum from a marginal wall adaptor and the receiver's loop (synthesizer) noise.

Synthesizer radiation is quite noticeable when using the indoor whip antenna. A similar problem with the early MX5000

manufactured by AOR for Regency Electronics was substantially reduced by internal shielding and bypass capacitors.

There is no window detector, so the search sequence will stop on a signal as soon as it is strong enough to break squelch rather than when it is tuned on center frequency; thus, a signal may actually be 5-10 kHz off frequency when the radio stops to monitor it.

As with the 2515's predecessors (MX5000/5500/7000, AR2001/2002), there is no search hold. If a signal is uncovered during the search sequence, even with delay on, the squelch knob must be opened to prevent resumption of the search sequence after the 3-second delay.

The 2515 doesn't always come on the first time the power button is pressed; the display will remain blank. The switch may have to be turned on and off several times before the microprocessor will initialize, indicated by the legend "AR2515" scrolling across the display.

The tiny, dark blue panel legends printed against a black background are very difficult to read. Lighter, larger print should be selected.

The instruction manual, a combined effort of a number of individuals, needs pruning of errors and convolution. Fortunately, AR2515 owners are invited to call a toll-free number for help.

The Bottom Line

While each of us would have designed it differently, the AR2515 does offer a great deal to the inquisitive listener and is a significant step forward in receiving capability. Its compact size, wide frequency coverage, enormous memory, signal strength indicator, computer port, manual tunability and rapid scan/search speed make it an attractive addition to the radio room.

Is It Really New?

Occasionally, we will receive a letter from reader who recently purchased a scanner or other radio and suspects that it is used. In some cases, the customer may well be right; it could have been a demonstrator or returned by a dissatisfied customer.

MT reader Mike Lewis of West Covian, California, recently provided us with a checklist to help decide whether or not the unit you received is really new. Somewhat edited, we share these here with our readers.

1. Are the insert tabs on the display carton torn, creased or re-taped over original tape?
2. Is the display carton creased, torn, smudged or taped shut?
3. Are accessories bound by previously-twisted tie-wraps?
4. Are wrappings torn, re-taped or re-stapled?
5. Is the styrofoam packing material broken?
6. Are accessory cables re-folded, showing previous creases from the factory?
7. Is the unit or accessories dusty, scratched or smudged?
8. Are the instructions wrinkled or smudged?
9. Is the warranty card missing, filled in or erased?
10. Have plastic film protectors been removed from the display or keypad?
11. Have local frequencies been programmed into the memory channels?
12. Is original heat-shrink plastic wrap now missing?

There are some pitfalls in such a "grading system." A factory-fresh radio has not been pretested; with some models, that's not good! Also, a carton can be damaged in shipping, but this does not mean that the radio has been used -- or even affected.

Some radios come from the factory looking used. This may be the result of careless packaging, or even the repackaging of a unit returned from a dealer.

Not all radios are heat-shrink wrapped, or have separate warranty cards or unprogrammed memory channels. Your best protection is to buy from an established firm who has earned a reputation for integrity. Even if a unit slips by him, he will honor your request for an exchange if done immediately.

Understanding Crystal Oscillators

Crystal oscillators aren't as simple as the circuit diagrams make them appear. Understanding how they operate can help to eliminate faulty operation, or no operation at all.

Various types of crystal oscillators are in common use, but I will describe only the two most common ones among experimenters — notably the Pierce and the Colpitts. We will also look at 3rd and 5th overtone oscillators, along with some VXO (variable crystal oscillator) circuits.

The Keys to Surefire Oscillation

A quality, active crystal is mandatory for proper circuit performance. This truism may seem trite, but I have known many tinkerers who experienced circuit failure because they tried to use old surplus crystals from bygone days and WW-II.

These crystals are contained in nonconductive molded cases, and the quartz crystal elements are sandwiched between two metal plates that have wires leading to the plug pins on the case.

The FT-243 style of holder is one example of the kinds of crystals I am discussing. Residue can build up within the crystal holder, owing to years of air pollution surrounding the crystal holder. Despite rubber gaskets, which some holders have under the cover plate, gasses enter the holder and coat the crystal and the metal contact plates.

Some of these sluggish or inoperative crystals can be restored by removing the quartz element (carefully!), then washing it and the metal plates with hot soapy water, followed by a thorough rinsing with clear, hot water. I have had good results also when cleaning them with denatured alcohol.

I recommend modern plated crystals in metal holders. These are found in a variety of sizes that range from the most common HC-6/U case to the smaller HC-18/U unit with wire leads. Plated crystals have their electrodes bonded to the quartz element, and the crystal floats on two small wires within the holder. These crystals are more fragile than their older brothers in FT-243 and similar holders, so try not to bump or drop them.

The next consideration for surefire oscillation is the proper feedback ratio in your oscillator. Feedback is obtained by sampling some of the oscillator RF output voltage and

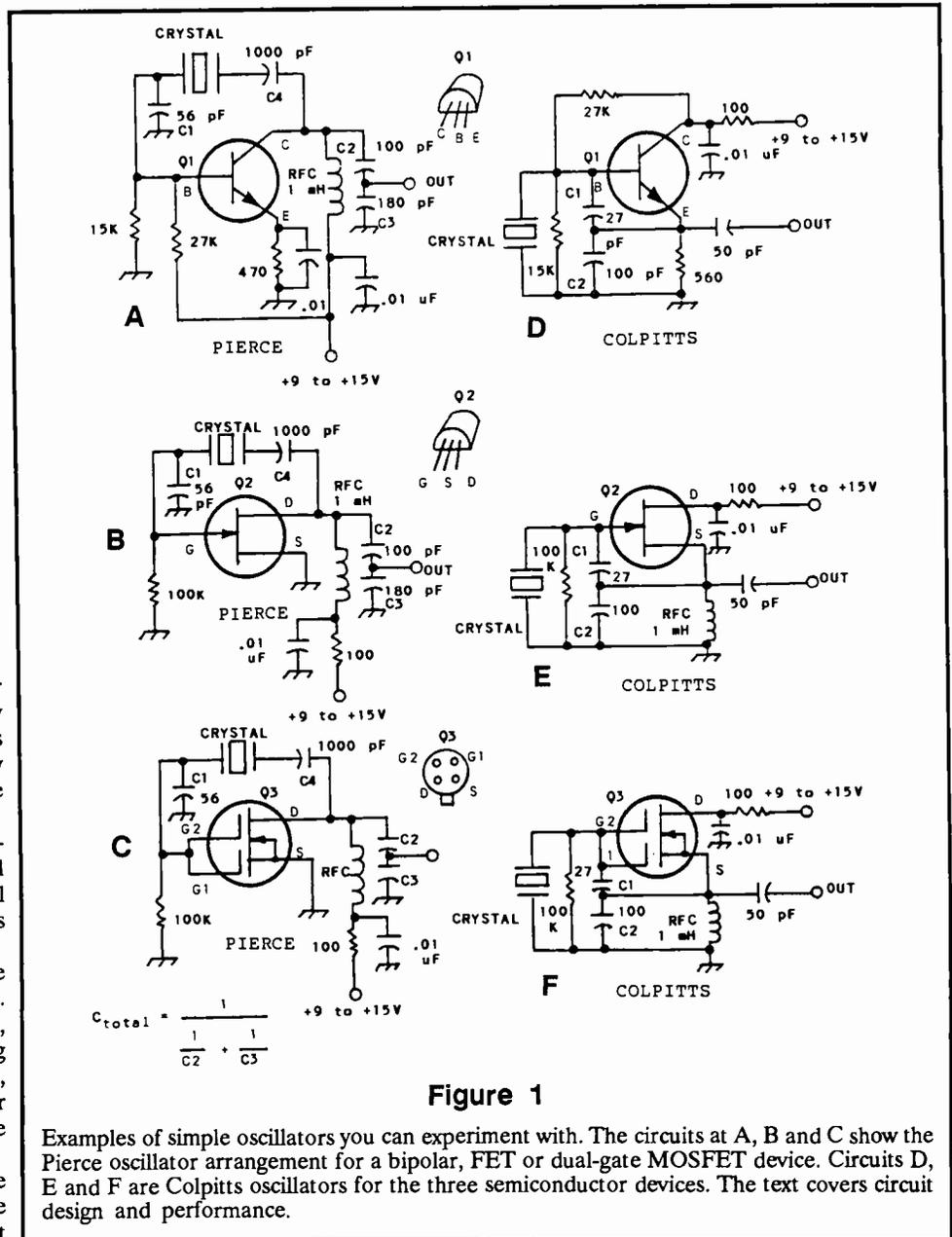


Figure 1

Examples of simple oscillators you can experiment with. The circuits at A, B and C show the Pierce oscillator arrangement for a bipolar, FET or dual-gate MOSFET device. Circuits D, E and F are Colpitts oscillators for the three semiconductor devices. The text covers circuit design and performance.

feeding it back to the input of the oscillator.

In essence, an oscillator is an amplifier that we cause to oscillate by way of feedback energy. Normally, no more than 1/4 the output power is used for feedback. Too much feedback can cause an oscillator to "squegg," and this leads to the development of spurious frequencies along with the desired one. Excessive feedback can cause the crystal to overheat and change frequency, and it may damage the crystal. Too much feedback can lead to transistor overheating and subsequent damage.

Finally, proper oscillation depends upon the upper frequency rating (fT) of the transistor versus the oscillator operating frequency. Try to select a transistor that has

an fT rating no less than five times the crystal frequency; e.g., a 50-MHz fT for a 10 MHz crystal.

An excellent bipolar transistor for crystal oscillators and VFOs is the CATV 2N5179. It has an fT of 1200 MHz! Similarly, a 2N4416 JFET offers good performance because of its UHF rating. Dual-gate MOSFETs, like the RCA 40763 and 3N211, are good choices for the same reason. If the fT is near the crystal frequency the oscillator may not operate.

Some Practical Circuits

Six common oscillators are depicted schematically in Figure 1. Circuits A, B and C are Pierce oscillators. The output is untuned

and the crystal is bridged between the input and output of the transistor. C1, C2 and C3 of Fig. 1A regulate the feedback. C4, depending upon its value, may also be selected for feedback control. C2 and C3 form a voltage divider to provide a takeoff point for the output energy.

The ratio of these capacitor values can be varied to provide a high- or low-impedance output characteristic. A 10:1 capacitance ratio (larger value at C3) yields a low impedance output, whereas the reverse (largest capacitor at C2) provides a high-impedance output.

In-between ratios may be used to obtain midrange impedances between 50 and several thousands of ohms. Generally, this is not critical to derive. In any event, C2 and C3 in series should have the same net value as that at C1.

Fig. 1B shows how to use a JFET (junction field-effect transistor) in a Pierce configuration. Gates 1 and 2 are simply tied together, as shown.

Examples of Colpitts oscillators are given in Fig. 1 at D, E and F. C1 and C2 are the feedback capacitors. Increasing the capacitance value at C1 provides greater feedback. This may be necessary if oscillation does not occur.

Some Colpitts oscillators require a C1/C2 ratio of 1:1. This depends on the quality of the crystal, the f_T of the transistor and the gain (beta) of the Q1 transistor. The FET gain is measured in transconductance (gm).

The component values provided in Fig. 1 should ensure good performance when using crystals from 1 to 20 MHz fundamental crystals.

Overtone Oscillators

We can cause a fundamental crystal to oscillate at odd harmonics. This is called "overtone" oscillation. The most common cases call for 3rd or 5th-overtone oscillation. This prevents the crystal from oscillating on its fundamental frequency.

For example, we can cause a 10-MHz crystal to oscillate at approximately 30 MHz by using the circuits of Fig. 2A and 2B. The overtone frequency is seldom exactly three or five times the fundamental frequency, but it will be reasonably close for most experimental work.

Overtone oscillators require a tuned circuit at the output (L1 and C1). This circuit is tuned to the desired overtone frequency, at which time oscillation commences. Reliable

oscillator starting can be ensured by tuning C1/L1 slightly higher in frequency than the setting that causes oscillation. Output reduction is minor when this is done.

Most crystal manufacturers provide products that are designed specifically for overtone operation. The frequency marked on the holder is correct, even though it may not be precisely three or five times the fundamental frequency of the quartz element.

Variable Frequency Crystal Oscillators

This type of oscillator is known as a VXO. We can "rubber" the crystal frequency a few kHz when using the circuits of Fig. 2C and 2D. A Pierce version is shown at 1C and a Colpitts VXO is presented at D. C1 and L1 are reactances (XC and XL) that are placed in series with the crystal.

The greater the inductance value for L1 the larger the frequency shift as C1 is adjusted. The lower the crystal frequency the smaller the frequency shift. For example, a 4.1-MHz crystal can be shifted only 1.5 kHz, typically. At 10 MHz we can expect shifts as great as 10 kHz, and at 15 MHz it is possible to obtain a 20 kHz shift. AT-cut crystals seem to rubber the best of the types available.

Too great an inductance at L1 will cause the oscillator to function like a conventional VFO, and large frequency swings will be possible. The disadvantage of this condition is that we lose the excellent frequency stability of the VXO. Miniature RF chokes are suitable for use at L1.

These are ball-park choke values versus frequency: 1-4 MHz; 50 uH. 4-7 MHz; 25 uH. 7-12 MHz; 15 uH and 12-21 MHz; 12 uH. I have found these values suitable in the circuits of Fig. 2C and D when using a 100-pF variable capacitor for C1.

Closing Comments

I have not discussed crystals in depth. Many additional characteristics pertain to crystals and the oscillator circuits in which they are used. Such matters as load capacitance, Q, series resistance and series- or parallel-mode oscillation are important to circuit designers.

I do not want to burden you, the beginner, with details about those parameters at this time. I urge you, however, to breadboard some of the circuits in Figs. 1 and 2. The learning exercise will provide a stepping stone to future circuit development.

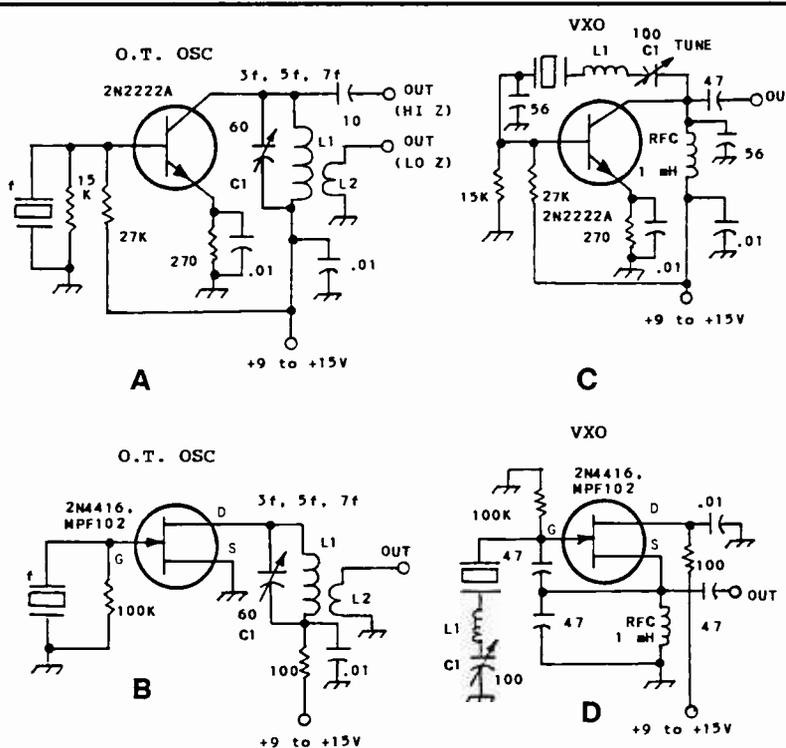


Figure 2

Examples of overtone and VXO circuits. The oscillators at A and B permit crystal oscillation at odd harmonics of the crystal fundamental by tuning the output circuit (L1/C1) to the desired overtone frequency. Circuits C and D enable you to pull or "rubber" the crystal lower in frequency by using a VXO type of circuit. C1 is the tuning control for shifting the frequency. See text for additional data.



Make the BC-600 (or BC-580/760) a Real Tone Scanner

by Dean McDermott

The BC-600 is a big step forward in the evolution of scanning, but it has one major draw back: you either scan all channels not locked out or you scan just the tone coded channels not locked out.

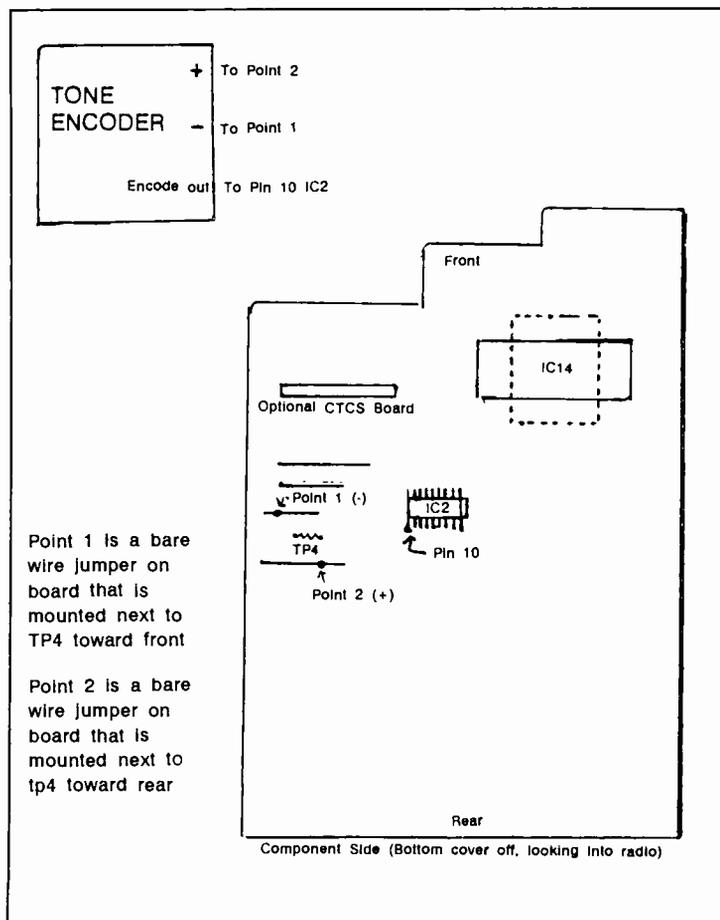
That was the past. This is now.

Now you can scan both tone and carrier squelch channels.

The way to do this is to include a CTCSS tone encoder in your scanner. Tone encoders are available from "Communications Specialist" (1-800-854-0547) at a price of \$29.95. Ask for model SS-32.

Here's the Hookup

- 1 Remove the bottom of the BC-600
- 2 Install optional tone board from Bearcat if it is not already installed.
- 3 Solder the negative lead from the new tone encoder to point 1.
- 4 Solder the positive lead from the new tone encoder to point 2.
- 5 Solder the encoder out lead to IC 2 Pin 10.
- 6 Follow the instructions included with the encoder board to program the encoder board for a tone of 67 Hz.
- 7 Mount the board on top of IC-14 using the tape supplied.
- 8 Turn the scanner on and turn the CTCSS on.
- 9 With the scanner in manual, program in a frequency along



with a tone of 67 Hz.

- 10 Turn the squelch full clockwise.
- 11 On the encoder board locate the output level control (small screw driver adjustment).
- 12 Starting with this adjustment full counter clockwise, turn it clockwise till you hear noise from the speaker.
- 13 Close the scanner up; use caution not to short any wires out.

Now follow directions for using the CTCSS decoder, but when you enter a frequency that does not have tone or a frequency that you don't know the tone of, enter the tone of 67 Hz. Now you can scan both tone and carrier squelch frequencies.

Note: 67 Hz is commonly used for open squelch. If 67 Hz is being used in your area for tone encoding you may select any unused tone for your open squelch channel.

Techniques of Taping

by W.N. Jenkins

Soon after one hears his or her first exciting radio call, the thought of preserving it on tape naturally occurs. It certainly did to me, and after making a very modest investment in time and material, I can say that not only has the use of taping enhanced my monitoring activities, but it has actually changed my listening habits.



A tape recorder is not simply a necessary piece of equipment and the ability to record and preserve material. It reaches much deeper, into subjects such as statistical probabilities. It provides you with a way to search for the exotic and unexpected at times when you're sound asleep or away at work.

The Equipment

Let's start with your receiver. All modern day scanners and receivers are suitable for off-the-air taping. I suggest caution when considering older tube-type equipment, as the voltage levels present at the speaker output may damage the solid state VOX (voice operated circuit) and the input levels presented to your tape recorder may be far too high. However, if your equipment is solid state with an 8 ohm speaker jack, you're on your way.

A final requirement from your radio is that it have a squelch control. The ability of your receiver to completely shut down any audio output below a preset level is what enables the VOX circuit to detect the presence or absence of such audio output. The remaining tasks are to turn on the tape deck, reduce the level of the audio to such that it is acceptable to the tape player's input,

and return to the original pause position when the signal is no longer present. All modern day scanners, of course, have a squelch control.

Some otherwise fine receivers such as the Sony ICF-2010, which does have a scan function, does not have the ability to completely drop off all of the audio signal. In some cases, the RF gain control can serve this purpose, although it has been my experience that this is not as precise as the usual squelch circuit.

Some accessory devices, such as the Jabco Voicegate, can be used to add-on the squelch feature. It also contains a VOX circuit and from what I've read about it in *Monitoring Times*, I'm looking forward to giving one a try.

If you own one of the more upscale pieces of recently introduced gear, this function may be built-in and so much the better! Those of us with more commonplace radios however, must make do with what is available. That means in addition to our receiver, we'll need a VOX circuit and a tape recorder.

The VOX circuit shown in the figure was at one time available in kit form from Capri Electronics (P.O. Box 589, Bayfield, CO 81122, ph. 303-884-9084). However, demand was not strong enough for it to remain in their catalog and the circuit is reproduced here for those who wish to "roll their own."

Capri used to sell an assembled version (with an additional sensitivity control). However, since they left the consumer market for electronic countermeasures, it may no longer be available. There are other circuits that will do the job but I have found this one to perform so well that I've never had any reason to investigate others.

Finally, you will need a tape deck. Good fortune smiles upon us! I have found that the best and most reliable recorders are the inexpensive cassette units found at Sears and Radio Shack. High quality and expense are wasted in this application. After all, we are recording voice transmissions and high fidelity just gets in the way.

When shopping for your deck, keep in mind that it must have a remote mike jack. This is what is used to turn the tape on and off by the VOX circuit.

Construction and hook-up is a breeze for anyone handy with a

soldering iron. As only audio and DC levels are present, parts placement is far from critical. The unit can be built on vector board and enclosed in a metal enclosure. Use shielded cable for the connection to your radio and the input to the mike jack on the tape deck. It is important that you match the DC polarities on your remote control jack to the boards polarity as shown in the schematic.

Ready to Roll

After making the initial hookups, insert a tape and place the recorder into the "record" position. When power is first applied to the VOX board, it goes into an "ON" condition for about four seconds, whether an audio signal is present or not. Now, turn up the volume on your radio and make tests at various levels noting the volume that yields the best recorded sound. This can vary from 25% to full volume.

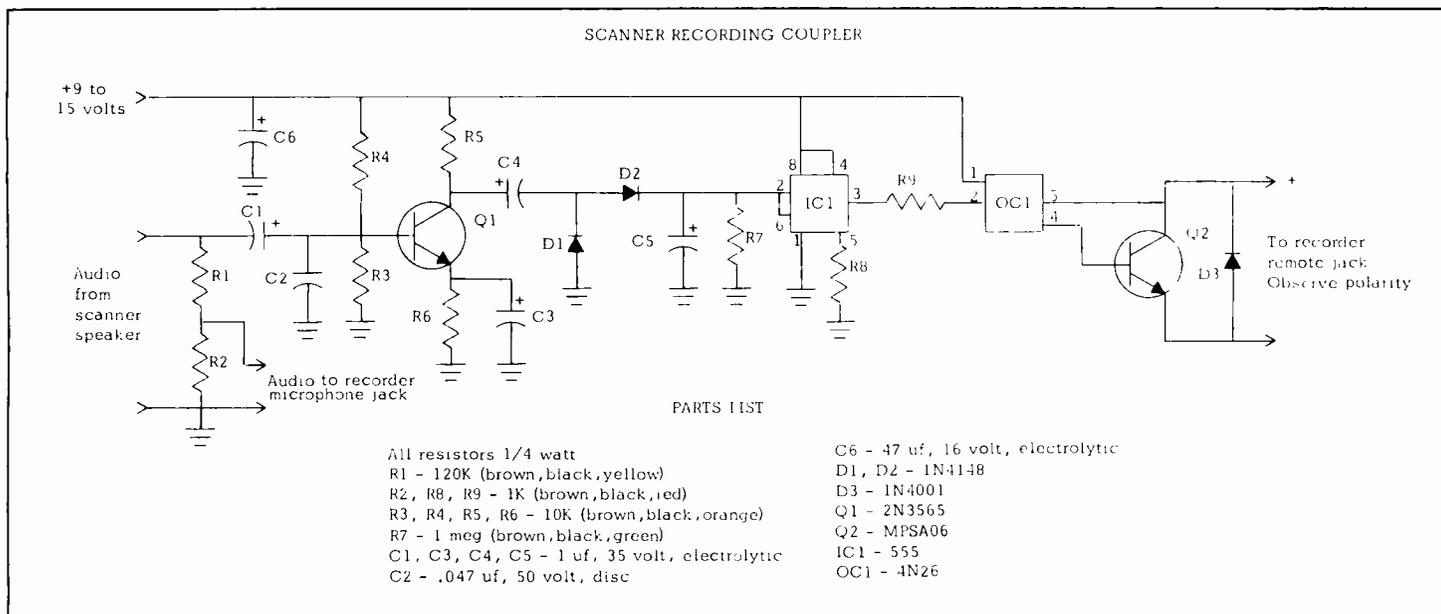
Resistor R7 can be increased in value to increase the on-delay time. In the circuits shown, about two seconds of tape run-on occurs after recording the last message. I have found this very appropriate, as it prevents the tape recorder from cycling during return transmissions, much in the same manner as the scan delay functions on the radio.

That's all there is to it. With a nifty gadget like this you can listen to all those missed communications. In fact, you can listen to a whole days worth of comms in just an hour or so.



Projects for Experimenter's Workshop, while reviewed by our Technical Editor, are submitted by readers and remain experimental.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, 25 Amherst, Wilkes-Barre, PA 18702



dB or Not dB:

A Guide to Interpreting Decibel Values

I'm sure that every reader of this column has heard or read the terms "dB" and "decibel." Of course, the first of these terms is the abbreviation of the second, but just what do they mean, and what have they to do with antennas and radio communications?

Well, in practical terms, workers in communications have found that, when signal power levels change, a decibel scale indicates the kind of difference the ear hears better than do some other scales.

To explain, let's compare the communications value of signals from two different shortwave stations. Let's say that you are tuning between one shortwave station (station A), and another shortwave station (station B). And let's also say that both stations are identical in every way except for the power they use: they are located next door to one another in the same foreign country, using the same kind of antennas, transmitting on the same band, playing the same kind of programming material, and so forth.

If station B transmits twice the power of station A, we might expect station B to sound twice as loud at our receiver as does station A, right? Although that seems to be a reasonable guess, it's wrong.

But now let's go to the decibel scale and see what it would indicate in this situation. On the decibel scale, one decibel is a just-barely-noticeable change in signal loudness. And, with a decibel scale, the change in power from station A to station B (a twofold increase) can be shown to be just three decibels. Remembering that a decibel is a very small change in signal strength, we would expect three decibels to be a relatively small change in signal loudness. Thus, using the decibel scale, we can better indicate how our ears respond to a doubling of signal power.

Now you might wonder how we can tell how many decibels a particular change in power levels will give, and how we can interpret the various amounts of decibel change we encounter in communications work.

Nicely enough, communications engineers have already worked this out for us. Table 1 shows some decibel values which we are likely to find useful in our communications work, and how to interpret them.

But what do antennas think about decibels?

When reading about a new antenna in

TABLE ONE
A Comparative Table of
Decibel Value Meaning

1 dB	About the smallest change in sound level which can be detected by the human ear. The effect of 1 dB change in power (25%) is almost unnoticeable.
3 dB	A doubling of power in a signal gives a 3 dB increase in signal level. This is an easily noticed change, but not at all strong. May make a marginally readable signal readable.
6 dB	Multiplying the power by four gives a 6 dB increase in signal level. This is a very noticeable increase, could make an unreadable signal readable. The S-meter on communications receivers usually have each S-unit = 4 to 6 dB.
10 dB	Multiplying a signal's power by 10 gives a 10 dB gain. A 10 dB change is a bit more noticeable than 6 dB, but not greatly so.
20 dB	This level represents a gain of 100 in power. It gives a big increase in the loudness of a received signal.
30 dB	This level represents a gain of 1000 in power. A 30 dB change in power gives a dramatically large change in the loudness of the received signal.

which we are interested, we may find a statement of its gain, given in decibels. Frequently this gain is determined by comparing the new antenna to our friend, the halfwave dipole antenna. The comparison is then reported as so many decibels of gain, referenced to a dipole (dBd).

Again, Table 1 can help us to understand what the dB gain value means. An antenna with a gain of 3 dB over another antenna would give an improvement in receiving weak stations, for which this

TABLE TWO
Approx Maximum Gain for
Common Antenna Designs

Antenna Type	Approximate Signal Gain
Groundplane	-1.8 dBd
Dipole	0.0 dBd
Longwire (1 wavelength lon)	.4 dBd
5/8 wavelength vertical	1.2 dBd
Two-element quad	7.0 dBd
4-element Yagi-Uda	10.0 dBd
Parabolic Dish	Gain varies greatly depending on the design. Gains of 50 to 60 dBd common

slight (3 dB) boost may bring them from marginally-readable to readable.

But let's say that you were looking for a means of bringing in signals so weak you cannot quite even tell for sure that they are there with the lower gain antenna. Then, since 3 dB is not a big improvement, the antenna with 3 dB more gain than the antenna you are using would not be of much interest to you. For what you want, you may need more like a 6 to 10 dB increase in gain.

Table 2 gives a comparison of the gain of some common antenna designs, as compared to a dipole antenna.

So, what difference does one dB make, anyhow?

Obviously, one dB will rarely make a real difference in your communication potential. Remember that it is a value that's just-barely noticeable by the human ear. So, unless we are really particular, we don't consider an improvement (or loss) of one dB in signal strength to be of any practical consequence.

But losses (and gains) in terms of decibels are additive. So consider a situation where you might have an antenna system where you are losing 1 dB due to corroded connectors at the antenna, another 1 dB loss due to low-quality feedline, and another dB due to failure to solder some connection you should have soldered. That adds up to 3 dB.

So, although any one of these 1 dB losses are not of any real significance by themselves, by correcting all of them, you can have a gain in antenna performance of 3 dB, a small but worthwhile amount in weak-signal work.

Incidentally, if you had several small losses in your antenna system with a total of 4 dB loss between them, correcting these losses would give one whole S-unit of gain (or more, see Table 1) to the system.

RADIO RIDDLES

Last Month: Last month I asked you to give two relatively common ways of reducing noise-pickup by the way in which we utilize ordinary antennas. I also asked you to give a common trick for reducing noise-pickup from the antenna lead-in, through the proper choice of cable. Did you know the answers?

Well, one well-known way to reduce received noise is to mount the antenna so that its length runs horizontally (i.e., it is

horizontally polarized). Because much man-made noise is vertically polarized, noise pick-up is often thereby reduced.

Another trick, if you have the real estate to do it, is to mount your antenna far away from any buildings and electrical power lines. This removes the antenna from the areas where electrical noise is generated, and reduces noise pick-up dramatically at times.

And, if there is an electrically noisy environment between the antenna and the receiver, it is good to use coaxial cable as your antenna lead-in. This is because the outer conductor (braid) of the coax is a shield against the entry of extraneous signals, such as the electrical noise, through which the cable must pass between the antenna and receiver.

While we're at it, we should mention also that the use of a highly directional beam antenna reduces noise signals from all directions except the direction favored by the beam's main lobe. Thus, if you have trouble with noise received from a particular direction, a highly directional beam, pointed away from the noise source, will cut down on noise interference while allowing communications in the direction favored by the beam's main lobe.

This Month: For what famous inventor is the decibel named? Hint: the answer is not Mr. or Ms. Decibel.

Find the answer to this month's riddle, and much more, next month in your copy of *Monitoring Times*. Til then, Peace, DX, and 73.



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MT

Q. I recently saw a huge conical horn antenna on a microwave tower. Can they interfere with ham radio equipment, TV—even microwave ovens? Are these hazardous to your health? (Barney Fontenot, San Antonio, TX)

A. Only if they fall on you. Due to their frequency range (several thousand megahertz), their patterns are highly directional; very little scattered radiation falls outside of their boresight.

While there have been documented cases of microwave radiation injury, they have all been the direct result of being in the line of fire. Cause and effect studies are presently being conducted to determine whether VHF and UHF walkie-talkies, held to the head during transmit, may cause eye injury. The jury is still out on this one.

There is contradictory evidence being gathered pointing toward high-tension power lines and even radio transmitters as being cancer producing. Suspicion of flawed data collecting should offer some relief to hams and broadcast engineers.

So far as interference potential from those microwave towers, only TV dish owners near the microwave transmitters have complained of such problems, called "TI" (terrestrial interference). This is because land microwave services share some of the same bands utilized by satellite TV. Other home electronics appear to be immune, largely because they utilize entirely different frequency ranges and have adequate shielding.

Q. Does anyone out there repair old scanners? I have a carcass to donate and need work done on another.

A. Absolutely! Gerry Oliver of G & G Communications (9247 Glenwood Drive, Le Roy, NY 14482; phone 716-768-8151) is always looking for discard scanners to salvage, and does a fine job troubleshooting and repairing scanners as well (if he has the parts in stock!).

Q. My old Hallicrafters R-48 extension speaker is rated at 3.2 ohms; is it safe to attach it to a radio specified for an 8 ohm output? (Robert Gallardo, San Jose, CA)

A. Ordinarily, yes. The only exception might be if the radio has a marginally-rated solid-state amplifier which will be operated at high listening volume. The low speaker impedance could cause the amplifier to draw excessive power, leading to heat failure.

If it is solid state, run the radio for a few minutes at normal listening volume, feeling the power amplifier circuitry for uncomfortably-hot temperatures. Moderately warm is normal. Be careful not to touch any of the wiring connected to the AC line cord and do not perform the "touch test" on vacuum tube circuitry; both represent a serious shock hazard.

Q. Even with the ignition switch turned off, my Realistic DX360 portable radio experiences high level "hash" noise when plugged into a DC/DC converter operating from the car battery. Any cures? (Robert Hilton, Ft. Wayne, IN)

A. I'd be willing to bet that some microprocessor-controlled circuit (clock, radio, ignition, etc.) in the vehicle is still functioning and causing the interference. Try these steps:

(1) Disconnect alternately the external antenna and power cord (switching to internal batteries) to determine whether the noise is coming through the antenna or power cord.

(2) If antenna, mount your outside receiving antenna as far as possible from the engine compartment, using coax lead-in.

(3) If power cord, install a hash filter (choke and capacitor set), available from most automotive electronics dealers including Radio Shack.

(4) You may have to wrap the radio in metal screening if it is picking up radiation directly through its plastic cabinet.

(5) Contact the dealer or manufacturer of your vehicle regarding service notes to reduce electrical noise interference on radio reception.

Q. What is "longwave" as printed on the dial of my portable radio? What can I hear there? (Charley Thomason, Longview, TX)

A. Years ago, various radio bands were expressed in wavelengths (meters) rather than frequency (formerly kilocycles and megacycles per second, now kilohertz and megahertz). International broadcasters still conventionally refer to "meter band" in their identifications, but two-way communicators never do; they always refer to frequency.

Without going into theory, the higher the frequency, the shorter the wavelength. Thus, low frequencies are the longwave bands and higher frequencies are the shortwave bands. The North American AM broadcast band, between the two, is called medium wave.

Some internal domestic services of foreign countries use longwave (150-400 kHz or 2000-750 meters) for programming to their citizens. Unfortunately, due to their relative low power, short-range propagation, and interference in North America from aeronautical beacons and images from powerful medium wave stations, reception of these stations is rare.

Q. Can a satellite TV dish be used for amateur transmitting and receiving above 1 GHz? (Barney Fontenot, San Antonio, TX)

A. Absolutely, with reduced gain and directivity below 3.7 GHz, and additional above.

Q. Are there any devices or computer interfaces which will allow me to copy the digital data transmissions I hear on our local police channels? (Robert Gallardo, San Jose, CA)

A. Apparently not. In spite of several teases inviting our technically-inspired readers to share with us any experiences they have had in doing this, not the first one has ever come in. It seems that the protocol is a non-standard packet system, accounting for its resistance to being copied by consumer equipment.

Questions or suggestions sent to MT are printed in this column as space permits. If you prefer a reply by return mail, you must include a self-addressed, stamped

Get the Most from your Nicads

Why Does My Bearcat Shut Off So Soon?

A number of Bearcat 200XLT owners have questioned the charge life of their battery packs. Some users have complained of only about 3 hours before the low battery indicator comes on (this premature loss of capacity is known as "fading"), while others report five or more hours of useful performance.

The energy storage capacity of a nicad (nickel-cadmium) battery is rated in milliampere-hours (mAH), obtained by multiplying the recommended discharge current by the time it takes the cell voltage to drop from the normal 1.2-1.3 volts to 1.0 volt (considered to be discharged).

It is a simple matter to determine normal voltage for any nicad battery: simply multiply the voltage per cell times the number of cells. Thus, a 6-cell battery would have a terminal voltage of 7.2-7.8 volts, discharging to 6.0 volts.

Capacity

A 560 mAH battery can nominally provide 56 milliamperes of current for 10 hours. It could also provide 560 milliamps for 1 hour, too, although at higher currents the efficiency drops as some energy is transformed into heat and the battery will discharge in less than one hour.

One may logically ask, if such high current discharge rates are available, why is it necessary to recharge so slowly? Trickle charges of 12-16 hours are common. The reason is that high charging currents produce excessive heat and oxygen gas which builds up pressure, causing internal damage.

Since nicads are not 100% efficient, a recharge time of about 140% of capacity is usually recommended. For example, a 450 mAH battery being charged at 45 mA would not reach capacity for about 14 hours.

How to Kill a Battery

The service lifetime of a nicad battery is many years, accommodating anywhere from several hundred to tens of thousands of charge/discharge cycles, depending upon effective maintenance. Diminished capacity can be caused by overcharging, repeated shallow discharge/recharge cycles, long term storage or inadequate charging.

Overcharging produces hydrogen and oxygen gases on the negative and positive plates. At first the excess oxygen unites with the cadmium metal to form cadmium hydroxide; eventually, after saturation, the gas pressure buildup forces electrolyte out of the battery cells, causing a reduction in electro-chemical capacity. This venting

process can permanently damage a battery.

You can verify loss of electrolyte in your nicad battery by simply measuring the voltage after a recharge cycle--it will be higher than normal (above 1.3 volts per cell). In spite of the higher voltage, the capacity will not be as good, resulting in premature discharge in use.

Repeated overcharging also reduces a nicad's capacity by permitting crystals to grow on the cadmium anodes. The crystals restrict the amount of electrochemical energy which can be stored, producing an effect known technically as "voltage depression" or, more commonly, "memory". Fortunately, the crystals are usually redissolved by several deep discharge cycles, a procedure known as "exercise".

Deep discharge simply means that the battery current is drained down to the point where the terminals measure 1.0 volt per cell.

A charging technique utilized by the military, known as "pulse" charging, can virtually reverse battery memory with one shot and add an extended service life of two or three times normal. Hopefully, it will see its way into consumer products!

Long term storage encourages the formation of a "passivation" layer of insulating crystals on the nickel plates, preventing them from efficiently reacting with the electrolyte. As with memory, the deposit is usually removed by several deep discharge cycles.

Occasionally, these simple remedial procedures won't work and it is necessary to lower the cell voltage below 1.0 volt, a process known as reconditioning. It is necessary, however, to do this under careful control to prevent depolarization of one or more cells, rendering the battery virtually useless.

Nicad batteries operate most efficiently between 32 degrees Fahrenheit (above freezing) and 105 degrees Fahrenheit; this can be shown by actually measuring the battery voltage which will rise to a maximum at approximately 75 degrees Fahrenheit.

Bearcat Batteries

The BP200 battery pack contains six Sanyo AA-size 600 mAH nicad cells connected in series to provide a nominal 7.2 volts DC to the radio. An internal voltage regulator assures that the battery will receive a constant charging current over a wide range of supply voltages, such as the 12-14 volts experienced when connected to the AC wall charger or an auto cigarette lighter charger.

Recently, Bob Parnass performed a series of tests which he reported in a paper on the subject as reprinted in the RCMA

Newsletter. We shall summarize his findings here.

The BC200XLT consumes an average of 50-100 mA of current when on, depending upon the volume setting. Loud volume draws the greatest current and, oddly enough, 800 MHz reception draws about 13 mA more than low band reception! Earphone listening conserves battery life.

Even when the radio is switched off, approximately 0.5 mA of memory "keep alive" current is drawn by the radio. The microprocessor also has a backup capacitor to prevent memory loss during short periods of battery disconnect.

Batteries also drain themselves through internal resistance, accounting for limited shelf life, about 40 days maximum in the case of the BP200 pack. If kept in a hot car, the discharge time increases, reducing life-time by as much as 6 days.

Don't recharge your Bearcat at the first sign of a blinking low battery indicator; it is better to turn off the scanner, then turn it back on to reset the timer and use the scanner longer. This procedure may be repeated many times before the battery capacity is completely drained. The low battery indicator comes on much too soon.

Ideally, the BP200 should be drained to 6 volts (1 volt per cell), then charged for 16 hours. This procedure may substantially increase battery time to as much as 9 hours. There are two ways to accomplish this:

(1) Every month or two, remove the battery pack and tape the leads of a 12 ohm, 10 watt resistor across the terminals. This allows a 600 mA discharge current which should safely deplete the charge in less than one hour. Measure the voltage with a voltmeter and when it reaches 6 volts, remove the resistor, remount the battery pack and charge it for 16 hours.

(In lieu of the resistor, an automotive bulb may be used. Solder wire leads to the two tips under the base of a #1157 bulb and connect it to the battery; 400 mA will be drawn, draining a fully charged battery in just over one hour...ed.)

(2) Allow the scanner to run until the display blanks; turn it off, then on again to reset the timer. Do this repeatedly, occasionally removing the battery pack and measuring the voltage. When it shows 6 volts, recharge it for 16 hours.

These simple tricks will prolong the life of your nicad battery, saving you from the aggravation of premature equipment shut-down.

LETTERS

continued from page 3

Jim Streitmatter, N9HAS, of South Bend, Indiana, agrees with the proponents of restricting radio listening -- to a degree. Says Jim, "I just don't believe that a person without the proper authorization has the write to listen to anything he wants. Leads to anarchy, I think. But I don't want a police state, either."

George Golebiowski of Southbridge, Massachusetts, says that while we mentioned "an inexpensive (\$15) modification that would enable a radio to receive FM SCA transmissions, no such modification appeared in the article."

We were three dollars off. That modification is available direct from Dr. Elving for \$18.00. His address is P.O. Box 24, Adolph, Minnesota 55701-0024. While you're at it, ask Bruce for a copy of his catalogue. Also, a new edition of the *FM Atlas* will reportedly be out soon -- just in time for vacation travel. I hope to have a review copy of it shortly.

Speaking of vacations, Bart Veerman, publisher of the popular Haruteq frequency directories, offers some help to the U.S. scanner listener hoping to take his radio across the border and into Canada.

"According to the Canadian Department of Communications, no rules or regulations exist for scanners when used for personal entertainment. This means that you don't need a license and all scanners, whether mobile or stationary, can be legally used in Canada."

Bart points out a neat twist in Canadian rules that U.S. legislators should take a look at. "So long as the scanner is capable of receiving at least one public frequency such as national weather (162.400, etc.), there are no restrictions imposed on the frequencies you can monitor. You can legally monitor the RCMP (the Canadian equivalent of the FBI) and cellular phones in Canada. You just can't make use of or divulge to a third party, any of the communications you hear."

Bona Fide Program Guide

"At last!" writes long-time *Monitoring Times* reader Arthur H. Frietzsche of San Luis Obispo, California. Referring to *MT's* "new and improved" program guide (pp.58-66), he waxes, "From the ridiculous to the sublime. From the worthless to the program

guide I had always hoped for! Do I detect ye editor's hand in this?"

What you see is what reader Jeff Miller, KB2FBI (no relation) of Trenton, New Jersey, refers to as a "magazine [that] is maturing nicely." A very nice compliment, indeed. No small amount of praise goes to *wunderkind* Kannon Shanmugam, who compiles the column.

Says Bill Kiley, Oklahoma City, Oklahoma, "I heard a pirate station playing the children's record, 'Winnie the Pooh and the Blustery Day' on 9950 kHz. They gave out your name and address for QSL cards." Yes, I know. I heard them, same frequency, playing "Brer Rabbit and the Tar Baby." There's another pirate giving out Dr. John Santosuosso's name and address for QSLs.

Rude Awakening

"After reading your March 1989 cover story about cruise ship monitoring, I thought you would be interested in the response I have just received from a cruise ship radio officer."

"I've always found most shipboard radio officers to be extremely helpful, alerting me to company nets, additional times and frequencies and so forth. I was truly taken aback by this negative reaction. From now on I will stick to merchant shipping!"

Along with his letter, Thomas Snell of Gambier, Ohio, sends along a copy of the report. In case you can't read the copy reproduced on page 3, the radio officer of the *MS Celebration* has typed across the bottom of the reception report, "By listening to commercial radio traffic, you are braking (sic) both the FCC and ITU regulations. I am sending my report to the FCC."

Thomas, we advise you not to let this rude, uninformed human being ruin your fun. The truth is that he is dead wrong. Says Bob Grove, "It is legal to do this kind of monitoring."

Why not write a note to the "Celebra-

tion's" main office (Carnival Cruise Line, 3915 Biscayne Blvd, Miami, Florida 33137), informing them that you and 50 of your closest friends have changed your plans to sail on their ship. After all, would you trust your life to a ship where the radio officer is so ill-informed -- not to mention rude?



Nudist Radio!

"Enclosed is a copy of an interesting article which I came across. The photo depicts an FM radio station that apparently operates within the confines of a nudist park. Could you do an article on 91.5-WSRL?"

We were unable to write an article on the station when we found that it was not included in any listing of FMs on 91.5. After passing around the station's publicity photo, however, we sure didn't have any shortage of volunteers for the assignment.

We asked the FCC for their assistance. After they saw the photo, rumor has it that they chartered seventeen buses so that the entire staff can be in on the investigation.

Letters should be addressed to Letters to the Editor, Monitoring Times, P.O. Box 98, Brasstown, NC 28902 and should include the sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted. Because of the volume of mail received, personal replies are not always possible.

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Need: R-80 ballast tube for R274/FRR HALLICRAFTERS radio. Call Bob collect (501) 352-5907 from 4 to 9 pm.

Read out CW and Teletype on 32 character vacuum fluorescent display. AEA Inc. MBA-RO unit reads out plain text scrolling from left to right. Find out what they're saying - \$150 UPS paid (803) 229-1133.

Utility monitors, also from Europe, are invited to contact me by letter. Would like to discuss monitoring problems, identity of signals and stations, technical matters, etc. Henri Walser, HB9DBW, P.O. Box 213, 4009 BASEL, Switzerland.

Wanted: ICOM R7000 in excellent condition. Jeff Kadet, W3CRH, Box 20, Macomb, IL 61455 (309) 833-1809.

Little Big Horn Amateur Radio Organization now being formed. Free membership open to American Indians and other interested hams. For information contact W6FGE, Mick, 940 Temple St., San Diego, CA 92106. Ph. (619) 222-3912.

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REGENCY MX5000 w/GROVE Fastscan mod - excellent condition \$225; HX1200 - like new \$140. Christner, 306 Woodview, Cortland, OH 44410.

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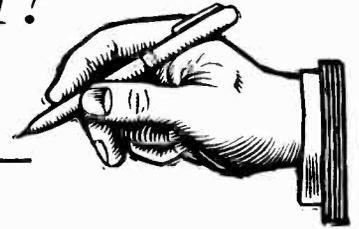
CONVENTION CALENDAR

Date	Location	Club/Contact Person	Date	Location	Club/Contact Person
May 5-6	S. Sioux City, NE	3900 Club & Sooland ARA/ Robt Pitner W0FZO 2931 Pierce St, Sioux City, IA 51104	Jun 4	New York, NY	Hall of Science ARC/Siphn.Greenbaum WB2KDG 85-10-34 Ave, Jackson Hts, NY 11372
May 6	Cedarburg, WI	Ozaukee ARC/ E.J. Bauer W9WQ N. 5415 Crystal Springs, Fredonia, WI 53021	Jun 4	Pittsburgh, PA	Talk In 144.300 simplex/223.600, 445.225 rptr. The Breeze Shooters/ William Kristoff Jr N3BPB 3617 California Ave, Pittsburgh, PA 15212
May 6	Brewster, NY	Putnam Emerg ARL/ Richard Brummer KC2TF RFD 6 Box 1283, Mahopac, NY 10541	Jun 4	Evansville, IN	Tri-State ARS/ Martin Hensley KA9PCT 1506 S. Parker Dr, Evansville, IN
May 6-7	Birmingham, AL	AL State Conv/ Frank Blanchard Jr AA4LB 3450 Kildare Dr, Birmingham, AL 35226	Jun 4	Princeton, IL	Starved Rock RC/ Kenneth Stasiak WB9ZFO 218 Chestnut, Wenona, IL 61377
May 6-7	Greenville, SC	Blue Ridge ARS/ John Chism ND4N Rt 6, 203 Lanewood Dr, Greenville, SC 29607	Jun 4	Chelsea, MI	Chelsea ARC/ Robt Schantz KA8JVK 416 Wilkinson St, Chelsea, MI 48118
May 7	Stirling, NJ	Tri-Co RA/ Herbert Eldert KA2DAU 1850 North Gate Rd, Scotch Plains, NJ 07076	Jun 4	Salina, KS	Central Kansas ARC/ Harvey Tewes WA0OZP 2317 Aurura, Salina, KS 67401
May 14	Medina, OH	Medina M2M Club/ Bill Green 256 Rustic Rook Dr, Chippewa Lake, OH 44215	Jun 4	Manassas, VA	Ole Virginia Hams ARC/ Joseph Turino KB4VHK P.O. Box 2027, Manassas, VA 22110
May 19-21	Rochester, NY	Atlantic Div/ Harold Smith K2HC 300 White Spruce Blvd, Rochester, NY 14623	Jun 10	Winston-Salem, NC	Forsyth ARC/ Bob Gates KJ4IC Box 60 Cedar Grove Pk, Kernersville, NC 27284
May 20	Knoxville, TN	TN State Conv/ L.B. Cebik W4RNL 2414 Fair Dr, Knoxville, TN 37996	Jun 10	Pittsburg, KS	Pittsburg Repeater/ Jerry Adams KA5BMX RR 5 Box 204, Pittsburg, KS 66762
May 20	Godfrey, IL	Lewis & Clark RC/ Harold Elmore KC9GL 5203 Dixon Dr, Godfrey, IL 62035	Jun 10	Coeur d'Alene, ID	Kootenai ARS/ Marjorie Hogeweide WB7WUB N 11655 Sundler Lane, Rathdrum, ID 83858
May 21	Peotone, IL	Kankakee ARS/ Frank DalCanton KA9PWW RR 1 Box 361, Chebanse, IL 60822	Jun 11	Willow Spgs, IL	Six Meter Club/ Jim Novak WA9FIH 2337 South 6th Ave, N. Riverside, IL 60546-1239
May 21	Randolph, OH	Portage ARC/ Joanne Solak KJ3O 9971 Diagonal Rd, Mantua, OH 44255	Jun 11	Erlanger, KY	N Kentucky ARC/ John Themes WM4T 60 Locust Ave, Covington, KY 41017
May 21	Tamaqua, PA	Tamaqua TS & Anthracite RA/ Allen Breiner W3TI 212 Race St, Tamaqua, PA 18252	Jun 16-17	Albany, GA	GA State Convention/ John Crosby K4XA PO Box 1205, Albany, GA 31702
May 21	Wheeling, WV	Triple States ARC/ Ralph McDonough K8AN Box 240 RD 1, Adena, OH 43901	Jun 17	Cortland, NY	Skyline ARC/ William Ackroyd WA2UFO 5 Hillton, Rd, Dryden, NY 13053
May 21	Wrightstown, PA	Warminster ARC/ Chris Dahl N13J 3417 Stafford Place, Holland, PA 18966	Jun 18	Santa Maria, CA	Satellite ARC/ John Flaherty N6PKK 409 Oakhill Terrace, Lompoc, CA 93436
May 28	W Friendship, MD	MD FM Assoc/ Mike Cresap 1294 Dorothy Rd, Crownsville, MD 21032			
Jun 2-4	Dallas/Ft. Worth, TX	ARRL National/ John Fleet WA5OHG 4348 Potomac, Dallas, TX 75205			
Jun 2-4	Seaside, OR	NE RS & OR Valley ARC/ Randy Stimsom KZ7Y 9890 SW Inglewood, Portland, OR 97225			

Monitoring Times is happy to run announcements of radio events open to our readers. Send your announcement at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.

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A couple of comments from *MT* readers:

Thank you for a wonderful year of Monitoring Times. In just one year of SWLing, I have grown to love the hobby. And in just one year, I can plainly see how the Times has grown and improved with each issue. Bravo!

I "inhale" every inch of every issue, and have never encountered a "bad" article. Enclosed is my two-year renewal. Continue your fine publication. I don't know how it could get better, but I suspect it will! - Stephen Wandel, Washington, D.C.

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Scanners and Receivers:

Are our wishes being ignored?

Over the years, a variety of consumer radios have appeared on the market. Shortwave receivers became more sensitive, accurate, stable and selective. Entrepreneurs entered into the foray, introducing fresh designs with attractive functions at reasonable cost. Then something happened.

A crush of low cost, high performance radios began to appear from Japan. American manufacturers were driven from competition. Revered brands like Hallicrafters, National, and Hammarlund buckled under the economic pressure, yielding to exotic names like Yaesu Musen, Trio-Kenwood, ICOM, Sony, Panasonic and Uniden.

The audiophile market had its analogy with the disappearance of Fisher, McIntosh, Harman Kardon, Bell and so many others which were replaced by offshore brands like Sansui, Matsushita, Onkyo, Nippon and Fujitsu Ten.

In an effort to deceive suspicious Anglophiles, many resourceful Oriental merchandisers branded their products with names like Juliett, Electro Brand, Citizen, Crown and Roberts.

In an effort to dominate, Japanese manufacturers began to offer "Chinese copies" of one another's functions and features undreamed of in prior years -- snooze alarms, shortwave memory channels, automatic on/off timers, recorder activators, microprocessor control, infrared remote controllers, computer interfaces and more.

At first consumers were dazzled by these "bells and whistles," but an unsettling fact has begun to emerge: The consumer is no longer in control. The Japanese manufacturers are offering to us not what we want, but what they want us to have.

Rotary knobs have been replaced by pushbuttons; variable and selectable functions have given way to factory-determined presets; bold, readable panel legends have grown small and dim; well-shielded metal cabinets have been replaced by plastic; easy-access circuitry has disappeared as dense construction and

house-numbered components now require maintenance by authorized service centers or discard and replacement; instruction manuals are often incomplete, incorrect and poorly translated.

Even worse, the Japanese seem to be indifferent to consumer input. Letters of complaint or inquiry are frequently ignored or pretentiously answered; customer service representatives are poorly informed, offering little relief to customers' queries; personnel who are really in charge are unavailable for assistance; back orders build for months without explanation or courtesy updates; dealer orders are cancelled without notification; parts are unavailable for warranty repair.

Whether this deplorable state of affairs in the consumer electronics marketplace is typical of Japanese business philosophy in general, or arrogance bred of successful market domination, there may be hope on the horizon.

Japanese manufacturers are suffocating under their own success. Inflation has driven them to other offshore suppliers -- Taiwan, Hong Kong, Korea, Malaysia -- in an effort to survive under their own competition. In many cases, these expediencies have lowered product quality, blemishing former reputations of high quality at low cost.

There is talk among some start-up American companies that the time might be ripe for Americans to fight back, unleashing a bevy of innovative products at competitive prices, satisfying the American consumer and providing service along the way.

We would encourage American industry to take a serious look at this opportunity. *MT* will be happy to support such an effort, reporting in its pages new products which are of value and interest to our readers. Let's all hope that in the near future we will be seeing more and more products bearing the label, "MADE IN THE USA"!

-- Bob Grove, WA4PYQ



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