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# MONITORING TIMES

A Publication of Grove Enterprises, Inc.

**Inside this Issue:**

**Ships of the NOAA Fleet**  
by Michael Chabak

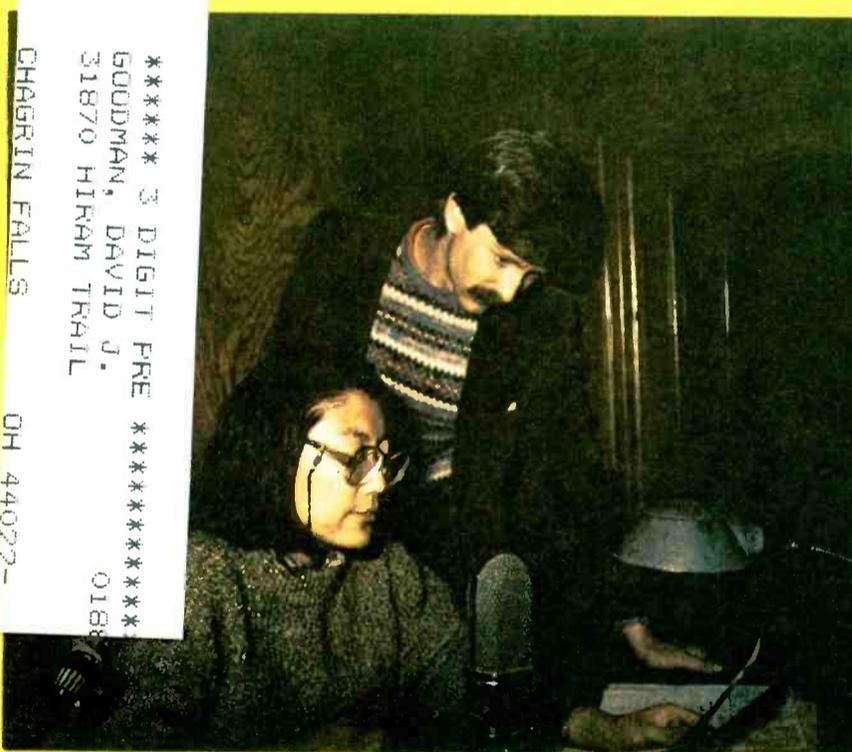
**DXing like the 'Eck-sperts'**  
by Larry Miller

**Larry Magne Reviews  
The New TenTec RX325**

**Annual Readers' Survey**

中國國際廣播電台

## THE CHINA CONNECTION



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 GUDDMAN, DAVID J.  
 31870 HIRAM TRAIL  
 0188  
 CHAGRIN FALLS OH 44022-

Chinese characters displayed above main headline translate to "Radio Beijing"

*14 Days in the People's Republic,  
A Trilogy of Articles By  
Our Man in China,  
Larry Miller*

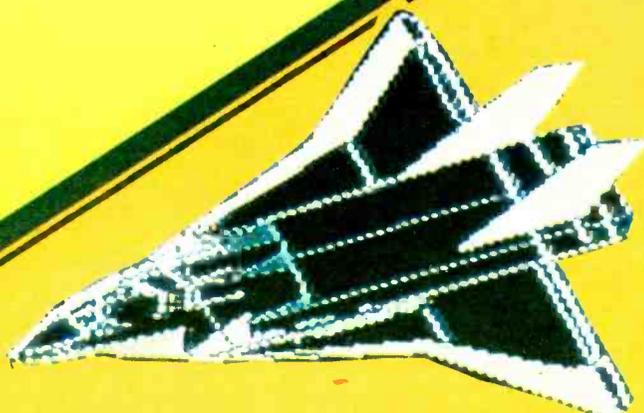
Story  
on Page 14

See p. 6

### Monitoring The Test Flights Of Top-Secret Aircraft

—By Steve Douglass

# STEALTH



LEFT—Author Steve Douglass's computer rendering of what F-19 Stealth fighter might look like.

# ICOM's State-of-the-Art 'Compatibles': New R7000 Joins World Famous R-71A



*"Now with these two superior pieces of equipment, you can enjoy laboratory quality reception from DC to daylight—100 kHz to 2000 MHz! Use them in combination with our fine antennas for signal reception which simply can't be beat."*

—Bob Grove

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An effective noise blanker has adjustable controls for optimum reduction of a wide variety of impulse noises, from power line hash to the Russian woodpecker. An internal speaker produces good audio and a tone control adjusts sound to comfort.

Outstanding sensitivity of 0.15-0.5 uV (from 1.6-30 MHz with internal preamp on). Many accessories are available for this first-class unit. **Order RCV6**

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## R7000: In a Word, Superb.

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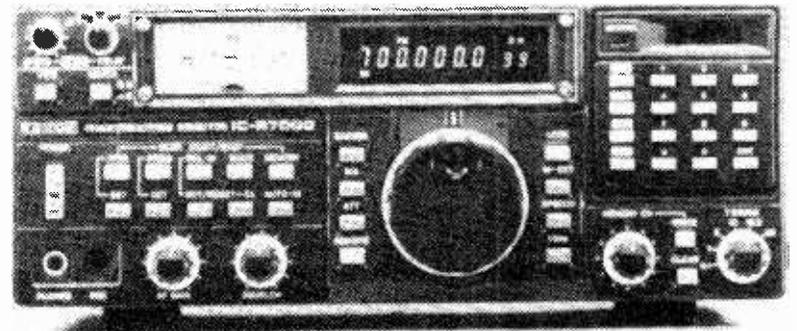
Yes, the new ICOM R7000 follows the reputation of its companion, the world-famous R-71A short wave receiver, but is fully compatible with that unit due to its total spectrum 25-1300 MHz frequency coverage (up to 2000 MHz with slightly degraded performance)!

Add to this enormous tuning range 99 memory channels with priority function, keyboard entry or dial tuning, FM/AM/SSB modes, five tuning speeds, S-meter/center tuning meter, narrow/wide filter selection, noise blanker, and adjustable scanning speed (1-5 channels/sec.) with selectable delay, and you have the most advanced scanning receiver ever designed for the serious VHF/UHF listener.

The R7000 covers aircraft, marine, business, ham (amateur radio), emergency services, government and television bands—all for a remarkably low price. For simplified operation, this receiver offers direct keyboard entry. Precise frequencies can be selected by pushing the digit keys in sequence of the frequency. The frequency will be automatically entered without changing the main tuning knob.

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## The FBI and FOIA

A recent question from a reader prompted some further investigation on my part and brought back some old memories. The listener/ writer was concerned that, because he receives propaganda literature from Communist bloc countries, he might be watched by the FBI.

A phone call to Washington FBI headquarters and our local (Charlotte, NC) field office revealed that anyone may solicit correspondence from anywhere and that an investigation without just cause (such as an overt act like stockpiling weapons) would be a violation of his civil rights. Besides, the spokesman added, it is simply impossible to manage the amount of paperwork which would be generated by casual investigations.

Enter the FOIA:

Anyone wishing to petition the FBI for a disclosure of any records being maintained by that agency may do so under the provisions of the Freedom

of Information Act (FOIA). Simply address your request to the FOIA officer at FBI headquarters in Washington, DC, or to your district field office.

Be sure that your signature is notarized, and be specific in your request. If you want all records pertinent to you, say so; if you want only specific records, tell them that. Be sure to include other information about yourself--date of birth, former addresses, places of employment--anything that will help establish your identity and not confuse the researcher who finds an identical name of someone else.

You may be legally billed for this service (perhaps ten cents per page) and may find some records deleted, but these deletions must be justified (unreleasable because of national security, etc.).

Next month's stunning conclusion:  
**THE FBI NAILS BOB GROVE!**

## Shortwave to be Featured on Talk Show

MT, PopCom and several shortwave clubs will be receiving special attention on the third annual "DX Special" to be aired over ABC Talkradio's popular phone-in program, the Ray Briem Show.

The very-early-morning special will begin at 0806 UTC (yes, that's 3 o'clock in the morning on the east coast!) and will feature such noteworthy guests as MT's Bob Grove and Paul Swearingen, ASWLC's Stewart MacKenzie, PopCom's Tom Kneitel, FM Atlas' Bruce Elyng, and noted radio engineer George Jacobs.

Best of all, it will also feature

YOU by simply dialing 1-213-879-8255. The phone will continue to ring until it is answered so that you won't be placed on interminable hold.

The program will be heard nationwide on the ABC network, including the following key stations and frequencies (kHz): WABC 770; WPRO 630; WTKN 970; WERC 960; WJBO 1150; WKIS 740; KPRC 950; KRNN 930; KTAR 620; KABC 790; KFBK 1530; KXL 750; KGU 760.

Check local schedules for a station near you and tune in to this exciting call-in talk show!

Gorrell in Richmond News Leader



See Stealth article on page 14.

Coming in Feb: MT grows to 64 pages! plus a startling disclosure about mysterious "spy numbers" stations!

## An SASE Makes the Difference

Yesterday we received approximately 500 pieces of mail. Many of these letter writers requested general information, guidance in their pursuit of the monitoring hobby.

While some of these writers enclosed self-addressed, stamped envelopes to offset our expense of answering their questions, a sizable number did not. At 22 cents a shot (our research and expertise are free) this could have represented over \$100 in postage for one day alone! It's easy to see why we have to draw the line.

One indignant (and persistent) letter writer threatened not to renew his subscription to MT if I didn't reply to his most recent barrage of questions in spite of the fact that I had replied previously as a courtesy, even though he had not included an SASE. That's a choice he will have to make.

If you have a question which needs a personal reply, please enclose an SASE; we will answer you as soon as possible. If you have a question of general interest which does not need a personal reply, we may (or may not) use it in the "Ask Bob" column. In any case, keep those cards and letters coming!

## A Tarnished Knight

### Captain Midnight Cashes In

When John MacDougall of Ocala, Florida, jammed HBO with a protest back in April, he was lauded as a sort of folk hero by backyard dish owners who agreed with MacDougall's "Captain Midnight" pirate message expressing outrage at HBO's subscriber costs.

When MacDougall was finally caught, tried and fined after a nationwide manhunt, a group of well-meaning supporters--the Captain Midnight Grassroots Coalition--rallied on his behalf, selling bumper stickers and Captain Midnight T-shirts to help him in his financial need.

But the home TVRO industry is taking another look at MacDougall. It seems that he has a publicity agent in Hollywood, charges for interviews and is working on a book about his exploits.

Could it be that the entire episode had a commercial smack from the beginning? Or is MacDougall merely profiteering from his illegal venture? Perhaps the entire question is moot since the case is over and one either approves or disapproves of his action.

(We would like to thank reader Dave Flanders for bringing to our attention an editorial by Bob Morris in the Orlando Sentinel which inspired our editorial this month)

# MONITORING TIMES

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# WORLD RADIO NEWS



# WORLD R



UTC	Country	KHz
0430-2300	Benguela	5040, 6150 7170
0500-2300	Bie	4895
0500-2100	Cabinda	4970
0400-2300	Huambo	5060, 7160
0400-2300	Huila	3970, 4820
0500-1300	Kuando-Kubango	4895
1700-2300	Kuando-Kubango	4895
0500-2300	Kuanza-Sul	7260
0400-1800	Luanda	7215, 7245
1800-0000	Luanda	3355, 3375 4820, 7215
0500-2300	Mocamedes	5015
0500-1000	Moxico	5192
1200-2300	Moxico	5192
0500-2300	Uige	4850
0500-2300	Luanda-Sul	4995
0500-1300	Zaire	4885
1700-2200	Zaire	4885

## Austria

Radio Austria International offers the following English broadcasts in its most recent schedule: [target area(s) for each frequency is in parenthesis]

0130-0200	6155	(North America)
0330-0400	6155	(North America)
0430-0500	5945	(Southern Europe)
	6155	(West.North America/ Europe/North Africa)
	11830	(Asia)
0630-0700	5945	(South.Eur./W.Africa)
	6000	(Europe/North Africa)
	6155	(Europe/North Africa)
	15410	(Asia)
0830-0900	6000	(Europe/North Africa)
	6155	(Europe/North Africa)
	7210	(Northern Europe)
	11840	(Australia/Asia)
	15410	(Asia)
1030-1100	15270	(Australia/Asia)
1230-1300	6000	(Europe/North Africa)
	6155	(Europe/North Africa)
	11915	(Eastern Europe)
	15320	(North America)
1400-1430	7245	(East Asia)
1530-1600	6000	(Europe/North Africa)
	6155	(Europe/North Africa)
	12015	(SW Eur./W.Africa)
	7115	(South Asia)
1830-1900	6000	(Europe/North Africa)
	9725	(East.& South.Africa)
	12015	(Asia)
2000-2030	9725	(Southern Africa)
	12015	(Asia)

## Albania

Every once in a while, Radio Tirana makes massive schedule changes. I believe this has just happened again. I have noted English at new times and frequencies -- but this is by no means a complete schedule: 2230-2257 UTC to Europe on 9480 kHz and assumed 7065, 2330-2357, 0230-0257 and 0330-0357 UTC all to North America on 7065, 9760 (yuck). No longer is English heard at 2200, 0000 or 0130 UTC and the frequencies 6200, 7120 and 7300 are used for other languages. (Reid, ODXA)

According to the BBC Monitoring Service, it appears that Radio Tirana has cut its external services by some 20 percent, dropping 588 hours a week to 448 hours a week. Broadcasting in all languages, except Greek, Italian, Persian and Portuguese appear to have been cut back. In addition, Radio Tirana has reduced its frequency usage during peak periods from 13 to 10 and has dropped from 16 daily half-hour broadcasts to 12, according to station announcements.

The BBC reports the following schedule, which it calls "practically complete":

0230-0300	7065, 9745
0330-0400	7065, 9745
0430-0500	9480, 11835
0630-0700	7065, 9500
0800-0830	9500, 11835
0900-1000	6185
1130-1200	9480, 11855
1400-1430	9500, 11985
1530-1600	9480, 11835
1830-1900	7065, 9480
2030-2100	9480
2230-2300	7065, 9480
2330-0000	7065, 9760

## Angola

Radio Nacional do Angola passes along a schedule of its country's short-wave operations:

2130-2200	6000	(Europe/North Africa)
	5945	(Europe/North Africa)
	9870	(W.Africa/SW Eur.)

## Belgium

The schedule of English broadcasts from the recently reorganized (or is it recently disorganized?) BRT is as follows:

0030-0100	Daily	5910
0615-0655	Sat/Sun	9880
0800-0830	Mon-Fri	9880
1330-1400	Mon-Sat	15590
2200-2230	Daily	5910

## Benin

La Voix de la Revolution on 4870 kHz from 2200 to 2250 UTC. Long dramatic production followed by pop music. (J. Santosuosso, Highland City, FL)

## Bhutan

Several Asian readers of *World Radio Report* have confirmed the report in last month's issue that the Bhutan Broadcasting Service has in fact not switched from 6065 kHz. As stated, it remains on 6035 kHz with English broadcasts at 1330 UTC. Still a near impossible station to hear in North America despite a new 5 kW transmitter, the day when the station is more easily heard may soon be close at hand: according to at least one report, India has promised to install a 50 kW transmitter in the capital of Thimpu.

## Burkina-Faso

RTV-Burkina at 0620 UTC on 4815 kHz in French. Male announcer with programming announcements and weak station identification. Fade out at 0630 UTC. (Gayle Van Horn-Orange Park, FL)

## China

A shortwave mystery that goes back some 19 years has apparently come to an end. The mystery was that of Radio Beijing's "backwards Russian" broadcasts. For nearly two decades, the station broadcast Russian language tapes -- backwards. The purpose for this exercise was never revealed and at one time occurred as many as five times a day. In recent time, the broadcasts had dwindled to just one, most recently heard at 0300 UTC on 9335 and 8260 kHz. Jamming of Radio Beijing's Russian service seems to have ceased at the same time.

## Clandestine

The National Voice of Iran, a pro-communist voice located in Azerbaijan SSR, appears to have gone off the air. However, some listeners are certain that the announcers last heard on 5915 and 6025 kHz are now on the new Persian and Azeri broadcasts on Radio Peace and Progress in Moscow.

## Cuba

From the book, *Fidel: A Critical Portrait* (William Morrow and Company, Inc., 1986) by former *New York Times* reporter Tad Szulc:

On Radio Rebelde: "...Fidel Castro's revolution -- or at least the selling of his revolution to Cubans -- might not have succeeded without the medium of television. Actually, Cuba had a tradition of the use of radio in politics, and Fidel has been very effective with the microphone... In the second and last year of the guerrilla war, Castro installed a radio station -- Radio Rebelde -- at his headquarters atop the Sierra Maestra, rapidly turning it into a superb instrument of

## RADIO JAPAN. LOUD AND CLEAR.

Radio Japan listeners in North America can look forward to improved transmission quality.

From today, October 1, we shall be sending you our programs via the RCI facilities in Sackville, New Brunswick, Canada.

So if you'd like to keep up to date with all the latest news from Japan, we can promise you a warm, and clear, reception.



This Japanese character, "Hibiki," tells us how sounds and information echo all around us.

Radio Japan can be heard on 6120 kHz between 6:30 and 7:30 A.M.

If you would like any further information about Radio Japan, NHK's shortwave world service, please contact:  
RADIO JAPAN - NHK,  
TOKYO 150, JAPAN.  
Tel: Tokyo 465-1111  
Telex: RADJAPAN J34179  
Cable Address: RADIONHK  
TOKYO

**NHK**  
Japan Broadcasting Corporation

Radio Japan thoughtfully took out this advertisement (modified to fit our space) in "Time" magazine in October. Unfortunately, instead of telling the uninitiated about shortwave, it touts "transmission quality" and "RCI facilities." Sadly, few non-listeners will understand what the ad is all about.

MONITORING TIMES

# DIO NEWS WORLD RADIO NEWS

propaganda and the dissemination of coded operational orders. He often addressed Cuba over Radio Rebelde." Radio Rebelde is easily heard on shortwave in Spanish on 5025 kHz. A good time to listen is after 0000 UTC.

On Radio Marti: "Emotion remains a powerful factor in the Castro decision-making, and he suspended an immigration agreement he had signed with the United States in 1985 because the Reagan administration put into operation a hostile radio station named 'Radio Marti.' Castro told friends that what he resented was the use of the hallowed Marti name against the Cuban revolution; he did not care about the broadcasts themselves."

## France

Radio France International reports that its Polish section has been voted the best station currently broadcasting in Polish. The award was conferred by the Association of Polish Journalists.

## Germany, West

The Director of Deutsche Welle, Klaus Schuetz, has resigned. His position will be filled by his deputy, Heinz Fellhauer. Fellhauer is known to support international shortwave broadcasting.

## Iran

Voice of the Islamic Republic of Iran at 1945 UTC on 15084 kHz in Farsi. Arabic music with station identification at 2000 UTC, followed by what appeared to be a newscast. Poor signal. (M. Hennington-FL)

## Laos

Radio Vientiane is on 7113 kHz instead of the announced 7145 kHz. English can be heard from 1330-1400 UTC. (Weerakoon in WDXC)

## Nicaragua

The Contras, fighting the Sandinistas in Nicaragua, may soon have a new radio station on the air. The facility, to be known as Radio Liberacion would use a 50,000 watt transmitter operating on the AM band. According to Reagan Administration officials, Radio Liberacion is part of a broad plan to build political support for the rebels and would receive U.S. technical assistance but would not draw on the recently approved \$100 million in aid given the Contras by Washington. The transmitter should be operational around January of 1987. (Alpert, NY)

## Outer Space

According to *Skyline's* Dave Rosenthal, there is one broadcaster on shortwave that certainly qualifies for "longest-distance reception." The broadcaster is the planet Jupiter and

according to Rosenthal, radio waves generated on and around the surface of the planet can be heard in the 18 to 21 MHz band. The emissions "sound like fast-breaking waves." All you need to hear the the "broadcasts" is a decent radio and some small amount of patience. "Though the mechanisms producing these signals are still not fully understood," say Dave, "the radio energy produced...results in three relatively well-defined beams -- or "lobes" -- of radiation emanating from the planet. Because Jupiter rotates in slightly less than 10 hours, those intermittent beams of radio energy regularly sweep across the earth." To hear Jupiter on shortwave, the planet must be in the sky and one of the lobes must be passing by. To find out more about this unusual phenomenon, send Dave a self-addressed stamped envelope and ask for the pamphlet, "Jupiter's Radio Emissions." His address is P.O. Box 1502, Ridgecrest, CA 93555.

## Spain

Radiotelevision Espanola [RTVE] has a new Director-General, Mr. Pilar Miro. RTVE is the state-owned Spanish company that owns Radio Exterior de Espana [REE], better known as Spanish Foreign Radio. Mr. Miro, a filmmaker, replaces Jose Maria Calvino.

## Tahiti

According to Art Blair who recently visited Radio Tahiti, big changes are coming at the popular station. Studios are currently being expanded for the French language broadcasts to the Pacific and Asia and two new transmitters are on order and should be operational within two years. The new transmitters are expected to be "around" 150 kW units. Radio Tahiti currently broadcasts in French on 6135 (4 kW), 9750 (4 kW), 11825 (20 kW) and 15170 (20 kW). All broadcasts are in French. (ASWLC)

## U.S.S.R.

"Insight" magazine, a weekly news-magazine published by *The Washington Times* (which is owned by Unification Church founder and leader the Rev. Sun Myung Moon) fingers three Radio Moscow announcers as Soviet KGB officers: Sergei Plekhanov, Radomir Boganov, host of "Top Priority," and the ever-popular Vladimir Posner. Imagine that! Sure glad there aren't any shady types like that working at the Voice of America!

## United States of America

C'mon everybody, sing along! "They've got hiiiiigh hopes, yes they've got hiiiiigh hopes. They've got high apple pie in the skiiii hopes..." NDXE Global Stereo Radio, the long

proposed shortwave station of raconteur Harry Dickson Norman has come out with its 1987 advertising rate card and it appears to be about as blue-sky as the rest of his plans.

Get this: for a 30 second commercial in a newscast, expect to pay \$5,775.00. For a half-second spot in the business report, \$6,250.00 and for a full minute in a weather report, \$7,681.00. For a three minute "target cast" (whatever that is) prepared by the client, dig deep into your wallet. It'll cost you \$11,212.00! Keep in mind that if you want to buy a full hour on WRNO Worldwide (and they actually have a transmitter), you'll only pay about \$300.00.

Equally strange -- as if you're not used to that with NDXE -- is the station's plea in a recent edition of the radio engineering trade paper *Radio*

World for tax deductible donations of equipment for NDXE. Normally, non-profit groups such as colleges request such used equipment from stations with the lure that the donor can deduct the donation from his income taxes. But how can a self-stated for-profit organization like NDXE fit into this category. Shortwave's silliest saga continues....

The official schedule for English broadcasts from KTWR (a Trans World Radio outlet related to TWR Bonaire, among others) in Guam is as follows:

0715-0720	15115	(Sunday only)
0720-0735	15115	(Fri and Sat)
0735-0900	15115	(Mon thru Thurs)
1300-1415	9870*	(Mon thru Fri)
1415-1430	9870*	(Sat and Sun)

\*Out-of-band frequency.

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## From Soup to Nuts...

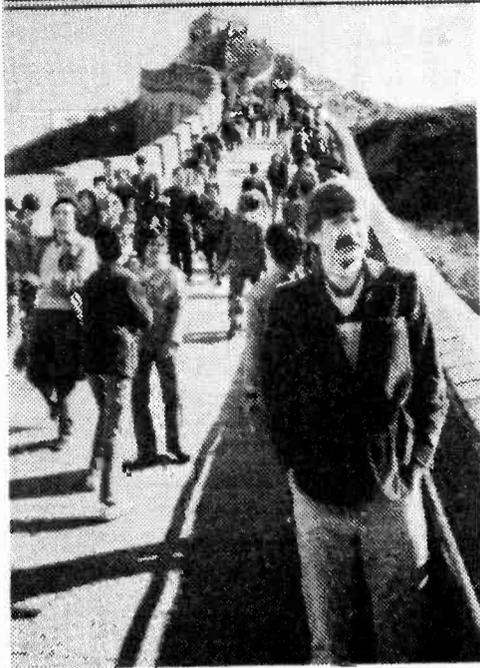
**Station News \* DX Tips \* Advance Program Details \* Frequencies \* Equipment News \* Articles \* and More**

If you're a serious shortwave listener, you know the need for up-to-the minute information. And that's what World Radio Report is all about. From the world's most comprehensive station news section to advance program details to the latest equipment, World Radio Report has it all. From editors that know what they're doing -- Larry Magne on equipment, Gail Van Horn on loggings and Larry Miller on station news. Plus guest columnists from around the world.

If you're serious about your shortwave, you owe it to yourself -- and your radio -- to check out World Radio Report. One year of World Radio Report is just \$18.00. Sample copies are just \$2.50 in the U.S.; \$3.50 elsewhere in the world. Send check, money order or cash to World Press International Inc., 3 Lisa Drive, Thorndale, PA 19372. From the publishers of International Radio.

## World Radio Report

**It's nothing flashy. It's just the best.**



"Our man in China"  
(Photo by Glenn Hauser)

The flight from the U.S. to China is nothing less than grueling. Despite the best efforts of an army of stewardesses aboard CAAC's 11:00 AM non-stop flight from San Francisco to Beijing, there is no compensation for having to spend almost a full day in an airplane. One begins to invent odd games to keep amused, planning in detail such events as using the lavatory or walking from one end of the plane to another. Time quickly loses its meaning. What was morning is now suddenly evening; evening now morning.

At 2:00 AM, the Beijing International Airport is a barren place and the everyday differences one expects to encounter in a foreign land are accentuated by incredible jet lag. Speeding to the hotel in an unlit car (the Chinese drive at night without headlights to conserve energy) strange scenes flash by in the darkness. For a brief moment, the car slows and is, unbelievably, surrounded by sheep. Buildings are hung with dozens of bright red Chinese flags, punctuating the dreamy greyness like fires blazing in the windows. And even at this hour,

## 中國國際廣播電台

### The China Connection

14 Days in the People's Republic

by Larry Miller

there are people on bicycles; people going from place to place, people with chickens strapped to their backs, soldiers in uniform.

China explodes with bicycles. They are everywhere, like rivers and rivulets of people, smaller streams flowing into larger and larger until at last they rush down the main street like they were suddenly released from behind some massive dam. And in its characteristic mix of old and new, I was not surprised to see a caravan of these two-wheelers towing brand new microwave dishes along the side of the road.

The People's Republic of China has within its 60 longitudinal degrees 6,000,000 square miles some 1,012,358,000 people. It is estimated that by the end of this century, one person in every four on this planet will be Chinese. For today, however, this vast country, once known as the "Central Kingdom," reigns as a land of fascination which tempts adventurous travelers from all over the world.

And China simply overwhelms them. It is abound in new sights, smells and sounds. It is a place of indescribable beauty and awash in the excitement of the world's most populous nation in the grips of modernization.

Dawn breaks with a yellow hue, the product of the uncountable coal fires used to heat the houses and power the industry. Everywhere, China is in

construction. Bamboo scaffolding surrounds the buildings, new hotels and offices rise on every available square foot of land. Billboards, once the province of political exhortations, are filled with the colors of commerce: whereas once every Chinese once strove to obtain "the big three" -- a bicycle, a wristwatch and a sewing machine -- they now are regularly seen on street corners taking home their Snowflake brand refrigerators, washing machines and TVs. "Imagine," says one western diplomat, "some people living in the heart of Guizhou province now see the evening news, with film from Beirut and New York. Three years ago, they did not know anyone lived on the other side of the hill."\*

In a way, that statement is quite puzzling. Because the Chinese are really quite familiar with shortwave and thus international broadcasting. Not only were my apprehensions about bringing my complicated-looking Sony ICF-2010 through customs unfounded, but I quickly found that virtually every radio sold in the country has full-shortwave coverage along with AM (but no FM).

The reason for the shortwave coverage isn't love for DXing; it's simply because many local stations happen to broadcast on shortwave, primarily between 2300 and 7000 kHz. (For more information on DXing the Chinese regionals, see the article on page 9. Over 124



New places - New friends

frequencies are used in this range alone for regional services and this does not even include the dozens of channels used by Radio Beijing! (FM is just beginning to get going in China. Coming from the Philadelphia area where the FM dial is clogged with competing signals, it was strange indeed to coast up and down the FM dial and find only a single station; perhaps none.)

Further, virtually all the Chinese we met admitted talked enthusiastically about shortwave; most, we were told, preferred the Voice of America and Radio Australia. Many listened in order to practice their English and hear the news.

Another shortwave station, familiar to audiences around the world, is located in China, specifically the capital. Radio Beijing is at 2 Fuxingmenwai Dajie, one of the capital's main arteries. Not the tallest building in the city, it distinguishes itself by the large number of antennae on its roof. *Radio Database International* lists Beijing as the world's number three shortwave

\**Time Magazine*, Jan 6, 1986, p.35



The traditional China of history books contrasts sharply with this modern street scene in Shanghai.



China is a culture in transition. Construction is seen everywhere, and advertising has taken the place of most political messages throughout China.



One of hundreds of small private enterprises springing up across China. Here a young man runs a sewing shop in Xi'an.



Radio Beijing's Chen Yu and Glenn Hauser going down the Great Wall--the easy way!

broadcaster. It trails behind only the Soviet Union and the U.S. in terms of number of total frequency use per week. It runs virtually neck and neck with the Americans.

Inside, hundred of workers buzz from floor to floor in the around-the-clock exercise of broadcasting to the world, its equipment a mix of state-of-the-art and functional antique. Inside the building, Radio Beijing is also in construction.

Large "stereo" studios provide seating for fifty or more. At the time of our visit, an orchestra was about to begin a performance of traditional Chinese music. Technicians hovered about an audio console the size of a small car; then hustled us out as the orchestra tuned up.

Further upstairs, I had the opportunity to visit the newsroom, a jumble of typewriters, radios and human beings, preparing for a U.S. west coast transmission. Like all newsrooms, it was a beehive of activity. Just down the hall was the announce booth manned (or rather, womaned) by one Wei Hua (see cover).

The correspondence office houses the workplace of those people who answer listeners' letters, namely Chen Yu and Fan Fuguan. On Mr. Chen's desk I was startled to see reception reports from -- yes, it is a very small world -- a number of *Monitoring Times* readers I have corresponded with including Thomas Williams of Spring Grove, Pennsylvania, Mark Wellman of Orlando, Florida and several others. When no one was looking, I filled out their reception reports and put them in the "out" basket. Somewhere in the U.S., a number of listeners have Radio Beijing cards signed by someone with the decidedly non-Chinese name of Larry Miller.

Throughout the visit, all four of us -- Glenn Hauser (I was told by some very reliable sources that Hauser had horns but this was quite definitely not the case. It was a pleasure to travel with him.), Australians Don and Christine Rhodes and myself were treated like kings. We were banqueted, feted, traveled and treated. We experienced 29 course meals at some of China's finest restaurants, shopped in markets in Xi'an, boated in the lake at

## 中國國際廣播電台



Beijing skyline. Radio Beijing is about 1/3 of the way from the left.

Hangzhou, saw Chinese acrobatics in Shanghai and scaled TV towers in Gaungzhou.

It will take literally years to digest all that I saw and learned. And it is, unfortunately, impossible to transmit via the space allowed the excitement of the country, the warmth of the people, and worthiness of the experience.

Simply put, it was, as one-time China travelers Joe Costello (WRNO) and George Poppin had predicted, "Something you will never forget for the rest of your life." And for that experience I will always be grateful to the staff of Radio Beijing, Chen Yu, our guide, reporter Sun Changqing (a man with more connections than Bell Telephone) and all of their gracious colleagues in the above-mentioned cities. I will return.

Considering China travel? Or just interested in knowing more about this fascinating country? There are dozens of "travel guides" to China on the market today; most of them I found to be virtually useless and quite inaccurate. May I recommend highly the book *How to Tour China*,

available from your local bookstore or direct from the Cypress Book Company, Inc. Paramus Place, Suite 225, 205 Robbin Rd., Paramus, N.J. 07652. Or, if you don't have time to read, just remember the word "Piju". It means "beer." And if you remember that, you'll make it through China alright. ■



Announcers at work

編輯部內

# A Day in the Life of Radio Beijing's Wei Hua



It was the first sunny day in weeks and all of Beijing seemed to rise to the opportunity. Chang An street, the main avenue through the capital, was clogged with thousands of bicycles. Vendors, who for days had huddled under plastic slickers to keep out of the constant drizzle, now aggressively hawked their wares. It was a perfect day for a walk.

MT Broadcast Editor Larry Miller and Radio Beijing staff reporter Sun Changqing took advantage of the weather to get acquainted with the ancient city. The walk also gave Miller his first opportunity to meet Wei Hua, who stopped to chat on her way to work at Radio Beijing. The meeting was brief. Wei Hua was in a hurry.

Wei Hua has a saying: "I'm terribly busy, busy for nothing." And everyone at Radio Beijing seems to agree that Wei Hua is indeed a busy person. Or at least, they say, she gives that impression. Sometimes, in fact, she's so busy that she forgets to do some of the jobs assigned to her. Around the station she is known by the affectionate nickname, "The Big Dummy."

But that's not really an accurate assessment of Ms. Wei. Those who know her say that she is an energetic, capable and thoughtful person. And she is truly busy.

**Early Saturday morning. 4:00 am.**

It's cold and quiet out on the streets of Beijing. For a city that is home to some nine million people, is surprisingly empty at this time of day. Those accustomed to streets crowded with thousands of bicycles find the early mornings a nice moment to enjoy. Yet few would give up their precious sleep for this chilly solitude except those who have to. Wei Hua is one of these.

She is on the morning shift today and was supposed to be at the office at 4:30. As usual, Wei Hua got up late. But within five minutes, she's bicycling flat-out down Cang An street, the backbone of the city, heading for the Broadcasting Building which looms ahead in the darkness like some medieval castle.

The early morning shift at Radio Beijing is the hardest. There are usually four or five people on duty, all preparing the 7:00 o'clock morning broadcast (heard at 0000 UTC/7:00 pm EST). The pre-recorded tape is due upstairs half an hour before transmission. Assembled for the task are a desk editor, a newscaster and two or three script writers.

Wei Hua usually writes two or three pieces of news then helps with the typing and checks the scripts. Around 5:45 she starts arranging the finished scripts, reading them aloud to loosen up her stiff lips and sleepy tongue. She always makes sure there are three books next to her: the Webster Geographic dictionary, the NBC pronunciation dictionary and a Collins dictionary. At 6:30 she heads upstairs to record.

Wei Hua graduated from the Beijing Broadcasting Institute in 1984 and has been working at the English Department ever since. She's been on the air only for about a year and a half and in that short time she's already established herself as one of the station's best newscasters. Usually, she says, she can make it through a ten minute international cast in 12 to 13 minutes with maybe only three or four mistakes or stops. Today she is lucky. She completes the cast on time and with no mistakes. Mistakes bother her. Because Radio Beijing's newscasts are pre-recorded, mistakes must be corrected on tape, a tricky and time consuming job.

Her task completed, she returns to the newsroom, switches on the short-wave and listens to the Voice of America and the BBC.

**9:00 AM...**

It's time for the early morning shift people to leave. But not Wei Hua. She has a heavy schedule today.

First on the agenda is the script for the program, "Across the Land." She really enjoys writing the program although she's often complains that it's a real headache. The problem is her limited opportunity to travel for first-hand interviews.

Midway through the script, somebody from the features section comes over and asks her if she'll sit in for a colleague who is sick. Why not? Wei Hua seldom refuses other people who ask her for help, especially at the office.

She is back to "Across the Land" just 20 minutes later. But just as she sits down at the typewriter, someone calls her and says she's wanted on the phone. It's a close friend saying she's just had a bad experience. Can Wei Hua meet her for lunch? Wei Hua is worried. Is her friend's problem serious? She rushes back to the typewriter, concentrates hard and finishes her script in half an hour. Then she whirls off to the restaurant which is a ten-minute bike ride from the office.

**2:00 PM**

Wei Hua is once again on her bicycle, heading to an interview at the Beijing Foreign Studies University in the western part of the city. The person she is talking to is one of her own teachers, an American woman now working at the University. She's preparing to write a book on the women of the Long March as a way to raise money for the China Children's Fund. It's the 50th anniversary of this legendary event so an interview on the topic would make an excellent program. Wei Hua just can't wait until the interview is aired. Normally it takes half an hour to get from the station to the University. This time she does it in 20.

**4:30 PM**

Back from the interview, Wei Hua returns the tape recorder to the office, puts the tape in her desk drawer for next week and takes a deep breath. All set. Then she remembers and begins to search her pockets. There it is: a ticket for the 5:30 train to Tianjin, a two hour ride.

Wei Hua is an amateur singer and she's crazy about it. She sings both English and Chinese music and several companies have asked her to record songs. She has accepted them all without hesitation. But time is a problem. She can only record on weekends. For now, she has a long ride and a lot of work in front of her. Tonight she will record 15 different songs.

There are 45 minutes left. She has to pedal faster if she's going to make her train. But she arrives with time to spare, parks her bicycle in a secluded spot where she thinks it will be safe and then dashes for her seat in hard class. Twenty minutes later the train bumps to a start and Wei Hua sighs breathlessly, "Good lord." She closes her eyes, a bit frazzled and on edge. "Am I too energetic," she asks no one in particular. "Is this killing me? Well, after all" she resolves, "we're here for a good life, not a long one...."

## Radio Austria International Programming

Each daily broadcast contains *Report from Austria*, which attempts to "present Austria in all its aspects to an English speaking audience around the world." Other programs include: Monday: *Sports Review* (a summary of what's been happening on Austria's ski slopes, football grounds, tennis courts, etc.), Tuesday: *Austria and the U.N.* (an examination of the activities at the Vienna Centre, one of the U.N.'s three main headquarter complexes), Wednesday: *The Austrian Economy*, Thursday: *Pop Corner* (light music), Friday: *Focus* (an in-depth examination of a single topic which may be music, literature, history or theater), Saturday: *The Tourist Scene*, Sunday: *Profile of Austria* (no description given) and *Postbox 700* (mailbag program). *Austrian Shortwave Panorama*, the station's DX program, can be heard Sundays at 0200, 0900, 1230, 1430, 1805 and 0430 (Monday).

Perhaps the station's most interesting feature in a fairly arid line-up of programs (boy, I just can't wait to hear what's happening on the next edition of *Austria and the U.N.!*) is *Austrian Coffeetable*, which is broadcast every Saturday at 1805 and Sundays at 0305, 1205, 1400 and 2030 UTC. It's an easy-going, in-depth look at the arts.

(Taken from *World Radio Report*; See p.4 for scheduling)



# DXing the Chinese Regionals

*The Meek Need Not Apply*

by Larry Miller

China is opening its doors to the west. And for those who so desire, there are ample opportunities to travel to the People's Republic. For those of us who want to learn about the country but don't have the time or money to go there ourselves, Radio Beijing is only as far away as your shortwave radio. Its programs span the full range of Chinese culture, from travel, history and politics, to every aspect of the arts, both modern and traditional.

But beyond Radio Beijing is another world of Chinese shortwave. From every province of the country, transmitters broadcast a steady stream radio waves, some ready and willing to be coaxed into our receivers, others so reticent of reception that they challenge even the best among us.

DXing China's regional stations is certainly no picnic for listeners on the east coast of North America. To explain why, let's go to Mr. Roger's Neighborhood for a quick science lesson on how the signals get from China to your radio. "Can you say 'trans-polar route?'" Good! I knew you could.

First, let's take a look at the path the signals take. To represent the earth, we'll use a globe. Playing the part of the shortwave signal will

be a piece of string. Now, take one end of the string and put it on China. Put the other end on the east coast of North America. And what do you see? The string (the signal) crosses the North Pole. And that causes problems.

The problem with this polar route is the magnetic field at the top of this planet. This disrupts signals passing through it, attenuating their strength and giving them a strange "under water" sound called "flutter fading." Flutter fading, which is actually dozens of fades per second, leave the signal understandable but with its strange characteristic audio that many say sounds like its bubbling up through a bucket of water.

The fact is that any high latitude path is risky. And a good example of what the polar route can do to a signal is shown every day when you try and listen to Radio Sweden International -- it's very unreliable. On the other hand, Italy comes in very well. Italy's success is owed not to more powerful transmitters, better antennas or anything like that but simply to its more southerly location. Another point: the path across the pole also seems to make the signals more susceptible to geomagnetic storms.

Fortunately for us right now, winter is a pretty decent time to DX China.

The best time is mornings around 1000 UTC -- even as early as 0900 -- until around 1200 or 1300 UTC. At the earliest, Chinese locals first begin to appear in the lower bands, from the bottom on up to the 5, 6, and 7 MHz regions. It is at the low end of the spectrum where the lower-powered stations are located. As the sunlight rises, reception moves up the bands until it finally peters out around 1300 UTC.

Late afternoon is almost as good for DXing China and by about 2100 UTC the stations begin to sign on the air (it's about 4:00 AM in China at that time). The opening begins a little earlier, around 2000 UTC and holds up pretty solidly until as late as 0300 UTC. Regretfully, many of the stations seem to leave the air between 0000 and 0100 UTC. In any case, shoot for the 6 and 7 MHz band but don't forget to check around the edges in 5 and 9.

Now, what will you hear? Unfortunately, many of the purely local stations are almost impossible to hear on the east coast. What you will be able to hear, however, are the Chinese People's Broadcasting



*The staff of the Xi'an transmitter city in China's northwest.*

Station networks known as CPBS. Sometimes mistaken for individual stations, it is actually many frequencies, transmitters and services. CPBS will be heard most often on shortwave in one of two forms: CPBS-1 and CPBS-2. Minority services in can be heard in languages other than Chinese as can programs designed especially for errant Taiwan. Chances are you'll hear CPBS programming

Figure 1

Province, City	Frequencies
Chifeng, Chifeng	3930
Fujian, Fuzhou	2340, 4975, 5040
Gannan, Hezouzheng	5971
Gansu, Lanzhou	4865, 6005, 6155, 9710
Guangi, Nanning	4915, 5010
Guangxi, Beihai	Varies anywhere from between about 8665 to above 8740 kHz.
Guizhou, Guiyang	3260, 7275
Hunan, Changsha	4990
Heilongjiang, Harbin	4840, 4925, 5950, 6150
Hubei, Wuhan	3940
Hulumbei, Hailar	3900, 4750, 6080
Jiangxi, Nanchang	2445, 5020
Jilin, Changchun	3310, 6070
Liaoning, Shenyang	4830 (varies)
Nei Mongol, Hohhot	3970, 4010, 4525, 6045, 9750
Qinghai, Xining	3950, 4940, 6260, 6500
Shaanxi, Xi'an	6176
Wenzhou, Wenzhou	2415
Xilingol, Xilinhot	4950
Xinjiang, Urumqu	2560, 3960, 3990, 4220, 4330, 4500, 4735, 4970, 4980, 5060, 5440, 5800, 6100, 6120
Yunnan, Kunming	2310, 2460, 4760, 5960, 6937, 7210
Zhejiang, Hangzhou	2475, 4785
Zizang (Tibet), Lhasa	4035, 4750, 5935, 5950, 5995, 7110, 7170, 9490

# HUGE

70 PAGE

## SHORTWAVE CATALOG

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**(CHINESE REGIONALS, cont'd)**

operating in parallel on a number of frequencies at the same time.

Second on the list of Chinese DX targets are the many provincial stations. Each uses the standard identification "People's Broadcasting Station" preceded by the name of the province. For example, the provincial outlet in Kunming, Yunnan would identify as "Yunnan People's Broadcasting Station." In Chinese that's "Yunnan Renmin Guangbo Diantai." So for each province, simply plug in the province name in front of "Renmin Guangbo Diantai."

Operation of these provincial stations is not continuous but they are on the air during prime Chinese DX time, the mornings. The list includes most of the main frequencies; those in bold are the ones you're most likely to hear. The first word is the province; the second the city. But believe me, it's not going to be easy.

Where's the best place on the dial to set up camp when hunting Chinese DX? My suggestion is to go "out of band." And, through the courtesy of the folks at *Radio Database International*, I have done a little "cut and paste" in order to give you an "at a glance" chart for 5950 through 6200 kHz, an area where I've had some luck. Incidentally, it is one of the great unknown secrets in shortwave, but *RDI* has the most accurate Chinese transmitter site information in the field.

If you're looking for some specific targets to go hunting for, I'll give you a couple ranging from pretty hard to the ultimate challenge.

**Pretty Hard:** The Fujian Front Station has been more recently referred to as "The Voice of the Strait." Before that it was known as "People's Liberation Army Radio." It beams much of its programming to Taiwan.

Try for the Voice of the Strait from 1000 to 2355 UTC on 2490, 3200, 3535, 3640, 4045, 4330, 5120, 5265, 5900, 6767 and 7850 kHz. It's on again from 0300 to 1800 UTC on 2430, 2600, 2800, 3300, 3400, 3900, 4130, 4380, 4840, 5170, 6000, 6400, 7025, 7280, 9505 and 11950 kHz.

**Tough:** BPM is the Chinese version of the U.S. Standard Time and Frequency station WWV. It's operated by the Shaanxi Astronomical Observatory. BPM is tough because its signals are buried under WWV's

**Figure 2**

*Frequencies in use by Chinese local and provincial stations between 2310 and 9500 kHz. This is the most active range of frequencies for prime early morning listening; many of them are active at that time. Those between 5950 and 6200 kHz and between 7105 and 7285 kHz are "out of band" and thus stand a better chance of reception. Those frequencies marked with a \* carry two separate programs or services.*

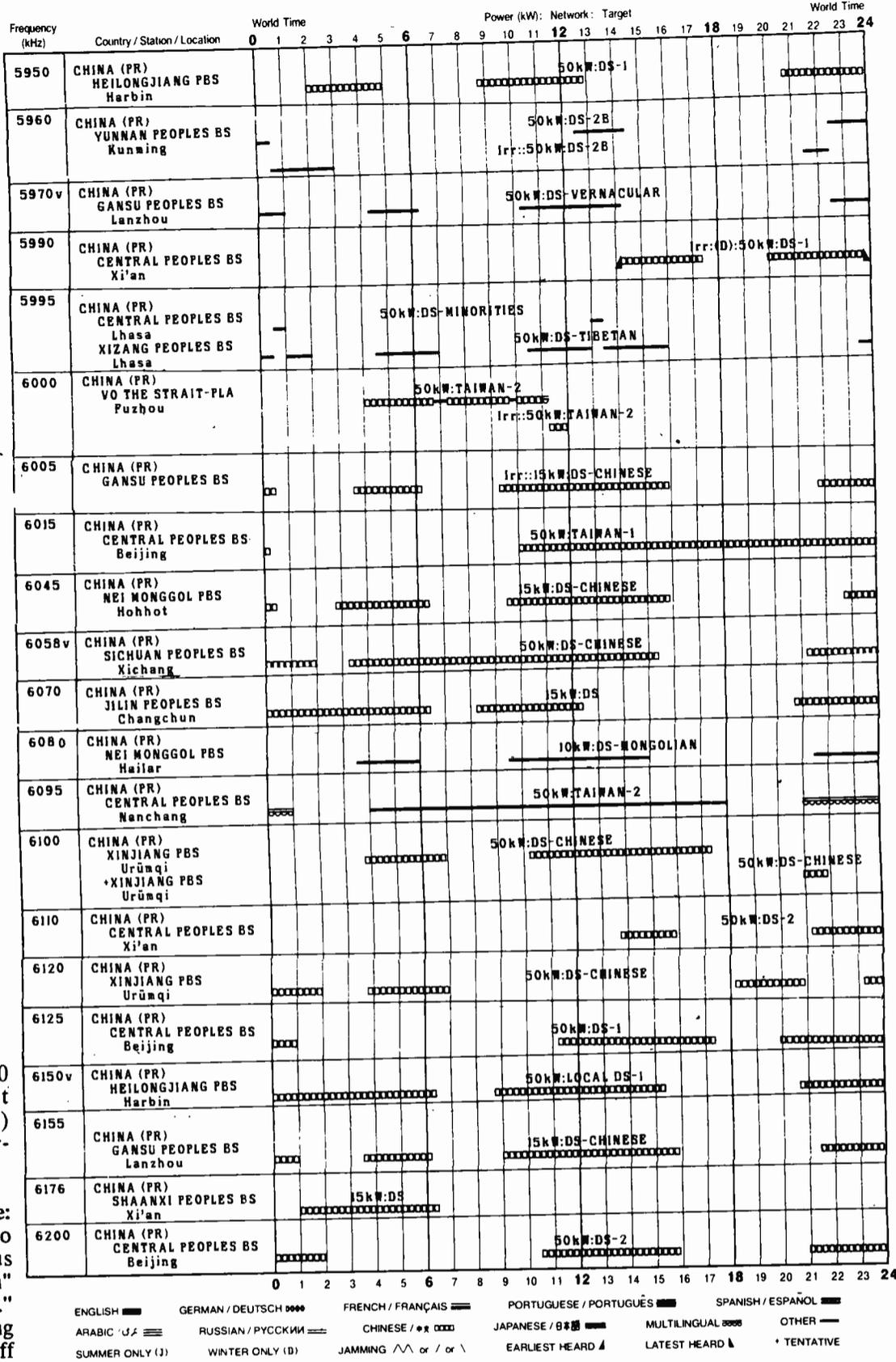
2310, 2340, 2430, 2445, 2460, 2475, 2490, 2560, 2600, 2154, 2800, 3200, 3220, 3260, 3290, 3300, 3310, 3360, 3400, 3535, 3640, 3815, 3900, 3940, 3950, 3960, 3970, 3990\*, 4010, 4035\*, 4045, 4190, 4220\*, 4250, 4330\*, 4380, 4460, 4500, 4525, 4735\*, 4750\*, 4760, 4785, 4799.8, 4830, 4840\*, 4850, 4865, 4905, 4915, 4925, 4940, 4970\*, 4975, 4980, 4990, 5010, 5020, 5030, 5040, 5049.7, 5060, 5070, 5075, 5090, 5125, 5163, 5170, 5240, 5440\*, 5508, 5770, 5800, 5860, 5880, 5900, 5915, 5935, 5950, 5960, 5970, 5990, 5995\*, 6000, 6005, 6015, 6045, 6058, 6070, 6080, 6095, 6100, 6110, 6120, 6125, 6150, 6155, 6176, 6200, 6260, 6400, 6430, 6493, 6500, 6665, 6750, 6775, 6790, 6890, 6937, 6974\*, 7025, 7050, 7105, 7110, 7170, 7210, 7225, 7235, 7265, 7275, 7280, 7285, 7335, 7385, 7440, 7504, 7516, 7525, 7770, 7850, 8007, 8740, 8910, 9020, 9030, 9064, 9080, 9170, 9380, 9455, 9457, 9490.

*Courtesy Radio Database International*

at 5000, 10000 and 15000 kHz. But it also operates out of band on 5430 (mornings) and 9351 kHz (early afternoons).

**The Ultimate Challenge:** Guangxi Renmin Guangbo Diantai, a.k.a. the mysterious "Chinese Fisheries Station" or "Beihai Fisheries Radio." Believed to be broadcasting to the fishing fleet off China's coasts, it is flea-powered, using only 1,000 watts of power for its roughly 0300-0500, 1000-1500 and 2200-2330 UTC schedule. To make matters worse, the transmitters varies in its frequency showing up anywhere from 8665 to above 8740 kHz.

What if you would hear this mysterious station or any of the others and want a QSL card? Well, Radio Beijing will confirm reception of the regional stations for you. Or, if you're really courageous, you might try sending the report to the station itself, marking the envelope with the name of the station, the city and province. Always, mark letters to China with the country's full name, "People's Republic of China" otherwise they may be returned to you. Unfortunately, there is no guarantee that the person reading your



envelope at the provincial level will be able to read your Roman characters let alone understand English. Best bet is to go with Radio Beijing.

So, as you see, there are, for the aspiring China DXer with the proper amount of patience and intestinal fortitude, many challenges on the shortwave bands. Hundred of channels, dozens of stations and ample chances to tune in on a very small slice of this mammoth nation. The fact that there remains stations still unheard by even the most expert DXers in this country ensures that the region will continue to provide a challenge to hobbyists for a long time to come.

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Typical outdoor street-side restaurant in Shanghai.

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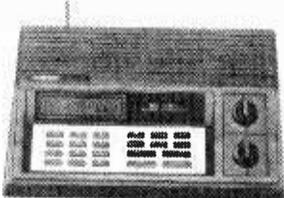
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# DXing with the Eck-spurts

## A Common-sense Guide to Shortwave DXing

### PART I

by Larry Miller

If you're an old timer, a pro behind the dials, there's no need to waste your time here. Move on to another article. This one's for the newcomer.

**Newcomer.** It's a polite term for that dreaded word, "beginner." In no hobby does the term have such negative connotations as it does in shortwave. From the time you buy your first radio to the time you cancel your last shortwave club bulletin in despair, you are confronted with people who call themselves experts. "What?" they seem to scream at you incredulously, "You've never heard the Yanggang Provincial Service Station in Hyesan, North Korea on 2300 kHz at 0900 UTC? Hell, I hear it every day, coming in like a local!"

Yeah, yeah, yeah. Believe them if you want to. But the truth is that the vast majority of shortwave listeners are just like you -- they've never heard the Yanggang Provincial Service station in Hyesan. And they haven't heard Pakistan's clandestine "Voice of Afghanistan" on 3230 kHz or Calceta, Ecuador's La Voz de Rio Carrizal on 3260.7 kHz or any of the other well-publicized bits of shortwave exotica. What? You've never met a shortwave listener who will admit to not hearing these stations? Well meet your first. I, Larry Miller, *Monitoring Times* Broadcast Editor, have never heard any of them. And do I look ashamed? Hell, no. And neither should you.

What the "experts" inevitably fail to tell you is that your chances of hearing some of these stations is about the same as they are for you to be hit by lightning, twice, while reading this magazine. (O.K., so I exaggerate a little. Maybe your chances are the same as getting hit by lightning once while reading *MT*.)

Say for instance that you read the story in last December's *MT* that said "Radio Nepal is now heard in English at 1330 UTC on 7165 kHz." And let's say that you really want to hear this -- your wife's cousin once dated a Nepalese when he was at college in Kathmandu or something. So you plan ahead. Get to bed early the night before, call in sick for work (1330 UTC is 8:30 AM on the east coast, man!), sit down at the radio in your PJs with your bowl of frosted flakes, and wait. And wait and wait and wait. There's no sign of Nepal.

Furious, you decide that no country the size of a postage stamp is going to get the best of you. You'll try again tomorrow. So you call in sick for work again and wait. Still nothing. And the next day and the next until finally, you receive a letter in the mail saying that you've been replaced at work by someone who has his priorities in the proper order. Now you've got to sell your radios in order to make the mortgage payment on the house. Sooo sorry. Shortwave has claimed another victim.

It's a terrible scene but someone had



A well-equipped radio room like that belonging to Frank Capacetti of Franklin Lakes, NJ, certainly can make DXing easier, but experts agree that knowledge and organization are just as important--perhaps more so--than high-priced equipment.

December 25, 1986

Larry Miller  
Broadcast Editor  
Monitoring Times  
P.O. Box 691  
Thorndale, PA 19372

Dear Idiot:

Last month, I read in *Monitoring Times*' World Radio News section that Radio Itititi in Benguelaha-ha was broadcasting in English on 2312.7 kHz at 1530 UTC. So I quit my job to stay home and hear it. But after three weeks, I still haven't heard anything but static. You obviously don't know what you're talking about. By the way, my attorney will be contacting you to try and recover my lost wages.

Signed,

A Disgruntled Shortwave Listener

cc: Meese, Regan and North, Esqs.

to open the door and let it out of the closet. Let's coin a new term and call it the "Nepal Syndrome."

But maybe you're not deterred by this awful situation. Perhaps the desire for big game still runs hot in your veins. All right, tiger. That's O.K. DXing is a lot of fun. But we want to help you avoid becoming a victim of the [now] dreaded Nepal Syndrome.

What you need is some ammo. Good, solid ammo: knowledge. Not some idiot trying to make you feel two feet tall by bragging about hearing Radio Florida in Samaipata, Bolivia on 3370. "I swear," he undoubtedly says, "it was cumin' in like a lo-cal!"

Writing in the November issue of *World Radio Report*, renowned DXer Gerry Dexter says, "The shortwave listener has to know what is possible and when and where things are likely to happen. Otherwise, all kinds of time is going to be wasted in attempts to achieve the impossible."

"The shortwave listener with a yen to explore the radio bands or DX," continues Dexter, "needs to know which shortwave bands can be expected to be open and at what times of the day and which seasons of the year."

Here's a brief list, taken from *World Radio Report*:

**Europe:** generally well-heard year round because the stations use such powerful transmitters in the international bands. But for the low power stations from this region, know that summertime usually means somewhat enhanced reception from Europe.

**Africa:** Also hearable year round. African stations will dot the 60 meter frequencies from late afternoon until their sign off times during months with shorter daylight periods. Afri-

can sign-ons, which occur late at night here (0300 to 0700 UTC) often provide the best signals during summer months.

**The Andes:** Hearable year 'round but with some unpredictable ups and downs throughout the year. Late fall through early spring are somewhat better for 1000 UTC station sign-ons.

**Indonesia:** Reception is best in the spring and fall seasons, right around local dawn, plus or minus 20 or 30 minutes.

**Subcontinent:** Rare Indian and Pakistani regional outlets on 60 and 90 meters. (roughly 4750-5060 kHz and 3200-2498 kHz respectively) are best attempted around dawn in the middle of winter.

**The Pacific:** Reception from here will be best in the summertime.

These are handy rules of thumb for DXing. There are, of course, times when you will hear the Pacific in the dead of winter and the subcontinent in mid-July, but these are less likely.

Now, armed with your first bullet, you should have a few others. After all, this is war! The first is a copy of *Radio Database International*. Simply put, if you're going DXing, you should have this book. I don't care if you buy it from Miller Publishing, Grove Enterprises, EEB or your local bookstore. Just get it. It really is invaluable.

Now, keep a logbook. It doesn't have to be anything complicated. Fix it up anyway you can and when no one is looking, have about ten thousand copies made on the office xerox machine.

If you really have your heart set on being a first-class "eck-spurt" on the shortwave bands, I'm going to make a suggestion. And here's where I deviate from the norm when it comes



# STEALTH

## Probing the Mystery behind the U.S. Air Force's Top Secret Aircraft through Radio Monitoring

by Steve Douglass

An Air Force jet crashes in the mountains. A tragedy like this has happened before, but this time there is a difference. Almost before the smoke has cleared, the area where the aircraft crashed is sealed off by government troops. The press is forbidden to enter the area. A massive search is begun in the woods for every scrap of debris from the exploded jet.

On an HF frequency a Lockheed crash investigator reports back to the company about the wreckage. Being a civilian and not too concerned with radio security, the investigator talks on and, in the process, reveals that the downed fighter was something quite special.

The Air Force will not say what kind of aircraft was destroyed. Why? You may have guessed by now. The aircraft involved was quite possibly the top secret F-19 or as it is better known, the Stealth fighter.

### Just what is Stealth?

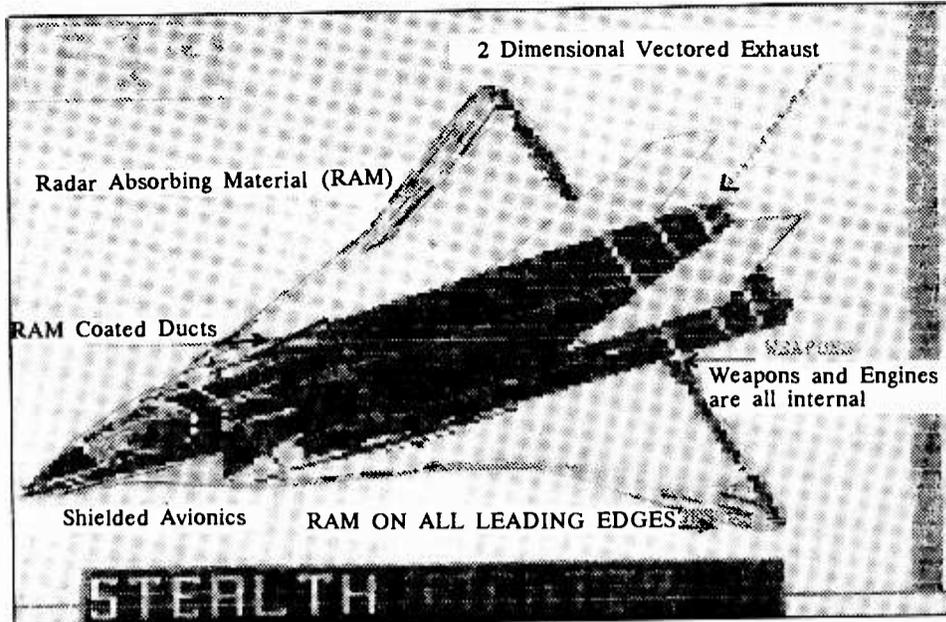
Ever since the advent of radar, air forces around the world have been trying to find ways to enable their aircraft to evade detection. If a fighter or a bomber does not show up on a controller's radar set, that plane has the extra advantage of being able to get to its target without being blown out of the sky!

Billions of U.S. dollars have been spent developing a top secret Stealth air force which includes bombers, fighters and stealth cruise missiles. This highly classified program is just now coming to light.

At an "abandoned" air field near Tonapah, Nevada, on the northwest corner of the restricted Nellis Air Force Base, possibly as many as 72 secret F-19 Stealth fighters are hidden away in hangars, away from prying eyes, including those of roving Soviet satellites. They are only flown on their training missions in the middle of the night and are safely hidden away by morning.

As early as 1977, secret Stealth fighters, developed under the project code name "Have Blue," were ferried by C-5 A Galaxy transports to the Nellis flight test center called Groom Lake. Their existence is denied by the U.S. government, but budgets and congressional allocations give away their presence.

Other than those directly involved with the F-19 or A.T.F. (Advanced Tactical Fighter), few people know what they look like. But some speculation based on known Stealth concepts can provide a rather accurate picture of this mysterious fighter. According to government records the Lockheed Corporation has the contracts for building and



This computer rendering is based on speculation of what the F-19 Stealth fighter might look like (key to cover sketch). Graphics by Steve Douglass.

developing the F-19 Stealth fighter.

Supposedly, the Lockheed team responsible for the F-19 is the same group known as "The Skunk Works," the team that developed the super-fast, highly-successful S-R 71 Blackbird, the C.I.A.'s super spy plane. The Blackbird remains the fastest plane around even twenty years after its debut.

Based on various leaks, congressional records, educated guesses, and reports in the military press and aerospace journals, a picture of the fighter is emerging. Imagine an aircraft 60 to 70 feet long with delta shaped wings, basically like those on the space shuttle. Envision further twin tail fins and small fins on each side of the nose for stability at low level.

The engines are hidden inside the plane with curving S-shaped ducts feeding air to the power plants; the curved inlets prevent radar returns from reflecting on the mostly-metallic jet engines. Radar waves entering the ducts are trapped by the twisting shape of the engine ducts, causing it to reflect from one side to the other. As it does so, the radar energy is progressively absorbed by radar absorbing material (RAM), preventing radar waves from bouncing out and giving away the airplane's presence.

Modern jet fighters such as the Navy's F-14 can tell on their radar screens just what kind of aircraft is approaching by the signature of radar waves reflecting off of engine blades in some aircraft. The Stealth fighter's engine duct design avoids such identification.

The entire aircraft is covered with radar absorbing materials, such as carbon-epoxy and Kevlar aramid epoxy. These are superb radar absorbers, sopping up incoming radar waves and reflecting nothing back. These new materials can be combined with iron needles and fill-

ings to absorb more electromagnetic energy or radar waves.

The exact composition of the materials used to cover the Stealth aircraft are top secret. When a stealth fighter crashed in the mountains of California, a major fear of the government was that a spy could find a minute piece and analyze it for its secrets.

The physical lines of such an aircraft are probably radically different as well. Flat, vertical wings, sharp edges, right angle stabilizers on regular aircraft are great radar reflecting surfaces. The venerable B-52 with its massive structure has the radar cross section of over a thousand radar-reflecting square feet! The smooth curved lines of the B-1 bomber, designed with some Stealth qualities, has a radar cross section of only 11 square feet.

It would appear that the trick to making an aircraft "stealthier" is to utilize smooth, rounded edges; curved, blended wing surfaces; and rounded, radar-absorbing shapes. The Stealth fighter has a radically different look from other planes in the sky.

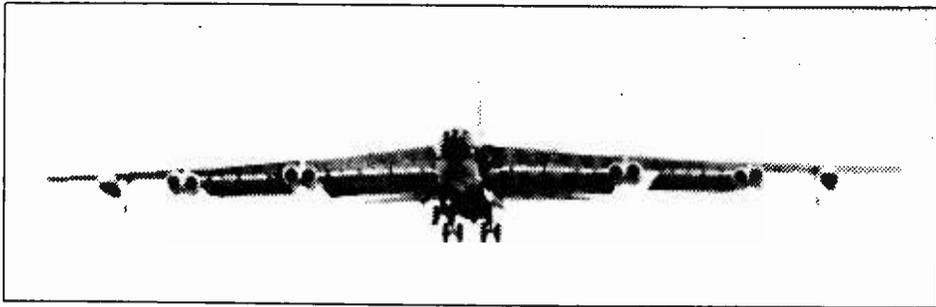
### The Bomber

Another stealth aircraft under tests is the Stealth bomber. All information points to Northrop as the chief contractor of this aircraft which is possibly being tested now at Edwards Air Force Base in California. Reports indicate that the ATB (Advanced Technology Bomber) is of the flying wing design.

The original flying wing, if you'll remember, was the YB-49, a test aircraft first flown in 1947. It was a strange, boomerang shaped craft that proved too unstable to be practical. But the shape proved to be great for a Stealth bomber. The British Vulcan bomber is basically shaped like the flying wing and it has Stealth qualities.



Folding wings help the F-111 fighter bomber evade radar detection.



The enormous radar signature of the giant B-52 bomber forced the development of the B-1 bomber which has a radar cross section only 1/100 of that of the older aircraft.

The main problem is how to make this Stealthy but unstable design workable on a low-level intercontinental bomber. The answer came as technology progressed in the form of micro-computers. The Gruman X-29, a test aircraft that looks like its wings have been glued on backwards, can fly rings around anything in the sky. But without an on-board computer checking the status of its wings 30 times a second, it would fly into the ground! So with the aid of computers, the ideal stealth shape, a flying wing, is now practical and possibly what the ATB looks like.

Besides being invisible to radar, an aircraft has to be undetectable in other ways as well. Jet engines with their hot exhaust leave tell-tale infrared radiation in their wake. And the radio communications of the aircraft can also give it away. The first problem is solved by designing engine exhaust outlets that dissipate the heat by mixing cold surrounding air with the exhaust before releasing it. The communication problem is a bit more difficult to solve.

New digital communications equipment is being designed by Motorola, General Electric and others utilizing frequency hopping transceivers: a transmission is sent out hopping over several thousand frequencies in an order known only to friendly forces, an almost intercept-proof method of communicating. With conventional scrambling, even though the enemy could not understand the message, the signals alone would reveal the aircraft was in his vicinity.

Laser light communication methods, bouncing lasers off a satellite to communicate, is nearly impossible to intercept and there is no radio signal giving away the stealth aircraft's presence. Other methods on the drawing board include narrow-beam, microwave communications in the thousands of gigahertz, EHF band radar transmitters that can project false targets, and time-compression, micro-burst communications.

OK, now let's heat up our sets, and see if we can eavesdrop on these elusive super-secret aircraft. Our best bets would be the flight test frequencies of the aircraft manufacturers involved and Air Force bases and air traffic control towers around them. If a radar-invisible aircraft were flying in your area on a flight test the appropriate air traffic

EDWARDS AIR FORCE BASE	
Approach Control	133.65 VHF
	348.7 UHF
Tower	120.7 VHF
	318.1 UHF
Ground Control	121.8 VHF
	390.1 UHF
ATIS	116.4 VHF
	269.9 UHF

U.S. AIR FORCE	
Military aircraft to FAA	255.4 UHF
USAF Contractors	314.6 UHF
	345.4 UHF
Strategic Air Command	311.0 UHF
Primary	321.0 UHF
	372.2 UHF
Refueling Pri	375.7
USAF Microwave	1175.7 MHz
(phase modulation uplink)	
Secondary	1831.8 MHz
(uplink phase modulation primary)	

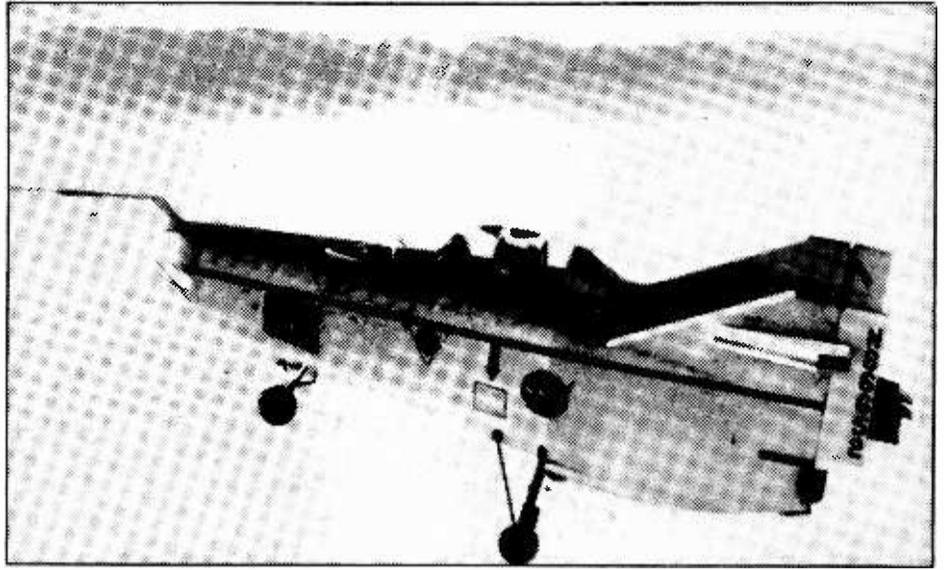
WESTERN SPACE AND MISSILE CENTER Pacific Test Range HF freqs	
3.165 MHz	5.700 MHz
4.486 MHz	5.822 MHz
4.520 MHz	10.275 MHz
4.760 MHz	10.510 MHz
Lockheed Flight Test	8.968 USB
Rockwell Flight Test	6.550 USB
Boeing Flight Test	6.555 USB
Northrup Flight Test	5.571 USB
	4.082 USB
	5.685 USB

control centers would probably have to be advised for safety reasons. Another good monitoring candidate would be your SAC and TAC frequencies (see the *Grove Short-wave Directory* for a list of these).

Will you be the first utilities monitor to hear an F-19? ■

Sources:  
*Future Fighters and Combat Aircraft* - Bill Gunston  
*International Defense Review*  
*Stealth Aircraft*, by Bill Sweetman  
*Aerospace Daily*  
*Radar Cross Section Handbook*

**More test flight & experimental freqs on p.55**



Experiments with NASA's wingless aircraft helped evolve the Space Shuttle...and perhaps the Stealth bomber as well.

The Lockheed Flight Test Network			
VHF (MHz)			
121.7	123.2	123.35	123.525
121.9	123.25	123.425	123.55
122.9	123.325	123.45	123.9
UHF (MHz)			
275.2	314.6	345.4	382.6
HF (kHz)			
3281	6550	13312	
3443	8822	17964	
5469	11306	21931	
Call Signs:			
WIB4	Marietta, GA (UHF)		
KA97213	California (HF)		
KD2792	Nationwide (VHF)		
KIW3	Marietta, GA (HF, VHF)		
KMA6	Los Angeles, CA (HF, VHF)		
KMJ6	California (VHF)		
KMN2	Palmdale, CA (HF, VHF)		
KT5504	Georgia (UHF)		
WAE3	Nationwide (VHF)		
WKX5	Palmdale, CA (VHF)		
WSO9	Los Angeles, CA (HF, VHF)		

Other Frequencies to Watch	
Nellis Airforce Base Nevada	
Approach	124.95 VHF
	279.7 UHF
Tower	126.2 VHF
	324.3 UHF
Departure	289.4 UHF
Holloman AFB (White Sands Proving Ground)	
Approach	120.6 VHF
	324.3 UHF
Tower	126.2 VHF
	255.9 UHF
Low Altitude Holloman Bombing range	132.65 VHF
	397.9 UHF
High Altitude	381.6
Tactical Air Comm.	381.3 UHF
Air Force Weather	342.5 UHF
SAC refueling	375.7 UHF
Air Force Towers	236.6 UHF
AF SATCOM uplink	295.075 UHF
AF SATCOM down	261.475 UHF

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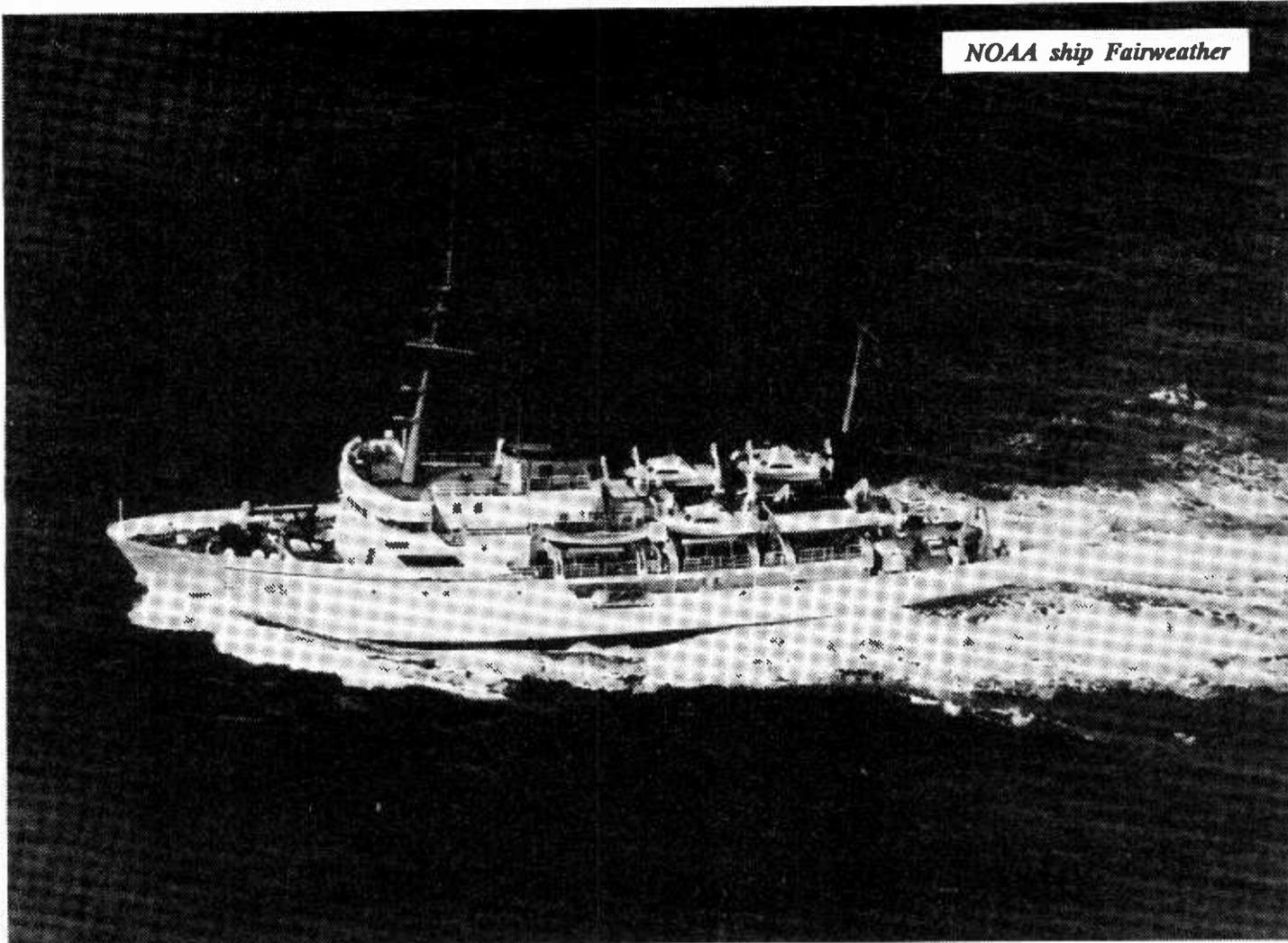
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# Ships of the

by Mike Chabak

If you're one of those utility monitors that chase after USCG Cutters and ships of the U.S. Naval fleet, you undoubtedly will, from time to time, also encounter ships of the NOAA fleet.

NOAA, the National Oceanic & Atmospheric Administration, is part of the U.S. Department of Commerce. The NOAA ships themselves are all engaged in various aspects of oceanographic type research.

Often called the "Great White Fleet" because of the vessels' overall white paint scheme, NOAA vessels come in various sizes and configurations. The largest are the 303-foot *Oceanographer* and *Discoverer*, ranging down to the 85-foot *Murre II*.

During voice mode comms, these NOAA vessels are easy to ID, since they normally do so as, "NOAA ship (so and so)."

NOAA vessels often show up on the main USCG ship/shore duplex voice frequencies, passing weather observations. As such, the following

## U.S. Oceanographic Research Vessels and their Current Assignments

(Courtesy Sea Technology Magazine)

Ship	Location	Mission
<b>NOAA</b>		
Albatross	Mid-Atlantic	Bottom trawling
Chapman	Gulf of Mexico	Fishing gear tests
T. Cromwell	S. Pacific	Biological study
John N. Cobb	Alaska	Juvenile fish survey
Davidson	California EEZ	Bathymetric survey
Delaware II	N. Atlantic	Trawl comparison st.
Discoverer	California EEZ	Bathymetric survey
Fairweather	Alaska	Hydrographic survey
Ferrel	Virginia coast	Fisheries oceanography
Miller Freeman	S.E.Alaska Pen.	Fisheries oceanography
David S.Jordan	S. Pacific	Porpoise abundance st.
McArthur	S. Pacific	Porpoise abundance st.
Mt. Mitchell	Icy Straits, AL	Hydrographic study
Murr II	S.E.Alaska Pen.	Salmon study
Oceanographer	Central Pacific	EPOCS study
Oregon II	Gulf of Mexico	Gear comparison study
Peirce	Norfolk, VA	In port
Rainier	S.E.Alaska Pen.	Hydrographic survey
Researcher	Caribbean	STACS cruise
Rude & Heck	New York Harbor	Item investigation
Surveyor	Hawaii EEZ	Bathymetric survey
Whiting	Bahamas	Hydrographic surveys
<b>Tracor Marine</b>		
Paul Langevin	E.Bahamas	Acoustic research
G.W. Pierce	W. Africa	Biological research
<b>Harbor Branch Foundation, Inc.</b>		
R/V Edwin Link	Bahamas	Midwater ecology
R/V Sea Diver	Bahamas	Benthic study
R/V S.Johnson	Galapagos Is.	Benthic study
<b>EPA</b>		
Peter Anderson	Florida coasts	Monitoring surveys
Roger R.Simons	Great Lakes	Water quality surveys
<b>McClelland Engineers, Inc.</b>		
R.L. Perkins	Gulf of Mexico	Geotechnical invest.
<b>Scripps Institution of Oceanography</b>		
Flip	San Diego	In port
Melville	Pacific Ocean	Benthic biology
New Horizon	Pacific Ocean	Calcofi survey
Orb	San Diego	In port
Robert Sproul	Pacific Ocean	Tracer studies
Th.Washington	San Diego	In port

<b>National Science Foundation</b>		
Polar Duke	Punta Avellas	In port
<b>Lamont-Doherty Geological Observatory</b>		
Robert Conrad	Equatorial Atlantic	Oceanographic research
<b>Gulf Ocean Services, Inc.</b>		
David McCall 2	Gulf of Mexico	Multifold high resol.
<b>University of Washington College of Ocean and Fishery Sciences</b>		
Alaska	WA/Oregon coast	Groundfish surveys
Thompson	Cal. coast	Ridge crest studies
Barnes	Dabob Bay/Friday Harbor	Biological research
Henderson	Seattle	In port
Miller	Seattle	In port
<b>Seafloor Engineers</b>		
Sea Profiler	Gulf of Mexico	Sediment coring
<b>Alpine Ocean Seismic Survey, Inc.</b>		
Atlantic Twin	Long Is. Sound	Engineering studies
<b>URI Graduate School of Oceanography</b>		
Endeavor	Cape Hatteras.	ONR cruise
<b>Jon B. Jolly, Inc.</b>		
Euharlee	Puget Sound	Side scan survey
<b>UNC - Wilmington</b>		
R/V Seahawk	Little River, SC	Artificial reef study
<b>Survey Boats, Inc.</b>		
L'Arpenteur	Gulf of Mexico	Side scan survey
Geodetic Surveyor	Gulf of Mexico	Multifold high resolution
Seis Surveyor	Jennings, LA	In port
Universal Surv	Gulf of Mexico	ROV support
<b>University of Miami</b>		
Calanus	Fla. west coast	Oceanographic resrch
Columbus		Oceanographic research
Iselin	Gulf Stream	

### MAILING ADDRESSES

NOAA/National Marine Fisheries Service  
P.O. Box 1668  
Juneau, AK 99802

NOAA/National Marine Fisheries Service  
c/o San Diego Port Captain  
P.O. Box 271  
La Jolla, CA 92038

NOAA/National Ocean Service  
Southeast Marine Support Facility  
1600 Port Blvd.  
Miami, FL 33132

NOAA Facility  
1125-B Ala Moana Blvd.  
Honolulu, HI 96814

NOAA/National Ocean Service  
Northeast Marine Support Facility  
Woods Hole, MA 02543

NOAA/National Ocean Service  
3209 Frederic Street  
Pascagoula, MS 39567

NOAA/Atlantic Marine Center  
439 West York Street  
Norfolk, VA 23510

NOAA/National Ocean Service  
Pacific Marine Center  
1801 Fairview Avenue East  
Seattle, WA 98102

# NOAA Fleet

USCG ship/shore frequency pairs should be checked out: 4134.3/4428.7, 6200.0/6506.4, 8241.5/8765.4, and 12342.4/13113.2 kHz.

In addition, NOAA ships can communicate directly with NOAA shore facilities. Among the more active semi-duplex ship/shore voice frequencies are: 4087.8/4379.1, 4137.3/4431.8, 6203.1/6509.5, 12370.3/13141.1, and 16494.1/17267.0 kHz. The 6 MHz pair is normally the most active.

For your information, here are the radio call letters of the NOAA ship home bases: KAB - Honolulu, HI; KAC - Woods Hole, MA; KHW - Juneau (Auke Bay), AK, and WWD - La Jolla, CA.

## QSLing -

Provided you adhere to the non-disclosure rules when reporting, your chances of obtaining a verification are 100%. None of the NOAA ships have their own QSL card, however, so it would be wise for you to enclose a prepared card or letter along with

### NOAA SHIPS by Radio Call Letters

KJLM - MURRE II  
 WMVC - JOHN N. COBB  
 WMVF - ALBATROSS IV  
 WNBD - DELAWARE II  
 WTDF - TOWNSEND  
           CROMWELL  
 WTDK - DAVID STARR  
           JORDAN  
 WTDL - CHAPMAN  
 WTDN - MILLER FREEMAN  
 WIDO - OREGON II  
 WTEA - DISCOVERER  
 WTEB - FAIRWEATHER  
 WTEF - RAINIER  
 WTEG - MOUNT MITCHELL  
 WTEJ - McARTHUR  
 WTEK - DAVIDSON  
 WTEP - OCEANOGRAPHER  
 WTEQ - PEIRCE  
 WTER - RESEARCHER  
 WTES - SURVEYOR  
 WTET - RUDE  
 WTEW - WHITING  
 WTEY - HECK  
 WTEZ - FERREL

the appropriate postcard or first class return postage.

To aid you in your QSLing, I have

### NOAA Ship Roster

Name	ID	Call	State
ALBATROSS IV	R-342	WMVF	MA
CHAPMAN	R-446	WTDL	MS
JOHN N. COBB	R-552	WMVC	WA
DAVIDSON	S-331	WTEK	WA
DELAWARE II	R-445	WNBD	VA
DISCOVERER	R-102	WTEA	WA
FAIRWEATHER	S-220	WTEB	WA
FERREL	S-492	WTEZ	VA
MILLER FREEMAN	R-223	WTDN	WA
HECK	S-591	WTEY	VA
DAVID STARR			
JORDAN	R-444	WTDK	CA
McARTHUR	S-330	WTEJ	WA
MOUNT MITCHELL	S-222	WTEG	VA
MURRE II	R-663	KJLM	AK
OCEANOGRAPHER	R-101	WTEP	WA
OREGON II	R-332	WTDN	MS
PEIRCE	S-328	WTEQ	VA
RAINIER	S-328	WTEQ	VA
RESEARCHER	R-103	WTER	FL
RUDE	S-590	WTET	VA
SURVEYOR	S-132	WTES	WA
TOWNSEND			
CROMWELL	R-443	WTDF	HI
WHITING	S-329	WTEW	VA

provided a NOAA ship roster of the currently active vessels. The list shows vessel name, hull ID, radio call letters, and a state code address

notation. You'll find the full mailing address elsewhere with this article. Good listening!

# SHORT WAVE /LONG WAVE ANTENNA & TUNER

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D. Oakley, Pa.

"I hooked up the Skywire to my Panasonic RF-3100 and it sounded like a new receiver. I've heard things in the past couple of days I didn't even know was out there. With the Minituner III hooked up I heard even more! I don't know why I went as long as I did without buying either one of them. Now I'm using them on my Sony ICF-2010 and again I can't believe the difference."  
Mike Day, OH.



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(Not a Preamplifier)

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# 1987 GROVE CATALOG

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Brasstown, N.C. 28902



This month's Radioactivity column comes from the Association of DX Reporter's December bulletin, *DX Reporter*, 7008 Plymouth Road, Baltimore, Maryland 21208. Sample copies are \$1.00 or 5 IRCS; Annual ADXR membership dues \$15.00 a year.

Each month a different club will be highlighted in Radioactivity. If you would like your club to be featured, have your bulletin sent to Larry Miller, P.O. Box 691, Thorndale, PA 19372.

## DX REPORTER

### FM AND TV CORNER

Editor: William Wyllie, Franklin, MA  
Contributor: Hank Holbrook, Chevy Chase, MD

MHz	Call	Location	Miles/Type/Date/Time (EDT)/Remarks
88.1	WJIS	Bradenton, FL	1035 MS 8-11 0835-1321 Address per phone call Parkland Dr. Suite 110, SARASOTA, FL 34234. Contemporary Christian station. News, music, phone-in show and missionary program. Only other station ID WMAW reported in May on skip. Also noted 8.12 0957-1030 EDT.
90.7	WRVS	Elizabeth Cty, NC	170 TROP 8-13 1255-1358 In and out. QRM slight to heavy WFUV NYC. Music NASTY LOVE and other ID's. Address per phone call Box 800, Elizabeth City, NC 27909.
107.9	WNCT	Greenville, NC	230 TROP 8-17 0550-0634 Fighting it out with WEBE, WFSI off with apparent transmitter trouble. Beautiful music MOR.

### TV Stations Logged in 1986 - Hank Holbrook

3	KDLH	Duluth, Minn.	965 Skip 5-17 1757-1830 CBS Sports ID Barnery MI.
14	????	Relay of Ch. 49	35 Trop 6-1 0728-0830 Is this ex-W61AN? WGCB, Summit, DE. No answer from x-W61AN. They did not QSL my report last season of W61AN-61.
61	WTGI	Wilmington, DE	85 Trop 8-11 2159-2322 News, stock news, local news, weather and Jackie Gleason.

### QSL REPORT

Editor: Patrick O'Connor

### Longwave Utility: [Aerobeacons]

kHz	Call	Remarks
221	PMZ	Plymouth, NC; letter in 1063 days: "I sincerely appologize for the delay in responding to your request. Your letter was misplaced and has just recently turned up..." (HH)
335	SW	Newburgh, NY; PFC in 8 days for ms (ID)
338	CCM	Augusta, ME; PFC in 10 days for ms (ID)
382	XU	London, ON; PFC in 13 days for 1 IRC (ID)

### [Maritime]

318	CC	Cape Cod Canal Breakwater Light Station, MA; PFC in 10 days for ms (ID)
500	A8KI	OLYMPIC SUN II (Steam Tanker); letter in 91 days (HH)

### Broadcast Band

AL:	690 kHz	WVOK Birmingham; "Voice of Dixie" cd in 83 days; no v/s (WW)
ME:	1440 kHz	WMER Portland; Form letter w/notes on bottom in 25 days for ms; v/s Kevin A. Smith; CE; ex-WJBQ, ex-WJAB. (WW)

ON: 1350 kHz CHRO Pembroke; letter, 2 pens in 30 days; v/s Al Kennedy, Station manager. (WW)  
PA: 1210 kHz WCAU Philadelphia; PD form letter in 190 days for f/up, ms (OW)

### [Shortwave Broadcast]

Honduras: R. Sani (HRRI) 4755; PFC, PD "Map" cd, interesting letter & a piece of "Tuno" bark in 22 days for ms; v/s Edward A. Pfister (OW)

### Shortwave Utility-Mobile

#### [Aircraft]

5963 CG-1375 USCG HH52A Helicopter; PFC in 9 days for ms (ID)

#### [Ships]

2182 CGDW CCGS "Cygnus"; PFC. photo fact sheet in 33 days for 1 IRC (ID)  
11176 NZXQ USS "Voge" (Frigate FF-1047); PFC in 27 days for ms (RHF)

### Shortwave Utility-Fixed

Belgium: OSN 12725 Oostende Naval Radio; PFC in 16 days for 2 IRCs; v/s ???  
England: GKS5 & GKC6 (freqs?) Portishead; 2 FD "Globe" cds in 22 days, xrp; v/s Lawrence Bennett, Radio Officer (OW)

### ADXR SHORTWAVE

Editor: RM1 Donald E. Stidwell

3.220	0930	SP HCJB Ecuador Sep 7 Time pips & ID; kids singing folk mx. Stutterheim.
4.485	1042	XX Unid Unknown Sep 5 Unid sta very weak with man in unid lang., multipath echo; either 2 stations on freq or someone talking in background. Stutterheim
4.765	0229	PT 544 Unid Brasil Oct 9 2 men spkg in PT. Hamill
5.980	0249	EG 544 R. RSA Johannesburg Oct 10 News in EG Svc. ID 0250. Hamill
6.230	0357	EG HCJB Ecuador Sep 8 Religious prgm. Stutterheim.
9.770	1410	VT R. Australia Sep 24 Program of nx in the Southern dialect of Vietnamese. Smith
12.075	2005	EG 343 Kol Israel Oct 2 World nx, ID. Hesch
13.680	1300	EG R. Moscow USSR Sep 6 ID and nx in EG. Stutterheim.
15.115	1816	PT 522 RFE Portugal Oct 5 M & W in PT, ID 1830, Heavy QRM from another station. Hamill
15.170	0155	SVL 544 RFO Tahiti Oct 11 Music. Multi-languages. Hamill
15.560	1201	EG 555 R. Nederland Flevo Oct 23 Media Network program. Stidwell.

### UNDERNEATH THE HEADSETS

BCB DXing  
Editor: John Wilkins

535	----	GRENADA, St. Georges. 9-6 2332. Strong w/Carib dance mx (MS)
585	-----	SPAIN, Madrid. 10-11 0120. SP mx, SP talk. Fair/good. (CH)
800	PJB	NETH. ANTILLES, Bonaire. 10/11 0220. relig pgms on Trans World Radio (DV)
1020	YVRS	VENEZUELA, La Asuncion. 9-15 0025. Fairly good w/"Mundial Margarita" ID's. Also another SP in background. (WW)
1331.8	????	unID 9/12 0231. Het not from TV (MS)
1521	-----	CZECHOSLOVAKIA, Cizatice. 9-5 0331. Folk mxl 6 pips at 0330. Xlnt. (GH)
1611	-----	VATICAN CITY, 9/5 0310. M&W in Slav lang. Xlnt. (GH)

### AMATEUR SECTION

Editor: Mike Witkowski

Contributor: Richard E. Lawrenson WDX1Q

SSB: RB5DX U.S.S.R. 14187 1955...J11LBD Japan 14185 1300...UP3IWA U.S.S.R. 14182 2015... CP8HD Bolivia 14217 0114... UA2AO USSR 14209 1830... YU7BJ Yugoslavia 14187 2114... SP9MQH Poland 14197 2038... LZ2EV Bulgaria 14216 2120... HA6NF Hungary 14192 2035... UA6LDX U.S.S.R. 14190 1926... (Icom R70/Yaesu FRG7700 & 120' L Shaped Wire. ↘)

*Politics and the Media*

## Democrats and the Death of Deregulation

by Larry Miller

Politics and the media. They're inseparable. You need only switch over to the international radio bands to hear about the "peace-loving peoples" of country X or the "victorious armies" of country Y. On this part of the spectrum, it's obvious.

And it's obvious how politics affects the media on an international level. Listen to the explosion of rhetoric on the air when country X does something that country Y doesn't like. Or how a military strike can put an end to a station, as in the case of Grenada.

But here in the U.S., the effect of politics on the media is less severe; more subtle. But then again, so is the entire political process in this country.

But the changes brought about by this fall's elections may not be all that subtle. With Democrats now controlling the Senate -- as well as the House -- six years of Republican efforts to deregulate the media and redefine the social role of broadcast stations in this country is at an end.

Under changes initiated by Federal Communications Commission Chair-

man and Reagan point man Mark S. Fowler, local radio news operations were gutted, public television emasculated and the goal of quality children's TV abandoned.

Under the Democrats, however, Fowler's days are numbered. Says David Cook of the *Los Angeles Times*, "Many consider him too much the idealogue and too close to the administration to remain an effective F.C.C. chairman." Whether Fowler remains on the job, leaves the position vacant, or in the hands of an interim chairman, the election results will most certainly hasten his departure. Leading candidates for the job are reportedly commissioners Dennis Patrick and Mimi Dawson.

With or without Fowler's departure look for possible efforts to rollback the Republican-era deregulation, especially in regard to the rule change that allowed broadcasters to more easily buy and sell radio and TV properties. The station trading, which has seen billions of dollars worth of stations change hands, has, according to Cook, taken money away from programming.

But what about shortwave radio in the United States? It was under the

Reagan administration that commercial international broadcasting in this country had its first flowering in decades. New to the airwaves during this time were now-accepted facilities like WRNO-Worldwide, World Harvest Radio and others. Dozens of others have explored the possibilities of shortwave, several are still scheduled to come on the air.

It was under the Reagan administration, too, that the Voice of America saw the beginning of a decade long 1.3 billion dollar modernization and the addition of services like Radio Marti and VOA Europe.

While it's unlikely that any new initiatives will be undertaken in the next two years, it's certain that -- while the status quo will probably be maintained -- the Republican-inspired momentum will die. Changes will be coming. But the full story is not likely to be known until 1988.

## UPDATE

### Papua New Guinea

In line with Papua New Guinea's general move out of the 120 meter band, "Radio Simbu" at Kundiawa has moved from 2376 to 3355 kHz and Radio Milne Bay has moved to 3365 kHz. There is now only one PNG station on 120 meters, and that is Radio Enga at Wabag, 2410 kHz. First advice of these changes was received from Gordon Darline in Port Moresby. (From Gayle Van Horn via Bruce MacGibbon)

### Two Jailed for On-Air Comments

Two safari operators in Zimbabwe's northern Zambezi Valley have been detained for making anti-government statements over their two-way radios.

Jeff Stutchbury and Garth Thompson were held for arraignment after their transmissions were overheard and considered subversive.

(From Robert Horvitz, Washington, DC)

Contributor: Steve Stevenson WPE3AZC

SSB: BY1QH China 14226 2332...5Z4BP Kenya 14156 2141... HD8G Galapagos 14198 2220... 5J0FRC Gorgona Is. 14197 2215... AH9AC Wake Is. 14199 2228... 7J1ACH Minami Tori 14226 0003...9M8EN E. Malaysia 14224 1746... 9Q5MA Zaire 14182 2046... KH6JEB/KH7 Kure 14226 2157...TJ1CH Cameroun 14182 1953...(National NC 190 & Dipole.)

Contributor: Roy Fansler K9UE

SSB: HK0BKX San Andres Is. 21019 1336...G0ESQ England 14006 1347... UA1ZFK E. Russia 140006 1350...(Johnson Ranger/Collins R390 & TA-33 Jr.)

### LF BEACONS

Editor: Joseph Woodlock

Freq	ID	St/Prv	Location	Time Date	Pepr	Notes
201	RI	PQ	Riviere du Loup	0450 10-22	JW-IL	New catch
207	CL	NB	Charlo	0849 10-11	CC-DE	
230	UGN	CUBA	Giron	0743 10-10	CC-DE	New catch
241	EW	NJ	Newark	1024 10-21	RD-MD	
263	LQL	OH	Willoughby	0539 10-7	CC-DE	New catch
276	YHR	PQ	Chevery	0539 10-13	CC-DE	
312	D	ONT	Cove Island LS SQ14	0800 10-11	CC-DE	New catch
323	UWP	NFLD	Argentina	0416	ID-NH	
344	BYY	TX	Bay City	0825 10-23	KS-IL	New catch
354	Z	PQ	Sept Iles	0626 10-10	RD-MD	
390	UCA*	CUBA	Ciego de Avila	0915 10-21	GS-IL	Now identified
414	OGY	NY	Rockaway	0309	ID-NH	Verified

## How Much Are You Missing?



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**Station News \* DX Tips \* Advance  
Program Details \* Frequencies \*  
Equipment News \* Articles \* and More**

# frequency SECTION

## The MT Monitoring Team

Joe Hanlon, PA      Greg Jordan, NC  
 Rich Foerster, NE  
**JANUARY HONORARY MEMBERS**  
 Robert Brossell, Pewaukee, WI  
 William O. Dickerman, Williamsport, PA  
 Bruce Gilson, Silver Spring, MD  
 Neal Kolb, Belen, NM  
 Rev. Michael Mayer, Wilmington, DE  
 Ken Reiss, Manchester, MO  
 William Scarbrough, Knoxville, TN  
 Pete Wahlquist, Reseda, CA  
 Robert Zilmer, Rio Rancho, NM

### 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.
- \* 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.
  - \* Frequencies in bold are most likely to be heard regularly in North America.
- 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.

Frequency updates from readers are also welcome and should be sent to:

Larry Miller, Frequency Coordinator  
 Monitoring Times  
 P.O. Box 691  
 Thorndale, PA 19372

Anyone whose material is used will receive a certificate of appreciation from Monitoring Times.

All frequencies in this list have been heard by one or more MT monitors during the previous month.

0000 UTC	[7:00 PM EST/4:00 PM PST]	0100 UTC	[8:00 PM EST/5:00 PM PST]	0200 UTC	[9:00 PM EST/6:00 PM PST]
0000-0015	Voice of People of Kampuchea 9683, 11938	0100-0115	All India Radio..... 6035, 7215	0200-0215	Vatican Radio..... 6145, 7125
0000-0030	BBC, England..... 5975, 6005	0100-0115	Vatican Radio..... 6030, 9605	0200-0225	Kol Israel..... 5885, 7465
	6120, 6175	0100-0120	RAI, Italy..... 6010, 9575	0200-0230	BBC, England..... 6120, 6175
	7325, 9410	0100-0125	Kol Israel..... 5885, 7465		7325, 9410
	9515, 9590	0100-0130	HCJB, Ecuador..... 9670, 11910		9515, 9590
	9915, 12085	0100-0130	Radio Berlin International.. 15155		7185
0000-0030	KGEI, California..... 15280	0100-0130	Radio Canada International.. 6080, 9730	0200-0230	Burma Broadcasting Corp..... 6025, 6110
0000-0030	Radio Berlin International.. 6080	0100-0130	Radio Japan General Service. 7140, 9675	0200-0230 (T-A)	Radio Budapest, Hungary..... 9520, 9835
0000-0030	Radio Canada International.. 5960, 9755	0100-0130	Radio Vientiane, Laos..... 15235, 17810	0200-0230 (M-F)	Radio Canada International.. 5960, 9755
0000-0030	M Radio Norway International.. 9580, 9610	0100-0130	Radio New Zealand Int'l... 7112v	0200-0230	Radio Korea World..... 7275, 11810
0000-0045	Kol Israel..... 5885, 7465	0100-0145	WYFR, Florida..... 9555, 15440	0200-0230	Swiss Radio International... 6135, 9625
	9435, 9815	0100-0145	Deutsche Welle, West Germany 6040, 6085		9725, 9885
0000-0050	Radio Pyongyang, North Korea 15140, 15160	0100-0150	ABC, Perth, Australia..... 15425	0200-0230 T-A	Voice of Nicaragua..... 6015
0000-0100	Armed Forces Radio and TV.. 6030, 11790		Armed Forces Radio and TV... 6030, 11790	0200-0230	WINB, Pennsylvania..... 15145
	15355, 17785		BBC, England..... 5975, 6005	0200-0250	Deutsche Welle, W. Germany.. 6035, 7285
0000-0100	All India Radio..... 9910, 11715	0100-0200	BBC, England..... 6120, 6175		9650, 9690
0000-0100	CBC Northern Quebec Svce... 6185, 9825	0100-0200	CBC Northern Quebec Svce... 6195, 9825	0200-0256	Radio RSA, South Africa.... 6010, 6185
0000-0100	CFCX, Montreal, Canada..... 6005	0100-0200	CFCX, Montreal, Canada..... 6005	0200-0300	ABC Perth, Australia..... 15425
0000-0100	CFRX, Toronto, Canada..... 6070	0100-0200	CFRX, Toronto, Canada..... 6070	0200-0300	Armed Forces Radio and TV... 6030, 11730
0000-0100	CFVP, Calgary, Canada..... 6030	0100-0200	CFVP, Calgary, Canada..... 6030	0200-0300 (S)	CBC Northern Quebec Service. 6195, 9825
0000-0100	CHNX, Halifax, Canada..... 6130	0100-0200	CHNX, Halifax, Canada..... 6130	0200-0300 (TEN)	Christian Science Monitor... 9745
0000-0100	Christian Science Monitor... 7365	0100-0200	Christian Science Monitor... 7365	0200-0300	GBC, Guyana..... 5950
0000-0100	CKFX, Vancouver, Canada.... 6080	0100-0200	CKFX, Vancouver, Canada.... 6080	0200-0300	HCJB, Ecuador..... 6230, 9870
0000-0100	KCBI, Texas..... 11910	0100-0200	FEB, Manila, Philippines.. 15315, 21475	0200-0300	KCBI, Texas..... 11910
0000-0100	KSDA, Guam (AWR)..... 15115	0100-0200	KCBI, Texas..... 11910	0200-0300	KSDA, Guam (AWR)..... 15115
0000-0100	KVOH, California..... 15250	0100-0200	KSDA, Guam (AWR)..... 15115	0200-0300	KVOH, California..... 11930
0000-0100	KYOI, Saipan..... 15405	0100-0200	KVOH, California..... 15405	0200-0300	KYOI, Saipan..... 15405
0000-0100	Radio Australia..... 15160, 15240	0100-0200	KYOI, Saipan..... 15405	0200-0300	Radio Belize..... 3285
	15320, 15395	0100-0200	Radio Australia..... 15320, 15395	0200-0300	Radio Bras, Brazil..... 11745
	17795	0100-0200	Radio Baghdad, Iraq..... 11750	0200-0300	Radio Bucharest, Romania... 5990, 6090
0000-0100	Radio Baghdad..... 11750	0100-0200	Radio Belize..... 3285		9510, 9570
0000-0100	Radio Beijing, China..... 9550, 15445	0100-0200	Radio Canada International.. 5960, 9755		9835, 11810
0000-0100v	Radio Dublin International.. 6910	0100-0200	Radio Canada International.. 11845, 11940	0200-0300	11940
0000-0100	Radio Havana Cuba..... 6090, 9740	0100-0200 (M)	Radio Baghdad, Iraq..... 11750	0200-0300 (T-A)	Radio Cairo, Egypt..... 9475, 9675
0000-0100	Radio Korea (South)..... 15575	0100-0200 (TES)	Radio Belize..... 3285	0200-0300 (TES)	Radio Canada International.. 5960, 9755
0000-0100	Radio Moscow, U.S.S.R..... 5940, 6170	0100-0200v	Radio Cairo, Egypt..... 9475, 9675	0200-0300 (T-S)	R. Discovery, Dominican Rep. 6245v
	7115, 7185	0100-0200	Radio Bucharest, Romania... 5990, 6090		Radio Dublin International.. 6910
	7195, 7215	0100-0200	Radio Bucharest, Romania... 9510, 9570		Radio Havana Cuba..... 5965, 6035
	7310, 13665	0100-0200	Radio Bucharest, Romania... 9835, 11810		6140, 6190
	15425, 15590	0100-0200	Radio Bucharest, Romania... 11940		9740
0000-0100	Radio Sofia Bulgaria..... 9700, 11720	0100-0200	Radio Bucharest, Romania... 11940		15420, 15195
0000-0100	Radio Thailand..... 9650, 9665	0100-0200	Radio Bucharest, Romania... 11775, 17750		17825
	11905	0100-0200	Radio Baghdad, Iraq..... 11750		11810
0000-0100	Radio Veritas, Philippines.. 9740	0100-0200	Radio Belize..... 3285		5915, 5940
0000-0100	Radio New Zealand Int'l... 11780, 15150	0100-0200	Radio Canada International.. 5960, 9755		6000, 6070
0000-0100	RTL Luxembourg..... 6090	0100-0200	Radio Canada International.. 11845, 11940		6130, 7115
0000-0100	Spanish Foreign Radio, Spain 6125, 9630	0100-0200	Radio Baghdad, Iraq..... 11750		7215
0000-0100	Voice of America..... 5995, 6125	0100-0200	Radio Belize..... 3285		11745
	6130, 9455	0100-0200v	Radio Bucharest, Romania... 5990, 6090		15150
	9650, 9775	0100-0200	Radio Bucharest, Romania... 9510, 9570		6095, 6135
	9815, 11580	0100-0200	Radio Bucharest, Romania... 9835, 11810		7145, 7270
	11680, 11740	0100-0200	Radio Bucharest, Romania... 11940		9525, 11815
	15205	0100-0200	Radio Bucharest, Romania... 11940		15120
0000-0100	WHRI, Indiana..... 11770	0100-0200	Radio Bucharest, Romania... 11775		9665, 11905
0000-0100	WRNO Worldwide..... 7355	0100-0200	Radio Bucharest, Romania... 17750		9740, 15195
0000-0100	WYFR, Florida..... 15365, 15440	0100-0200	Radio Bucharest, Romania... 17795		11940
0015-0100	AWR, Costa Rica..... 15460	0100-0200	Radio Bucharest, Romania... 17795		6005, 9720
0030-0100	BBC, England..... 5975, 6005	0100-0200	Radio Bucharest, Romania... 17795		15425
	6075, 6120	0100-0200	Radio Bucharest, Romania... 17795		
	6175, 7325	0100-0200v	Radio Bucharest, Romania... 17795		
	9515, 9590	0100-0200	Radio Bucharest, Romania... 17795		
	9915, 11750	0100-0200	Radio Bucharest, Romania... 17795		
0030-0055	BRT, Belgium..... 5910, 9825	0100-0200	Radio Bucharest, Romania... 17795		
0030-0100	HCJB, Ecuador..... 9670, 11910	0100-0200	Radio Bucharest, Romania... 17795		
	15155	0100-0200	Radio Bucharest, Romania... 17795		
0030-0100 (A)	KTWR, Guam..... 15340	0100-0200	Radio Bucharest, Romania... 17795		
0030-0100	Radio Belize..... 3285	0100-0200	Radio Bucharest, Romania... 17795		

# frequency SECTION

0200-0300	Voice of America.....	5995, 6130 7205, 9455 9575, 9650 9670, 9740 9775, 11580 11680, 11720 15205
0200-0300	Voice of Asia, Taiwan.....	7285
0200-0300	Voice of Free China, Taiwan.	5985, 9555
0200-0300	WHRI, Indiana.....	9680
0200-0300	WINB, Pennsylvania.....	15145
0200-0300 (M)	World Music Radio.....	6910
0200-0300	WRNO Worldwide.....	7355
0200-0300	WYFR, Florida.....	11805
0215-0220	Radio Nepal.....	5005
0215-0300	Radio Berlin International..	6060, 9730
0230-0300	BBC, England.....	5975, 6005 6120, 6175 7325, 9515
0230-0300	CBC Northern Quebec Service.	9915
0230-0300	KNLS, Alaska.....	6195
0230-0300	Radio Netherland.....	11905 6020, 6165
0230-0245	Radio Pakistan.....	9590, 9895 7315, 11740
0230-0300	Radio Sweden International..	15115
0230-0300	Radio Tirana Albania.....	9695, 17840 SSB 7065, 7120
0230-0300	SLBC, Sri Lanka.....	9760
0230-0300 (S,M)	WINB, Pennsylvania.....	9720
0240-0250	All India Radio.....	15145
0245-0300	Radio Berlin International..	9610, 9545 6125, 6165

<b>0300 UTC [10:00 PM EST/7:00 PM PST]</b>		
0300-0310	CBC Northern Quebec Service.	6195, 9625
0300-0315	Radio Budapest, Hungary.....	6025, 6110 9520, 9835
0300-0325	Radio Netherland.....	6020, 6165 9590, 9895
0300-0330	BBC, England.....	5975, 6005 6120, 6155 6175, 7160 7185, 7325 9515, 9600 9915
0300-0330	Radio Berlin International..	6125, 6165
0300-0330	Radio Cairo, Egypt.....	9475, 9675
0300-0330	Radio Canada International..	5960, 9755
0300-0330	Radio Japan General Service	17810, 17835
0300-0330	Radio Kiev, Ukrainian SSR...	17845 6035, 6135 7175, 7250 11790, 1605 13645
0300-0330 (T-A)	Radio Portugal.....	9565
0300-0330 (S,M)	WINB, Pennsylvania.....	15145
0300-0350	Deutsche Welle, West Germany	6185, 9545 9565, 9640
0300-0350	Radio Berlin International..	9560
0300-0350	Voice of Turkey.....	9560
0300-0400	Armed Forces Radio and TV...	6030, 11730 11790, 12060 17765, 21570
0300-0400	CFCX, Montreal, Canada.....	6005
0300-0400	CFRX, Toronto, Canada.....	6070
0300-0400	CFVP, Calgary, Canada.....	6030
0300-0400	CHNX, Halifax, Canada.....	6130
0300-0400	Christian Science Monitor...	9745
0300-0400	CKFX, Vancouver, Canada.....	6080
0300-0400	HCJB, Ecuador.....	6230, 9870
0300-0400	KCBI, Texas.....	11910
0300-0400	KSDA, Guam (AWR).....	17840
0300-0400	KVOH, California.....	9852.5
0300-0400	KYOI, Saipan.....	15190
0300-0400 (M)	La Voz Evangelica, Honduras.	4820
0300-0400	Radio Australia.....	15160, 15240 15320, 15395 17715, 17750 17795, 11750 15180, 15280 15445
0300-0400	Radio Beijing, China.....	3285
0300-0400	Radio Belize.....	3285
0300-0400	Radio Cultural, Guatemala...	5955
0300-0400 (T-S)	Radio Dublin International..	6910
0300-0400 (T-S)	Radio Earth.....	7400
0300-0400	Radio Havana Cuba.....	5965, 6035 6080, 6100 6140, 6190 7400, 9740
0300-0400 (M)	World Music Radio.....	6910
0300-0400	Radio Moscow, U.S.S.R.....	5820, 6000 6070, 6130 7115, 7165 7185, 7310 12050, 13665

0300-0400	Radio New Zealand Int'l....	11780, 15150
0300-0400	Radio Polonia, Poland.....	6095, 6135 7270, 9525 11815
0300-0400	Radio Prague, Czechoslovakia	5930, 7345
0300-0400	Radio RSA, South Africa.....	3230, 4990 7270, 9585
0300-0400	Radio Thailand.....	9560, 11905
0300-0400	SLBC, Sri Lanka.....	6005, 9720
0300-0400	TIFC, Costa Rica.....	15425
0300-0400	Trans World Radio, Bonaire..	5055
0300-0400	Voice of America.....	9535 6035, 6130 9455, 9550 9575, 9650 9740, 9775 11580, 11680
0300-0400	Voice of Free China, Taiwan.	5985, 6065 9680, 11745
0300-0400	Voz Evangelica, Honduras....	4820
0300-0400 (M)	WHRI, Indiana.....	7355
0300-0400	WRNO Worldwide.....	6185
0305-0400 (A)	Radio Austria International.	5945, 6055 6155 6150
0310-0330	Vatican Radio.....	6005, 6055
0315-0330	Radio France International..	6175, 7135 9535, 9600 9790, 9800
0330-0400 (M)	CBC Northern Quebec Service.	6195, 9625
0330-0400	BBC, England.....	3955, 5975 6120, 6175 9410, 9600
0330-0400	Radio Austria International.	6155
0330-0400	Radio Havana Cuba.....	6090, 6100 6140, 9740
0330-0400	Radio Sweden International.	11705
0330-0400	Radio Tanzania.....	5985
0330-0400	Radio Tirana Albania.....	6200, 7065
0330-0400	UAE Radio, Dubai.....	9640
0335-0340	All India Radio.....	3905, 4860 7105, 9545 9610, 11830 11895, 11940
0340-0400	Voice of Greece.....	7430, 9420
0345-0400	Radio France International..	6175, 7135 7175, 9535 9800, 9901 9620, 9645
0345-0400.	Radio New Zealand Int'l....	11705
0350-0359	Radio Yerevan, Armenian SSR	11790, 13605 15180

<b>0400 UTC [11:00 AM EST/8:00 PM PST]</b>		
0400-0410	Voice of Kenya.....	6090
0400-0415	Radio Budapest.....	6025, 6110 9520, 9635
0400-0415	Radio Cultural, Guatemala...	3300
0400-0425	Radio Netherland.....	7175, 9895
0400-0425	Radio RSA, South Africa.....	3230, 4990 7270, 9585
0400-0430	Radio Bucharest, Romania....	5990, 9510 9570, 11810
0400-0430 T-A	Radio Canada Intl.....	11940
0400-0430 M	Radio Norway International..	9590
0400-0430	Swiss Radio International...	6135, 9725 9885, 12035
0400-0430 (S,M)	Trans World Radio, Bonaire..	9535
0400-0430	Trans World Radio, Bonaire..	4835, 7295
0400-0500	ABC, Perth, Australia.....	15425
0400-0500	Armed Forces Radio and TV...	6030, 12060 11730, 11790 17765
0400-0500	BBC, London, England.....	3955, 5975 6005, 6120 6175, 7105 7160, 9510 3927, 3930 7149
0400-0500	Capital Radio, South Africa.	7149
0400-0500	CBC Northern Quebec Service.	6195
0400-0500	CFCX, Montreal, Canada.....	6005
0400-0500	CFRX, Toronto, Canada.....	6070
0400-0500	CFVP, Calgary, Canada.....	6030
0400-0500	CHNX, Halifax, Canada.....	6130
0400-0500	Christian Science Monitor...	9745
0400-0500	CKFX, Vancouver, Canada.....	6080
0400-0500	HCJB, Ecuador.....	6230, 9870
0400-0500	KNLS, Alaska.....	9670
0400-0500 TEN	KVOH, California.....	9852.5
0400-0500	Radio Australia.....	9755, 11945 15160, 15240 15320, 15395 17715, 17795 9645, 11980 15180
0400-0500	Radio Beijing.....	3285
0400-0500 (T-S)	Radio Belize.....	3285
0400-0500	Radio Dublin International..	6910
0400-0500	Radio Havana Cuba.....	5965, 6090 6100, 6140 6190, 9740 9595, 9675 6130, 7155 9500, 11770 12030
0400-0500	Radio Japan.....	5920, 5940 6000, 6170 7165, 7775 7185, 7270 7310, 9635 9765, 11790 12050, 13645
0400-0500	Radio Moscow.....	9620, 11780
0400-0500	Radio Moscow World Service.	5920, 5940 6000, 6170 7165, 7775 7185, 7270 7310, 9635 9765, 11790 12050, 13645
0400-0500	Radio New Zealand.....	9620, 11780



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### World Radio Report

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# frequency SECTION

0400-0500	Radio Pyongyang, N.Korea...	15140, 15160
0400-0500	Radio Sofia Bulgaria.....	7115
0400-0500	Radio Uganda.....	4976, 5026
0400-0500	RAE, Argentina.....	9690, 11710
0400-0500	VLW 15, Lyndhurst,Australia	15230
0400-0500	VLW 15, Wanerom, Australia	15425
0400-0500	Voice of America.....	3990, 5995
		6035, 6040
		7170, 7280
		9575, 9670
		11835, 15205
0400-0500	Voice of Turkey.....	9560
0400-0500	WHRI, Indiana.....	7400
0400-0500v (M)	World Music Radio.....	6910
0400-0500	WRNO Worldwide.....	6185
0415-0430	Radio France International..	6175, 7135
		7175, 9550
		9790, 9800
		5980
0425-0450	RAI, Italy.....	9480, 11835
0430-0455	Radio Tirana Albania.....	7150, 7225
0430-0500	Deutsche Welle, W. Germany..	9565, 9765
		5945, 6155
0430-0500	Radio Austria International.	9755
		9560, 9620
0430-0500	Radio Berlin International..	6055, 6175
0445-0500	Radio France International..	7135, 9535
		9550, 9790
		9800

0500 UTC	[12:00 AM EST/9:00 PM PST]	
0500-0505	Radio Belize.....	3285
0500-0510	Radio Lesotho.....	4800
0500-0515	Kol Israel.....	7410, 9009
		9435, 9860
		11610, 11960
		21710
0500-0515	Vatican Radio.....	11725, 15190
0500-0530	BBC, London.....	5950, 5975
		6005, 7105
		7160, 9410
		9510, 9600
		9825, 12095
		3927.5
0500-0530	Capital Radio, S. Africa....	9670
0500-0530	KNLS, Alaska.....	11840
0500-0530	Radio Canada Int'l.....	15180, 15165
0500-0530 (M)	Radio Norway International.	9535
0500-0530 (S.M)	Trans World Radio, Bonaire..	5960, 6120
0500-0550	Deutsche Welle.....	6130, 7225
0500-0600	ABC, Melbourne, Australia..	15330
0500-0600	ABC, Perth, Australia.....	15425
0500-0600	Armed Forces Radio and TV...	6030, 11790
		15330, 17765
0500-0600	CBC Northern Quebec Service.	9625
0500-0600	CFCX, Montreal, Canada.....	6005
0500-0600	CFRX, Toronto, Canada.....	6070
0500-0600	CFVP, Calgary, Canada.....	6030
0500-0600	CHNX, Halifax, Canada.....	6130
0500-0600	Christian Science Monitor...	9745
0500-0600	CKFX, Vancouver, Canada.....	6080
0500-0600	HCJB, Quito, Ecuador.....	6230, 9870
		11910
0500-0600	KVOH, California.....	9852.5
0500-0600	KYOI, Saipan.....	15190
0500-0600	Radio Australia.....	15160, 15240
		15320, 15395
		17715, 17750
		17795, 17795
0500-0600	Radio Beijing, China.....	9565
0500-0600	Radio Canada International..	6140
0500-0600v	Radio Dublin International..	6910
0500-0600	Radio Havana Cuba.....	5965, 6035
		6090, 6190
		9740
0500-0600	Radio Japan General Service.	9675, 15235
		17810
0500-0600	Radio Korea World News Svc..	7275
0500-0600	Radio Moscow.....	5905
0500-0600	Radio Uganda.....	4976, 5026
0500-0600	Radio Zambia.....	11880
0500-0600	SBC Radio 1, Singapore.....	11940
0500-0600	Soloman Islands Bcating Co	5020
0500-0600	Spanish Foreign Radio.....	9630
0500-0600	VLW 15, Lyndhurst,Australia	15230
0500-0600	VLW 15, Wanerom, Australia.	15425
0500-0600	Voice of America.....	5995, 6035
		7200, 7280
		9575
		9575
		6015
0500-0600	Voice of Nicaragua.....	7400
0500-0600	WHRI, Indiana.....	6910
0500-0600v (M)	World Music Radio.....	6185
0500-0600	WRNO Worldwide.....	5975, 9510
0530-0600	BBC, London.....	4850
0530-0600	Radio Cameroon.....	6165, 9715
0530-0600	Radio Netherland.....	

0600 UTC	[1:00 AM EST/10:00 PM PST]	
0600-0610	Ghana Radio.....	4915
0600-0610	Voice of Kenya.....	4808, 6090
0600-0620	Vatican Radio.....	6185, 9645
0600-0625	Radio Netherland.....	6165, 9715
0600-0630	Deutsche Welle.....	7290, 9625
		9700
0600-0700	Armed Forces Radio and TV...	6030, 15330
		17765
0600-0700	BBC, London.....	3955, 3975
		5900, 5975
		6175, 7105
		7150, 7120
		9510, 9600
		9640, 9915
0600-0700	CFCX, Montreal, Canada.....	6005
0600-0700	CFRX, Toronto, Canada.....	6070
0600-0700	CFVP, Calgary, Canada.....	6030
0600-0700	CKFX, Vancouver, Canada.....	6080
0600-0700	CHNX, Halifax, Canada.....	6130
0600-0700	Christian Science Monitor...	7365
0600-0700	GBC-2, Accra, Ghana.....	3366
0600-0700	HCJB, Quito, Ecuador.....	6230, 9870
0600-0700	King of Hope, Lebanon.....	6280
0600-0700	KVOH, California.....	6005
0600-0700	KYOI, Saipan.....	15190
0600-0700	Radio Australia.....	15160, 15240
		17715, 17750
		17795
		11760
0600-0700	Radio Cook Islands.....	9525
0600-0700	Radio Havana Cuba.....	9570, 7275
0600-0700	Radio Korea, South.....	5905, 7175
0600-0700	Radio Moscow.....	7310, 7270
		7300, 9490
		9635, 9580
		9755, 11770
		11950, 12030
		13605
		11780
0600-0700	Radio New Zealand Int'l....	13650, 13680
0600-0700	Radio Pyongyang, N. Korea..	11880
0600-0700 (S)	Radio Zambia.....	11940
0600-0700	SBC Radio 1, Singapore.....	5020
0600-0700	Soloman Islands Bcating Co.	9660
0600-0700	VLQ 9, Brisbane, Australia..	15230
0600-0700	VLW 15, Lyndhurst,Australia	15425
0600-0700	VLW 15, Wanerom, Australia.	3990, 5995
0600-0700	Voice of America.....	6035, 6080
		6125, 7280
		9530, 9550
		9670
		7285
0600-0700	Voice of Asia, Taiwan.....	5985
0600-0700	Voice of Free China,Taiwan..	6175, 9750
0600-0700	Voice of Malaysia.....	15295
		6100
		6910
0600-0700 (S)	WHRI, Indiana.....	6185
0600-0700 (S)	World Music Radio.....	6185
0600-0700 (S)	WRNO Worldwide.....	6185
0600-0700	WYFR, Okeechobee, Florida..	6065, 7355
		7365, 7400
		9455, 9680
		9852.5
0615-0655 (A,S)	BRT, Belgium.....	9880, 21810
0615-0630 (M-F)	Radio Canada International..	6140, 7155
		9740, 9760
		11775
0615-0630 (M-A)	Vatican Radio.....	15190, 17730
0625-0700	TWR, Monaco.....	7105
0630-0655	Radio Netherland.....	9895, 11930
0630-0700	Radio Polonia.....	6135, 7270
		9675
0630-0700	Radio RSA, South Africa.....	5980, 7270
		9585, 11900
		9700, 11720
		15140
0630-0700	Radio Sofia, Bulgaria.....	7065
0630-0700	Radio Tirana.....	3985, 6165
0630-0700	Swiss Radio International...	9535, 9870
		12030, 15430
0645-0700 (M-F)	HCJB, Quito, Ecuador.....	6205

0700 UTC	[2:00 AM EST/11:00 PM PST]	
0700-0712	Radio Bucharest, Romania...	11940, 15250
		15335, 17790
		17805, 21665
0700-0730	Burma Broadcasting Corp....	9730
0700-0730	BBC, London.....	5950, 5975
		6050, 7150
		7210, 9510
		15360
0700-0730 (A,S)	TWR, Bonaire.....	9535
0700-0730v	Radio Zambia.....	11880v
0700-0735	TWR Swaziland.....	6070
0700-0745	Radio New Zealand Int'l....	11780, 15150

0700-0745	WYFR, Florida.....	6065, 7355
		7400, 9455
0700-0750	Radio Pyongyang.....	11930, 13750
		15340
0700-0800	ABC Brisbane.....	9660
0700-0800	ABC Lyndhurst.....	9680
0700-0800	Armed Forces Radio and TV..	15400
0700-0800	CFCX, Montreal, Canada.....	6005
0700-0800	CFRX, Toronto, Canada.....	6070
0700-0800	CFVP, Calgary, Canada.....	6030
0700-0800	CHNX, Halifax, Canada.....	6130
0700-0800	CKFX, Vancouver, Canada.....	6080
0700-0800 (A,S)	ELWA, Liberia.....	11830
0700-0800	FEBC, Manila.....	11850, 15350
0700-0800	GBC-2, Accra, Ghana.....	3366
0700-0800	HCJB.....	6130, 6205
		9745, 9845
		9860, 11720
0700-0800	King of Hope, Lebanon.....	6280
0700-0800	KVOH, California.....	6005
0700-0800	KNLS, Anchor Point, Alaska..	9555
0700-0800	KYOI, Saipan.....	15190
0700-0800	NBC, Papua New Guinea.....	4890
0700-0800	Radio Australia.....	5995, 9655
0700-0800 (S)	Radio Earth (via Milano)....	7295
0700-0800	Radio Havana Cuba.....	9525
0700-0800	Radio Japan General Service.	9675, 9735
		11955, 15235
		17810, 17855
0700-0800	Radio Kuwait.....	9560
0700-0800	Radio Moscow.....	7165, 7290
		17590, 17880
0700-0800	Radio Thailand.....	9655, 11905
0700-0800	SBC Radio 1, Singapore.....	5010, 11940
0700-0800	Soloman Islands Bcating Svc	5020
0700-0800	VLM4 Brisbane, Australia...	4920
0700-0800	Voice of America.....	3990, 5995
		6035, 6080
		6125, 7280
		9530, 9540
		9550, 9670
		11840
0700-0800	Voice of Free China.....	5985
0700-0800	Voice of Malaysia.....	6175, 9750
		15295
0700-0800	Voice of Nigeria.....	15120, 15185
		17800
0700-0800	WHRI, Indiana.....	9620
0700-0800 (S)	World Music Radio.....	6910
0700-0800 (S)	WRNO Worldwide.....	6185
0715-0730 (M-A)	Vatican Radio.....	11725, 15190
0715-0800 (S)	FEBA Radio, Seychelles....	15120, 17795
0725-0800	TWR Monte Carlo.....	7105
0730-0735	All India Radio.....	5990, 6010
		6020, 6050
		7110, 7250
		9610, 11730
		11850, 11935
0730-0800	BBC, London.....	9510, 9600
		9600, 9640
		11860
0735-0800 (M-H)	KTWR, Guam.....	15115
0730-0800	Radio Finland.....	6120, 11755
		15265
0730-0800	Radio Netherlands.....	9630, 9715
0730-0800	Radio Prague.....	11855, 17840
		21705

0800 UTC	[3:00 AM EST/12:00 AM PST]	
0800-0805	GBC, Accra, Ghana.....	3366
0800-0825 (M-F)	BRT, Belgium.....	9880, 17595
0800-0825	Radio Netherlands.....	9630, 9715
0800-0825	Voice of Malaysia.....	6175, 9750
		15295
0800-0830	Voice of Islam,Bangladesh..	11645, 12030
0800-0830	HCJB, Quito, Ecuador.....	6130, 6205
		9745, 9860
		7255, 15185
0800-0830	Voice of Nigeria.....	15120, 17795
0800-0845 (S)	FEBA, Seychelles.....	6012
0800-0900	AFAN, Antarctica.....	11750
0800-0900	AFRTS Far East Network....	9410, 9510
0800-0900 (S)	BBC, London.....	6035
0800-0900	BBS, Bhutan.....	6005
0800-0900	CFCX, Montreal, Canada.....	6005
0800-0900	CFRX, Toronto, Canada.....	6070
0800-0900	CFVP, Calgary, Canada.....	6030
0800-0900	CHNX, Halifax, Canada.....	6130
0800-0900	CKFX, Vancouver, Canada.....	6080
0800-0900	FEBC, Manila.....	6030, 11890
		21475
0800-0900	FEN, Tokyo.....	3910, 6155
0800-0900 (S,A)	GBC-2, Accra, Ghana.....	3366
0800-0900	HCJB, Quito, Ecuador.....	6130, 9745
0800-0900	King of Hope, Lebanon.....	6280
0800-0900	KNLS, Anchor Point, Alaska..	11860
0800-0900 (M-H)	KTWR, Guam.....	15515
0800-0900	KYOI, Saipan.....	15190
0800-0900	Radio Australia.....	5995, 6080





# frequency SECTION

1600-1700	BBC, London.....	9410, 9515 11705, 12095 15070, 15260 15390, 17705 17880
1600-1700 (A)	CBC Northern Quebec Service.....	9625, 11720
1600-1700	CFCX, Montreal, Canada.....	6005
1600-1700	CHNX, Halifax, Canada.....	6130
1600-1700	CFRX, Toronto, Canada.....	6070
1600-1700	CFVP, Calgary, Canada.....	6030
1600-1700	CKFX, Vancouver, Canada.....	6080
1600-1700	KVOH, California.....	17775
1600-1700	KYOI, Saipan.....	9665
1600-1700	Radio Australia.....	6035, 6060 6080, 9550
1600-1700	Radio Beijing.....	9570, 11600
1600-1700	Radio Canada International.....	11955, 15440 17820
1600-1700	Radio France International.....	6175, 9860 11705, 15315 17620
1600-1700	Radio Jordan.....	9560
1600-1700	Radio Korea.....	5975, 9870
1600-1700	Radio Malawi.....	3380, 5995
1600-1700	Radio Moscow.....	9895, 11840
1600-1700	Radio Prague, Czech.....	11990, 13715 15110, 17705
1600-1700	Radio Riyadh, Saudi Arabia.....	9720v
1600-1700	Radio Tanzania.....	6105
1600-1700	Radio Zambia.....	9505
1600-1700	UAE Radio.....	9640, 11955
1600-1700	Voice of America.....	15320, 1435 6110, 9575 9760, 15205 15410, 15445 15580, 15600 17785, 17800 17870
1600-1700	Voice of Asia.....	5980, 7445
1600-1700	Voice of Nigeria.....	7255, 11770
1600-1700	WHRI, Indiana.....	15105
1600-1700	WRNO Worldwide.....	15170, 15420
1600-1700	WYFR, Florida.....	15440, 11830 11875, 17645 17845, 21525
1610-1620 (M-F)	Radio Botswana.....	4820, 7255
1610-1645 (M-F)	Radio Belem.....	3205
1630-1655 (M-F)	BRT Belgium.....	9905, 11695
1630-1700	KNLS, Alaska.....	7355
1630-1700	ELWA, Liberia.....	11830
1630-1700	Radio Nacional Angola.....	7245, 9535 11955
1630-1700	Radio Netherland.....	6020, 15570
1630-1700	Radio Polonia.....	7125, 9525
1630-1700	Voice of Africa, Egypt.....	15255
1645-1700	Radio Pakistan.....	6230, 9455 9465

1700-1800	Radio Pyongyang, N. Korea.....	7105, 7205 7305, 9325 8960, 9977 11665 9720v
1700-1800	Radio Riyadh, Saudi Arabia.....	6105
1700-1800	Radio Tanzania.....	9505
1700-1800	Radio Zambia.....	15255
1700-1800	Voice of Africa, Egypt.....	11760, 15410
1700-1800	Voice of America.....	15575, 15580 15600, 17785 17800, 17870
1700-1800	Voice of Nigeria.....	11770
1700-1800	WHRI, Indiana.....	15105
1700-1800	WINB, Pennsylvania.....	15295
1700-1800	WMLK, Pennsylvania.....	9455
1700-1800	WRNO Worldwide.....	15420
1700-1800	WYFR, Florida.....	11830, 11875 15170, 17750
1730-1745	BBC.....	15070
1730-1800	Radio Australia.....	6035, 9580
1730-1800	Radio Bucharest, Romania.....	7145, 9640 9690, 11830
1730-1800	Radio Polonia.....	6135, 9540
1730-1800	Radio Surinam.....	17755
1745-1800	BBC, London.....	9410, 11745 12095, 15070 15260, 15400
1730-1800	Radio Sofia, Bulgaria.....	11735, 11840 15310
1745-1800	Radio Berlin Int'l.....	9730
1745-1800	SLBC, Sri Lanka.....	11800
<b>1800 UTC [1:00 PM EST/10:00 AM PST]</b>		
1800-1810	Voice of Kenya.....	6135
1800-1815	Kol Israel.....	9385, 9660 11655, 13747
1800-1815	Radio Cameroon.....	4750, 4795 4850, 5010 9745 6205
1800-1830	AWR, Italy.....	9730
1800-1830	Radio Berlin Int'l.....	15260, 17820
1800-1830	Radio Canada International.....	7250, 9675
1800-1830	Radio Japan.....	3340, 9620
1800-1830	Radio Mozambique.....	9535
1800-1830	Swiss Radio Int'l.....	11965
1800-1830	TWR, Monte Carlo.....	11965
1800-1900	Voice of Africa, Egypt.....	15255
1800-1830	Voice of Vietnam.....	12020
1800-1900	Deutsche Welle.....	7285, 9700 9745, 11785
1800-1850	Radio Nacional do Brasil.....	15265

1800-1900	4VEH, Haiti.....	4930
1800-1900	AFRTS.....	15330, 15345 15430, 17765 11620, 11940 15280
1800-1900	All India Radio.....	6180, 6195 7325, 9410 11820, 12095 15070, 15400 9625, 11720
1800-1900	BBC, London.....	6180, 6195 7325, 9410 11820, 12095 15070, 15400 9625, 11720
1800-1900	CBC, N. Quebec Service.....	9625, 11720
1800-1900	CFCX, Montreal, Canada.....	6005
1800-1900	CFRX, Toronto, Canada.....	6070
1800-1900	CFVP, Calgary, Canada.....	6030
1800-1900	CKFX, Vancouver, Canada.....	6080
1800-1900	CKZU, Vancouver.....	6160
1800-1900	KCBI, Dallas.....	11735
1800-1900	KNLS, Alaska.....	7355
1800-1900	KVOH, California.....	17775
1800-1900	KYOI, Saipan.....	9665
1800-1900	Radio Australia.....	5995, 6045 6060, 6035 6080, 7215 9580
1800-1900 (A,S)	Radio Canada International.....	15260, 17820
1800-1900 (TES)	R. Discovery, Dominican Rep.....	15045
1800-1900v	Radio Jamahiriya, Libya.....	15450v
1800-1900	Radio Korea.....	5975, 15575
1800-1900	Radio Kuwait.....	11675
1800-1900 (MWF)	Radio Nacional, Eq. Guinea.....	9553
1800-1900	Radio New Zealand Int'l.....	11780, 15150
1800-1900	Radio Moscow.....	7115, 7150 9825, 11840
1800-1900	Radio Riyadh, Saudi Arabia.....	9720v
1800-1900	Radio Tanzania.....	6105
1800-1900	Radio Zambia.....	9505
1800-1900	RAE, Argentina.....	15435
1800-1900	TWR, Swaziland.....	9550
1800-1900	Voice of America.....	11760, 11920 11580, 15445 15580, 15410 15600, 17785 17870, 17800
1800-1900	Voice of Nigeria.....	11770, 15120 17800
1800-1900	WHRI, Indiana.....	15105
1800-1900	WINB, Pennsylvania.....	15400
1800-1900	WMLK, Bethel, Pa.....	9455
1800-1900	WRNO Worldwide.....	15420
1800-1900	WYFR, Florida.....	11580, 11830 11875, 15170
1805-1830 (A,S)	Radio Austria Int'l.....	9725, 12015
1814-1817	Radio Suriname Int'l.....	17755
1815-1900	Radio Bangladesh.....	6240, 7295 7505
1815-1900	Radio Berlin International.....	6080, 6115
1830-1855 (M-A)	BRT Brussels, Belgium.....	5910, 9905
1830-1900	Radio Polonia.....	5995, 6135 7125, 7285 9525, 9675
1830-1900	Radio Sofia, Bulgaria.....	11840 6070, 9700 11720
1830-1900	Radio Sweden Int'l.....	11845
1830-1900	Radio Tirana.....	7065, 9480
1830-1900	Swiss Radio International.....	6165, 9535 9885, 11955

<b>1700 UTC [12:00 PM EST/9:00 AM PST]</b>		
1700-1710	Voice of Lebanon.....	6548
1700-1720	Radio Netherland.....	9515, 15570
1700-1730	BBC, England.....	9515, 11775 12095, 15070 15260, 15400 17880
1700-1730	Radio Australia.....	6035, 6060 7205
1700-1730	Radio Japan.....	5990, 11815
1700-1730	Radio Norway International.....	9590, 9655 11850
1700-1730	Radio Portugal.....	15250
1700-1800	4VEH, Haiti.....	4930
1700-1800	AFRTS.....	9700, 11805 15330, 15345 15430
1700-1800	CBC, N. Quebec, Canada.....	9625, 11720
1700-1800	CFCX, Montreal, Canada.....	6005
1700-1800	CFRX, Toronto, Canada.....	6070
1700-1800	CFVP, Calgary, Canada.....	6030
1700-1800	CHNX, Halifax, Canada.....	6130
1700-1800	CKFX, Vancouver, Canada.....	6080
1700-1800	CKZU, Vancouver, Canada.....	6160
1700-1800 (S)	KCBI, Texas.....	11735
1700-1800	KNLS, Alaska.....	7355
1700-1800	KVOH, California.....	17775
1700-1800	KYOI, Saipan.....	9665
1700-1800	Radio Beijing.....	9570, 11600
1700-1800	Radio Korea, South.....	5975, 15575
1700-1800	Radio Moscow.....	9470, 9490 11840
1700-1800 (MWF)	Radio Nacional, Eq. Guinea.....	9535
1700-1800	Radio Nacional Angola.....	7245, 9535 11955



## WE'RE UGLY

Station News \* DX Tips \* Advance Program Details \* Frequencies \*  
Equipment News \* Articles \* and More

We've got to be honest with you. If you send for a copy of World Radio Report and expect a full-color, slick 'n glossy magazine with ads for \$50,000 cars and designer cigarettes, you're going to be disappointed. On the other hand, if what you want is the latest, most up-to-date information on what to hear and where to tune, then you're going to love World Radio Report. Written and published by full-time shortwave pros, we cover the world -- from station and equipment news to DX tips -- for you each month.

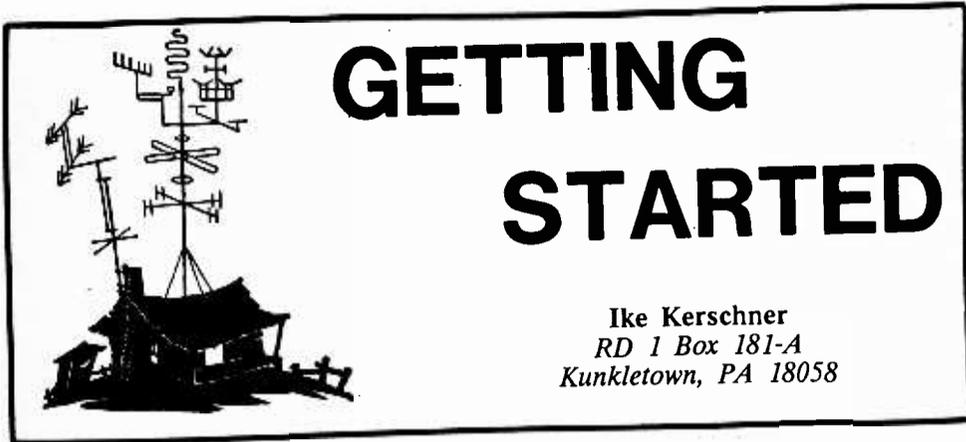
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World Radio Report

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# GETTING STARTED

Ike Kerschner  
RD 1 Box 181-A  
Kunkletown, PA 18058

## LOW BAND SCANNING

In an earlier column we discussed how the radio spectrum is divided into several bands designated by the frequency they occupy. For example, the high frequency (HF) band occupies the spectrum from 3 to 30 MHz, and from 30 to 300 MHz we have the very high frequency (VHF) band.

Being the lowest segment of the VHF band, the 30-50 MHz portion is called low band. A public service band, the users include police, fire, government, and business. FM is the dominant mode.

Two amateur radio bands sandwich low band: ten meters (29 to 29.7 MHz--monitor the national calling frequencies of 29 and 29.6 MHz for activity), and six meters (52 to 54 MHz).

### Surprises

Low band, being so close to the HF region, sometimes exhibits behavior similar to those frequencies; often, stations half a continent or more away (during periods of high sunspot activity) may be stronger than many locals.

While this is fun for the listener it is a serious problem for users of the band, especially during times of emergency; consequently, public safety users prefer the higher frequencies where such conditions are not as severe.

In spite of this shortcoming, users who must operate in hilly terrain to maintain contact over fairly long range favor low band for its ability to perform well under these conditions.

Military, conservation, game law enforcement, and state police agencies use this band extensively; additionally, logging, mining, local contractors, and some utility companies (power, water, gas) can be found here.

### Equipment for Low Band

Three general types of receiver are in use on these frequencies. Tunable receivers (similar to your general coverage shortwave receiver) are available; the advantages offered by this type of receiver are choice of mode (i.e., code, SSB, AM, FM), ability to cover very small increments of frequency and variable selectivity.

Perhaps the greatest disadvantage of tunable receivers is cost; the most popular tunable receiver, the ICOM R7000, costs about \$1000.00. Do not expect a \$39.95 all band receiver to do a creditable job on VHF--It will not!

Crystal-controlled monitor receivers, single channel units or scanners, are fine if you are interested in dedicated frequencies. Crystals cost around \$5.00 each so experimenting with unfamiliar channels is expensive. Adequate crystal controlled receivers can be purchased for \$50.00 and up.

The third and most popular receiver covering this range is the programmable scanner. As the name implies these can be programmed to receive any frequency within their range limits by simply pressing the buttons on a key pad.

Dozens of channels can be scanned by these units or they can be programmed to search through a

specific range of frequencies looking for signals. Cost ranges from about \$120 to \$500 depending on the features you choose.

Pocket size portables and table models are available; most can be used on household AC or in the car. Some offer the option of receiving AM, wideband FM and narrowband FM. The two most popular names in programmable scanners are Bearcat and Regency.

### Antennas

Low band antennas range from short, loaded, flexible whips ("rubber duckies") to high gain directional arrays. Outside-mounted, omnidirectional antennas are the most

popular types in general use. The best commercial unit I have used on low band is the Butternut SC-3000 (cost about \$55.00).

The simple quarter-wave ground plane does a good job for normal use and will receive local signals quite well. For squeezing the last mile out of a signal one of the high gain omnidirectional antennas (5/8th wave vertical or vertical collinear) should be used.

The true DXer will opt for a rotatable, tower-mounted, multi-element directional Yagi, or quad array; ranges over 150 miles are common on low band with this type of antenna system.

## A High Performance, Low Cost Antenna for Low Band

Figures 1 and 2 are simple, reliable antennas the beginner can construct for a cost of about five dollars each.

Figure 1 illustrates the popular quarter-wave ground plane antenna. Make the vertical element from half-inch, electrical, thin-wall conduit (aluminum if available) or any tubing that will support itself.

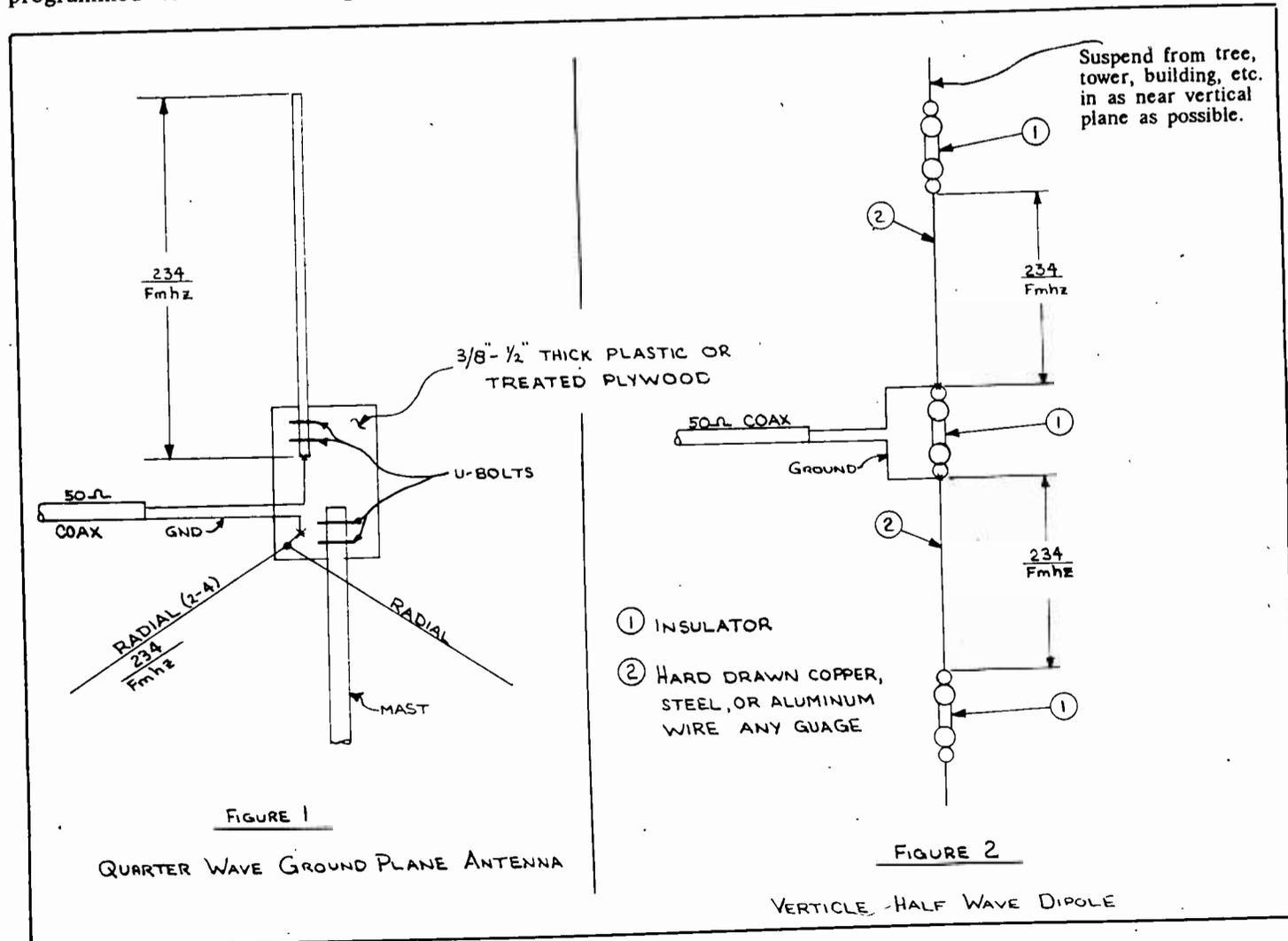
The radials are made from either wire or tubing and are the same length as the vertical element. Calculate the length using the formula 234 divided by the frequency in MHz. The answer will be in feet.

$$\frac{234}{\text{FMHz}}$$

For example at 40 MHz (a good frequency to cut this antenna for) the length will be  $234/40 = 5.85$  feet, or 5 feet 10 inches. This formula will allow you to construct a quarter wave antenna for any frequency from VLF to VHF.

Bolt the vertical element to a piece of plastic or wood (give wood a coat of shellac or varnish) either by drilling and directly bolting, or using U-bolts around the tubing. The wood or plastic plate should be 4" x 8" x 1/2".

Drill a 5/32-inch hole in the very bottom of the element, insert a one-inch 6-32 machine screw, lock washer, flat washer, and nut to



connect the center of your coax to.

The radials can be made of tubing or wire and connected the same way (use two to four radials); they should slant downward at about 45°.

Wire radials can be used as guy wires to support the entire antenna structure. Secure an insulator at the lower end of each and, using rope, tie the radials off at about a 45° angle with the mast. The shield of your coax connects to all the radials at the top.

### The Mast

Make the mast from pipe (PVC or steel) or wood from 1 to 1-1/2 inches in diameter. Commercial masts work fine; in fact, the entire antenna can be built from a discarded TV antenna!

Figure 2 details a half-wave vertical dipole made from wire. Use the same  $234/F_{MHz}$  formula to find the length of each half of the antenna. At 40 MHz your antenna will be eleven feet eight inches in length.

Connect your coax across insulator 1: the center conductor of the coax to the upper end of the antenna and the shield to the lower.

Suspend the antenna from a tree, tower or building keeping the wire as vertical as possible.

If you hang the antenna from a tower or metal building the antenna will show some directional characteristics; try to erect it on the side toward the stations you are interested in hearing.

Bring the coax away from the antenna at right angles several feet before letting the feedline drop vertically and use the best 50 or 75 ohm coax you can afford.

Be careful to install your antenna away from power lines!

### Tuning In

I enjoy low band monitoring a great deal. It's fun to listen to the local game wardens chasing poachers, check out the state police in a neighboring state or travel with an army unit on maneuvers. I'm sure that once you give low band a try you will be hooked on it, too!

To find out what kind of activity is taking place in your area pick up one of the many public safety service handbooks such as the *Police Call Radio Guide*, available from Radio Shack.

That's it for this month folks. Keep the letters and cards coming. Please remember that if you need an answer to a question include a self-addressed stamped envelope with your letter. Tnx es 73.

## Reagan Quips with NSA Officials

During a recent dedication ceremony at the new 11 story National Security Agency (NSA) operations complex at Ft. Meade, Maryland, President Reagan reported to the crowd of dignitaries that when he asked for directions to the facility he was told to "wear (his) trench coat, go to 17th

and K and wait for the phone to ring."

He continued, "I even offered to bring over some White House cuff links as souvenirs for all of you but I was told you prefer the NSA cuff links—you can tune in the Redskins games!"

## Just Getting Started?

Whatever your area of listening, we are eager to help. Drop us a line and let us know what needs we are not covering, and we'll pass it on to our authors. Or, if you need help choosing a shortwave or scanner receiver and/or antenna, send an SASE with your request and we'll send you some helpful guidelines.



**Special \$239.99** (7.00 shipping)  
**50 Channels — Mobile/Base**

Features include simple raised button keyboard programming of the following frequency ranges: 32-50 MHz, 118-136 MHz, 144-174 MHz, 421-512 MHz. Vacuum fluorescent display, dim control, priority, count transmissions, non-volatile memory retains memory without power back-up, automatic search, scan speed control, automatic search, scan delay, lockout, service search, automatic squelch, crystal-less, digital clock, external speaker & tape jack, auxiliary equipment control, plus much more. Built inside the rugged metal cabinet. Includes AC & DC cords, telescopic antenna, mobile mounting kit, and one year factory warranty on the Bearcat 300 for only \$239.99 and \$7.00 shipping. (Optional extended warranty: 3 years \$35, or 2 years \$25.)

### REGENCY HX1200

Digital programmable 45 channel hand-held Scanner. Frequency coverage: 30-50MHz, 118-136MHz, 144-174MHz, 406-420MHz, 440-512MHz. Covers public service bands plus Aircraft. Has priority, search, lockout, scan plus much more. Package includes HX1200, AC charger/adaptor, Ni-cad battery, carry case, rubber antenna and 90 day factory warranty. **Complete package only \$216.99** (6.50 shipping) (3 year extended warranty only \$35.00, 2 year \$25.00)

BEARCAT 50XL Programmable Hand-Held	124.99	(5.00)
AD100U AC Adapter/Charger for 50 XL	12.95	(.00)
BP50 Ni-Cad Battery Pack for 50XL	12.95	(.00)
BEARCAT 180 AC Digital Scanner	159.99	(5.00)
BEARCAT 140 AC Programmable Scanner	94.99	(5.00)
BEARCAT 145XL AC Programmable Scanner	104.99	(5.00)
BEARCAT 175XL AC Digital Scanner	159.99	(5.00)
BEARCAT 100XL Digital Hand-held	199.99	(6.50)
BEARCAT 210XW AC/DC Digital Scanner	229.99	(6.50)
BEARCAT 2020 AC/DC Digital Scanner	219.99	(5.00)
BEARCAT 260 AC/DC Digital Scanner	239.99	(7.00)
BEARCAT 300 AC/DC Digital Scanner	319.99	(6.00)
BEARCAT 800 XLT AC/DC Digital Scanner	284.99	(12.00)
BEARCAT DX-1000 Shortwave Receiver	216.99	(6.50)
REGENCY HX-1200 Digital Hand-held 45 Channel	16.99	(.00)
REGENCY MA-257 Cigarette cord for HX1000/1200	24.99	(.00)
REGENCY MA-917 Ni-cad Battery for HX1000/1200	69.99	(3.50)
REGENCY HX-CASE Hvy Leath. case for HX1000/1200	94.99	(5.00)
REGENCY MA-256 Drop in charger for HX1000/1200	159.99	(7.00)
REGENCY R-1060 Programmable 10 chan. AC Scanner	198.99	(6.50)
REGENCY HX-2000 Digital Hand-Held	179.99	(7.00)
REGENCY MX-3000 AC/DC Digital Scanner	329.99	(6.50)
REGENCY MX-4000 AC/DC Digital Scanner	399.99	(7.00)
REGENCY MX-5000 AC/DC Digital Scanner	129.99	(5.00)
REGENCY MX-7000 AC/DC Digital Scanner	159.99	(5.00)
REGENCY Z-30 AC/DC Digital Scanner	178.99	(5.00)
REGENCY Z-45 AC/DC Digital Scanner	5.99	(.00)
REGENCY Z-60 AC/DC Digital Scanner	178.99	(5.00)
Mobile Mounting Bracket for Z Scanners	178.99	(5.00)
REGENCY D-810 AC Digital Scanner	75.99	(4.00)
REGENCY ACT-R-1 AC/DC Cryst. Single Channel	399.99	(7.75)
REGENCY RH-256 High Band Transceiver	119.99	(5.50)
REGENCY UC 102 HI-VHF Hand Transceiver	439.99	(7.75)
REGENCY RU150B UHF Transceiver	12.95	(.00)
Book "Top Secret Registry of Gov't Frequency"	8.95	(.00)
Book "Covert Intelligence, Electronic Eavesdropping"	14.95	(.00)
Book "Betty Bearcat Frequency Directory"	7.95	(.00)
Book "Rail Scan Directory"	12.95	(.00)
Book "Air Scan Directory"	38.99	(3.00)
RCD MRP-1 Single Channel Hand-Held	189.99	(6.50)
JIL SX-200 AC/DC Digital Scanner	99.99	(5.00)
FANON M8HLU DC Crystal Scanner	12.99	(.00)
FANON PSK-1 AC Adapted for M8HLU	98.99	(5.00)
FANON Slim-6 HLU Crystal Hand-held Scanner	129.99	(5.50)
FOX BMP-1080 AC/DC Digital Scanner	9.99	(.00)
FOX Mounting Bracket for BMP-1060	199.99	(5.00)
WHISTLER Spectrum Radar Detector	199.99	(5.00)
WHISTLER Remote Spectrum Radar Detector	29.99	(3.00)
ANT-1 Magnet Mount Mobile Scanner Antenna	29.99	(3.00)
ANT-6 Base Scanner Antenna w/50' cable		

## SCANNER WORLD, USA

10 New Scotland Ave., Albany, NY 12208 518/436-9606



## Z30

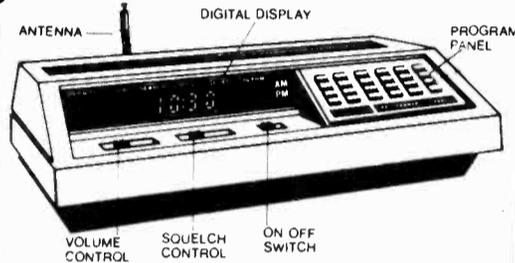
### 30 Channel Automatic Programmable Scanner

Scanner World Special

**\$129.99**

(plus \$5.50 shipping each)

Optional Accessories:  
Cigarette Lighter Plug RGMPC . . . \$4.95  
Z Mobile Bracket — Special . . . \$5.99



The Regency Z30 is a compact, programmable 30 channel, multi band, FM monitor receiver for use at home or on the road. It is double conversion, super heterodyne used to receive the narrow band FM communications in the amateur, public safety and business bands: 30-50, 144-174, and 440-512 MHz. Size 10 3/4" W x 2 7/8" H x 8 3/8" D.

Sophisticated microprocess-controlled circuitry eliminates the need for crystals, instead, the frequency for each channel is programmed through the numbered keyboard similar to the one used on a telephone. A "beep" acknowledges contact each time a key is touched. The Z30 scans approximately 15 channels per second.

Any combination of two to thirty channels can be scanned automatically, or the unit can be set on manual for continuous monitoring of any one channel. In addition, the search function locates unknown frequencies within a band.

Other features include scan delay, priority and a bright/dim switch to control the brightness of the 9-digit Vacuum-Fluorescent display. The Z30 can be operated on either 120 VAC or 12 VDC. Includes one year warranty from Regency Electronics (optional 3 yr extended warranty only \$35, gives you a total of 4 yrs complete warranty or 2 yr extended warranty only \$25, gives you a total of 3 yrs complete warranty.)



**\$159.99** (Plus \$7.00 Shipping each)

Digital Programmable 20 Channel Hand-Held Scanner with raised button keyboard for easy programming of the following frequency ranges: 118-136 MHz, 138-174 MHz, 406-512 MHz, 800-950 MHz (NOTE: This is the only hand-held portable scanner which will receive the 800-950 MHz range plus high band, air, and UHF). Features include priority, scan delay, memory backup, dual scan speed, channel lockout, jacks for external antenna and earphone, 90 day factory warranty, keyboard lockswitch, sidelit liquid crystal display for night use, program AM or FM mode, search or scan, size is 3" x 7" x 1 1/2". Complete HX-2000 package includes Ni-Cad rechargeable batteries, wall charger adapter, protective carry case, and rubber antenna. All for the low price of only \$159.99 plus \$7.00 shipping each. (Optional extended warranty: 3 years \$35; or 2 years \$25.)



**\$179.99** (Plus \$7.00 Shipping each)

Digital programmable 20 channel scanner operates as a Base or Mobile unit or can be used as a portable with rechargeable Ni-Cad batteries included. MX4000 covers the following frequency ranges: 30-50 MHz, 118-174 MHz, 406-512 MHz, 800-950 MHz. Features compact size of 5 1/2" x 2 1/2" x 7 1/2", memory backup, scan delay, priority, dual scan speed, channel lockout, jacks for earphone and external antenna, keyboard lockswitch, one year factory warranty. Sidelit liquid crystal display for night use, program AM or FM mode, search or scan, reset button. Complete MX 4000 package includes telescopic antenna, mobile mounting bracket, mobile power cord, rechargeable Ni-Cad batteries, wall charger adapter. All for the low price of \$179.99 plus \$7.00 shipping each. (Optional extended warranty: 3 years \$35, 2 years \$25.) Optional cigarette lighter Plug #4000MPC \$4.99.

### Bearcat 100 XL

**\$199.99** (6.50 shipping) Handheld digital programmable, no crystal portable scanner. 16 channels, search feature, plus more! Frequency range: 30-50, 118-174, 406-512 MHz. Included in the package is a flexible rubber antenna, earphone, battery charger/AC adapter, 6 AA Ni-Cad rechargeable batteries and a heavy duty carry case. All for the low price of:

**\$199.99** (6.50 shipping)  
(3 year extended warranty only \$35.00, 2 year \$25.00)

### REGENCY RH-256 B

**PROGRAMMABLE TRANSCEIVER**  
RH-256B Transceiver, 16 channel 12 VDC 2-way Radio fully programmable in transmit and receive mode. Includes built-in CTCSS tones for encode/decode, time-out timer, scan delay, 25 watts transmit power, priority, plus more. Frequency spread as shipped 152-158 MHz. Package includes mobile mike, bracket, mobile antenna, and all cables and instructions for installation. **Special package deal only: \$399.99** (7.75 shipping)  
(2 year extended warranty \$40.00 — 3 year \$68.00)

### ORDERING INFORMATION

Call (518) 436-9606 to place orders by phone or mail orders to **Scanner World**, 10 New Scotland Av., Albany, NY 12208. Orders will be shipped same day received by United Parcel Service. **Scanner World** accepts VISA, MasterCard (COD shipments by United Parcel will be for cash or certified checks only). Mail orders with personal or business checks will be held 4 weeks for bank clearance. Orders with cashiers checks or money orders shipped same day received. Prices, specifications and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. **Scanner World** warehouse in Albany, NY. We are not responsible for typographical errors. All merchandise carries full manufacturers warranty. Bid Proposals and Purchase orders accepted from Government agencies. Free full line catalogue available upon request. No minimum order. New York State Residents add 7% sales tax.

### SHIPPING CHARGES

(\* Add \$5 per scanner, and \$3.00\* for all accessories ordered at same time. C.O.D. shipments will be charged an additional \$3.00 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service. Shipping charges are for continental USA only. Outside of continental USA, ask for shipping charge per scanner.

### Scanner World, USA

10 New Scotland Ave., Albany, NY 12208

(518) 436-9606

Most orders Shipped Same Day Received!

# Propagation Digest

by Bert Huneault

## SYNOPSIS

Solar activity was mostly very low in the last few months of 1986 as cycle 21 draws to a close. Solar flux averaged under 70 for much of the year, resulting in low values of maximum usable frequency (MUF). The 21 and 28 MHz ham bands, 27 MHz CB band and 21 MHz broadcast band were not fertile grounds for DX hunters.

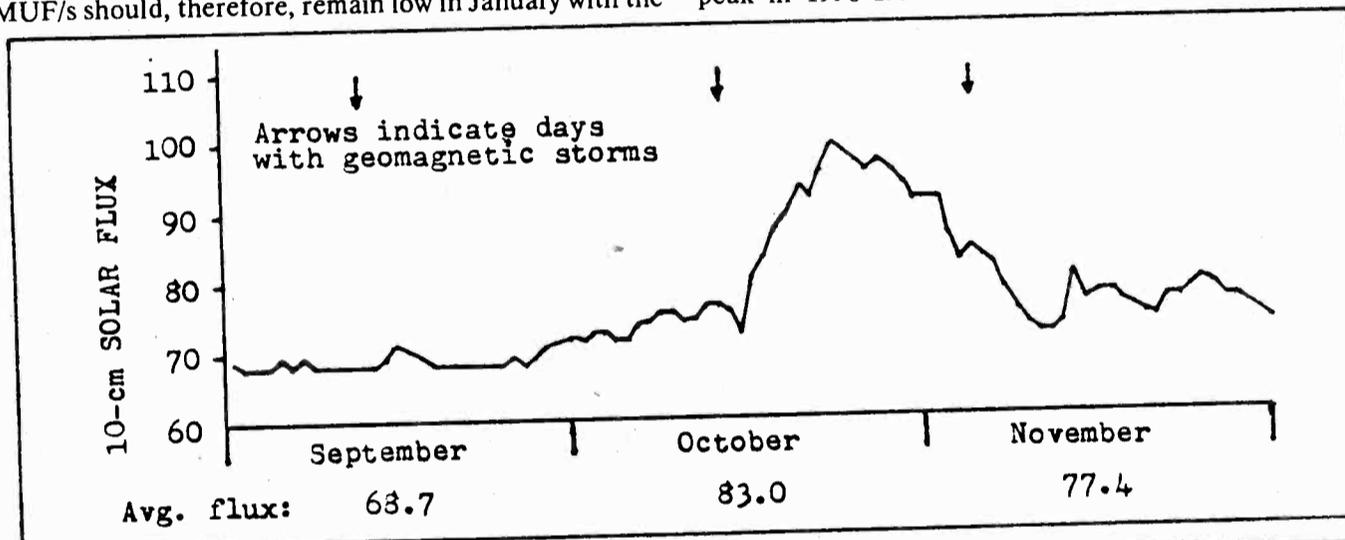
During October solar flux rose markedly, reaching 99 on the 23rd (highest since last winter) as the largest sunspot groups seen in months faced the earth, apparently the first outbreak of new solar cycle 22. Higher MUFs resulted and the 21 and 28 MHz ham bands opened up to the delight of operators participating in a worldwide DX contest.

Solar flux dropped back to the mid-70s this winter; MUF/s should, therefore, remain low in January with the

sun far south of the equator, but should begin rising as ol' Sol approaches the equator towards the end of winter (see forecast tables below).

Openings may occur periodically in the HF bands above 20 MHz when sunspot groups form as cycle 22 tries to establish itself. Higher solar activity is often accompanied by increased geomagnetic activity, however, resulting in poor propagation conditions in high latitude paths such as northern Europe and northern Asia.

Winter is the best season for LF monitoring as minimum thunderstorm activity brings quiet to the low and medium frequencies below the AM broadcast band. For VHF monitors, little 30-50 MHz DX activity is expected for another couple of years as we just now begin the slow climb in the new 11 year sunspot cycle which will likely peak in 1990-1991.



## NORTH AMERICAN H.F. PROPAGATION FORECAST MAXIMUM USABLE FREQUENCY (MHz)... WINTER, 1987

VALID	MID-JANUARY						MID-MARCH					
	76											
SOLAR FLUX	73											
UTC (GMT)	00	04	08	12	16	20	00	04	08	12	16	20
BETWEEN DETROIT AND :												
New York	5.3	4.4	4.1	7.3	10.4	10.1	3.5	5.5	4.5	9.1	11.6	11.5
Gander	7.7	6.6	6.2	12.0	15.5	14.4	10.2	7.4	6.5	15.1	17.6	16.3
Vancouver	14.2	3.5	7.6	7.3	17.2	13.5	13.2	9.8	3.2	12.0	20.1	21.1
Miami	9.1	7.4	6.7	12.2	17.7	17.4	16.0	10.7	3.2	13.1	13.7	19.3
BETWEEN LOS ANGELES AND :												
Kansas City	16.7	9.0	7.9	7.4	13.5	20.2	20.2	13.3	9.9	3.3	19.9	22.1
New York	19.3	11.5	10.2	9.7	24.8	26.0	24.9	15.6	12.1	15.6	27.3	23.8
BETWEEN MIAMI AND :												
Chicago	9.8	7.7	6.9	11.8	13.1	17.9	16.7	11.2	3.5	12.9	19.0	19.9
San Francisco	15.2	3.5	7.5	7.1	18.5	19.6	19.3	13.2	9.7	3.3	17.2	21.3
BETWEEN NEW YORK AND :												
Kansas City	3.3	7.2	6.5	10.0	16.6	16.5	14.7	9.4	7.5	13.4	13.3	13.5
Miami	3.6	7.1	6.4	12.7	17.2	16.6	15.1	10.2	7.8	13.1	13.0	13.5
BETWEEN WINNIPEG AND:												
San Francisco	17.2	9.5	8.4	7.9	18.3	20.5	20.7	11.9	9.4	3.4	21.2	23.1
New Orleans	14.1	3.3	7.9	7.5	19.5	20.1	13.9	11.3	9.2	13.7	21.5	22.4
Montreal	6.8	5.7	5.2	6.2	12.5	12.4	11.2	6.3	5.5	11.4	14.5	14.4
Halifax	3.5	7.2	6.6	10.5	16.0	15.6	13.3	7.9	6.9	15.2	13.5	13.2

**MT**

## HELPFUL HINTS

**LOOKING FOR HAMMARLUND OR NATIONAL PARTS?**

Years ago, when the venerable old receiver companies went out of business, many of their remaining parts assets were purchased by investors for gradual resale. Chassis parts, special transformers, dials, and knobs are still available--at a premium in most cases--from Strux Corporation, 90 E. Montauk Highway, Lindenhurst, NY 11757 (phone 516-957-8000 and ask for Bob).

Looking for a good list of tips to improve reception on that Hammarlund HQ-180? Try the "HQ-180 Series Manual Supplement" by Dallas Lankford. A nine-page reprint is available from the author for \$2 plus an SASE sent to PO box 6145, Ruston, LA 71272-0018.

...And How About an Add-on Frequency Display?

We occasionally receive inquiries regarding the source for digital frequency displays which can be added to analog-dial receivers. Try Torrestronics' WTK-1 (\$135 from Universal Shortwave) or write Grand Systems, PO box 2171, Blaine, WA 98230 and inquire about their display.

(Thanks to the ANARC Marketplace newsletter for these items)

**"LOCKOUT" ON THE ICOM R7000**

Several listeners have expressed concern that the ICOM general coverage VHF/UHF receiver does not have a lockout feature like conventional scanners, permitting selected memory channels to be temporarily deactivated without having to remove the frequency from the memory.

Since the R7000 has 99 memory channels, the prospect of having to sequentially sample all of them, whether you want to or not, isn't too attractive. Fortunately, there is a simple solution.

The R7000 has what might be called a "lock-in" feature; that is, one may select which of the 99 programmed channels one wants to monitor and

the receiver will ignore the rest. The procedure for selecting and programming the channels is very simple.

Select the channel(s) either by rotating the memory channel knob or by pressing the number of the desired channel on the keypad and pushing in on the memory channel knob. When the channel appears, press the SET/RESET button (note the appearance of a small dot on the channel number confirming the entry). Repeat this procedure for as many channels as you would like to retain during the scan sequence.

Now, when you press the SEL-M button, only those selected channels will be scanned. These are toggle functions so you may stop the selective scanning sequence by pressing SEL-M again, or you may remove one of the selective scan channels by pressing SET/RESET again.

To return to a full 99 channel scan, press CL to clear all selected channels at once.

### LOOKING FOR LF FREQUENCIES?

Hugh Miller of Seattle, Washington, passes on a tip to fellow MT readers. He is interested in identifying those Morse beacons he hears in his area in the 200-400 kHz range.

While looking through his grocery magazine rack he discovered a copy of *1986 Tide Table and Dot's Fishing Guide* compiled for western Washington state. Along with tide tables, stormflag signals, motorboat regulations, sunrise/sunset times, moon phases, and other lists of interest to the fisherman, there was a list of about 30 beacon frequencies and their Morse identifiers...all for 89 cents!

Hugh suggests that listeners might wish to consult local sources of fishing and yachting supplies for similar publications in their area.

### CONVERT A TV ANTENNA TO 30-900 MHz BEAM

by Larry Wiland

I have found many excellent articles on conversion of inexpensive TV antennas for use with scanners as directional outdoor "beam" antennas. All of them say to vertically-polarize the antenna; shorten the elements to resonate at the particular frequency(ies) you wish to monitor; mount them on an inexpensive TV antenna rotator; use good quality cable for the lead-in wiring (with good grounding and lightning protection, of course); and finally, to cut off the UHF section

completely.

Having built one of these homemade beams, I will attest to the fact that it works great on low and high band, but I do not agree with the need to remove the UHF section.

UHF TV channels 70 to 83 overlap the 800 MHz and cellular phone bands; why not leave the UHF portion of the antenna intact? That is exactly what I did when I built my beam.

Send in a photo (like this one of Mike Nikolich and his Regency monitoring station) and receive a free gift from Regency. Be sure to include your name, address and phone number.



# Regency "Scanner Answer" Giveaway



Here's your chance to win a complete monitoring package from Regency Electronics and Lunar Antennas. 18 scanners in all will be awarded, including a grand prize of the set-up you see above: the Regency HX1500 handheld, the Z60 base station scanner, the R806 mobile unit, and a Lunar GDX-4 Broadband monitoring/reference antenna.

### 55 Channels to go!

When you're on the go, and you need to stay tuned into the action, take along the Regency HX1500. It's got 55 channels, 4 independent scan banks, a top mounted auxiliary scan control, liquid crystal display, rugged die-cast aluminum chassis, covers ten public service bands including aircraft, and, it's keyboard programmable.

### Compact Mobile

With today's smaller cars and limited installation space in mind, Regency has developed a new compact mobile scanner, the R806. It's the world's first microprocessor controlled crystal scanner. In addition, the R806 features 8 channels, programmable priority, dual scan speed, and bright LED channel indicators.

### Base Station Plus!

Besides covering all the standard public service bands, the Regency Z60 scanner receives FM broadcast, aircraft transmissions, and has a built-in digital quartz clock with an alarm. Other Z60 features include 60

channels, keyboard programming, priority control, digital display and permanent memory.

### Lunar Antenna

Also included in the grand prize is a broadband monitoring/reference antenna from Lunar Electronics. The GDX-4 covers 25 to 1300 MHz, and includes a 6 foot tower.



#### Grand Prize (1 awarded)

- 1—Regency Z60 Base station scanner
- 1—Regency HX1500 Handheld scanner
- 1—Regency R806 Mobile scanner
- 1—Lunar GDX-4 Antenna

#### First Prize (5 awarded)

- 1—Regency Z60 Base station scanner
- 1—Regency R806 Mobile scanner

#### Second Prize (5 awarded)

- 1—Regency HX1500 scanner

**Contest rules:** Just answer the questions on the coupon, (all answers are in the ad copy) fill in your name and address and send the coupon to Regency Electronics, Inc., 7707 Records Street, Indianapolis, IN 46226. Winners will be selected from all correct entries. One entry per person. No purchase necessary. Void where prohibited by law. Contest ends June 30, 1987.

1. The Regency Z60 is
    - a digital alarm clock     an FM radio
    - a scanner     all of the above
  2. The Regency R806 is the world's first \_\_\_\_\_ controlled crystal scanner.
  3. The Regency HX1500 features
    - 55 channels     Bank scanning
    - Liquid crystal display     all of the above
  4. The Lunar GDX-4 antenna covers \_\_\_\_\_ to \_\_\_\_\_ MHz.
- Name: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zipcode: \_\_\_\_\_  
 I currently own \_\_\_\_\_ scanners.  
 Brands owned: \_\_\_\_\_

Now, by running one lead-in to my 800XLT and using a standard VHF/UHF TV splitter to convert the one 75-ohm cable lead-in to two separate Motorola-plug equipped cables, I have a directional beam for my BC-800XLT scanner which provides outstanding reception on VHF, UHF and on the 800 MHz band, too!

I can rotate the beam with my rotor and point it at any one of the three cellular towers in our area (the

closest being about six miles; the farthest about 16 miles) and get crystal-clear reception that the little receiver-mounted whips won't even pull in!

(Ed. Note: This article was written before the Privacy Act, which forbids cellular telephone listening, was passed.)

# Making Waves

AM/FM/TV DXing with

Paul Swearingen  
P.O. Box 4812  
Panorama City, CA 91412

## CHOOSING RECEIVERS

Dxers tend to be collectors, too, and of course receivers from years past top the list of items cluttering shelves and closets of radio enthusiasts worldwide. But of all the radios that have appeared on the market over the decades, only a few top the list in sensitivity and selectivity, the two most important attributes of DX receivers.

You might be surprised to find that most radios on the market -- from the small portables to boomboxes to communications receivers, are fairly close in terms of sensitivity, even with only the internal ferrite rod used as the antenna. More than a few DXers have been surprised to hear a long-sought after station unexpectedly sneaking through on the nineteen dollar clock radio they keep by the side of the bed.

But it's in selectivity that "consumer" radios tend to fall by the wayside and specialty receivers shine. An "el cheapo" clock-radio-cordless telephone just won't cut the sideband splash of KFI-640 so that WSM-650 can be heard, and vice versa.

Some columnists won't dare recommend and specific equipment for some reason, but I've never been blessed with enough common sense to keep me from sticking my neck out, so here's my top picks for AM DXing. I'm going to divide the receivers into portables, combo portables (with more bands than just AM/FM), solid-state communications receivers, and tube-type receivers, plus current or no longer manufactured.

The best current DX receiver for the money (under \$50.00) is the GE Superadio II. It's a widely available portable, a fine performer on both AM and FM, and it belts out a rich sound.

Sony's ICF-2010 wins my vote for top combo, even if it is a little pricey. The Kenwood R-1000 continues to offer the best value in a solid state table-top receiver, and it's not hard to find used ones in good shape for under \$300.00. And as for tube-type boat anchors, you can't go wrong with an R-390A (manufactured by Collins, Motorola, Stewart-Warner, Elec-

tronic Assistance, and others) or for a few less dollars a Hammarlund HQ-180A.

Also widely used by DXers are receivers like ICOM, Yaesu, Sangean, Panasonic, Bearcat, Magnavox, Grundig and others. Not having had experience with most of them, I'll refrain from offering in depth advice and instead refer you to Larry Magne's fine reviews in *Monitoring Times* and *Radio Database International*.

How about you? I'd welcome your comments on the best rig for AM DXing. Drop me a line, perhaps along with a picture of your shack, and we'll discuss it here in "Making Waves."

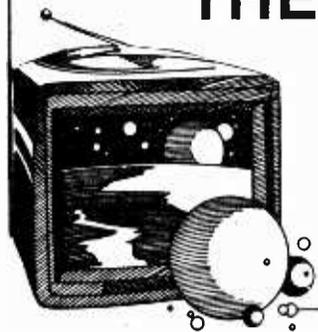
Now, what kind of AM DX can you expect to hear this time of year on a \$30.00 portable? With the cluttering of the clear channels by new locals going on the air weekly, you'd expect not to be able to hear much outside your own state, right?

Happily, DXers are still merrily logging receptions from thousands of miles away. I can still hear 13 clear channel stations situated more than 1,400 miles away from Los Angeles, plus one outside the band at about 3,550 miles!

My logbook shows CBK-540 (1,425 miles), WSM-650 (1,800 miles), XEX-730 (1,570 miles), WBBM-780 (1,775 miles), WBAP-820 (1,470 miles), WCCO-830 (1,575 miles), WHAS-840 (1,890 miles and in almost every night of the year), KRVN-880 (1,455 miles), WLS-890 (1,775 miles -- buried by KDXU in Utah but still audible), XEW-900 (1,570 miles), WHO-1040 (1,485 miles), KRLD-1080 (1,470), KSTP-1500 (1,575 miles), and the distance champ, the Caribbean Beacon-1610 on the island of Anguilla, at 3,550 miles. All are audible more than half the nights of the year.

And it gets better; If I choose a radio with decent selectivity and get up around 3:30 AM, Trans Pacific DX starts rolling in on split frequencies. Common countries heard on the west coast and sometimes reported by DXers as far east as Colorado and

# THE OUTER LIMITS



Dr. John Santosuosso  
P.O. Box 1116  
Highland City, FL 33846

Scott McClellan  
P.O. Box 982  
Battle Creek, MI 49016

Probably the most complex clandestine situation around today is the Iranian one. Stations come and go, but most likely at least ten are currently active, broadcasting their protests of the Ayatollah Khomeini's regime.

One recently monitored here is the Voice of the Mujahadin-e-Khalq on 5960 kHz (you've probably heard the jammer for this station behind Radio Canada transmissions on the same frequency). According to the June issue of "Clandestine Confidential," this is operated by a communist group with headquarters in Paris. It has the only active military resistance inside the country.

The station is not the easiest to hear because of a very effective bubble jammer. Also, the programming is in Farsi. However, it was logged at this location for about 20 minutes before 2200 UTC.

This same station probably also broadcasts on 7110 and 7190 kHz,

Minnesota, are New Zealand and Australia, plus Russia, Japan, Kiribati, the two Chinas and Koreas, Tahiti, Tonga, Fiji, and occasionally, even Thailand, on 1575 kHz.

Some South and Central American stations have returned to their nominal frequencies, but some easily heard splits are Costa Rica-525, Grenada-535, El Salvador-655, Jamaica-705, Antigua-1165, Anguilla-1505, and Cayman Islands-1555. It's common for Latin stations to drift off frequency as much as 15 kHz occasionally, too, making it easy to pick them off.

Finally, DXers as far west as Nebraska and as far south as Georgia have verified new CJFT-530 in Fort Erie, Ontario, its 250 watts finding little interference except from low-power beacons and Travelers' Information stations. Perhaps, on a quiet night, it will make it to the west coast...just perhaps. And if it does, you'll be able to hear me from one coast to the other no matter how sensitive or selective your receiver is. Until the next time, 73. ■

although some have claimed it is an Afghan clandestine on these two frequencies. Bubble jammers can frequently be monitored on both, but this writer has never been able to hear the clandestine break through on either. There is no known QSL address for Voice of the Mujahadin-e-Khalq.

A much easier station to hear is Radio Truth and it is one of the few clandestines around that broadcasts exclusively in English. Look for it from 0430 to 0500 UTC on 5015 kHz. Programming often features classical music as well as political commentary.

Radio Truth opposes the present government of the African country of Zimbabwe. While it has not been proven, South African government sponsorship of the station and a South African location are strongly suspected.

The station has normally been a good verifier, even if replies may be a bit slow. There has been an address given in America: Mr. Stanley Hatfield, 815 Thayer Avenue, Silver Spring, MD 20910. In reality, there is no Mr. Hatfield and an expert piece of investigative work by Rob Horvitz revealed the real identity of the elusive Stanley (See *World Radio Report*, January, 1987).

During the past several years Comandante Huber Matos' Cuba Independiente y Democratica organization has had a near monopoly on anti-Castro clandestine broadcasts with its Voz del CID transmissions. Gone are the days of the early 1980s when a new anti-Castro broadcaster appeared almost every week.

One of the few that managed to survive is La Voz del Alpha 66. It tends to feature commentary by Duego Medina. The station broadcasts irregularly, and signal strength may vary considerably from one part of the country to another. However, if you're trying to hear this one, then look for it around 9:00 PM Eastern Standard Time on a Monday, Wednesday or Friday. The frequency is the very appropriate 6666 kHz.

Programming will be entirely in Spanish but reception reports in English will probably be answered.

# CJFT 530

## FORT ERIE RADIO

Reports can be sent to Alpha 66, P.O. Box 420067, Miami, Florida 33142. It may take some time to get a reply, but in the last few years the station has been a good verifier.

Almost every month the Honduran situation seems to change. Those test transmission on 6230 kHz, believed to be from Radio Monimbo, stopped almost as abruptly and mysteriously as they appeared. Still, Radio Monimbo could reactivate at any time, and 6230 kHz would be a good frequency to watch.

From Pennsylvania, John Demmitt says that he has learned Cuba ran some sort of test transmission on 1160 kHz early in September. Further reports say that there was strong, additional activity on December 7. Could this have something to do with Radio Lincoln?

Meanwhile, is anybody hearing Radio Taino, also known as Tour Radio, on 1160 kHz? It has not been audible for quite a while, but then mediumwave conditions have not been good, and the sign off time was 6:00 PM Eastern Time. Information on this station's current status and the recent additional Cuban activity on the AM band would be appreciated.

And with that, it should be time to catch up with all the latest pirate news, so let's hear from our pirate expert, Scott McClellan.

#### The McClellan Report:

Hello, everyone. Rick Matthews of British Columbia, Canada, forwards a newspaper clipping from "The Providence" dated October 10, 1986. According to the article, pirate station TNFM, also known as CFTN, was closed down by the Canadian department of communications in early October. Station owner Allan White, 24, of Saltspring Island, received a letter from the communications department reminding him that he faced a fine of \$2,500.00 or 12 months in jail if his station remained on the air. 'Nuff said.

White started his station in November of 1982 and his rock request shows were aired on 100.3 MHz FM on weekend evenings. His signal was so weak that parts of the island couldn't receive it. He was closed down in May of 1984 when complaints were made that one of his disc jockeys was swearing and slandering people of the air. White resumed operations in July of 1984. But his downfall came when he started simulcasting his FM program on shortwave.

WKUE was logged by Joseph McEwan of Georgia on 7435 kHz between 2315 and 2340 UTC. He enjoyed hearing the rock and roll oldies that WKUE played. A QSL for the station can be obtained by

sending a reception report via P.O. Box 5074, Hilo, Hawaii, 96720. Enclose three first class mint stamps.

Did you hear any pirates over the holidays? We'd like to know! Send you loggings to me at P.O. Box 982, Battle Creek, MI 49016. See you next month!

And with that, we close the Outer Limits for another month. Scott and I always enjoy hearing from you and welcome your contributions. And B.H.S., are you still out there? ■

## Organized Crime Enjoying Cellular Phones

The Royal Canadian Mounted Police (RCMP) is alarmed over the growing use of cellular telephones by organized crime members. Cellular technology with its frequency hopping and cell hand-offs makes monitoring extremely difficult.

Since Canadian officials have acknowledged this problem of surveillance, we can assume that the same technology is proving discouraging to American law enforcement as well. (Lionel Dewis, Calgary, Alberta)

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Watch for ICOM full page Ads for more details. EEB engineers are developing options for the enhancement of the R7000 performance-computer control video output, filter options and more. Call or Write for details.

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Handwritten notes: "BY TRY BY", "DANDIT DADIT", "AT THE TONE...", "GRACKLE", "BZ-Z-Z-Z-Z", "BY TRY BY", "DANDIT DADIT", "AT THE TONE...", "GRACKLE", "BZ-Z-Z-Z-Z"

**INTER-AMERICAN WAR GAMES**

During 9-24 October I followed the activities of the Inter-American War Games (IAWG-86); this concentrated coverage required almost four rolls of teletype paper!

The Control Group this year was located at the Naval War College in Newport, RI. The participants were the Naval War Colleges of Argentina, Bolivia, Brazil, Chile, Colombia, Peru, Ecuador, Uruguay, Venezuela, Paraguay, and NAVCAMS LANT DET IANTN FARFAN PM(!). The communications control and relay point was again at U.S. Navy Radio Station NBA, Balboa, Panama.

On 9 & 10 October various test messages were sent including administrative traffic concerning arrival of delegates, housing arrangements at Newport and briefing schedules. Due to the U.S. holiday on 13 October there was not activity scheduled for the net in conjunction with IAWG-86.

During 14-16 October signal checks with various stations were observed and some administrative traffic was passed. The games got underway on 17 October at 1300Z. The participants were arranged into various Task Force Elements.

An overview of the traffic showed intelligence summaries, logistical arrangements, convoy escort assignments, course and speed reports, periodic weather forecasts, radar and sonar contact reports, assignment of patrol areas, command assignments, locations of merchant vessels, shellings, sinkings, damage reports, and frequent situation reports as issued by the various commands.

One participating country became miffed, objecting to overlapping air search tracks with another country and consequently sat out the remainder of the games as an observer.

There were some lighter sides to IAWG-86 as well. One delegate to the Control Group at Newport issued an invitation to all members of the Control Group to "next engagement in Task Force club at shopping center"--the proper Naval way of expressing "cocktail party"!

There was also the clever message carrying a birth announcement addressed to a Control Group delegate describing the arrival of a "new destroyer with displacement of 8 pounds."

The numerous repetitions required for each message demonstrated that the network requires additional improvement for more efficient traffic handling. As necessary, NBA would have out-stations change frequencies and often asked for test tapes. NBA ran out of patience with several out-stations when one kept running a faulty message tape and another persisted in running his test tape continuously, prompting Panama to complain they were going through tons of paper on the TTY machine.

I was getting good copy of NBA on 13371.5 kHz, so I stuck with that frequency, but I believe there were at least two other simulcast frequencies used: 16194 and 19616.5 kHz.

Other frequency references noted were NBA telling CCF to QSY 16197.5, 21700, 16200, and 13415 kHz. NBA also told OBC to QSY 18035, YWM-1 to QSY to 14912, and 5KM to QSY 20155 and 11248 kHz. When calling all stations of the net, NBA used the collective callsign YAPD.

**SWEEPERS**

The sweeping signals continued to be seen during the month with the signals heard on the 4, 6 and 13 MHz bands. Although most of the time these signals are sweeping down the band, they do often sweep up as well. Sometimes the sweep rate is very slow and at other times it goes quite fast.

**CW UNKNOWNNS**

The callsigns previously noted in the 6241 kHz region have apparently been replaced. The frequency has shifted up slightly with activity now taking place on 6243.7 kHz. The new calls were HAS and PLA being called by PUN. If this is the same activity as that formerly using calls of FST, XTB, etc., then they have gotten rid of the sloppy operator who used to be on the net.

CW station OM was observed again, this time on 7 October at 2136Z on 14445 kHz. He again would send long strings of OM OM OM etc. followed by ER ER ER N N N K K V V V. On this particular contact he worked another station (unheard) and indicated he had QTC.

He also sent OK GR 11 OK IMI BT and into a few digit groups of various lengths. Another BT was sent and a few more groups, but then he

was clobbered by local QRM and I had to drop the coverage.

While searching through the 5 MHz band I ran across an unusual station which I have commented on in the past. The frequency was 5757 kHz and the CW transmission consists of one five-figure group being repeated over and over for about 4-1/2 minutes at which time it is replaced with another different five-figure group and it is repeated over and over for 4-1/2 minutes. This procedure goes on for hours. This was copied on 26 October at 0822Z.

Similar traffic was copied on 3424 and 3455 kHz on 24 October at 0331 and 0325Z respectively. This traffic is mixed letters and numbers. Although the amount of traffic copied was somewhat limited, it does appear that all the letters of the alphabet are used as well as all the numbers 1 through 0. This CW activity was very much like that heard on 2988.5 kHz on 21 March 1986 at 0037Z.

**RDF EXPERIMENT**

I recently constructed and installed an Adcock DF antenna but the results were very disappointing. I

suspect that I made the antenna too small and it was not of the proper wavelength relationship. I plan to increase the distance between the elements and lengthen the elements.

Next I tried a home-brew diamond-shaped loop. I have not been satisfied with the results of this antenna either and am awaiting the opportunity to consult with my son-in-law who is much more technically qualified than I am and seek some suggestions from him. There must be some way of coming up with a fairly reliable DF antenna for SWL hobby purposes.

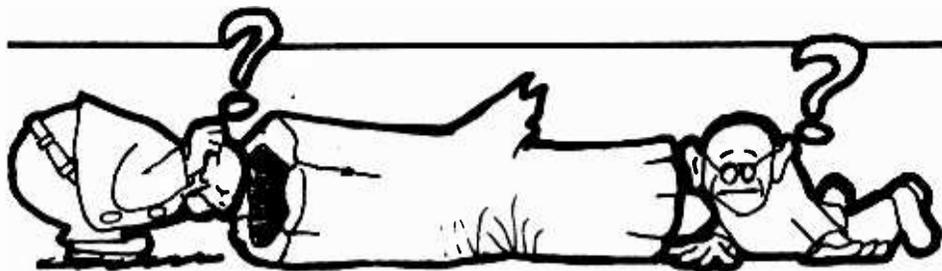
*(We are working on the same project here at MT headquarters...Bob)*

I must report on one antenna I constructed which has really turned out to be much better than I anticipated: the Budget Omni (see April 1986 MT, page 39) performance has exceeded my expectations.

I will continue my experimentation with various types of DF antennas and if I stumble onto one whose performance seems to show promise, I will be sure to pass along the information to readers.

**OCTOBER 1986 LOGGINGS**

KHZ	DTOI	MODE/IDENTIFICATION/COMMENTS
3457.7	190024	CW/NCO DE KQC (Unidentified)
3457.9	120001	CW/YFH DE RV (Unidentified)
3490	240337	CW/No calls/5L Grps, hand sent
4236	240345	CW/DE EDF (Prob Aranjuez, Spain)
4540	030844	CW/No calls/5L Grps/down with AR SK
4541.6	211106	CW/No calls/5L Grps, automatic sent, slight pause after each ten grps
4665	020225	CW/CVN DE AUL (Unidentified)/PT Spanish WX
5098	030854	CW/A-N Marker, No identification
5759	260810	CW/No calls/5L Grps, automatic sent, down with BT BT BT
5875	140337	CW/No calls/5L Grps, 120 Grp msg, down with BT AR
6326.5	021630	CW/DE WNU (Slidell, LA)/Trc list and Wx for Gulf of Mexico
6500	140352	CW/DE FFT31 (St. Lys, France)/no tfc, just call marker
6506	020305	USB/CG San Francisco tells uniden stn to check their equipment, COMMSTA Kodiak also heard telling uniden stn their transmission was garbled
6603.5	301356	USB/EE-OM giving Wx at Canadian locs.
6692.5	271521	USB/YL-EE giving Wx, signs off with "St. Johns Military, Out"
6744.9	181354	CW/UFZ DE BOK (unidentified)/Exchange QSA reports, Spanish language chatter
6897.8	111352	CW/IKF DE LIA (unidentified)/Exchange QSA reports and give times (QTR)
7542.7	301302	USB/SS-YL sending PT Spanish msg to very weak stn.
8293.6	301558	USB/Two OM-EE talking about repairs to ship while in drydock
10588.2	302328	RTTY 50-425/No calls, Havana to NY commercial link/passing commercial telegrams in Spanish PT
10643.8	301608	CW/No calls/5L Grps, spec charac IM, AA, OE, OT
11243.5	281634	USB/SKYKING Brdcst from callsign DRUGSTORE
13258.7	252121	CW/No calls/Spanish PT msg, La Paz mentioned in message (poss Bolivian military)
13342.5	311415	CW/DE SDJ (Stockholm, Sweden)
13360	181320	CW/No calls/(Prob CLP1, Havana) Cuban MFA News items in Spanish
13369	201240	CW/CLP1 (Havana, Cuba) wrkg uniden stn, sending MFA Press items
13388	101242	CW/ACA50 DE KKN39 (US State Dept)
13389.9	101234	CW/CLP55 DE CLP1 (CubaEmb Georgetown, Guyana from MFA Havana)/Tells him to QSY 16310
13392	281638	Sounds like a PICCOLO transmission
13479.2	301643	RTTY 50-425/DPA Deutsche Presse, Hamburg GFR, Press items in English
13760	072225	CW/No calls/Two stns passing PT Spanish tfc, one opr uses bug, other using hand key
13957.8	181919	RTTY 50-425/CLP1 (Havana) to uniden stn/Sending MFA Press items, also sent 5F (cut nbrs) grps
13966.9	131446	CW/No calls/Portuguese PT msg
13985	072012	CW/CLP1 (Havana) to uniden stn, sends MFA Press items
14396.5	252143	USB/SS-YL sending 5F grps, live, not taped
14429.7	292148	USB/SHAMPOO THIS IS TONIC (uniden)
14444.4	091654	CW/Stn in Rogaland, Norway giving callsigns & respective frequencies, LFU-6467, LCN-10715, LHG-14445, LFT-16953AAA4
14444.6	252150	USB/SS-YL talking with SS-OM, cryptic conversation re lobsters & refrigerated storage facilities??
14472.1	281342	RTTY 50-425/Appears to CLP1 with MFA Press items
14487.6	091708	RTTY 50-425/DE RVW57 RIC75 RGW28 RNK36/TASS press items in English
14809.5	081744	CW/Uniden stn sending 5F groups, Poss Cuba to Angola link
14826	311659	CW/TJSN DE T... (Cameroon alloc)/French PT tfc
14928	311350	CW/VV L2Z 043/124/122 (Argentine allocation)



# Listener's log

## Winston 500 Monitoring

Mike Heightchew of Fremont, California, made a point to find as many radio links as possible in the annual race held at Riverside, California. These are his catches from fall 1986.

154.600	Track ops/Fire and Rescue	151.625	TV crews
154.540	Security	461.025	Vendors
464.500	Nascar operations	464.800	<b>DRIVERS</b>
464.900	Nascar Chan 9 & WTBS	464.387	Richard Petty
467.250	WTBS race car camera	463.900	?
467.225	WTBS	468.125	Tim Richmond
267.325	WTBS Cueing camera	461.187	Bobby
462.675	Media	469.012	?
463.650	Riverside Track media office	461.875	Terry Labonte
		464.337	Herry Gant
		461.700	?
		461.387	?
		463.462	Kyle Petty
		461.150	Allen
		464.300	Joe Ruttman
		469.550	Al Uncer
		469.312	Bob Allison
		468.487	Dale

464.6625 Randy  
463.650 Bobby (and track media office)

## North Carolina

contributed by Bill Britt  
Whiteville, NC

### U.S. FOREST SERVICE (MHz)

<b>Croatan</b>	168.125	168.725	154.77
<b>Uwharrie</b>	168.125	158.725	411.325
	415.325		
<b>Nantahala</b>	168.025	169.125	411.575
	168.2	171.475	415.3
	168.625	172.225	415.325
	168.75	411.3	415.575
	168.775	411.325	
<b>Pisgah</b>	168.025	171.475	415.225
	168.125	172.225	415.3
	168.625	411.225	415.325
	168.725	411.325	415.575
	169.125	411.575	

### CONSERVATION- Forest Service & Game Warden

30.98	31.34	31.46
31.22	31.38	31.5
31.26	31.42	31.54

### MISCELLANEOUS

155.01	Dorothea Dix Hosp. Raleigh (Psychiatric)
155.94	NC Museum of Art-Raleigh
155.775	NC Ports Authority-Morehead City & Wilmington
158.775	NC State Zoo-Ashboro
45.2	Rural Manpower Serv (Employment Security Commission)
45.24	"
45.8	"
155.79	State Capitol Police-Raleigh
155.61	University Security (NC State)-Raleigh

### STATE LAW ENFORCEMENT

Alcoholic Beveral Control	42.84	Ch. 11
Dept. of Corrections (Prison Farm System)	42.56	
NC Highway Patrol	42.62	Ch 1 42.56 42.76
	42.52	Ch 3 42.64 42.80
	42.6	Ch 5 42.7 42.86
	42.66	Ch 7
	42.5	Ch 9

Highway Patrol Repeaters:	154.68	457.225	453.0
	154.92	452.2	453.6
	457.05		

### 155.190 State/local intersystem

State Bureau of Investigation	42.72	Chan. 9
	42.58	Chan. 10
	154.905	
	159.09	Charlotte
	159.115	Greensboro

## Extend the Reception Range on Your Hand-held Scanner!

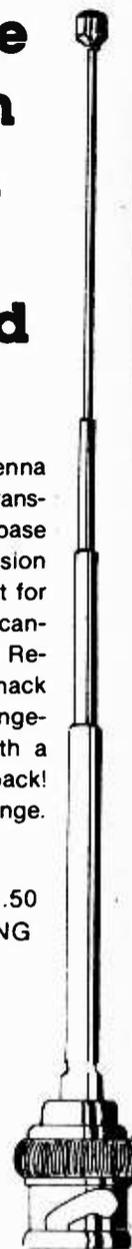
Universal full-length antenna for handheld scanners and transceivers! Standard BNC base allows custom length extension from 7 to 46 inches! Great for amateur hand-helds and scanners like the Bearcat 100, Regency HX-1000, Radio Shack PRO-30. Replace that range-limiting rubber ducky with a full-size whip and stand back! Guaranteed to increase range.

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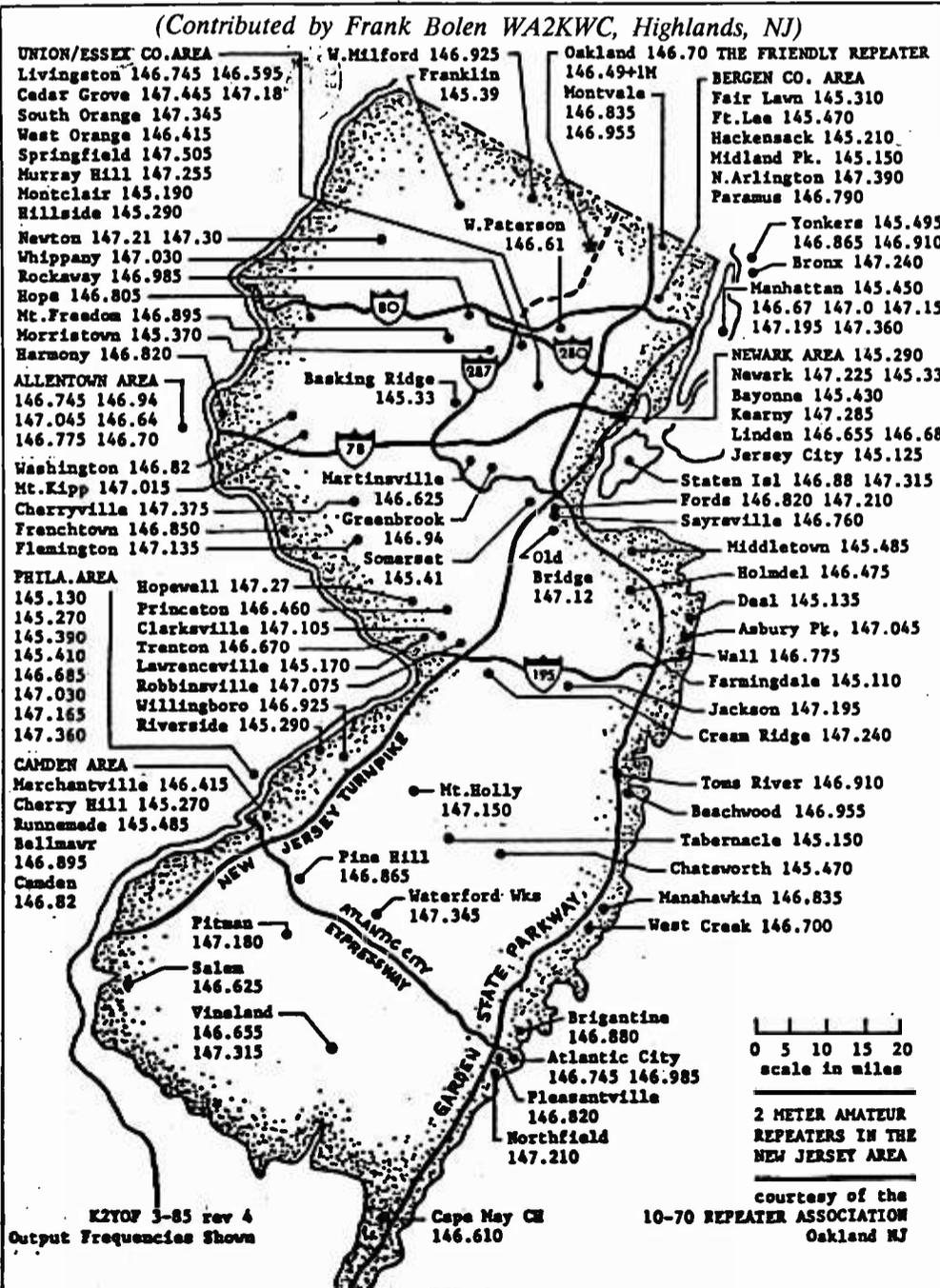
## South Carolina (Bill Britt)

U.S. FOREST SERVICE	164.925	168.675
Sumter	168.075	168.775
Francis Marion	164.925	168.675
	168.075	411.525
		415.525

## ERRATA

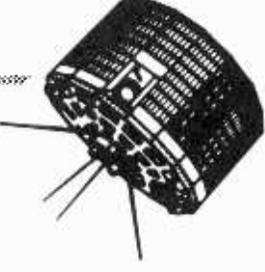
The Williamsport, Pennsylvania, listings in our November 1986 column contained a considerable number of errors. Those of you who copied these data would best delete the following frequency entries: 46.125, 35.075, 40.15, 45.555, 49.1, 49.525, 120.45, 122.4, 122.75, 122.9, 124.6, 130.425, 132.0, 133.05, 152.09, 152.21, 154.89, 155.17, 156.495, 461.45, 454.175.

Additionally, the following valid frequencies need to be identified as follows: 44.185 agricultural; change 75.3 to 47.3; 122.6 Philipsburg, PA FSS; 122.9 air-to-air; 124.9 Williamsport; 129.85 ARINC; 131.45 NW Airlines; 131.5 People's Express; 131.7 NW Airlines.



# MT FAX FACTS

G. P. Mengell  
2685 Ellenbrook Drive  
Rancho Cordova, CA 95670



## TUNING IN PRESS PHOTOS

The field of high frequency facsimile is one fraught with intrigue, amazing discoveries and constantly changing practices. If you want the best of what radio can offer as to valuable insights into world events well, then, "This, Bud, is for you!"

At the moment, virtually all HF press facsimile runs at 60 revolutions (scans or lines) per minute. You do not need a multi-speed machine to copy strictly pictorial facsimile from the news services; what you do need is a stable and sensitive HF receiver such as the NRD-515 or 525, Kenwood R2000, 5000, ICOM R71A, or venerable surplus radios such as the Collins 51S1/G133, or R390, R290A, 51J4 or J3. If one has the room, the AN59-FRR "double-decker" is a penultimate FAX receiver.

The audio from the receiver is fed into the HF FAX converter (such as a CV172 or 421C, probably best suited for press pix reproduction) where the signal is cleaned up and sent out as tones readily recognizable to the input of the FAX machine.

The FAX machine interprets the tones as a video image which is transferred to the marking amplifier which prints it (hard copy).

It's all pretty simple once you get the hang of it: You tune a FAX signal much like you would RTTY; once on frequency, usually in upper sideband, adjust the BFO until the best detail (i.e., recognizable image and shades of gray) is displayed. It is a good idea to set your receiver's bandwidth at around 2kc (1.8 or 2.8 is OK) to limit interference.

If press photo reception only is required, consider a single speed machine which is much lower in cost than a multi-speed unit. There are many dual-speed Aldens; some quad speed and even more available for a price!

The new M800 InfoTech facsimile demodulator (pictured last month) seems to be taking the FAX world by storm, and uses a conventional graphics printer (not supplied) such as an Epson LQ800 or FX85. It has three picture length I.O.C.'s (index of cooperation), AM and FM

reception, four speeds (60-90-120-240 RPM), tuning indicators, and much more (see copy below).

The following news photo frequencies (in kilohertz) bear watching; all are 60 scans per minute. An asterisk (\*) indicates recent usage.

AP	REUTER (formerly UPI)	KCNA
10680*	10340	11476
15824	15783	12175
19848	18508	13580
6874*	18433*	
10678.5*	5880*	
17672.0*		

Some European stations run 240 scans such as Norway on 9980 (logged one time only).

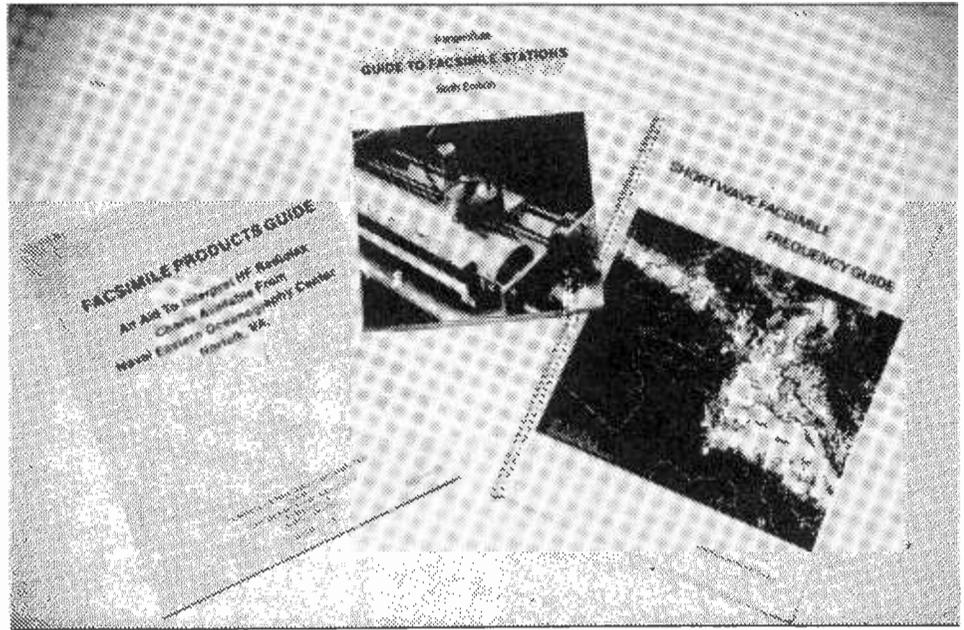
The South America TELAM Net from Argentina may be heard on:

7930 kHz	11451
8166	11480
9244	

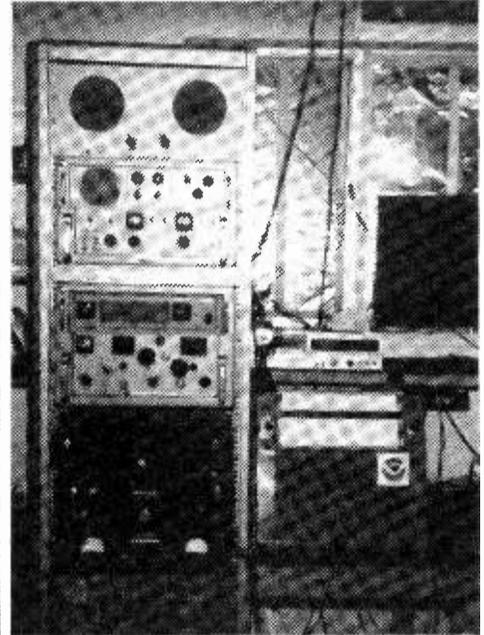
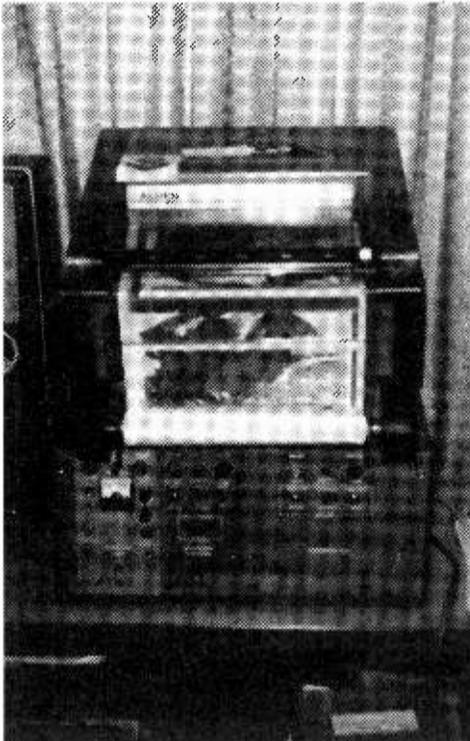
From the Far East, Kyodo and CNA send FAX newspapers in oriental copy in 60 and 120 scans:

Kyodo	CNA
8472 kHz	9430 kHz
12745	13766
17069	14685
	15878

Cultures and their problems and triumphs vary, but the thing to keep in mind is that FAX puts you there now!



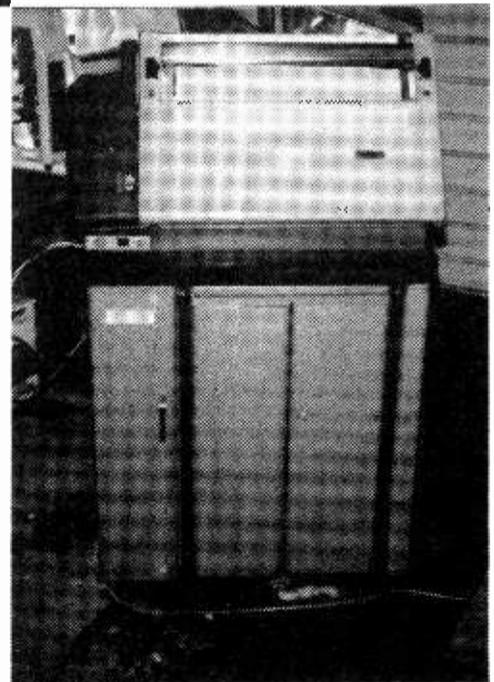
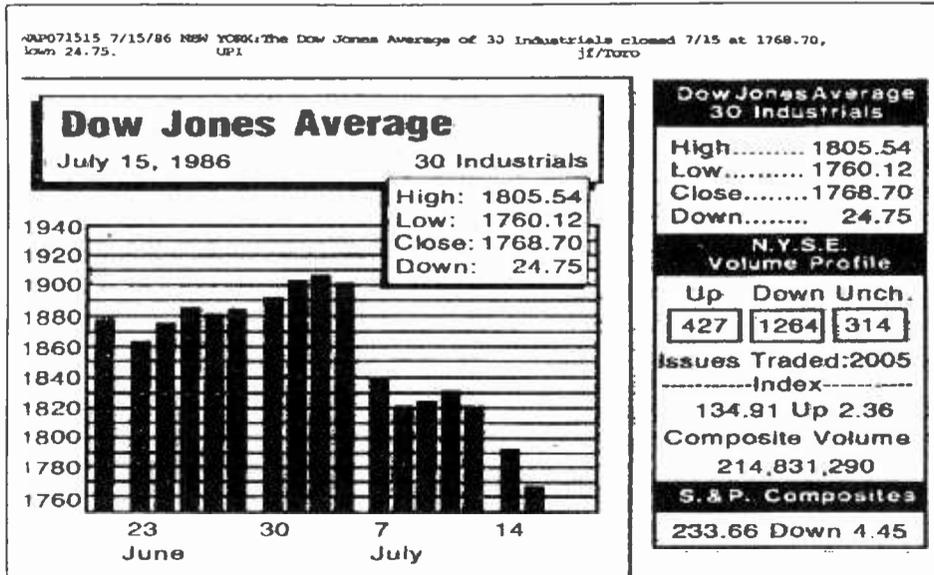
FAX books available



Top half of rack AN FRR 59A Facsimile printer 9303

Several different models of multi-speed Alden FAX machines are available to suit your need and pocketbook. Pictured above is the Alden 9225E; below right, the Alden 9244T.

NEXT MONTH: TIROS weather satellite reception! 73's



Alden 9244T

Left: Dow Jones Average is copy taken from the M800 facsimile demodulator, reproduced here at 70% actual size.





# Worldwide Scanning with Norm Schrein

Fox Marketing, Inc.  
4518 Taylorsville Rd.  
Dayton, Ohio 45424

## SCANNING ABROAD

If you were going to take a trip outside the United States and wanted to take your scanner along with you, where would you look for active frequencies to listen to? There are many sources of worldwide scanner frequencies and following are a few suggestions.

One simple way is to check with the local store that deals in scanners. This may vary from country to country. Many countries actively discourage the monitoring of two way radio traffic other than amateur bands, and in other countries it is an illegal matter altogether.

Once you can determine the legal status of monitoring and the general feel of the government on that matter, then you can proceed to contact the local radio shop about active frequencies.

### Aircraft Information

There are other publications which will help in your monitoring and

Tokyo International Airport	
ATIS	128.800
Approach Control	119.100
	126.000
	236.800
	261.200
Tower	118.100
	118.800
	126.200
	236.800
Ground	121.700
	121.800
Departure Control	126.000
Clearance Delivery	121.800
Tokyo Information	126.800
Tokyo Info (Kowa)	126.600
Fukuoka Info Shimizu	128.200
Naha Information	
Earabu	128.600
Haneda VOR-DME(HME)	116.500
ILS (I-AD)	111.700
ILS (I-HM)	110.900

these are readily available and list frequencies. For example, there are a number of aeronautical flight supplements that are designed for

pilots across the world, and along with incidentals on the various airports are listings of personnel.

One of these supplements is published by the Defense Mapping Agency Aerospace Center (St. Louis Air Force Station, Missouri 63118). One copy I have is the supplement for the Pacific, Australia, Asia, and Antarctica. The Tokyo Airport list is a sampling of what you will find.

Also in the Tokyo area (approximately 35 miles to the southwest) is the large U.S. Air Force base located at Yokota. Needless to say there is a lot of aeronautical radio traffic there as well. Here is a sample from the Yokota Air Force Base.

Yokota Air Force Base		
Single Freq Approach/ Pilot to Dispatcher		313.600
ATIS		128.400
Approach		
118.300	120.700	270.600
123.800	261.400	367.000
Tower		
120.300	126.200	315.800
Ground		133.200
		308.600
Departure		122.100
		363.800
Radar Advisory Service		
118.300	123.800	270.600
120.700	261.400	367.000
Clearance Delivery		133.200
		308.600
Meteorological Data		344.600
Consolidated Command Post		
	238.300	325.800
MAC Aircraft		128.000
		349.400

In addition to these large air facilities there are a number of other airports in the Tokyo area (Honshu Island) and it is just a matter of looking through the supplement and identifying them. In addition, you can find frequencies for Tokyo Center.

### Marine Radio

So much for the easy research; how can you find other frequencies to listen to? Well, let's stick with the Tokyo area for our sample. The next publication you may want to check into is the *List of Coast Stations* published by the International Telecommunication Union in Geneva, Switzerland. This is a directory of active marine frequencies worldwide. The list is set up by country. Needless to say there are many frequencies listed for Japan, but in the Tokyo area specifically the following are listed:

Agency: Tokyo Port Radio  
Frequencies: 156.550, 156.600, 156.700, 156.800, 161.500, 161.600, 161.700

Agency: Tokyo-wan Traffic Advisory Service  
Frequencies: 156.600, 156.650, 156.800

Actually, Tokyo is not the big harbor that Yokohama is, and there are a lot of frequencies listed for them as well.

Are there any other clues to frequencies to listen to before going on the trip? The ITU also publishes lists of frequencies used worldwide. These lists are quite expensive, but you can check with the U.N. and find one of their deposit libraries across the country.

For example the nearest deposit library to me (in the Dayton, Ohio, area) is in Cleveland. So, depending on how badly you want frequency information, you can check at one of these libraries.

The information is sketchy at best, generally just a listing of frequencies, call letters and perhaps geographical coordinates. Sometimes there is a code number listed for the licensee, but this is rare.

In order to decode this licensee, it is necessary to have a copy of the *Preface to the International Frequency List*. Looking through my copy of the *Preface* I found but one listing for Japan and that is the Radio Regulatory Bureau (R.R.B.), Ministry of Posts and Telecommunications. That is the same agency that licenses radios in Japan, so there would not be much help there.

Other countries have more listings; for example, Israel has 41, Kenya has 65, and Mexico has 315.

The licensees really vary from one country to another. In North Korea the only licensee listed is the Ministry of Posts and Telecommunications, Department of International Relations in Pyongyang. South Korea, on the other hand, being a bit more democratic, lists not only the Ministry of Communications in Seoul, but the Department of State (out of Washington, D.C.) and the Field Service United Nations Headquarters (out of New York).

The individual licensees include the Ministry of Communications, Minicom, Seoul, and the United Nations.

Libya shows ten individual licensees, including P&T Corporation, Civil Aviation, International Aeradio, Ltd., Oasis Oil Company, Arab Gulf Oil Company, Oil Companies General, National Oil Company, Libyan Arab Airlines, Kufra Company, Esso Standard (Libya) Oil Company, and the Diplomatic Corps in Libya.

There are other sources of information regarding U.S. operations overseas. The Federal Microfiche (available from Grove Enterprises) lists U.S. Government operations not only in the U.S. and its territories, but all over the world. This is another relatively inexpensive way to check into frequencies for the

### (READING RTTY, cont'd)

- 13977.7 FDZ Paris ARQ often//8094.7 around 0000. Often relays RFFVAD, N'Djamena and RFFXI, Banjui, msgs FF. Cct Id. FDZ
- 14748.8 T85A encryption, T85B nothing. 1230-2330.
- 14788.1 LOL 75/425 msg SS to Madrid then QRU SK 2025
- 14794.95.4 FDM 2 channels, each of which has 2 channels of TDM-2 T170A&B.
- 14882.6 IRL68 Rome 50/425n IINA and OEAJEIA JEDNEWS Nx 1340
- 15550.3 6WW Dakar T850B (TJI) relaying msgs FF to FUF(RFLI) from RFFICS Paris 2000.
- 15575.1 REN30 Moscow 50/400r TASS Nx EE 1345.
- 15815.8 MSS Belize? T330B encryption 1545 2115.T330A idle 1400 one.
- 15710.1 RWN76 Mscow 50.425r ADN Nx FF 1405
- 15881.2 CL? Havana? 45/395R//11511.2 privacy to USSR? 2315
- 15935.4 CLP1 Habana 50/500n Diplo Nx SS to Embacuba 2140
- 16091.5 LOL 75/85R ry int ZBZ K 2130; 75/425n msg SS to PWZ33. 1810
- 16142.3 FUF Ft. de France T850B msg FF to RFFVA. Then msg FF (Cct. Ind. ALI) from RFLID Pointe a Pitre to RFFZAC, Centeradmi Tours 1715. The other channel, T850A, used privacy. T850B at 1730 (Cct.Ind. FDI) msg FF fm RFLICR to RFFICY. At 1740 the freq dropped to 16141.4 and the shift to 540!
- 16355.1 CLP5 Argel(Algiers) 50/520 msgs SS to MINREX, Habana. 1735
- 16393.1 OMZ Prague 75/425n msgs to Obzamani, Washington DC 1440
- 17377.3 6WI Dakar T840B (DRZ) At 2210
- 17468.4 PWZ-33 Rio 75/1120R ry to HDN Quito 2210
- 17623.1 9KT344 Huban 50/350r KUNA Nx EE to London 1720
- 17627.0 9KT344 Huban 50/350R KUNA Nx AA 1730-2100
- 18030.7 CLP1 Habana 50/550n msgs SS to Embacuba 1530
- 18047.1 Belgrade MFA 75/425N. Left 19277.1 at 1500 and opened here, 5 kHz higher than former 18042 for daily contacts with Yugo Embassies
- 18143.8 CCM Magallanes 50/850r From Chile Dwy Weather Service to South African Navy via ZRH wx msgs, 1510
- 18542.7 WFK48 N.Y. 50/425n Privacy after all these years of clear USIA Nx in SS and FFI
- 18659.7 CLP1 Havana 50/425n Privacy cd gps to Nigeria, Zambia and Tanzania
- 19455.1 CLP1 Havana 45/425n msgs SS to Embacua 2148
- 19757.4 6VU79 Dakar 50/410N Meteo msgs 20040 Assigned freq is 19750.0
- 20078.4 FTU8B Paris 50/400n ry then Diplo Nx FF started at 1512//FTW91 22915 kHz, FTS78 18785 kHz and relayed by FZF61 Ft. de France 16106.5.
- 200091.2 YBU 1/4 ry QRU SK off 1310. Very strong. Habana? 50/500R
- 20906.9 Habana? Mexico City? 50/425n Embassy msgs Korean every day about 1730-1820, presumably to Pyongyang

**(WORLDWIDE SCANNING, cont'd)**

country you are going to visit; however, remember that these are U.S. Government operations and not the local police or fire departments.

Gleaning through the pages of the RCMA newsletter and *Popular Communications* should not be ruled out for finding information on frequencies to program into your scanner in a foreign land. RCMA does have an international column and, of course, by looking through the pages of *Monitoring Times* you will find a wide variety of frequencies for various parts of the world.

**Precautions**

Be sure that having a scanner in your possession is legal in the country you are going to. It is also wise to fill out a customs certificate listing your equipment prior to leaving the U.S. When you return it will be a simple matter of turning in the certificate instead of having a hassle about where you bought the equipment.

Until next time -- good monitoring ■

# Schultz Manipulates Press "Leaks"

Secretary of State George Schultz, commenting on freedom of the press, recently revealed how the government uses this privilege to their advantage.

"You people in the news business enjoy not allowing the U.S. to do anything secret if you can help it. So, if the fleet moves from one place to another, you are determined to report it, even though we might want to have it operate secretly. So we can absolutely bank on the fact that if the fleet does something or other, you will scream. Qaddafi will hear it...if there are ways in which we can make Qaddafi nervous, why shouldn't we? So we label it a big secret and you will find out about it and you will report it. The higher the classification the quicker you will report it. So you are predictable in that sense."

But indiscriminate news reporting has had serious consequences as well. A recent report by Michael Ledeen, a senior fellow at the Georgetown Center for Strategic and Inter-

national Studies, revealed several unfortunate cases.

On November 22, 1974, during delicate negotiations with terrorists who had hijacked a British Airways plane, a newsman, watching for the approach of an aircraft carrying terrorists released at the demand of the hijackers, spotted the wrong aircraft--it had no released terrorists on board.

Hearing the report by the newsman over the air that the promised release was a hoax, they promptly retaliated by executing a passenger.

In another case in Germany, the magazine *Der Stern* learned of a ransom payment which was to be delivered for the release of a kidnap victim. Reporting all details including time and place, the exchange was thwarted by the publication. Four days later the kidnap victim was found dead.

During the notorious Patty Hearst kidnaping incident, a San Francisco

# UFO Abducts SWL (?!)

The tabloid press has done it again, complete with a photo showing a flying saucer hovering over the castle-residence of Czeslaw Mylowski, a Polish amateur radio operator and shortwave listener.

The report continued that finally, after 47 years of trying to contact aliens from outer space, Mylowski, 68, disappeared after a massive UFO hovered over his home in Koszalin.

*(From Dave Beauvais--who dared us to publish this item!)*

radio station monitored police communications and revealed to their listeners that the SWAT team was closing in. Hearing this, the fugitives escaped.

*(Contributed by Don Schimmel, Vienna, VA)*

## Power Ant III

### Wideband Preamp for all Frequency Ranges!

The new Grove PRE-3 Power Ant has taken all of the best from its successful predecessors and combined them into one powerful signal booster for scanners, shortwave and longwave receivers, even TV and FM radios!

Equipped with a high gain, low noise, solid state amplifier stage, the PRE-3's front panel control allows custom selection of up to 30 dB amplification!

Two output connections are provided allowing you to use two receivers on one antenna at the same time! All connectors are type F for maximum signal transfer.

#### USE WITH OUR FAMOUS TUN-3 MINTUNER FOR INCREDIBLE SHORTWAVE/LONGWAVE RECEPTION!

When used with a short indoor or outdoor antenna, the combination Power Ant III and MiniTuner (see page 17) can equal the performance of a full-size outdoor dipole!

Connect the powerful duo to our new ANT-6 Hidden Antenna and discover worldwide shortwave reception you never dreamed possible with such a compact antenna system! And if you now have an outside antenna, connect it to the PowerAnt/MiniTuner combo and stand back as signals pin your S-meter! Don't forget to order the accessories you will need to power the PRE-III and connect it to your antenna and receiver!

#### Specifications

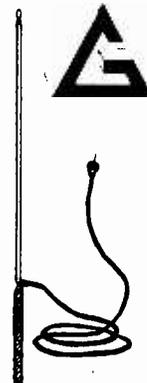
Gain .....	30 dB @ 1 MHz
.....	29 dB @ 10 MHz
.....	27 dB @ 50 MHz
.....	21 dB @ 150 MHz
.....	13 dB @ 450 MHz
.....	10 dB @ 900 MHz
Noise figure .....	2 dB nominal
Usable frequency range .....	10 kHz-1300 MHz
Input/output impedance .....	50-75 ohms nominal
Power required .....	12 VDC @ 40 ma.
	(DC cord supplied)
Connectors .....	F type
Dimensions .....	4"W x 2"H x 3"D
Weight .....	6 ounces

  
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Comes fully assembled with 20 feet of coax, F connector and instructions.

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HERE'S THE ANSWER!**

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# MT HIGH SEAS

James R. Hay  
141 St. John's Blvd.  
Pointe Claire, P.Q.  
Canada, H9S 4Z2

## THE FLORIDA BOATING SEASON

With winter here, let us concentrate our monitoring on a popular retreat from the winter weather: Florida! Figure 1 gives a sampling of what can be heard; all frequencies are in megahertz, FM mode.

Along the Intracoastal Waterway 156.650 MHz can be interesting since this is the frequency used by the Army Corps of Engineers as well as bridge-to-bridge communications between the tugs which frequently travel the waterway. Stations can be heard all along Florida's eastern coastline.

Ship to shore radiotelephone bristles with activity on the frequencies shown in Figure 2.

### U.S. Coast Guard

The United States Coast Guard has numerous stations throughout Florida, including the following:

NMA 10	Cape Canaveral, FL
NMA 16	Davis Is., FL
NOQ 3	Destin, FL
NMA 10	Flagler Beach, FL
NMA 10	Jacksonville Beach, FL
NOK	Marathon, FL
NMA 11	Marathon, FL
NOQ 7	Panama City, FL
NMA 3	Ponce de Leon, FL
NMA 12	Port Canaveral, FL
NOQ 6	Santaros, FL
NOQ 7	St. Marks, FL

These stations may be found on any of the following frequencies: 157.050, 157.075, 157.100, 157.150, and

Figure 1

156.425	WHG 962	Daytona Marina & Boat Works	Daytona Beach, FL
156.425	WHF 724	Daytona Marine Electronic	Daytona Beach, FL
156.450	WHF 724	Daytona Marine Electronic	Daytona Beach, FL
156.425	WRV 305	Halifax River Yacht Club	Daytona Beach, FL
156.450	WRV 305	Halifax River Yacht Club	Daytona Beach, FL
156.425	WHU 295	Perry's Boatworks Inc.	Daytona Beach, FL
156.450	WHU 295	Perry's Boatworks Inc.	Daytona Beach, FL
156.350	KPB 561	Eller and Company	Fort Lauderdale, FL
156.450	WRD 621	Cable Marine Inc.	Fort Lauderdale, FL
156.575	WHF 725	Electronics Unlimited	Fort Lauderdale, FL
156.450	KFT 297	Flotilla Two Inc.	Fort Lauderdale, FL
156.450	WFY	Jackson Marine Electronic	Fort Lauderdale, FL
156.900	WFY	Jackson Marine Electronic	Fort Lauderdale, FL
156.475	WXZ 509	Jayache Yacht Services	Fort Lauderdale, FL
156.475	WXZ 509	Jayache Yacht Services	Fort Lauderdale, FL
156.450	WDJ 325	Koch Towing	Fort Lauderdale, FL
156.425	KEB 379	Marina Del Mar Inc.	Fort Lauderdale, FL
156.450	KSK 265	Phillips Communications	Fort Lauderdale, FL
156.450	WHD 767	Rahn Marina Inc.	Fort Lauderdale, FL
156.425	WHD 767	Rahn Marine Inc.	Fort Lauderdale, FL
156.350	WGB 825	Pipe Welders Inc.	Fort Lauderdale, FL
156.350	WGB 826	Pipe Welders Inc.	Fort Lauderdale, FL
156.450	WGB 464	Butler Electronics	Jacksonville, FL
156.725	KYH 553	C G Willis Inc.	Jacksonville, FL
156.350	KYH 553	C G Willis Inc.	Jacksonville, FL
156.700	WQZ 332	Caldwell Shipping	Jacksonville, FL
157.025	WQZ 332	Caldwell Shipping	Jacksonville, FL
156.450	WHH 228	Carolina Shipping	Jacksonville, FL
156.975	WXZ 594	Cross State Towing	Jacksonville, FL
156.450	KPB 507	Desco Marine	Jacksonville, FL
156.350	KFL 355	Florida Towing Company	Jacksonville, FL
156.500	KFL 355	Florida Towing Company	Jacksonville, FL
156.350	KJC 810	Florida Towing Corp.	Jacksonville, FL
156.500	KJC 810	Florida Towing Corp.	Jacksonville, FL
156.450	KVY 563	Florida Yacht Club	Jacksonville, FL
156.925	KIZ 718	Intramarine	Jacksonville, FL
156.450	WHD 649	ITT Telecommunications	Jacksonville, FL
156.450	KJA 365	Jacksonville Marine	Jacksonville, FL
156.950	KJA 365	Jacksonville Marine	Jacksonville, FL
156.425	WHG 895	Murphy Communications	Jacksonville, FL
156.425	WRS 920	Nautilus Electronics	Jacksonville, FL
156.450	WRS 920	Nautilus Electronics	Jacksonville, FL
156.500	WHD 544	North Florida Shipyard	Jacksonville, FL
156.500	KZD 945	Sea Land Service Inc.	Jacksonville, FL
156.500	KZA 984	Seacoast Electronics	Jacksonville, FL
156.675	KZA 885	Strachan Shipping	Jacksonville, FL
156.975	KZA 885	Strachan Shipping	Jacksonville, FL
156.725	KMB 894	Sun State Marine Inc.	Jacksonville, FL
157.025	KMB 894	Sun State Marine Inc.	Jacksonville, FL
156.500	WPE	Tug Communications Inc.	Jacksonville, FL



157.175 MHz as well as standard marine VHF channels.

### Channel 16

One must always remember that busy channel 16, 156.800 MHz, can provide fascinating listening. Virtually all maritime stations will use this frequency for calling vessels.

Intership frequencies which can be worth monitoring include 156.650 MHz; 156.300 MHz is a safety channel and is often used for vessels to pass safety information to one another, as well as for tugs to communicate with their tows.

Perhaps the most active frequencies will be 156.425, 156.525 and 156.625 MHz (channels 68, 70 and 72). These frequencies are used by pleasure craft for ship-to-ship as well as some ship-to-shore communications.

Virtually anything can be heard on these three channels from warnings about deadheads to friends arranging to meet. Even an invitation for the crew of one boat to join another for cocktails has not been unheard of (although the practice is frowned upon by the authorities!).

### NOAA Weather

Perhaps the most important information which mariners use is the weather; the following stations and frequencies will be of interest:



162.400	Clewiston, FL
162.400	Daytona Beach, FL
162.475	Fort Myers, FL
162.475	Gainesville, FL
162.550	Jacksonville, FL
162.400	Key West, FL
162.550	Melbourne, FL
162.550	Miami, FL
162.475	Orlando, FL
162.550	Panama City, FL
162.400	Pensacola, FL
162.400	Tallahassee, FL
162.550	Tampa, FL
162.475	West Palm Beach, FL

Good listening until next time. As always, your comments and suggestions are welcome at the address at the masthead.

Figure 2

161.900	KTR 945	Marine Telephone Co.	Cocoa, FL
162.000	KWS 605	Marine Telephone Co.	Daytona Beach, FL
161.850	KPB 689	Marine Telephone Co.	Fernandina Beach, FL
161.950	WQZ 354	Marine Telephone Co.	Marineland, FL
161.900	KEW 823	Marine Telephone Co.	Fort Lauderdale, FL
161.825	KEW 823	Marine Telephone Co.	Fort Lauderdale, FL
161.950	KLU 791	Marine Telephone Co.	Homestead, FL
162.000	KLU 791	Marine Telephone Co.	Homestead, FL
161.900	KQU 411	Marine Telephone Co.	Key West, FL
161.825	KQU 411	Marine Telephone Co.	Key West, FL
161.800	KSK 210	Marine Telephone Co.	Marathon, FL
161.850	KSK 279	Southern Bell Telephone	Miami, FL
161.900	KYQ 841	Marine Telephone Co.	Stuart, FL
161.950	KVY 628	Marine Telephone Co.	Vero Beach, FL
162.000	KGW 294	Marine Telephone Co.	West Palm Beach, FL
161.875	KGW 294	Marine Telephone Co.	West Palm Beach, FL

# SIGNALS FROM SPACE

Larry Van Horn  
160 Lester Drive  
Orange Park, FL 32073



## New Soviet Space Initiative

As this new year of 1987 begins, and we approach the first anniversary of the STS-51L shuttle disaster, the Russian space program is poised to begin a new era in space.

Recent press reports indicate that full-scale operations aboard the space station Mir will commence very soon. This activity will include the launch of new crews and the first in a new series of large building-block modules.

According to Soviet officials attending the International Astronautical Federation's 37th congress in Innsbruck, Austria, a manned flight is planned for early 1987. The manned flight will be followed by a launch of the first building block, a large, specialized module to Mir, in the first half of 1987.

V. V. Ryumin, the Soviet manned space flight director, said that there will be an increase in the length of time that cosmonaut crews will remain in space, typically 10 months. If no adverse effects on the cosmonauts' bodies is noted, the crew time aboard Mir will be extended again.

The first specialized module to be sent to the Mir will be an astrophysical module. One of the experiments aboard this module will be an X-ray observatory complex, a multinational cooperative experiment by several nations including the Netherlands, Great Britain, ESA, and West Germany.

One new feature of the Mir station is the use of satellite links via the Soviet Luch relay satellites for nearly continuous transmission of data to the ground for Mir control, diagnostics and the downlink of scientific data. This is somewhat puzzling in view of the Soviets filing a separate system for space relay comms via the SDRN system.

Listeners interested in this activity will have to construct an 11 GHz listening post. Suitably equipped stations might want to check the following frequencies for Russian space activity:

### Luch Transponders

Channel 1	10975 (MHz)
Channel 2	11025
Channel 3	11075
Channel 4	11125
Channel 5	11175
Channel 6	11475
Channel 7	11525
Channel 8	11575
Channel 9	11625
Channel 10	11675

Listeners might also want to check out the SDRN frequency spectrum for manned activity. The following frequency information applies:

### SDRN Transponder Breakdown

Spacecraft to SDRN uplink	(MHz)	15005
SDRN to spacecraft downlink		13520
SDRN to ground station downlinks		10820
		11320
		13700
Ground stations to SDRN uplinks		14620

This should be a very exciting period for the Soviet space program. As one U.S. delegate to the congress said, "I think the message is clear: Soviets are prepared to fire the starting gun for a new period of intensive manned space flight."

### NASA Launches

By contrast to the Soviets, the U.S. manned space program is grounded. NASA has just released the latest schedule of space shuttle flights when launches resume in February. As time draws near *MT* and *SFS* will present a completely new update on shuttle communications. For now we have NASA's schedule.

Bob Grove passed on some interesting information recently. Those of you who have his *Shortwave Frequency Directory* will be interested to know that the frequencies and callsigns listed for the Western Test Range are accurate per conversations with WTR communication personnel. 13218 and 5700 kHz are utilized on the WTR as 11780/5190 MHz is on the ETR. Listeners should note that 5810 ETR night primary has been replaced by 5190 MHz due to numbers station interference.

One change of note in the *Directory*: Abnormal Three Zero, Kwajalein, should be listed as Abnormal Four Zero.

Also Bob found out that 259.7 MHz is now the primary shuttle to ground UHF channel and 296.8 MHz is used by Astronaut John Young in the shuttle training aircraft to pass weather recon traffic to ground stations and the shuttle astronauts on the pad.

It has also become known that NASA is utilizing some FLEETSAT-COM/LEASAT satellite circuits. Information indicates that these circuits are in the clear. Monitors

might want to watch out for NASA activity on these milsats.

One very interesting note from Bob for HF monitors: he asked if HF was going to be phased out and more satellite circuits used by NASA. The answer is no; in fact, we might see more HF frequencies being used in the future! There is some hope on the horizon.

### How About a Contest?

Information I have received indicates that a U.S. federal government agency is utilizing the 136-138 MHz satellite band for voice comms. These transmissions are being relayed via the ATS-3 satellite in geostationary orbit at 105° west and its 135.555-135.645 MHz transponders put in a good signal here in north Florida.

Listeners are invited to join the search for these voice comms. The first *MT* reader that finds voice comms from the ATS-3 satellite in the 136-138 MHz range will receive a 8x10 color print of a shuttle astro-

naut working in space.

To qualify you must send a tape recording (cassette only) of the comms you monitored, date/time/frequency, and your receiving setup to: Voice Search, c/o Signals from Space, 160 Lester Drive, Orange Park, Florida 32073.

The first correct entry verified as coming from the ATS-3 in that range will be awarded the pix. All entries become the property of Signals from Space and the decision of the judge (me) is final!

### Signals from the South Pole

Direct communication between South Pole scientists and the U.S. is now possible for the first time through the ATS-3 satellite. NASA's Goddard Space Flight Center in Maryland installed a satellite antenna system at the South Pole to send and receive VHF signals from ATS-3.

After over 18 years in geosynchronous orbit, well beyond the

## SPACE SHUTTLE ASSIGNMENTS

Flight	Date	Orbiter	Duration	Payload/Carrier
26	02/18/88	Discovery	4 days	TDRS-C/IUS
27	05/26/88	Atlantis	--	DOD mission
28	07/28/88	Columbia	--	DOD mission
29	09/22/88	Discovery	4 days	TDRS-D/IUS
30	11/17/88	Atlantis	7 days	Hubble Space Telescope
31	01/19/89	Columbia	7 days	Astro-1/1G+2P
32	03/02/89	Discovery	--	DOD mission
33	04/25/89	Atlantis	4 days	Magellan/IUS
34	06/02/89	Discovery	--	DOD Spacelab/LM
35	06/21/89	Columbia	7 days	GPS-1/PAM D2 GPS-2/PAM D2 MSL-3/MPRESS
36	07/20/89	Atlantis	--	DOD mission
37	09/01/89	Discovery	--	DOD mission
38	09/21/89	Columbia	5 days	GPS-3/PAM D2 GPS-4/PAM D2 MSL-4/MPRESS
39	11/01/89	Atlantis	4 days	Planetary Oppty
40	12/07/89	Discovery	7 days	SLS-1/LM
41	01/18/90	Columbia	4 days	GRO
42	02/15/90	Atlantis	--	DOD mission
43	04/20/90	Discovery	7 days	IML-1/LM
44	05/04/90	Columbia	7 days	GPS-5/PAM D2 Pathfinder EOS-1 Share
45	05/31/90	Atlantis	--	DOD mission
46	07/12/90	Discovery	--	DOD mission
47	07/26/90	Columbia	7 days	GPS-6/PAM D2 Skynet-4/PAM D2 MSL-5/MPRESS
48	08/31/90	Atlantis	--	DOD mission
49	10/05/90	Discovery	4 days	Planetary Oppty
50	10/25/90	Columbia	7 days	GPS-7/PAM D2 INSAT-1D/PAM D TSS-1
51	11/15/90	Atlantis	7 days	LDEF Retrieval Syncom IV-5
52	01/17/91	Discovery	7 days	Atlas-1/1G+2P
53	02/14/91	Columbia	7 days	COFS-1/Pallet GPS-8/PAM D2 GPS-9/PAM D2 MSL-6/MPRESS SSBUV-1
54	03/01/91	OV105	--	DOD mission
55	04/04/91	Atlantis	7 days	GPS-10/PAM D2 Skynet-4/PAM D2 Eureca



# ON THE HAM BANDS

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Seattle, WA 98102-1279

## THE HISTORY CONTINUES

### The Amateurs Go to War

As the U.S. entered into WWI the Navy, once again, through its friends in congress, tried to take over control of all radio communications. The radio clubs jumped into the fight and congress and the Navy backed off...for awhile.

After this squabble was over, the radio clubs went to work on the war effort. Obviously, the military required radio operators, techni-

cians, instructors and officers in great numbers. Radio was still in its infancy and the military had not yet built up a sizable base of talent, so they looked to the amateurs to fill the gap.

Fortunately for our country, a few far-sighted club leaders, most notably Hiram Percy Maxim of the ARRL and Edwin Armstrong of the Radio Club of America, had seen the need coming and had already canvassed their members to develop

a list of the talent available.

The first call (within a few days after our entry into the war) was for about 500 radio trained volunteers and shortly after that, thousands were requested. Initially, the military wanted not only the amateurs, but their equipment, too. And the amateurs provided it.

### The Five-Day Wonder

In the early stages of the mobilization, a qualified amateur operator would be a civilian on Monday and by the following Friday would be a fully uniformed soldier or sailor on duty standing a radio watch at a station! Even when the formal training courses were set up, amateurs were only given a short orientation on procedures and, within three or four weeks (including travel time) after entering the military, they were on duty at a camp or aboard ship.

Many in the officer corps were well-known amateurs who received direct

commissions and were put in charge of training or operations with equal dispatch. Edwin Armstrong was commissioned and placed in charge of the Army Signal Corps lab in France. While he was there, he invented and developed the super-heterodyne circuit we all use today.

Fortunately, the war lasted only 19 months after we entered it but, when it was over, thousands of newly trained radio operator/technicians wanted to become amateurs and, like the former amateurs, wanted to get on the air.

But the battle to keep the Navy in control of all radio wasn't over yet. The radio clubs were reactivated and organized their activities very quickly to meet the threat. Congress received a blizzard of negative mail from the families of the old and new radio operator veterans and the bills died in committee.

The Navy continued to hold control of radio (it was given control for the duration of the war) while the fight for permanent control of radio continued. Even though the war ended in November 1918, it was a full year later before the control reverted to the Department of Commerce and amateurs were once again allowed back on the air. (Next month: *The Great Radio War - CW versus Spark.*)

### AMATEUR REPEATERS

Incentive licensing has had a lot to do with the popularity of repeaters--and repeaters (especially FM repeaters) have had a major impact on amateur radio. Utilizing repeaters, anyone with a Technician (or higher grade) license can talk over a wide local/regional area on voice with relatively small and inexpensive equipment, and no 13 WPM code test, either!

Since "rag chewing" (talking) with friends is the number one activity of all hams, repeaters are a real winner. With the Novice expansion, repeaters are sure to see their popularity increase even more.

Repeaters aren't just popular, they are also cost effective and useful. Placing one big high-powered rig on a hill or mountain allows a lot of hams to utilize small low-power rigs to communicate over hills and other obstacles for long distances (20 to 100 miles radius) and that is very cost effective.

The ability to utilize a phone patch, have quick access to emergency services, and the ease in finding someone to talk with makes them even more useful.

The "party line" function and ease of rag chewing still seems to be the major factor, however. The best example of our natural inclination

### (SIGNALS FROM SPACE, cont'd)

design lifetime of seven years, the ATS-3 satellite is one of the last to use the VHF low frequency range.

Depleted of its positioning fuel, ATS-3 drifts daily into tracking ranges of ground stations at the South Pole and at the University of Miami here in Florida. Communications are available for about four hours a day. The Antarctic project is a joint venture of NASA, the National Science Foundation and private industry.

Communications from the ATS-3 can be heard most mornings on ATS channel 2 -- 135.575 MHz. You will hear Malabar calling and talking to several stations.

Transponder Bandplan	
Channel 1	135.545
Channel 2	135.575
Channel 3	135.600
Channel 4	135.625
Channel 5	135.645

ATS-3 was also used extensively during the Mexico City earthquake for relief and emergency communications. Communications were handled through ATS-3's ground control station at Malabar, Florida, from Mexico City to international relief organizations. CBS news also utilized ATS-3 for communications between its U.S. operations office and reporters in Mexico City.

Monitors might want to keep an eye on the 135 MHz transponders from time to time for interesting communication possibilities, especially during major natural disasters.

This brings to a close this month's SFS. From Gayle, Loyd and me, the best of the New Year, and we hope you have a Happy 1987!

### 1991 AND BEYOND PAYLOADS

Year	Quarter	DOD	NASA	Civil
1991	1st	GPS-8	Atlas-1	
		GPS-9	COFS-1	
	2nd	DOD	MSL-6	
		GPS-10	SSBUV-1	Spacelab-J
3rd	GPS-11	Spartan-2	Skynet-4	
	DOD	TDRS-E	Eureca	
	DOD	EOIM	Inmarisat II	
1992	1st	DOD	SSBUV-2	Satcom
		DOD	Hubble_revisit	Spacelab-D2
	2nd	DOD (V)	EOS-2	Intelsat VI
		DOD	UARS	Eureca retrieval
1993	1st	DOD	SSBUV-3	Intelsat VI
		DOD (V)	Spartan-3	
	2nd	DOD	ACTS	Inmarisat II
		DOD (V)	MSL-7	
1994	1st	DOD	SSBUV-4	Intelsat VI
		DOD	SLS-2	SII-1
	2nd	DOD	CRRES	
		DOD	WIND*	
1995	1st	DOD	Geotail*	Geostar-1
		DOD	Planetary Opp	
	2nd	DOD	Sheal-2	GOES-I *
		DOD	SRL-2 (V) **	SII-2
1996	1st	DOD	Space Station-1	Geostar-2
		DOD	Lageos-2	Landsat-6 (V)
	2nd	DOD	Space Station-2	
		DOD	Polar (V) *	
3rd	DOD	Space Station-3	SII-3	
	DOD	Space Station-4	NOAA-K (V) *	
1997	1st	DOD	MSL-8	
		DOD	Space Station-5	
	2nd	DOD	Space Station-6	
		DOD	Space Station-7 (V)	
3rd	DOD	ROSAT *		
	DOD	EUVE *		
1998	1st	DOD	Spartan-5	Geostar-3
		DOD	Space Station-8	
	2nd	DOD (V)	MSL-9	
		DOD	Space Station-9	
3rd	DOD	Space Station-10		
	DOD	Space Station-11 (V)		
4th	DOD	Atlas-2		
	DOD	Space Station-12		
			Hubble Revisit	

#### Notes:

\* ELV launch under consideration

\*\* SRL-1 under consideration for launch from KSC in 1991

toward that purpose is the popularity of Citizens Band and the new "Gab Line" services the phone companies are offering.

As I mentioned in this column a few months ago, the social aspects are more of a driving force in amateur radio than the technical aspects. And there's plenty of room for both.

Repeaters offer a lot of fun and interest to the SWL, too. Scanners can include the local repeaters and when things are not hot on your favorite public service band, the amateur repeaters can help you to learn a lot about hamming and keep you up-to-date with what's new.

Many SWLs have become hams because of monitoring amateur repeaters and deciding to get in on the fun of talking, too. Of course, they are still SWLs; amateur radio and SWLing are not mutually exclusive hobbies--they go hand in hand.

The individual or group who installs a repeater determines what it is to be used for. Some are private (only the owner and maybe a few others can use it because it has tone controlled access), some are for rag chewing, some are for emergency services work (search and rescue, phone patch access to fire/police, etc.), still others are for DX and contesting ("QST, XP1AB is working 14,290 loud and clear at this time, W7WHT") so that many hams can be aware of what DX is currently active. And some repeaters perform all or many of these functions together.

But not all repeaters are for voice use. Many support packet radio, RTTY, computers, etc., so repeaters are very versatile as well as useful and cost effective.

Repeater etiquette is usually simple. Once never calls CQ. By saying "W7WHT monitoring," you will let all those listening know that you are there and willing to chat.

If you want someone in particular, a short call, "KA7IPJ - W7WHT" will get his attention if he is listening. If he doesn't answer, a second call 10 to 15 seconds later is OK. If there is no answer to that, say, "W7WHT clear" to let everyone know you are through with the repeater.

During conversations, transmissions are usually kept short (some repeaters have timers to enforce that) and a few seconds of silence is left between the end of each transmission and the beginning of the next one to allow others to break in. In other words, polite behavior is always the rule.

If you are not yet into working or monitoring repeaters or are new to ham radio, don't fail to get into this segment of the hobby. It has a lot to offer and is easy to learn. You only need to listen for a short time to understand how it works, and then you too can share in the fun.

#### LETTERS

Jeff Wallach, N5ITU, writes that both HF and WEFAX facsimile

is popular in the Dallas area. He operates a Vanguard receiver with GLB helical resonators, a Robot 1200C slow scan converter, Clay Abrams software, and an IBM XT computer to copy the APT satellites and HF too.

Jeff also operates a Datalink Bulletin Board service dedicated to amateur radio, FAX, WEFAX, satellite tracking, orbital elements, etc. It's at (214) 340-5850, 24 hours a day, using an IBM XT with 300/1200 modem, 8 data bits, N parity, and 1 stop bit. No charge for use and it has over 1,000 files covering all the subjects mentioned above and more. Check it out!

The BOC Group is sponsoring a single-handed, around-the-world sailing race. It started on August 30th at Newport, Rhode Island, and will end there. The fastest boat should finish about February 1st to 15th and the last boat about March 25th to April 15th (date depends on weather, problems, etc.). They'll be home just in time to pay taxes!

As you read this, the boats should be spread out from about Sydney, Australia, to Cape Horn in South America. You can monitor or talk to them on 14.286 MHz primary or 14.247 MHz secondary during the

#### OUR SURVEY SAYS...

Most people enjoy reading the results of surveys.

But first people have to answer the survey. Fill yours out today, then sit back and soon you'll see where you fit in with other radio monitors!

daily schedule from 1530 to 1700 UTC. Net control and headquarters station is K1WEW.

Information will also be available on 14.313 MHz and 14.303 MHz which are the U.S. and UK Mobile Maritime Net frequencies. If you need or want to talk to the race HQ, the phone number is (410) 849-4486.

This sounds like a fun opportunity for ham and SWL alike. Start listening and follow the race to the finish! By the way, half of these sailboats are exactly or just under 60 feet long and the rest are in the 41 to 50 foot category. They represent many countries.

See you next month. Keep those cards and letters coming! ■

#### CONVENTION CALENDAR

Date	Location	Club/Contact Person
Jan 18	Richmond, VA	Richmond ATS/ Wm. A. Scruggs, N4DDM 8430 Abbey Rd, Richmond, VA 23235
Jan 24-25	Sarasota, FL	Sarasota ARA/ A.E. Herrald, AA4AN 5161 Oxford Dr., Sarasota, FL 34242
Jan 25	Yonkers, NY	Yonkers ARC/Robert H. Newman, WA2IES 77 Shoreview Dr., Yonkers, NY 10703
Feb 7-8	Miami, FL	Florida State/ Evelyn Gauzens, W4WYR 2780 NW 3 St., Miami, FL 33125
Feb 14-15	Jackson, MS	Mississippi State/ Don Elder, KC5VD P.O. Box 4860, Jackson, MS
Feb 15	Melville, NY	Long Island Mobile ARC/ Henry Wener, WB2ALW 53 Sherrard St., East Hills, NY 11577
Feb 15	Kansas City, MO	Mid-America FM Assn/ Robert Atkeisson 403 Palomino Circle, PO Box 188, Raymore, MO 64083
Feb 15	Elkin, NC	
Feb 15	Mansfield, OH	Intercity ARC/ Jack Weeks, K8RT 773 Andover Rd., Mansfield, OH 44907
Feb 22	Vienna, VA	Vienna Wireless Society/ Warren Bain, N4MWU 2802 Grovemore Lane, Vienna, VA
Feb 22	Fayetteville, WV	
Feb 22	Tallmadge, OH	The Cuyahoga Falls ARC/ Bill Sovinsky, K8JSL 2305 24th St., Cuyahoga Falls, OH 44223
Feb 22	Davenport, IA	Davenport RAS/ Don Schneider, WD0ANA 518 W. Locust, Davenport, IA 52803

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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Fort Wayne/Lima Scanner Listings; Great

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Behind the Dials: Palomar Noise Bridge;

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(Photocopies of MT articles are available for \$2 per article)



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MHz; continuous transmit, 1.6-30 MHz; includes Scan-Loc for true receiver memory scanning, improved noise blanker, FM30 narrowband FM adaptor, 8-pole narrow SSB filter. Cost \$1255, sell \$795.

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Call 1-704-837-9200 for a used equipment trade agreement if you are interested in swapping!

# At Last, A U.S.-Made Shortwave Receiver!

by Lawrence Magne, Editor-in-Chief  
Radio Database International

RDI Rating of Performance: \*\*

It's been a long time since we've heard from American producers of shortwave gear. The cost of production in the US is so high as compared to what you find in Asia that everybody from Zenith to Drake threw in the towel long ago. Even GE's worthy World Monitor portable is clearly labeled, "Made in Japan".

Still, a few years back the US firm of Ten-Tec did seriously consider producing its own tabletop shortwave receiver. They decided against it then, but by 1984 they had had a change of heart and began laying out the design for the new Ten-Tec RX325.

Originally, the '325 was to be introduced this summer at a price of \$549. But after we reviewed a prototype for the 1987 RADIO DATABASE INTERNATIONAL and found some serious shortcomings, they went back to the drawing boards to improve the set's performance before releasing it for sale to the public.

Now, a couple hundred sets have been produced for the market. Our RDI test unit is from the most recent production, so it incorporates the latest improvements.

There are two things you notice right off. The good news is that the production version works a lot better than the prototype did. The bad news is that the list price has soared from \$549 to \$699 in the last few months.

What you get for those bucks that you can't get in most other receivers is compactness and high-quality construction. In fact, the '325 is such a small unit that you'd almost think it was meant to be a portable. But its quality of construction is not what you'd expect to find with a portable. The cabinet and chassis are almost exclusively of steel and aluminium, and its circuitry looks as though it had been designed for use in Beirut. This looks like one tough little critter.

It's also got a number of the kinds of controls we've come to expect from newly designed world-band radios. For example, tuning isn't only by the usual knob, but also by a keypad -- plus memories and a scanner. But even with all this, it's an easy set to operate. In fact, the only

real problem is that the keypad is awfully small for comfortable day-to-day use. It also uses soft-rubber keys that our panelists, at any rate, felt have all the feel of unroasted marshmallows.

There are some other ergonomic shortcomings, too -- especially with the fluorescent display. But, overall, the controls are well laid out and the set is easy to operate.

The set performs fairly well for listening to shortwave broadcasts. For one thing, it's very sensitive, which is helpful if you're trying to receive some faint signal from afar. It also has two bandwidths, and both of these have appropriate widths and skirt selectivity for shortwave listening.

Its audio quality has the potential of being pretty good, too; "potential" because it's not anything to write home about with the set's built-in speaker, which is on the bottom of the set.

Of course, with the set laid down on its four little feet, the sound ends to become "lost" and muffled under the set. But if you raise the front of the set off the ground with the built-in elevation rod, the sound bounces forward, off the table, towards you. It's just a variation of reflected-sound technology, which was first patented in 1963 by no less than electronics pioneer Dan Greenfield of Philadelphia. Since then, Bose and others have gotten on the bandwagon, so its appearance on a shortwave set really isn't all that odd.

So, the problem with the '325's audio quality isn't with the speaker's location or reflected sound as such. Instead, it's with the dinky little speaker that comes built into the set.

Unfortunately, Ten-Tec doesn't offer an optional external speaker, but we tried the set with one of our own speakers and found the sound to be quite pleasant with a very reasonable level of distortion.

But the real problem with this radio is that it doesn't do much else all that well. For example, for half the price of the '325 you can get a Sony ICF-2010 or ICF-2001D with synchronous detection. This allows you to select automatically between either of a station's sidebands.



The Ten-Tec RX325 -- a promise that didn't deliver

This can help in reducing interference, as well as in eliminating certain types of fading and distortion. But there is no synchronous detection on the '325. Even if you try selecting sidebands by hand, the results are mediocre because the BFO circuitry is drifts and the set doesn't tune to closer than the nearest 50 Hz.

Also, there's no passband tuning, no notch circuit and no tone control(s). There is a noise blanker, but its outdated circuitry doesn't begin to cope with the racket from the Soviet "Pulser" radar system, which for some time has been one of the main reasons for having a noise blanker.

Dynamic range, front-end selectivity and certain other laboratory measurements of performance are not encouraging, either. For difficult listening situations, especially in such high-field-strength locations such as Europe, the '325 is going to have some tough sledding. Even in the US, you may encounter difficulties with the '325 if you live near a local AM or FM station.

These and other disappointments are also characteristic of some other sets on the market. But the difference is that these other models were introduced years ago, not on the eve of 1987.

The Ten-Tec RX325 is a nice, pleasant, easy-to-use little set, and awfully well made -- much better than nearly anything else on the market nowadays. In that respect, Ten-Tec has showed that when American manufacturers choose to do so, they can compete successfully with the best of them when it comes to quality of construction.

But this set's performance is just not worth any \$700. The '325 is simply too little, too late, and too costly. ■

### Radio Database International Scale of Overall SWL/DX Performance

- \*\*\*\*\* Superb
- \*\*\*\* Excellent
- \*\*\* Very Good
- \*\* Good
- \* Fairly Good

No stars - Fair (F), Poor (P), or Unacceptable (U)

## NEW FREQUENCY FOR COSPAS/SARSAT

Automatic beacons operating on aircraft and boats, known as emergency locator transmitters (ELTs) and emergency position indicating radio beacons (EPIRBs), operate on 121.5 (civilian) and 243.0 (military) MHz. These transmitters may be manually activated or automatically triggered by impact, sending out their characteristic downswep tones twice per second.

Signals are presently detected by ground-based receivers and by satellite. The United States, Canada, France, and the Soviet Union have cooperatively launched three COSPAS (monitors 121.5 MHz) and two SARSAT (monitors 121.5 and 243.0 MHz) satellites; in addition, both satellites are capable of monitoring a new frequency, 406.025 MHz. The countries of Norway, the United Kingdom, Bulgaria, Finland, and Denmark have joined the effort as "investigators".

When a 121.5 or 243.0 MHz emergency beacon is received by any of the five satellites, it is retransmitted in real time on 1544.5 MHz to a local user terminal (ground

## Those Elusive Wireless Mikes

by Bob Grove

Years ago, an experimenter who had a penchant for broadcasting could order a wireless microphone from any of a large number of mailorder companies. Upon receipt he would install the batteries, string out the wire antenna, tune it to an unused portion of the AM broadcast band, and...PRESTO! Instant broadcasting!

Even some turntables came with a little AM transmitter which could be heard anywhere in the house by a broadcast-band radio tuned to the appropriate frequency.

With the advent of solid-state circuitry and the growing popularity of FM as a noise-free broadcasting medium, the little AM transmitters gradually disappeared from the consumer marketplace, replaced by a new breed of miniature wireless microphone.

The mail-order catalog mikes are designed to operate at the low end of the FM broadcast band (near 88 MHz). But what about the professionals? Do they use the same equipment?

The big three networks--ABC, CBS and NBC--all share certain pool frequencies set aside for commercial wireless microphones. Chances are, next time you see an interview or an on-the-scene reporter who isn't "wired", he will be wearing a wireless mike on one of the following frequencies, each separated by 6 megahertz: 174.000, 180.000, 186.000, 192.000, 198.000, 204.000,

or 210.000 MHz.

The networks aren't the only users of these frequencies; smaller studios and production services also employ the same equipment. Some other frequencies which bear watching are: 26.000, 26.100, 26.480, 161.225, 161.625, 161.640, 161.670, 161.700, 161.730, 450.000, 455.000, 942.000, and 947.000 MHz.

### Profound Thought:

*"When you have a telephone, you just don't call it a radiol!"*

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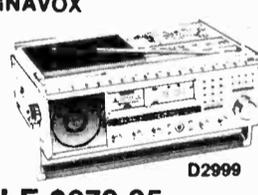
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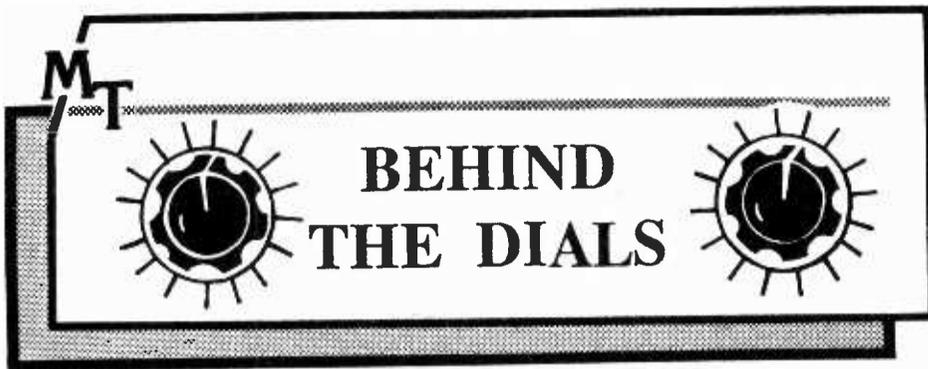
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station); a 406.025 MHz beacon is pre-processed on board, then sent to the ground on 1544.5 MHz. It may also be stored aboard the satellite for later retransmission.

Local user terminals transfer their received data to the closest mission control center which, in turn, alerts the rescue coordination center closest to the scene for search and rescue efforts. The actual coordination of the distress signal is computed by comparing Doppler shift measurements by the moving satellites.

While the 121.5/243 MHz beacons contain only the audio sweep tone, the 406.025 MHz beacon also contains digital information such as the type of emergency, country of registry, identification of the station in distress, and other information as well which could facilitate rescue operations.

The National Oceanic and Atmospheric Administration (NOAA) has petitioned the Federal Communications Commission (FCC) to permit voluntary ship and aircraft utilization of the new 406.025 MHz radiobeacons.



### AZIMUTH WORLD TIME TRAVEL CLOCK

What fits in your shirt pocket and tells time in 24 major world cities? The new WT-80 World Time Travel Alarm Clock from Azimuth

Smaller than most pocket calculators, the travel clock features dual LCD displays, one for local time and the other for the time of your choice from around the globe. Daylight savings time may be selected for your local area.

Radio hobbyists will appreciate that the clock works on 24 hour time; the characters are large and contrasty making them easy to read. An edge light permits nighttime viewing.

A built-in alarm clock buzzes repeatedly for one minute (unless manually defeated), guaranteeing to arouse the soundest sleeper! Or, you may wish to press the "snooze" button, and be awakened again in six minutes.

Powered by two AAA cells, the World Time Clock carries a list price of \$29.95 but is available to MT subscribers for only \$19.95 plus \$1.95 shipping from Azimuth Clock, 11030 Santa Monica Blvd., Suite 100 Dept MT, Los Angeles, CA 90025. Call 1-800-821-6842 (in CA 1-800-421-1061) to place a Mastercard or VISA order.



The ultimate alarm clock for the world traveler! The Azimuth WT-80 World Time Clock works on 24-hr. time and

keeps track of two time zones of your choice.

### NEW FROM BEARCAT

Two new programmable scanners from Uniden will be announced at the winter Consumer Electronics Show (CES) in Las Vegas this month. Most exciting for MT readers is a reduced-size hand-held scanner.

The new BC70XLT is the smallest in the industry, yet supports full features including 20 channel memory, search, priority, wide frequency coverage (29-54, 136-174, 406-512 MHz), and comes with rechargeable batteries, charger, leather case, and BNC-equipped flexible whip antenna. February

delivery is expected.

A new variation on the popular BC210 is the BC210XLT which will now include the 118-136 MHz AM civilian aircraft band and two switchable banks of 20 channels each to provide a total of 40 memory channels. A May release is expected on this one.

Uniden is also expected to announce a continuous-coverage scanner in June in an effort to compete with the Regency MX7000, AOR AR2002 and Radio Shack PRO2004.

## WHAT'S NEW?

### Equipment Shelf



#### Radio Shack Deletes Cellular Coverage on PRO-2004

As we suspected (see previous issue), Radio Shack has made the regrettable decision to censor reception of the cellular telephone band on their long-awaited PRO2004 programmable scanner.

The decision was reached after considerable deliberation by company officials who weighed the ramifications of including total coverage against conflict of interest with their cellular mobile telephone system. Apparently, cellular won.

This mistake could prove costly to Radio Shack since quite an array of competitive scanners will include the cellular band.

#### AR2002 SUPER SCANNER NOW AVAILABLE!

At this writing, the AR2002 programmable, wide frequency coverage scanner has been type accepted by the FCC and is due for imminent distribution. Grove Enterprises has placed a large order for these fine units and will offer them at a discounted price of \$479.

The AR2002 is basically a Regency MX7000, but with several improvements which include a tuning dial as well as keyboard entry, signal strength indicator and computer control interface. Grove also offers a scan/search speed increase modification.

### SNEAK PREVIEW

A well-known scanner manufacturer expects to introduce a hand-held programmable scanner with low, high, air, UHF, and the 800 MHz band sometime in 1987. Manufactured in the Orient and private labeled for the American company, tentative specifications list 26-54, 118-174, 406-512, and 851-902 MHz frequency coverage and 100 memory channels.

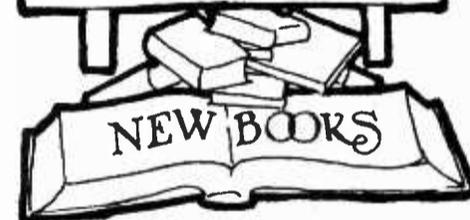
The same manufacturer is also expected to announce an add-on 800 MHz converter for existing scanners which don't include the upper frequency range.

Naturally, MT will have more details as they become available.

#### Regency MX7000 Discontinued

A small number of Regency MX7000s, manufactured and private-labeled for that company by Tokyo-based A.O.R., were manufactured recently but the supply is expected to dwindle quickly and the unit has been permanently discontinued, according to a company spokesman.

### LIBRARY SHELF



#### ARCHIE'S HAM RADIO ADVENTURE

by Bill Grove

There is a new comic book out on the market for parents who want to give their kids a "nudge" toward wanting to get into ham radio. The comic book is called *Archie's Ham Radio Adventure*. I personally love Archie's comic books, so I was quite intrigued about how they were going to put ham radio into my beloved comics.

It's really not all that different from a regular Archie's, but the writers stress how important it is to use ham radio in (exaggerated) situations (floods, robberies, etc.). It was fun to read, but they included words like rig, radio shack, phone patch, repeater, and a few more terms usually only referred to in a ham

MT

# ANTENNA TOPICS

W. Clem Small, KR6A/1, CET  
R.R.1, Box 181, Salisbury, VT 05769

From the Sublime to the Ridiculous...

## ODD AND UNUSUAL ANTENNAS

As we all know, antennas are a vitally important link in the radiocommunication chain and, as any radio engineer can tell you, the design and siting of the antenna for a station is a major factor in its performance. This month we will take a look at some of the interesting variants in the history of antenna design.

### First the sublime:

John Kraus, the originator of the well-known W8JK beam, is a man of many accomplishments in the field of antennas. Since developing the original "8JK" beam, he has contributed regularly to antenna design. More recently this work has been in the field of radio astronomy.

One of his large radio telescope antennas was dubbed "The Big Ear" by a newspaper reporter who noted that it was used to "listen" to the heavens. A newspaper editor, on learning that the sound heard with the Big Ear was the "frying sound" of

cosmic static, was aghast. Kraus tells us in his autobiography, "The editor implied that we must be tuned to the

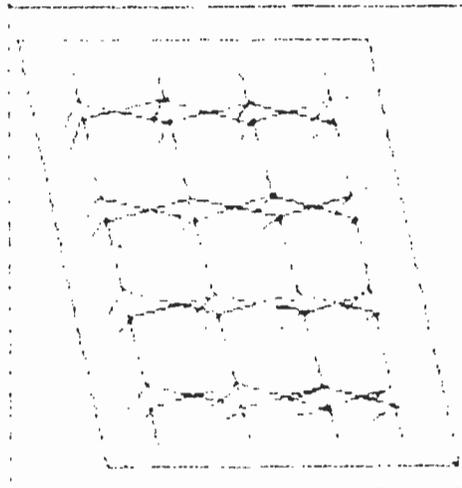


Fig. 1. A "Bedspring" Antenna: An array of dipoles over a flat reflector. (After Henry, Radio Engineering, 5th ed.)

wrong place; celestial objects should produce only beautiful music!"<sup>1</sup>

### And now for the oddballs:

We all want a really neat antenna for our rig, right? And most of us choose antennas which are reasonably well known and not too remarkable or bizarre. On the other hand, there are moments in life when regular rules are suspended.

Oldtimers will tell you that many a radio experimenter, finding that they had no antenna at hand, ran a wire to the springs of their bed and discovered that it worked just fine! One classic text on amateur radio, published in 1922, reports that, "...for receiving purposes almost any kind of elevated conductor fairly well insulated, a bed-spring, a tin roof, or a small coil, may be used with fairly satisfactory results."<sup>2</sup>

Incidentally, there is actually a legitimate "bedspring" antenna design for use at ultra high frequencies. It consists of a plane reflector and an array of elements arranged above the reflector such that the overall assembly does somewhat resemble an old-fashioned bedspring (see fig. 1).

### Of fences and trees:

When you look at a barbed-wire fence, it doesn't seem too much of a stretch of the imagination to consider that such a fence could serve as an antenna. Indeed, *Antique Radio Trivia* reports that barbed wire fences were used in the early days of telephones as the signal wire for some rural phone lines; later, when wireless came into vogue, they were used as wireless antennas.<sup>3</sup>

On the other hand, it took somewhat more imagination to come up with the idea that trees (yes, trees!) could function as antennas. Yet in radio's early days, a tree was sometimes used as a vertical antenna. Loomis reports, "It has been found that a tree can be used for a receiving antenna, preferably an oak, by attaching a lead-in wire to the trunk of the tree."<sup>4</sup>

Have we gotten bizarre enough for you yet?

### Buried antennas:

In a discussion of unusual antennas, we should not fail to mention underground antennas. "How," you may ask, "can an

### (LIBRARY SHELF, cont'd)

radio world. Fortunately, though, a small dictionary in the back of the comic book defines the terms.

An Archie Radio Club admission form is included along with some facts about ham radio, and a ham radio puzzle (which I still have not finished!). All these things add up to quite an entertaining, educational comic. So if you and your children enjoy Archie comic books, you won't be disappointed in this one.

To get one or more copies of the comic book, have your nearest junior high school science teacher send a self-addressed, stamped envelope to: Archie Program, ARRL Headquarters, 225 Main Street, Newington, CT 06111.

Enclosed in the letter should be a request to have more information on how to get the comic books, your address and phone number and, if you have one, your call sign and the radio club you (or your teacher) belong to.

If you feel as though your kids should be as smart as you were to get into ham radio, first tell them about how you had to walk through five feet of snow (uphill both ways) to get to your friend's radio that you couldn't afford on that 5-cents-an-hour job you had working in that shop around the corner. Then buy them the *Archie's Ham Radio Adventure* comic book. You do want your child to grow up like you, don't you? Send the SASE out today! ■



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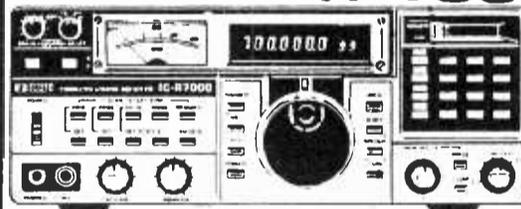
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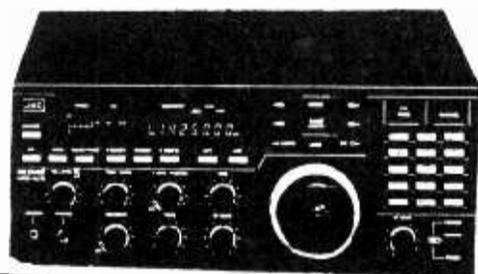


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SONY ICF-2002 150khz-30mhz, Memrys, Scans...234.95  
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RFB-300 1.6-30mhz, AM/USB/LSB/CW, Digital...189.95  
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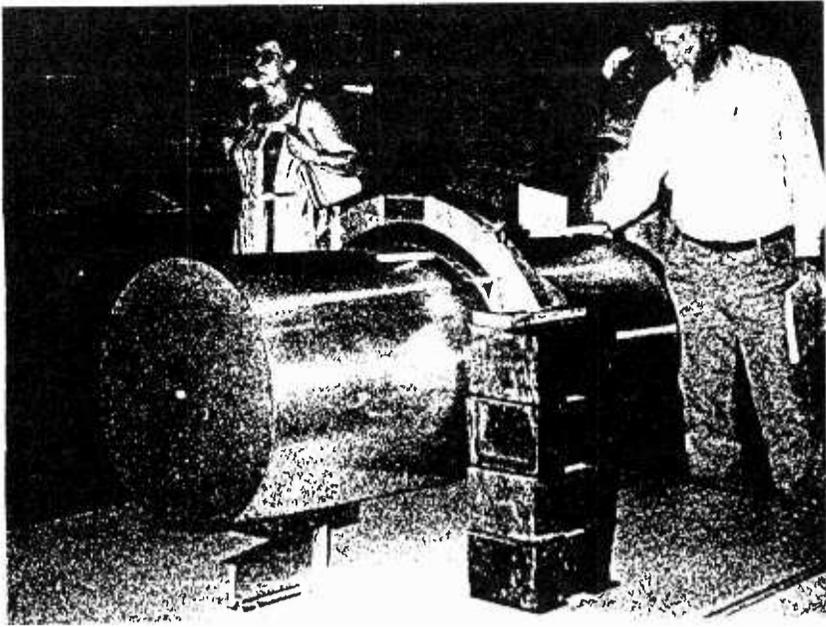


Fig. 2. That large metal cylinder, which KR6A is looking at so carefully, is a gravity antenna. It is on display at the Smithsonian Institution.

#### (ANTENNA TOPICS, cont'd)

antenna which is buried underground respond to signals propagated through space above ground?" Well, some of a radiosignal's energy does penetrate the earth if the signal is close to the ground. This is especially true at lower radio frequencies.

Underground antennas have been used successfully to some degree in the past. Perhaps even more remarkably, submarines can utilize underwater antennas while fully submerged. Users of such underground or underwater antennas claim that they are less susceptible to atmospheric noise interference and, of course, safer with respect to lightning damage than are ordinary, above-ground antennas.

Signal strengths from such systems are usually quite low as compared to above-ground antennas, but sometimes that signal level is adequate for satisfactory work in both receiving and transmitting situations.<sup>5</sup>

#### You ain't heard nothin' yet!

but the world of antennas harbors stranger examples of "creative antenna design" than those just mentioned. Aubrey Fessenden was one of the truly great pioneers of radio. In a moment of typical creativity, this gentleman used water pumps to shoot streams of water skyward as he connected his rig to use the water-stream as an antenna! In case you think this idea is all wet, the report says that he contacted another station 160 kilometers away in this fashion!<sup>6</sup>

We know that impure water contains ions (charged atoms and molecules) and thus will conduct electricity. And we know that a grounded antenna can be loaded, so Fessenden's water antennas don't really blow our minds completely out.

But how about using plasma columns or ion columns in the trail of a satellite as an antenna? Yes, a plasma column is something of a gas, certainly nothing solid like a metal wire. Nevertheless, a plasma column can serve as an antenna, probably in much the same way as Fessenden's ionized water column worked.<sup>7</sup>

#### And now, the main event!

If you're still with me, I have the one you've been waiting for! The most remarkable and creative antenna design yet stumbled upon in man's quest for strange skywires. Would you believe bird feathers...and still on the bird at that?! "Experiments have shown that birds are quickly disoriented on exposure to 16 GHz radiation...The feather dimensions are appropriate for their behavior as dielectric rod antennas at the higher microwave frequencies."<sup>8</sup>

But I don't know whether bird feathers as antennas are any harder to believe than using an entire island in the ocean as an antenna!!! Absurd as it may seem, in 1962 an article in the Proceedings of the Institute of Radio Engineers read, "One fascinating idea that should have a great future is the plan by Morgan to use an island in the ocean as an antenna."<sup>9</sup> Test were run, and the scheme actually seemed to work!

#### What on Earth?

Did you ever notice how the formulas for the strength of electrical attraction, magnetic attraction and gravity are basically the same? This similarity has been of great interest to scientists for a long time, leading to efforts to show the unity of all three of these forces.

If it is true that electrical, magnetic, and gravitational attraction are different manifestations of the same thing, then maybe the force behind these natural phenomena is expressed in nature as gravity waves,

just as it is in electromagnetic (radio) waves.

While visiting the Smithsonian Institution in Washington, D.C., a couple of years ago, I was surprised to see on display a "gravity antenna," a device used to attempt to receive gravity waves in a manner analogous to the way in which a radio antenna receives electromagnetic radio waves (see fig. 2). I have not heard of success in the attempt to detect these gravity waves, but the attempt to find them with such antennas is being made.<sup>10</sup>

#### And so...

So now you can see that in the world of antennas, just as in the world of people, there is the ordinary, the odd and the bizarre. As always, let me know if you enjoyed the tour and what types of topics you'd like to see covered in this column in the future.

#### CONTEST TIME!

For some time now, I have been collecting information on very small and very large antennas. What antenna do you think is the largest, and which the smallest ever constructed? To enter this "Largest and Smallest antenna Contest," just drop me a card with your candidate for either, or both, of these categories.

Try to give a reference of some kind as to the source of your information about the antenna. A picture would be great, too, but is definitely not necessary. Just a post card or letter with your candidate for the largest and/or the smallest-ever antennas.

I'll try to sort out the entries and report the information of the "winning," and "runner-up" antennas in both categories, as well as some of the other interesting comments received. Prizes will be books from Bob Grove's collection!

Names of persons submitting the entries selected will be credited in this column, and they will receive a certificate of appreciation for their participation in the contest.

So, let's get those entries in; address them to me at the address shown under this column's heading. They should lead to some interesting reading!

#### RADIO RIDDLES

**Last Month's Radio Riddle:** Last month we asked the question, "Just what is so 'super' about the superheterodyne radio receiver design?" Well, in the days before Armstrong developed this circuit, there were receivers which mixed incoming radio signals with locally generated radio signals to produce a beat note or "heterodyne" signal. This heterodyne was, itself, a signal in the audio frequency range. The CW BFO used in many receivers today is such a system.

Armstrong devised the idea of

mixing the incoming radio frequency signal with a locally generated radio frequency signal to produce an "intermediate frequency" or "IF". This IF was a heterodyne signal in the radio frequency range, rather than in the audio frequency range.

Armstrong realized that this IF heterodyne was different from the older ones in that it was above the range of hearing, or supersonic in frequency. Thus, he devised the name "supersonic heterodyne," later shortened to "superheterodyne."<sup>11</sup> The supersonic heterodyne design has continually proved itself to be a super design indeed!

**This Month's Radio Riddle:** As you may know, history generally credits Heinrich Hertz with being the first person to discover the principle of the antenna. Hertz was a scientist, making the discovery of antenna function as a part of his research into how one might produce electromagnetic waves.

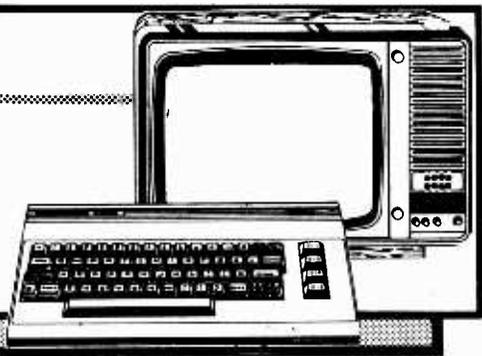
A different scientist later developed the antenna as a part of a communication system, rather than as a scientific experiment. After a lengthy court battle, it was determined that this later scientist was the first to develop and patent a communication system utilizing an antenna. Who was this person? Hint: It was not Marconi! ■

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# MT Computer Corner

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## OUT OF THE MAILBAG

I would like to share a couple of letters I recently received. Not the whole letter, of course, just the highlights.

First out of the bag is a letter from Ron Michael Hughes of Memphis, Tennessee (4357 Barr Ave., zip 38111-7832). Ron is looking for help in locating a program for a Commodore 128/64 which would organize frequency lists. He would like to see such a program with an option to delete or add frequencies.

Ron is willing to pay postage or swap diskettes, so anyone who can lend a hand contact Ron direct. If you have something of interest you would like to share, drop me a line and I'll pass it on.

Greg McIntyre of Belle Fourche, South Dakota, did just that. Greg dropped me a line after reading the November issue of *MT's* Computer Corner, stating that he had already put together a program for the Commodore 64.

Greg's program draws schematics, allows printing the schematic, and allows storing the drawing as a series of numbers on diskette. The last allows the data to be transmitted via RTTY, Packet, modem, or whatever, and converted back into a schematic for printing on the receiving end.

With his letter Greg included a sample schematic, and the resolution and symbol formation is really good for typical dot matrix output. But the best news is that he is willing to share his handiwork. A diskette for the C-64 is available from Greg for \$15.00. Many commercial companies charge \$10.00 for a demo disk!

One last letter comes from Jerry Callam, 10 Avalon Road, Mt. Vernon, Ohio 43050. Jerry chides me a little for not giving the Atari machines much coverage. Well, Jerry, it isn't because I don't like Atari, it's just that I don't have access to one!

Jerry remarks that the Atari line is "...very low priced, bullet proof and has plenty of memory..", to which I have to agree. Jerry also has some programs for circuit design, QSL logging, beam heading, etc., and tells me I should give his name to any

Atari users looking for public domain software. Well, Jerry, looks like I've done just that.

In fact, I took Jerry's hint and went looking through back issues of the various computer mags, some bulletin boards, etc., and was impressed with two machines. There seems a great interest in the Atari 540ST and the Commodore AMIGA, so I gleaned some specs for the would-be owners out there. I also found some remarks on the 1040ST which might be of interest.

Atari's 520ST has 512K RAM, one 512K 3.5 inch floppy, hard disk adapter, printer adapter, and is available with monochrome (\$800 retail) or 16 colors (\$1000 retail). System information: 68000 cpu, 8 MHz clock (no wait states); 0.5-1.0 MB main storage; bit-mapped video interface (up to 640 by 400 monochrome pixels); Centronics printer interface (also usable for 8 bit parallel input), supports the IBM character set; Midi music interface (high speed serial interface; 39.5 kbaud, 1 start/2 stop bits); RS232 serial interface (up to 19200 bps); keyboard: ASCII output.

Atari officially announced the 1040ST at the Winter Consumer Electronics Show (CES) in Las Vegas. Similar to the 520, features include: 1 megabyte of RAM in double-sided diskette drive; Logo and Basic in ROM. The March '86 issue of *Byte* has a cover story on the 1040ST.

Jack Tramiel seems to be having a field day; wonder what other tricks he has up his sleeve! He sure made Atari a household word.

### AMIGA

The Amiga uses a 68000 CPU, 256KB of memory and is operated by a 7.8 MHz clock (no wait states). Other specs are: 640 x 400 interlaced video; 4096 colors in palette (32 active); one built-in 3.5 inch, 880K disk drive. A two-button optical mouse is include, but a monitor is optional. Software uses AmigaDOS and Microsoft Basic software fitted with joystick, Centronics I/F, RS 232, and Bus Expansion. List price is \$1295.

**NEED TO RENEW YOUR SUB? Don't wait too long -- back issues of MT are rarely available!**

### Accessories:

- 256K Memory (\$200--1 per machine)
- RGB Analog Mon. (495)
- 1200 Baud modem (295)
- 20 MB disk (1,000--Tecmar)
- Trump Card (500--IBM compatibility)
- GENLOCK board (no price given)
- MIDI I/F (no price given)
- Music keyboard (no price given)
- 2400 baud modem (no price given)
- 20MB tape backup (no price given--Tecmar)

An AMIGA product preview can be found in the August '86 *Byte* magazine.

One last comment I'd like to pass on comes from Clay Abrams of Abrams Software fame. Clay got a demo of ElectroCAD from B & C Microsystems, 6322 Mojave Drive, San Jose, CA 95120. Evidently Clay was quite impressed with the package. He mentions that it is a schematic drawing program like Dash 2 and runs under Autocad. No price was mentioned.

Next month I'll try to come up with some info on frequency synthesizers, computer controlled and otherwise. Bob tells me there have been inquiries on this subject. Incidentally, drop Bob or me a line if you have anything you'd like to see discussed in Computer Corner. Can't say I can cover all subjects, but I'll do my best.

### CAVEAT:

## IBM Clones

Last spring the FCC swooped into the largest semi-annual micro computer convention, Comdex, in Atlanta. They placed 2500 tags on uncertified gear! Again, in November, six FCC agents hit the Fall/Comdex in Las Vegas and found that 70% to 80% of the IBM clones still fail the test which include radio frequency interference (RFI) emission!

If you plan to use one of those tempting cheap clones in your QTH, try before you buy. Be sure to have all the printers, modems, and RTTY/Packet accessories hooked up before you decide.

One other consideration is susceptibility to failing in the presence of static buildup. One plush office in Chicago full of clones is having real trouble with static. Anyone just walking by causes the system to shut down!

(Contributed by Brian Davis, W9HLQ)

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number 80 on the bandspread dial-20 dial marks down from "100"; so, 100/20 = 5 kHz per division. We also know the radio is tuned to 11.900 MHz since we adjusted the bandspread dial 100 kHz lower than 12 MHz. If we wish to tune in a station at 11.865 MHz, we simply drop to 73 on the bandspread: 135 kHz below 12 MHz @ 5 kHz per division = 27 marks below 100, or 73.

Note that this scenario is valid on our mythical receiver at 12 MHz only. Since the tuning is non-linear, a simple reference table should be made for each frequency of interest and placed at a convenient point near the radio. Remember to zero beat the radio every time you tune to a new frequency to maintain the bandspread accuracy.

Armed with this new tool, your NC-98 or DX-150 -- whatever you're using -- will give you tuning accuracy equal to the first digital units introduced in the mid-1970's.

There have been a few more recent calibrators with a "100 kHz/10 kHz" switch, allowing even better accuracy; check your local amateur radio outlet for more information.

### A Few Thoughts on Indoor Antennas

This little treatise should answer most of the common questions. Wood and brick are both "transparent" to radio waves. Anyone living in a dry wooden structure can use an indoor antenna, but there are a few things to watch out for.

Never run an antenna parallel to the house electrical wiring - this picks up noise badly; using that "old cold water pipe ground" does little or nothing for reception, can add to a noise problem, and may even be a shock hazard! A simple "drop wire" just picks up more noise; use coax downlead.

An antenna such as the "Eavesdropper" works very well in an attic, even if it has to be "zig-zagged" a little. Coax can be fed through ducting or run through the heat escape louvers and down the outside of the structure (Don't run it across anyone's window--bad P.R.!).

A good antenna, though directional, can be found already in place as the rain gutter/downspout. These are almost always insulated from ground and the connection point can be the most physically convenient for you. In antenna terminology, this is called a "bob-tail Windom" and an antenna tuner/preselector should be used. Just punch or drill a small hole in the assembly closest to your window and attach a wire using a cadmium plated or stainless steel metal screw.

I once lived in a three-story brick apartment house and worked into the Indian Ocean basin with this

arrangement and a 100 watt transmitter. (A "ham" *must* use a low-pass TV filter and a coaxial or "zero-length ground" as discussed in my last column in this type of situation or risk being lynched!).

I cannot condone the destruction of anyone's property, but a window screen can be slightly "sprung" with a large screwdriver for wire access and egress. Number 28-34 wire is invisible two stories high and can be thrown over a handy tree with a

relatively small stone tied to the end.

As to the active antennas, I have to fall back on the old computer "saw"; garbage in - garbage out. If you're in the middle of the Sonora Desert, they are sensational. In the presence of man-made noise and strong signal levels they really can't tell the difference between what you want and what you don't.

Those with a tunable preselector help a bit, but they're not that sharp.

Resisting the temptation to "run up the gain" can go a long way into turning these devices into a useful accessory.

Just remember, "Where there's a will, there's a way!"

### CORRECTION

The two capacitors in series with the crystal in figure 3B of the November issue should be 0.1  $\mu$ F 00V.

## NEW! Lower Price Scanners

**Communications Electronics,** the world's largest distributor of radio scanners, introduces new lower prices to celebrate our 15th anniversary.

### Regency® MX7000-EA

List price \$699.95/CE price \$399.95/SPECIAL 10-Band, 20 Channel • Crystalless • AC/DC Frequency range: 25-550 MHz. continuous coverage and 800 MHz. to 1.3 GHz. continuous coverage. The Regency MX7000 scanner lets you monitor Military, Space Satellites, Government, Railroad, Justice Department, State Department, Fish & Game, Immigration, Marine, Police and Fire Departments, Broadcast Studio Transmitter Links, Aeronautical AM band, Aero Navigation, Paramedics, Amateur Radio, plus thousands of other radio frequencies most scanners can't pick up. The Regency MX7000 is the perfect scanner to receive the exciting 1.3 GHz. amateur radio band.

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List price \$299.95/CE price \$179.95/SPECIAL 8-Band, 60 Channel • No-crystal scanner Bands: 30-50, 88-108, 118-136, 144-174, 440-512 MHz. The Regency Z60 covers all the public service bands plus aircraft and FM music for a total of eight bands. The Z60 also features an alarm clock and priority control as well as AC/DC operation. Order today.

### Regency® Z45-EA

List price \$259.95/CE price \$159.95/SPECIAL 7-Band, 45 Channel • No-crystal scanner Bands: 30-50, 118-136, 144-174, 440-512 MHz. The Regency Z45 is very similar to the Z60 model listed above however it does not have the commercial FM broadcast band. The Z45, now at a special price from Communications Electronics.

### Regency® RH250B-EA

List price \$674.30/CE price \$329.95/SPECIAL 10 Channel • 25 Watt Transceiver • Priority The Regency RH250B is a ten-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to ten frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH250 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A 60 Watt VHF 150-162 MHz. version called the RH600B is available for \$454.95. A UHF 15 watt version of this radio called the RU150B is also available and covers 450-482 MHz. but the cost is \$449.95.

### NEW! Bearcat® 50XL-EA

List price \$199.95/CE price \$114.95/SPECIAL 10-Band, 10 Channel • Handheld scanner Bands: 29.7-54, 136-174, 406-512 MHz. The Uniden Bearcat 50XL is an economical, hand-held scanner with 10 channels covering ten frequency bands. It features a keyboard lock switch to prevent accidental entry and more. Also order part # BP50 which is a rechargeable battery pack for \$14.95, a plug-in wall charger, part # AD100 for \$14.95, a carrying case part # VC001 for \$14.95 and also order optional cigarette lighter cable part # PS001 for \$14.95.

### NEW! Scanner Frequency Listings

The new Fox scanner frequency directories will help you find all the action your scanner can listen to. These new listings include police, fire, ambulances & rescue squads, local government, private police agencies, hospitals, emergency medical channels, news media, forestry radio service, railroads, weather stations, radio common carriers, AT&T mobile telephone, utility companies, general mobile radio service, marine radio service, taxi cab companies, tow truck companies, trucking companies, business repeaters, business radio (simplex) federal government, funeral directors, veterinarians, buses, aircraft, space satellites, amateur radio, broadcasters and more. Fox frequency listings feature call letter cross reference as well as alphabetical listing by license name, police codes and signals. All Fox directories are \$14.95 each plus \$3.00 shipping. State of Alaska-RL021-1; State of Arizona-RL025-1; Baltimore, MD/Washington, DC-RL024-1; Buffalo, NY/Erie, PA-RL009-2; Chicago, IL-RL014-1; Cincinnati/Dayton, OH-RL008-2; Cleveland, OH-RL017-1; Columbus, OH-RL003-2; Dallas/Ft. Worth, TX-RL013-1; Denver/Colorado Springs, CO-RL027-1; Detroit, MI/Windsor, ON-RL008-3; Fort Wayne, IN/Lima, OH-RL001-1; Hawaii/Guam-RL015-1; Houston, TX-RL023-1; Indianapolis, IN-RL022-1; Kansas City, MO/KS-RL011-2; Long Island, NY-RL026-1; Los Angeles, CA-RL016-1; Louisville/Lexington, KY-RL007-1; Milwaukee, WI/Waukegan, IL-RL021-1; Minneapolis/St. Paul, MN-RL010-2; Nevada/E. Central CA-RL028-1; Oklahoma City/Lawton, OK-RL005-2; Orlando/Daytona Beach, FL-RL012-1; Pittsburgh, PA/Wheeling, WV-RL029-1; Rochester/Syracuse, NY-RL020-1; San Diego, CA-RL018-1; Tampa/St. Petersburg, FL-RL004-2; Toledo, OH-RL002-3. New editions are being added monthly. For an area not shown above call Fox at 800-543-7892. In Ohio call 800-621-2513.

### NEW! Regency® HX1200-EA

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### Bearcat® 210XW-EA

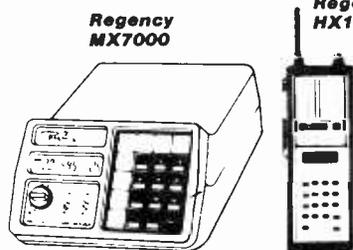
List price \$339.95/CE price \$209.95/SPECIAL 8-Band, 20 Channel • No-crystal scanner Automatic Weather • Search/Scan • AC/DC Frequency range: 30-50, 136-174, 406-512 MHz. The new Bearcat 210XW is an advanced third generation scanner with great performance at a low CE price.

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List price \$179.95/CE price \$102.95/SPECIAL 10 Band, 16 channel • AC/DC • Instant Weather Frequency range: 29-54, 136-174, 420-512 MHz. The Bearcat 145XL makes a great first scanner. Its low cost and high performance lets you hear all the action with the touch of a key. Order your scanner from CE today.

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A60-EA Magnet mount mobile scanner antenna... \$35.00  
A70-EA Base station scanner antenna... \$35.00  
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USAK-EA 3/4" hole mount VHF/UHF ant. w/ 17' cable... \$35.00  
USATLM-EA Trunk lip mount VHF/UHF antenna... \$35.00  
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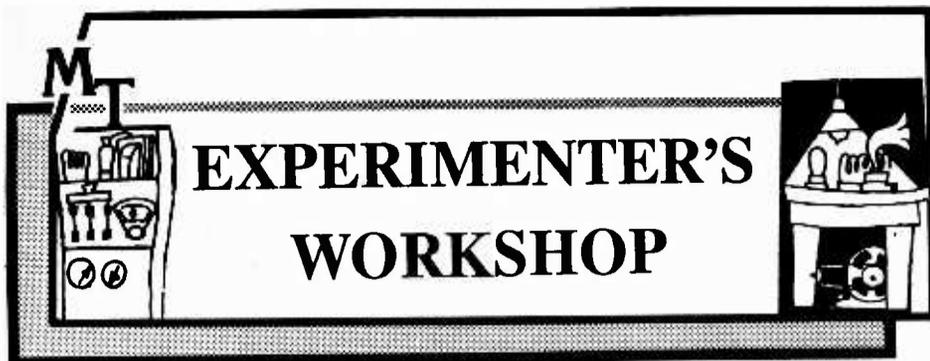
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## Interference Cancelling with the Grove MiniTuners

by D. A. Sutherland K4RTG  
Pen Hook, VA 24137

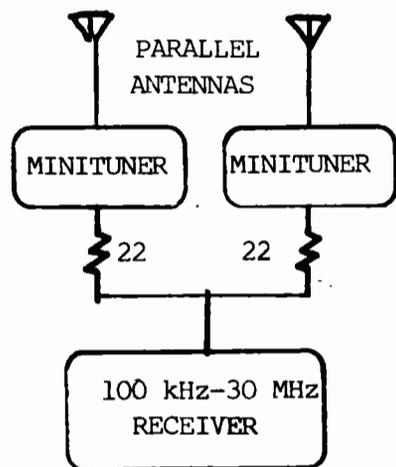
A pair of Grove TUN-3 MiniTuners fed by two identical parallel antennas close-spaced can cancel out any interfering signal on any frequency between 100 kHz and 30 MHz. Isn't that just what you've been looking for?

My main reception antenna comprises two 600-foot Beverage antennas spaced just 18 inches apart and suspended 6 feet above the ground. You may use any close-spaced wire antennas for similar noise-cancelling application; the close spacing prevents fading problems due to phasing changes which would occur from skip reception on wide-spaced antennas.

### The Trick

The key to the system is phase reversal which may be accomplished by using a simple phase reversing transformer at the input (or output) of one MiniTuner, by reversing the coax connections on one dipole, or by grounding the far end of one Beverage only.

Although the two outputs may be combined directly by a T connector,



better match to the receiver is achieved if the outputs are isolated by two 22 ohm, 1/4 watt resistors as shown in the illustration.

Operating the system is a simple matter of juggling the tuning controls of the two Grove MiniTuners near the same frequency until the desired signal suffers a minimum amount of interference from the co-channel signal. ■

## "Color-Coding" Your Crystal Scanner

by Larry Wiland

If you own a crystal-type scanner, I am sure you are aware of how difficult it is to tell who's talking on what channel when you only have a split-second to look at the radio between transmissions or when you're in a dimly-lit or darkened room with the scanner operating.

How do you tell the *police* dispatcher from the *fire* dispatcher if you don't recognize their voices? How do you know which of ten LEDs are lit in a dark automobile? If you want to maximize the efficiency of your crystal scanner then you need to "color-code" your radio.

"Color-coding" simply means replacing some of the red LEDs in various channels with other colors to signify

different usages or services. For example, state police in channels 1 through 3 could be green; fire in 4 to 7 would remain red, and local police in 8 to 10 might become yellow.

This modification will tell you at a glance what type of service you just heard and, as they are now grouped in smaller "sets" (by color) it will be easier to determine which specific channel is in use.

You can purchase LEDs very inexpensively at your local Radio Shack store which sells assortments of LEDs for around \$2.00 which contain various sizes and colors (stock #276-1622).

Common types of LEDs available for

## Bearcat BC-250 Erratic Display Cure

Martin A. Toomajian, Jr.  
Troy, NY

A common complaint of Bearcat 250 owners is that the scanner sometimes stops scanning, leaving an odd readout in the display such as a single 0. Other odd readouts are also reported.

The immediate solution for this problem is simple: Without turning the scanner off, unplug and replug the scanner into the AC outlet. This resets the microprocessor to its original out-of-the-box condition except that the memory in channels 1-50 is not lost.

Search limit memory and search store memory are lost, however; the clock is reset to 0.00, and the receiver scans the first bank of ten channels as soon as it is replugged into the AC.

The same scanner will occasionally reset its own microprocessor even without the AC interruption described above.

The first place to look for problems is the AC cord. If it is found to be tight fitting in the radio and the wall outlet, look inside the cabinet. The solder joints inside the cabinet at the AC entry point should be checked. Unplug the cord and resolder the

terminals if they look poorly done.

The second point to check is the transistor Q204 on the small circuit board; this is the large transistor with type TO-220 case, a TIP-29 made by Texas Instruments. Its function is to take the 16 volts from the power supply section and regulate it to 8.4 volts for use in the small feature board.

This small circuit board performs all the microprocessor functions in the radio. When the voltage or current on the microprocessor board in my scanner dropped, the microprocessor reset. After replacing Q204 the reset problem ceased.

The only warning I have for potential repairers is that a very close match to the Texas Instruments TIP-29 is used. Do not use the Radio Shack part listed in their semiconductor book as being equivalent; it isn't! I eventually used a Philips ECG 291 replacement.

Thanks to Stephen A. Kayworth of the RCMA Technical Topics and MT contributor Robert S. Parnass for their assistance in helping me track down my problem. ■

use in color-coding are red (dark and light), green, yellow, orange, high-output, dual-color, tri-color, and flashing (Consider the flashers for channels of major interest...they are attention-grabbers!).

Another source for LEDs is hamfests, where large quantities can be bought cheaply. They are less expensive purchased this way as you don't pay for packaging and distribution costs.

You do not have to be a "whiz" with a soldering gun to implant these new LEDs; if you own a 15 to 30 watt soldering pencil (or small gun), can afford \$.99 for a roll of desoldering wick or braid, and can do minor disassembly (usually only removing outer cases), then this should be no problem.

### The Surgery Begins

Lay a piece of desoldering wick over the soldered connections of the existing LEDs and apply just enough heat to the braid to melt and "suck-up" the solder, freeing the existing LED which may now be removed. Install the new LED into the existing holes. Apply a small amount of solder to each of the two leads to secure them to the solder pads,

paying close attention to use as little heat as necessary and to which lead is *anode* (+) and which is *cathode* (-). If you solder an LED in backwards, it simply won't light; unsolder it and reverse the leads. Most packaged LEDs have a diagram on the package as to which is which.

Snip off the protruding extra length of the leads with snippers and *test* the scanner *before* reinstalling the case.

While you may place various color LEDs in random sequence, I have found that it is easier to interpret them in groupings.

The total conversion takes from about 45 minutes to an hour, and will make that old crystal scanner into a more useful and visually interesting piece of gear. ■

**LET'S GIVE CREDIT  
WHERE CREDIT IS DUE  
(Oops)**

In our November issue (p. 54) we misnamed the contributor of the notch/peak filter circuit. Bill Edwards of Ft. Davis, Texas, was the one who sent in this tip. Thanks, Bill.

# Experimental/Developmental Communications

by Bob Grove

As new technologies evolve, research and development laboratories keep pace by constant testing. In the communications world, this frequently involves on-air radio links which can prove extremely interesting.

Many large research facilities are actually federal government contractors; their communications often accompany flight tests of new aircraft, navigational system work-outs, even long-range surveillance of criminal activity.

Without divulging the nature of their operations, we have hand-picked some of the more interesting users of the HF spectrum and the frequencies assigned to them by the FCC. A pair or trio of frequencies separated by 1.4 or 1.5 kilohertz usually indicates upper or lower sideband voice.

Many of the frequencies are general allocations for air to ground or ship to shore...but some are not! All listings are from the FCC microfiche available from Grove Enterprises.

- KM2XAA** ARINC: South Bend, IN  
942.000 944.000 945.000 945.400 946.000 MHz
- KM2XAG** Motorola: Ft. Worth, TX  
812.2125 813.4625 814.7125 815.4875 815.5125 MHz
- KM2XAM** GE: Nationwide (and Rotterdam, NY)  
149.175 149.195 149.220 149.245 149.265 MHz
- KM2XAS** Motorola: Lake Zurich, IL
- KM2XAT** Motorola: Chicago, IL
- KM2XAU** Motorola: Carpentersville, IL  
159.420 451.650 MHz
- KM2XBA** Tennessee Earthquake: Memphis, TN  
217.000/.015/.030/.045/.060/.075/.500/.515/.530/.545/  
.560/.575/.900/.915/.930/.945/.960/.975 MHz
- KM2XBO** Magnavox Government Comms: Nationwide  
2005 2204 2510 5005 15010 20010 21870 25005 kHz
- KM2XBR** SRI International: Palo Alto, CA  
3365 5985 9500 10100 11700 15100 17700 18030 21450 22720  
23100 25600 kHz  
43.50 154.49 MHz
- KM2XBS** Waterway Comms: Nationwide  
216.0 217.15 MHz
- KM2XDA** Motorola: Elgin, IL  
466.2375 466.7125 467.4125 MHz
- KM2XDB** Motorola: Schaumburg, IL  
456.2375/.7125 457.4125 466.2375 467.4125 MHz
- KM2XDE** American Electronics: Montgomeryville, PA  
20015 kHz  
30.00 50.00 75.5 MHz
- KM2XDH** SRI International: Stanford, CA  
3240 4438 5005 5730 7300 9040 10100 11975 13410 14350  
15450 17360 18030 20010 21750 22720 23350 25600 27410  
29700 kHz
- KM2XET** SRI International: Towson, CA (nationwide)  
2422 5950 9500 1170 15100 17700 21450 25800 kHz  
30.66 36.14 36.50 49.80 49.84 MHz
- KM2XFL** Metromedia Comms: St. Louis, MO  
6950 7411 14446 14455 kHz  
143.975 148.025 MHz
- KM2XGO** Chrysler Corp: Detroit and Chelsea, MI  
1800 3500 7000 10100 10115 14000 21000 25120 27430 38000  
kHz  
30.70 33.30 35.04 37.44 42.96 49.00 50.00 144.00 153.38  
158.355 220.00 420.00 825.02 MHz
- KM2XHO** RCA: Burlington, MA; Camden, NJ; Indianapolis, IN;  
Rockledge, FL; West Windsor, NJ  
3102 3103.5 3104 3105.5 4040 4041.5 5270 6845 11195  
11196.5 15056 15057.5 kHz
- KM2XHY**
- KM2XHZ** Rockwell International: Newport Beach, CA  
2396.5 2398 2399.5 4795.5 4797 4797.8 6151.5 6153 6154.5  
6171 6172.5 6174.5 9655.5 9657 9658.5 11761.5 11763 11765.6  
15341.5 15343 15344.5 15406 15407.5 15409 21725.5 21727  
21728.5 27738.5 27740 27741.5 29928.5 29930 29931.5 kHz
- KM2XKG** Wimpol, Inc.: Houston, TX  
1609.3 1611.15 1612.25 1613.5 1615.3 1616.5 1617.7 1638  
1645.5 1678.5 kHz  
173.2 MHz

- KM2XKH** National Semiconductor: Santa Clara, CA  
13560 27120 kHz  
40.68 MHz
- KM2XLB** Rockwell International: Cedar Rapids, IA  
5760 5960 6060 6160 10200 10400 10600 10800 15760 15860  
15960 16060 16160 25230 27440 29720 kHz
- KM2XLF** Rockwell International: Nationwide  
2399.5 3282.5 4798.5 6154.5 6174 9658.5 11764.5 15344.5  
21728.5 25344.5 27741.5 29931.5 kHz
- KM2XLP** Eyring Research: Provost, UT  
11.0 145.0 427.0 489.0 1600 1614 1700 2198.5 2200 2242  
2243.5 2396.5 2398 2456.5 2458 2510 2598 2599.5 2600 2601.5  
3191 3192.5 4040 4041.5 4042.5 4044 5100 6098.5 6100 6171  
6172.5 7354 7355.5 7731 7732.5 8013.5 8015 9498.5 9500  
10100 10120 10121.5 10707 10708.5 15100 15341.5 15343  
19047.5 19049 22901.5 22903 23100 23101.5 24928.5 24930  
25100 27741.5 27743 29931.5 29933 kHz
- KM2XMN** Rockwell International: Richardson, TX  
2852.4 2852.5 3005.4 3444.4 5452.4 5470.4 5572.4 6551.4  
8823.4 10046.4 11289.4 11307.4 13313.4 17965.4 21932.4 kHz
- KM2XOP** GTE: Needham, MA; Rome, NY; Washington, DC; Raleigh-Durham, NC  
3340 4438 5005 5730 7300 9040 10100 11975 13360 14350  
15450 17360 18030 20010 21750 22720 23350 25600 27410  
29700 kHz
- KM2XQJ** Motorola: Ft. Lauderdale, FL  
2004.4 2225 2639.4 4126.4 4145 4177.5 4179.5 4420.8 5250  
5251.5 6220 6268 6523.3 8292.5 8297.6 8299.6 12530.6 12433.7  
12520 12523 16588.5 16695 22125.4 22226 kHz
- KM2XRA** Bell Telephone: Florida, Washington, California  
2119.4 2133.9 2143.4 2159.4 2207.4 2515.4 2531.4 2539.4  
2551.4 2599.4 kHz
- KM2XRQ**
- KM2XRR** Navidyne Corp: Newport News, VA and nationwide  
1600 4063 6200 8195 12330 16460 22000 kHz
- KC2XGF** Wood's Hole Oceanographic Inst: Nationwide  
2398 6970 kHz
- KC2XIZ** Cincinnati Electronics: Cincinnati, OH  
2200 2201.5 5300 5301.5 6900 6901.5 kHz
- KC2XJB** ITT: Raleigh, NC  
2007.4 2032.9 2066.4 2080.4 2207.4 2459.4 2599.4 2783.4  
3259.4 4073.7 4101.6 4169 4190 4225 6220 6252 6285 6339  
8202.6 8335.5 8380 8450 12374.8 12490 12570 12660 16511  
16648 16760 16890 22044.8 22178 22280 22360 kHz
- KC2XK6** Rockwell International: Cedar Rapids, IA
- KC2XKJ** Rockwell International: Newport Beach, CA  
2810 4992.5 5060 5842.5 7656.5 7658.5 7780 9240 9498.5  
9803.5 11075 11077.5 12223.5 14351.5 14687.5 14691.5 15955  
17602.5 18667.5 19132.5 23404.5 kHz

## " ASK BOB " Omission

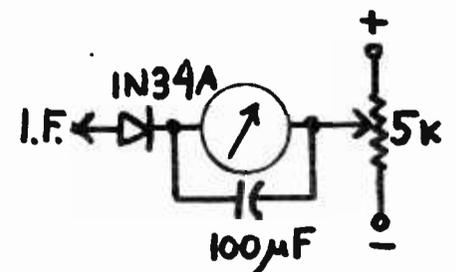
On page 53 of the December issue of MT, Marcus Ard of Georgetown, SC, asked the question, "Is there any way I can hook an S-meter to a Bearcat 250 scanner?" Bob's reply was to have been accompanied by a schematic, which was inadvertently omitted. Printed here is both his reply and the schematic.

A. Yes, but you must be technically competent to do so or risk harming the integrated circuit to which it must be attached--and repair parts are no longer available for the 250.

The schematic below shows a simple S-meter circuit. It is connected to the AGC bus on the IF chip. Any sensitive (50 microamp to

1 milliamp) meter movement may be used and DC voltage, is anything convenient--5 to 12 volts.

The meter is adjusted for zero deflection with no signal present. Be extremely careful when first adjusting the calibration resistance; the voltage setting should be equal to the voltage coming out of the IF chip, otherwise the meter or chip could be damaged.



# Mailbag

## Broadcasting

Larry Miller, MT Broadcast Editor, P.O. Box 691, Thorndale, PA 19372

### THE DIRT ON DXing

Just when things were getting a little dull in shortwaveland, mother nature provides us with new radios to play with and DX -- lots of DX. If you've been at the dials of your rig during the past month, you've no doubt noticed the marked improvement in reception conditions -- some are saying the best in years.

Some very interesting signals have been drifting into the receiver here -- and I'm talking about my humble Sony ICF-2010, not some big rig with a 2,000 foot antenna attached to it.

In early December, Ruth Hesch of White Plains, New York called to tell me she was hearing a South African domestic station on 3955 kHz at 0225 UTC. Knowing Ruth's reputation for accuracy but being a little skeptical, I tuned in the frequency and there it was -- Radio Orion's "good morning" show with an announcer giving greetings in English and Afrikaans, to farmers and housewives and playing requests like Cat Stevens' "Morning Has Broken." Signal strength was excellent. I ended up staying at the radio until 4:00 AM, much to my consternation the following morning.

But that's what makes shortwave listening fun. There are no guarantees but plenty of surprises. Prior to that evening in early December, I had never heard Radio Orion before.

As we indicated in one of our articles this month, in a lot of instances, experience and skill certainly do play a part in DXing, but persistence and -- no little amount of luck -- play an even bigger part. (A call from Ruth "The Radio" Hesch doesn't hurt either!) So don't be discouraged. We're coming up on some of the most exciting years of shortwave listening since we hit the bottom of the sunspot cycle a short time ago. And you can count on the MT team to keep you on top of the latest action.

You might also note that in order to give you more DX information to work with, we're now reprinting selected items from *World Radio Report* magazine in the World Radio News section of *Monitoring Times* each month.

We've also had the opportunity to try out a number of receivers this

month. First was the new Ten-Tec RX325. And since my esteemed colleague Larry Magne of *Radio Database International* has a formal review in this edition of *Monitoring Times*, I will refrain from comment. However, I also was able to use two other receivers not generally available in the U.S. The first was a Philips D2935. The D2935 has been getting some very good reviews, especially since the manufacturer installed a tighter filter (which in rough, non-technical terms limits the width of the frequency allowed in to the radio at one time). It's an especially solid receiver with full coverage, decent audio, keypad and manual frequency entry, and digital read-out. And, although it is not a DX machine, frankly, I drooled over this radio since I saw the write-up in *Radio Database International*. Its price tag in Europe: an incredible US\$169.00 or so. It's worth at least another hundred dollars but don't let Philips know that.

But the final surprise of the month was the arrival of a Selena B-217 receiver manufactured by TENTO in, of all places, the Soviet Union. Let me tell you, this is a sharp radio. But let me also warn you that it, too, is no DX machine.

You may recall back a couple of issues ago our good friend Jeff White reviewed the sister of the '217, the Selena B-215, while regular reviewer Larry Magne was on vacation. Well, most of White's comments on the B-217 are also valid for the '215. But it has one incredible feature -- the most superior audio I've ever heard on a shortwave radio. On stations like the BBC, I've listened to music with the same richness -- have you ever heard someone call any shortwave audio "rich" before? -- as FM. Remarkable. The radio is a "big" portable that's built like a tank and weighs in like a portable refrigerator. (We joked around here it should come with four wheels and a strap so it can be towed around like luggage at the airport.) And it has a *real wood* cabinet. The retail price is US\$199.00 from a Belgian firm called "Radio Mail" at Post Office Box 93, 1060 Brussels 31, Belgium. Rumor has it that at least one well-known U.S. shortwave firm is considering carrying the radio in the U.S.

Anyhow, enough chatter. Let's get to your letters.

### FINISHED READING THE PAPER??

Why not take a few more minutes to tear out the Readers' Survey card, fill it out, stamp it, then stretch your legs with a leisurely walk down to the corner mailbox, returning with a real sense of well-being and the satisfaction of knowing *you've done your part!* MT thanks you for your cooperation.

### SW MOD

"I, too, am interested in finding out how 'not his real name' in a Virginia prison modifies a cheap transistor radio to receive shortwave" writes Bill Metcalf in Ames, Iowa. "Can that actually work? You might say I'm a bit skeptical."

So far I've had no volunteers for the project but I'm still hopeful that someone with the technical expertise will write something up. As for whether or not it will work, let me advise you against throwing out the ICOM R71A just yet.

### LEARNING THE ROPES

Steven Meyer of Philadelphia writes in to say that "In your frequency list, you have CFVP in Calgary on 6030 kHz at 0200 UTC. How come when I tune it in I get Armed Forces Radio and TV? Your list is wrong." While there are errors on the frequency list (let's be honest, now), that isn't one of them. And the truth is that I get these letters often, mostly from people new to shortwave listening. Indeed CFVP in Calgary is on 6030 kHz -- with a mere 100 watts of power. And indeed AFRTS is on 6030 at the same time -- with 175,000 watts. Which one's going to make it through? Well, unless you're sitting in CFVP's back yard, it's going to be AFRTS.

That's part of the incredible complexity of frequency management in shortwave. There are often several stations on the same frequency at the same time, each leaving a transmission tower in a different part of the world, headed off to its own target area. Sometimes they don't interfere with one another, sometimes they do.

For example, when you listen to Radio Canada's evening transmission on 5960 kHz, Canada comes in just fine. But there's something in the background -- a jammer. But the jamming isn't directed to Canada's transmissions. Rather it is just "bleeding through" as it tries to wipe out Tehran's broadcast targeted to the Middle East. So actually there are three stations on this frequency at this time -- Canada, Iran and a jammer! (Actually four, counting Kazakh Radio in Alma-Ata.) You hear two -- Canada and that nasty jammer.

Another mistake that people new to the hobby often make is that they expect everything listed to be audible. That's just simply not the case. Someone on the east coast tuning in Thailand on 9665 kHz at

0100 UTC is probably not going to hear it. I know I sure don't. But then I don't expect hear it. I confess to checking it from time to time, but I don't go off the deep end when my attempts are frustrated.

That's the point of one of our articles this month -- you've got to use your wits. But more importantly, you've got to learn what has a reasonable chance of getting through to where -- that's why we did the "Common Sense Guide to DXING" in this issue. Give it a read, Steven.

### WRR RATIONALE

A couple of people have written to ask about *World Radio Report*. "I originally subscribed to *International Radio*" writes one reader. "Then you palmed me off on *Monitoring Times*. Now you're publishing another magazine. Have I been taken?" Hardly. *International Radio* magazine merged with *Monitoring Times* because both the Groves and I wanted to create a broader-based, more competitive communication magazine. Prior to the merger in July, MT consisted primarily of utilities; IR of shortwave broadcast. Together, they have a future unimaginable as separate entities. Current circulation for MT, I am told, is somewhere around 25,000 and growing very quickly -- far quicker than either magazine on its own. So the merger seems to have worked. MT, we might point out, will add another few pages with the next issue.

*World Radio Report*, on the other hand, is strictly shortwave, giving its readers a pure dose of the media so intense that we're thinking about requiring a note from your doctor before you subscribe.

Finally, let me take a moment to say thanks to everyone for all the Christmas cards. They were all very much appreciated. I hope your holidays were all that you expected.

### ANNUAL SURVEY

And speaking of cards, please don't forget our annual survey! Look for the card in this issue of *Monitoring Times*. Please take a moment to fill it out and send it in. And after we're done tallying the results and collecting bribes from the broadcasters, Bob and I will put together an article summarizing the results. Who will be the favorite station of 1987? The favorite broadcaster? We'll let you know the results in a month or two.

# Mailbag

## Utilities

Bob Grove, Utilities Editor, P.O. Box 98, Brasstown, NC 28902

### "PLUG" IT IN MT!

I just wanted to send you this note thanking you for your mention of *Northeast Scanning News!* (October 1986 issue).

We have received 33 inquiries mentioning they saw your mention of us in *Monitoring Times*. I'm sure there have been other inquiries that were the result of your "plug."

Les Mattson  
Northeast Scanning News  
212 W. Broad St.  
Paulsboro, NJ 08066

### S.2575 - DEAD? OR ALIVE?!

I was confused when Bob Horvitz advised that the communications privacy act had been passed into law because my own investigation by inquiring to the "Bill Status" office on Capital Hill revealed that it had died in committee.

I urge you to publish an editorial in *MT* outlining the (so-called) legislative process that railroaded this bill into law, and calling on all radio-hobbyists to contact their respective representatives and senators in Washington to repeal Public Law #99-508.

Izak Luchinsky  
Baltimore, MD

### Horvitz's reply:

*S.2575 did indeed die in Committee, but its substance lives on. In order to pass the bill as quickly as possible, Sen. Leahy decided to offer the text of S.2575 as a substitute amendment to H.R.4952, which the Senate then passed. It went back to the House, which passed it the next day. Using this parliamentary maneuver, Sen. Leahy was able to bring the bill to a Senate vote before the Judiciary Committee report on S.2575 was issued, and before the promised referral of the bill to the Subcommittee on Communications. In other words, when the Senate passed it, they didn't know what the bill meant (the interpretation is in the Judiciary Report), and Communications hadn't signed off on it!*

(Anyone desiring more information on Bob's lobbying on behalf of the radio listening community may wish to refer to a condensation of his efforts in the winter issue of the *Whole Earth Review*...ed)

### ILLEGAL GAINS?

I read with interest the article "Making Headlines" by Steve Douglass in the Dec. issue of *MT*.

The author recorded a "Private US Naval Communication," then

divulged its contents to the press. As a result, he made a material gain of payment for the info contained in this Communication

Regardless of the author's occupation, I believe that he has committed a serious violation of the Communications Act of 1934! Your comments, please!!

Bob Studley  
Woburn, Mass.

*(While your observations may be quite correct, it is common in the news media to monitor radio frequencies for late-breaking stories. The military are aware of widescale monitoring of their communications and elect to use scrambling when security issues are being discussed. Such was not the case in this instance.)*

### THE CASE FOR CAP

As an avid reader of *MT* and a Civil Air Patrol member very active in ELT search, your article on your ELT search on page 32 of the December 1986 issue was appreciated very much. Three a.m. is a normal occurrence around our house (three CAP members). Needless to say, your article struck a nerve (as it no doubt was intended to).

I would like your permission to submit your article to our wing newspaper, *The Georgia Wing Spinner*, for publication. Of course, appropriate credit will be given.

We have our training programs for search and rescue, but no one should refuse help or assume that they know more than the next guy. I intend to make this point to our membership.

Keep up the good work and don't let our enthusiasm spoil your relationship with CAP.

1st Lt. Bruce Owings, CAP  
Norcross, GA

*(We would be pleased to have you share our article with your colleagues. And don't worry, my own enthusiasm still runs at fever pitch. We are still experimenting with improved RDF's so that next time we can do even better!...Bob)*

### CORRECTIONS & SUGGESTIONS

I am not sure who wrote the article "The Toughest Top Ten," which appears in the November 1986 issue of *Monitoring Times*, but there are several errors or omissions which should be cleared up. First of all AFAN in Antarctica now operates on 6012 kHz, as it did in 1980. Not on 6030 kHz. I would say that AFAN probably eluded the writer of the

article. Next there is Bhutan. 3400 and 7040 kHz are probably pretty poor bets for hearing the Bhutan Broadcasting Service (not NYAB), unless one wants to be pretty bored. Try 6035 kHz 11-1400, or 3395 kHz at the same time. Sundays the transmissions are only supposed to be on 6035 kHz at 06-900.

Steven Lare  
Holland, MI

*(Reader Lare is quite correct. While AFAN did not 'elude' the writer as Lare suggests, 6012 somehow became 6030 when it reached the typewriter. Apologies to all who were checking the wrong frequencies. Bhutan's 3400 and 7040 frequencies were those last known to be in use when the article was written. 6035 is, indeed, active now and is being heard in Australia although, as of mid-November, there are no known US loggings...ed)*

Concerning the comment made by Bent S.D. Taylor in (the October) issue of *MT* about a Ham Net, I have two suggestions:

1. Line up a different Control Operator for each week of the month. This spreads the responsibility among four people on the 1st, 2nd, 3rd and 4th week.

2. Join another weekly Net that is already in operation, one to which a Ham (control operator) already belongs and is willing to handle increased traffic.

Ruth Hesch  
White Plains, NY

I really like *Monitoring Times*; I have subscribed for two, or is it three, years now. I would like to make one small suggestion. From now on all time references should be in UTC only. In the Oct. 1986 issue there is a time reference without any identifier (UTC, EDT, PDT) on page 5, the Suriname article. It turned out to be EDT.

The use of EDT and PDT in the frequency section seems unnecessary when you have them in UTC also. I always seem to end up converting from UTC anyway. So to avoid future confusion I suggest using UTC only for all time references.

Larry Loper  
Sugar Land, TX

*(Good points, Larry. Authors, take note: All loggings should be submitted assuming UTC. Any exceptions, such as local reception of VHF/UHF should note the time zone--EST, etc....Bob)*

### HAM vs. SWL vs. SCANNING

I am only extending for one more year. I have become disappointed in the format. You have just about forgot about scanners and gone to shortwave, DX, etc.

John Robinson  
Lakeland, FL

Was SWL before getting ticket for Novice. Please keep your column "Ham Radio" going.

Sidney Adler  
Floral Park, NY

Please renew my subscription to *Monitoring Times*. Thanks to you people I now have my Ham License and I enjoy radio more than ever.

Pierrot Couch N6MSY  
Hayward, CA

*(Congratulations, Pierrot--I'll look for you on the air! Bob WA4PYQ)*

Your inclusion of a Ham radio column was the inducement that caused me to renew. Keep it simple. I've been a ham for many years, plus commercial first for years before and the ham mags of today are so damned hi tech they take an effort to read.

Robert Matz  
Sellersville, PA

I read Mr. Freeds (M/Sgt) letter in the Dec. issue of *MT* and although I am a ham (W5MD - extra class for 34 years) I must agree with him. I enjoy SWLing very much - even as low as 15 kHz - and would like to see *MT* keep their pub as free of ham radio as possible. As Sgt. Freed stated, there are lots of ham pubs and I enjoy *MT* for all the other info.

E.B. Charlton  
Radioman Chief  
U.S.N.R. - Ret.

I cannot agree with Sgt. Freed's opinion (Dec '86) that amateurs should have their magazines, SWL'ers have theirs and mixing the two is "like trying to mix apples and oranges."

I am an amateur operator and former radioman in the U.S. Navy. Thousands of amateurs enjoy SWL'ing and many have scanners for the higher frequencies. I'm certain there are numerous SWL people on the road to becoming amateurs.

A great deal of overlap exists between the two hobbies; obviously, manufacturers think so--just look at new amateur equipment. HF rigs have SWL receive capability. Two meter radios have scan capabilities and include receive coverage of the aircraft, marine, weather and certain police and fire frequencies.

Amateurs need the technical expertise *MT* has in knowing how and where to listen and in *MT*'s development of antennas and equipment needed for advancement of the hobby. SWL'ers can learn from amateurs who work with antennas, television, public service assistance, computers, packet radio, etc.

Separation of the two hobbies is detrimental to all concerned. The recent surge of restrictive Federal and State legislation limiting our right to listen to the airways requires technical cooperation and mutual effort of SWL'ers, amateurs and others in the communications field so that with the "strength of numbers" we have enough political and monetary force to stop this nonsense before we lose our freedom to listen.

Ron Brandenburg N2ARQ  
Union City, NJ

# STOCK EXCHANGE

*NOTE: Monitoring Times assumes no responsibility for misrepresented merchandise.*

PERSONAL SUBSCRIBER RATES: \$.10 per word; NON-SUBSCRIBER RATE: \$.25 per word. All ads must be paid in advance to Monitoring Times. All merchandise must be non-commercial and radio-related. Ads for Stock Exchange must be received 45 days prior to the publication date.

COMMERCIAL RATES: \$30 payment must accompany ad, payable to Monitoring Times. Send 2-1/4" x 2" camera-ready copy or send text.

Wanted: SONY ICF-6500W or comparable mid-size digital portable. J.R. Miller, 206 Ridgewood Dr., Baltimore, MD 21210

ATARI A/D software for ham, SWL and etc. For sale or trade. SASE for details. Jerry Callam, 10 Avalon Rd., Mount Vernon, OH 43050

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Homebrew projects list. SASE, WB2EUF, Box 708, E. Hampton, NY 11937

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For Sale: REALISTIC DX200. Excellent condition with original box and manual. \$75. Gerald Buccilli, 21583 Poinciana, Southfield, MI 48034.

Wanted: KENWOOD R600 in good working condition. Anderson, 4413 Saint Martin, Metairie, LA 70006.

Pick up sale. COLLINS 51S-1, R390, 13.8 power supply, Bearcat 300. Sy Kramer, 318 N. Chancero, Green Valley, AZ 85614

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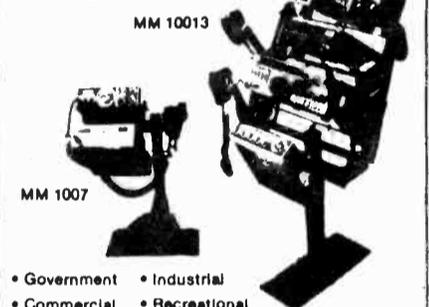
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(VIEWPOINT, cont'd)

## BOOK LIST..and hams

I'm afraid the ANARC newsletter listing on pages 45 and 46 of your fine December issue contains a fair number of errors in connection with the books mentioned. Harold Sellers should update his list!

On p. 46 he lists our *Simple, Low-Cost Wire Antennas for Radio Amateurs* as out of print and published in 1972. This title is our #1 seller and the 2nd edition came out three years ago and is now in its 4th printing in 1985!

MT is certainly going places and is of great help to SWLs. Contrary to what one fellow wrote, you are smart to include a section on ham radio. It's a natural progression for some SWLs to amateur radio, as it is from CB to ham. We do the same thing in our *The Truth About CB Antennas*, as you know. And it has worked out well.

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- \* ICOM IC-R71A
- \* Japan Radio NRD 525
- \* Japan Radio NRD 93
- \* Philips/Magnavox D2999
- \* Sony ICF 2010/2001D
- \* Trio-Kenwood R-5000
- \* Ten-Tec RX325
- \* Yaesu FRC 8800

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## The Complete Shortwave Listener's Handbook \$16.45

The classic Hank Bennett & Harry Helms introduction to shortwave has been updated and revised. Chapters on many aspects of radio monitoring from DXing to QSLing. A decent book for the hobbyists of all levels of experience.

## The Shortwave Listener's Antenna Handbook \$13.95

Even the most sophisticated receiver can pick up only average signals if the antenna isn't up to par. And a relatively inexpensive receiver can bring in some real whoppers when the right antenna is in place. It's a sad fact, but the antenna is often the most neglected part of the receiver. The Shortwave Listener's Antenna Handbook remedies that with an authoritative guide to listening antennas, including how to design, build and install them. Complete your shortwave set up with the perfect antenna.

## Shortwave Listening with the Experts \$19.95

Finally, there's a shortwave book that covers the hobby from A to Z. It's a massive, 500+ page book filled with an unbelievable 25 chapters on virtually every aspect of radio monitoring, from "How to Get Started" to antennas, DXing, and much more. It's the best shortwave book to come out in many, many years and it deserves a place in every listener's library. A really super book!

## 1987 World Radio TV Handbook \$19.95

The 41st edition of this popular annual shortwave reference book ships in January. And in the 1987 edition, you'll get over six hundred pages of station information -- addresses, personnel, frequencies and more.

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