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Monitoring Times®

The Full-Spectrum Radio Magazine
A Publication of Grove Enterprises, Inc.

Will the Sun Set on Radio Canada?

Also in this issue:

- Go Underground with the LAFD Operations Center
- Like to Bike? Get Toned Up While Tuning In
- Review: Grundig's Traveler II

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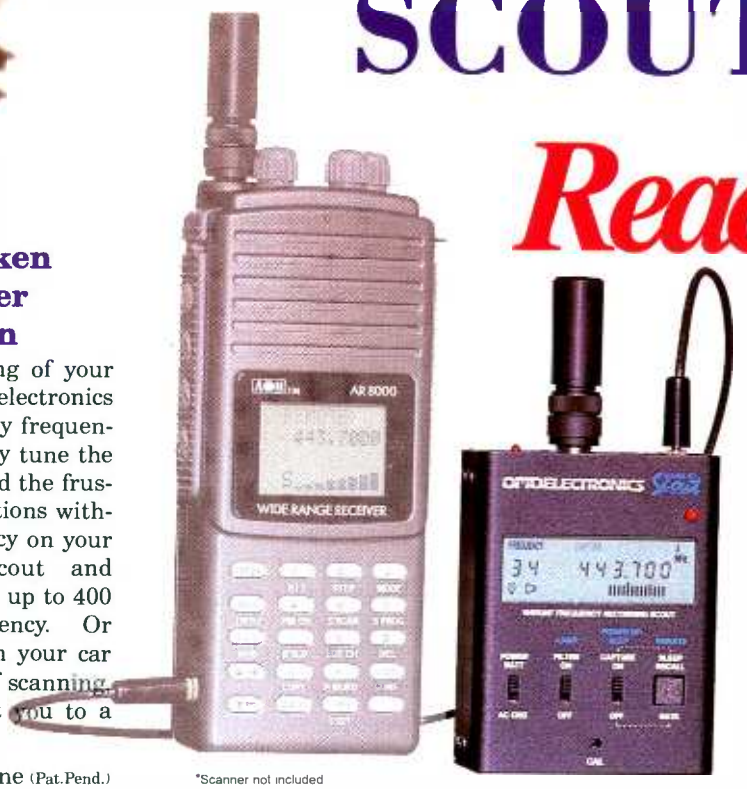

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Monitoring Times™

Vol. 15, No.3 March 1996

CONTENTS

Cover Story

Will the Sun Set on Radio Canada International?

By Ian McFarland

"On December 11, the entire staff of RCI received termination notices that the external broadcasting service was slated to be shut down March 31st—the end of Canada's fiscal year. Although recent developments cause station supporters to be "cautiously optimistic," the fact that such a move was even contemplated has wider implications for international broadcasting as a whole.

Former RCI host McFarland takes a hard look at the role of RCI and how other international broadcast services are meeting the demands of their mandate versus their budget. Story on page 9.

Cover: Canadian sunset photographed by John Bailey superimposed on collage from RCI of past QSL cards.

DEPARTMENTS

Reviews:

Brand new on the market is an attractive little shortwave portable from Grundig—the Traveller II. Magne suggests that this is the first sign of Grundig's quality improvements trickling down to the lower-cost models. Street price on this one is likely to be just under $100. Check out the full review on page 98.

Doug DeMaw found an addition to his Workbench to be so indispensable, he had to review it for *MT*. Everyone should read DeMaw's review of CAIG's deoxidizer spray (page 96). It might just save a trip to the repair shop.

On page 90 Computers & Radio brings us up to date on the latest version of Scan Star Plus for Windows—Catalano says he's never seen the FRG-9600 scan so fast!

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Cobra 148FGTL-U CB with frequency counter $209.95
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Other neat stuff

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LETTERS

A New Product Wish List

Following are a few of your responses to January's "Closing Comments" enquiry into what new products readers would like to see in the marketplace.

• Joe Balitza, Jr., of Palmerton, Pennsylvania, (a subscriber from *MT*'s very first issue), says he wonders why manufacturers don't make portable radios with a variety of frequency ranges in the $100 plus price range. For example, he'd like something on the order of a Sony ICF-M200 or Grundig YB400 which also includes the TV station frequencies.

• Another charter subscriber, William Marton of St. Louis, Missouri, sends his wish list:

1) An alarm clock with multiple alarms settable to time and day of the week, similar to programming a VCR. Ideally, it would include a recorded voice announcement (such as "Listen to Glenn Hauser's World of Radio on 9475 kHz" or "This Old House coming on soon on PBS"), and could trigger a beeper if one were elsewhere in the house or nearby.

2) TV-audio radios that cover the full spectrum of TV transmissions—UHF as well as VHF.

3) Hand-held electronic solitaire similar to the one on Microsoft Windows.

4) Audio tape recorder that uses VHS tape and records in VHS format, that can play audio from any VHS tape, and is stackable with other Hi-Fi components.

5) A really effective battery charger that works on all types of batteries automatically. Should automatically sense the type of battery and amount of charge.

• Bob Fraser, a faithful contributor to *MT* from Cohasset, Massachusetts, says, "I would like to see a good basic radio, one with excellent sensitivity, excellent selectivity, and excellent dynamic range over the whole spectrum coverage of the receiver. I feel that today's manufacturers are becoming too complacent and are ignoring their customers. We seem to be getting glitz, not quality. From what I hear, the new scanners are no better than the old. New shortwave radios don't even equal the ones they're replacing.

"If I were a radio manufacturer and had a new product to offer, I would make three dozen prototypes and have interested people try them in the field."

• Steven Hada of Rosemead, California, came up with some wishes and fantasies:

1) Handheld combination scanner/frequency counter.

Congratulations to Floyd Perry of Stockton, California, whose name was drawn by Bob Grove out of two dozen entries. Floyd won the Phase Locked AM Option kit offered by Herbert Foster in January's "Letters."

2) Audio cassette recorder/radio that is time *and* frequency programmable (audio-only VCR).

3) Tabletop SW receiver with Drake's performance, Grundig's audio quality and ergonomics, and JRC's build quality.

4) Digitally-tuned TV-audio radio that receives TV channels 2 through 69 (with stereo and SAP).

5) Speech readout for *anything* and *everything* with a digital display (for the blind).

6) High quality radios with wood and metal cabinets.

7) Self-contained pedal-powered electric generator for use in charging batteries and running equipment during power outages.

8) Analog clock whose hour hand can be moved with a single switch for changing between standard and daylight savings time.

9) A new telephone infrastructure with voice bandwidth greater than 3 kHz.

10) A TV broadcast standard with equipment that can transmit and receive the entire frequency range of visible light and the same luminescence scale as daylight!

I hope manufacturers will note there are some areas of signifcant similarity in the above lists!

Hatteras DXpedition

George Zeller elaborates on the DXpedition of which he was a part, and which is pictured in February's feature by Jacques d'Avignon. Eight veteran DXers gathered in a vacation condo in Buxton, North Carolina. George says, "This location proved to be an excellent spot for SWBC DXing, and for European and African reception on medium and long wave. The structure was far enough away from power lines and other buildings, so noise levels were fortunately quite low.

"Upon arrival on Thursday afternoon, the first order of business was the erection of antennas. More than a dozen longwires, dipoles, and terminated beverages were up before sundown. Most of these were hundreds of feet in length. My own antenna was a 500 foot longwire pointed west. The ability to string very long antennas in a quiet spot is the most important advantage of a DXpedition. Excellent DX results are virtually inevitable under these conditions.

"This DXpedition featured an unusually good collection of excellent receivers, including two Watkins Johnson HF-1000's, two Drake R-8A's, a Drake R-8, one each of a Japan Radio Corporation 535, 525, and 515, a Lowe Europa, a Collins R388 and a Collins R390A, two Yupiteru MVT-7100's, and Tony Germanotta's ITT Mackay Marine 3020A that I had never seen before. I brought my Sherwood SE-3 Mark III synchronous detector unit, which was used with outstanding results on both the HF-1000's and the R-390A. Other equipment included plenty of headphones, tape recorders, and a laptop computer used for rapid communication of DXpedition logs via internet to the outside world.

"Literally hundreds of good logs resulted. Given the internet setup, the best of them have appeared already in DX resources. My overall favorite was clear copy of the 1200 kW mediumwave transmitter on 1386 kHz in Bolshakovo (Kalingrad), Russia, with a relay of the English service of Radio Netherlands including Jonathan Marks' voice. It was odd to hear Jonathan via Russia on mediumwave.

"I certainly encourage all DXers to attend a DXpedition if possible. The long antennas in a quiet spot solve two constant problems that I have from my home QTH. Everyone's DX skill improves considerably when there are other DXers in the room, and when you spend some consecutive days roaming the bands."

Ham DX Opportunities

Jorge Martinez, stationed at the Panama Canal, chimes in with others who miss the DX Tips Rob Gerardi offered in his boxed regular feature next to "On the Ham Bands."

(Continued on Page 104)

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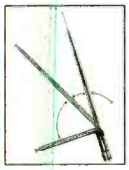

Try our unique, swivel base, telescopic scanner antenna. Our new CAT-WHISKER lets you lay your handheld scanner on its back and still keep the antenna vertical!

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What other antenna will let you lay your handheld on a car seat and still receive?

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We simply don't have the space to tell you ALL the new GOLD features

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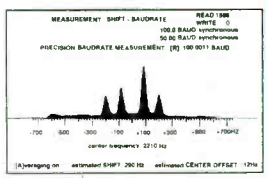

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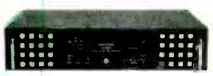

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Motorola 22.2; Gass 0

Talk about getting hammered. Larry Gass, who was recently convicted of "modifying devices [radios] intended for unauthorized interception or publication of radio communications" in Tulsa, Oklahoma, is now being sued by Motorola for copyright and trademark infringements.

Motorola, which did $22.2 billion dollars worth of business in 1994, says that Gass used Motorola's "registered trademarks to create the false impression that the [presumably modified] radios originated with or were approved and authorized by Motorola." Motorola asked the court to grant a permanent injunction against the defendants from engaging in further "illegal activity" in addition to the granting of "monetary and other damages."

According to Anthony Biell, manager of software protection at Motorola, Gass "was actually programming radios to *operate* [italics ours] on the Tulsa public safety radio systems for people who had absolutely no business communicating with these agencies on their own radio systems." The company promised "an ongoing program" of enforcement against such incidents.

Cellular Monitoring Bust

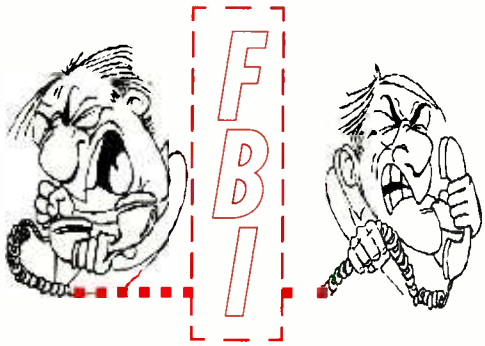
An Oswego, New York, man has been sentenced to one year of probation and 100 hours of community service for monitoring cellular phone calls. According U.S. Attorney Thomas J. Maroney, James D. Earhart "knowingly and willfully intercepted and divulged to other people the radio portion of cellular telephone communications without permission of the senders."

Earhart monitored cellular phone calls three times in 1990 and 1991, according to the *Observer-Dispatch* newspaper. The case resulted from an investigation by the Federal Bureau of Investigation but no further details were given.

I Hear Voices

One of the most common "unusual" letters that arrives on the desk of radio hobby editors is the one that begins, "I think that someone is tapping my phone..." While there are many variations of this letter, the source of the alleged tapping is almost always The Government. From the number of letters, you'd think that everyone is being tapped.

According to reporter Dan Freedman, the fact is that very few wiretaps are ever approved. In 1994, says Freedman, federal and



state prosecutors asked the courts to approve wiretaps on telephones, cellular phones, faxes, and computer e-mail transmissions in only 1,154 cases. In 1993, court approval was granted only 976 times. [Contrast this with the record of the National Security Agency. Though fewer in number, every one of their requests for a wiretap has been granted since its creation in 1979, according to a report in the Ann Arundel *Sun*.]

All this could change if the FBI gets its way with the local phone company. It wants them to engineer their computerized systems to permit the interception of 1 percent of all simultaneous phone calls. That means that in a big city with a digital equipment capacity for 100,000 simultaneous phone calls, the FBI could be tuned in to 1,000 of them. The FBI calls wiretaps "the single most effective investigative technique used by law enforcement."

Oops. A Drug Deal

A Salisbury, Massachusetts, teenager was arrested on drug charges after a local police officer "inadvertently" homed in on his cordless phone conversation. Darin Grenier, 19, was arrested after police officer Jack Carl picked up the call on his scanner while on patrol. During the conversation that was overheard, Grenier gave the exact times and location for a drug deal; Carl then notified the local drug task force.

A police spokesman explained the "inadvertent" interception this way to a local newspaper reporter: "Cordless phone calls do not usually get picked up by police scanners; however, on rare occasion phone signals have been known to go astray and end up on scanner frequencies."

CBer in Hot Water

It was just before Christmas 1995. Radio hobbyist Steven Holbrook was trimming the family tree with his 4 year old son, Brandon. There was a knock on the door and the police entered the house. Holbrook was arrested, charged with disrupting a public service, and taken to jail. All because of his CB radio.

The background behind the story? Holbrook is a CBer and his neighbors in a Moraine, Ohio, apartment house had become upset that he was interfering with the TV. Said Mike Price, "even the screen moved with his voice."

Eventually, Price called police who, in turn, warned Holbrook not to use his CB until he could solve the interference problem. When the officer left, Holbrook allegedly got back on the CB to tell a buddy what had happened. Price says that Holbrook's CB conversation—which he taped on his VCR as it came through the TV—included expletives and threats.

Price called police again and turned the tape over to them. Holbrook was subsequently arrested. The charge of interrupting a public service does not allow for a bond and carries a maximum penalty of 10 years in jail and a $5,000 fine.

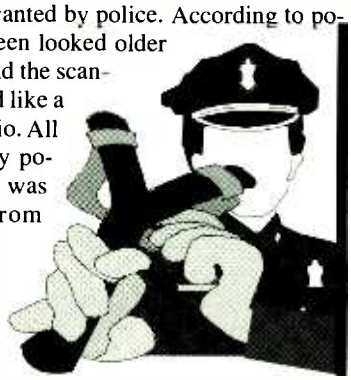
Holbrook's wife, Lori, called the situation "appalling." "Everything we were doing here is legal and they just took my husband to jail on a third-degree felony."

Make My Day

This is the kind of story that makes scanner listeners cringe. A Newark, Delaware, teenager who wore phoney police gear purchased at a farmer's market and who carried a scanner, was arrested by police. The 15 year old boy was seen at an apartment complex, walking around a pickup truck, writing down information.

The owner of the vehicle, who lives in the apartment complex, approached the boy/officer and asked what he was doing. The teen said he was a special agent for county police, was investigating the man as a wanted suspect, and would arrest him. The man didn't think the boy/officer was in fact an officer and called police.

When police arrived on the scene, they found the boy holding handcuffs and mace, trying to arrest the man. The unidentified man was not wanted by police. According to police, the teen looked older than 15 and the scanner looked like a police radio. All his phoney police gear was taken from him.



Scanner Listener Saves Baby

A man listening to his scanner was able to save an newborn infant found abandoned in a Illinois cemetery. Charles Heflin, an off-duty firefighter with a scanner in his truck, heard dispatchers report an anonymous call saying that a baby was between a tree and a mausoleum in the Mount Olive graveyard. Heflin happened to be nearby and stopped.

"I didn't see the baby at first, but I heard her whimper. It was newborn, red with mucous on it." Heflin, a trained emergency medical technician, took the baby back to his truck and put her near the heater. He met incoming sheriff's deputies on his way out of the cemetery and turn the baby over to them.

"I know how fast hypothermia works," Heflin said."I wanted to get that baby into a warm truck."

The Info Superhighway

Sex, violence, and gambling. Sounds like the Red Light district of any major city. But we're talking about the Internet.

According to the *W5YI Report*, vice is big business on the net. But even it takes a twist in cyberspace. Take, for example, gambling. No local penny-ante stuff here. Go to http://www.interlotto.li and play the national lottery of Liechtenstein. Pick 6 of 40 numbers and win more than a million dollars. Entry fee is 5 Swiss Francs, payable with your Mastercard.

Also available are various casino games from the Caribbean and Cuba. According to *W5YI*. they're easy to find and access. "Just....type in key words like 'casino' and 'lottery.' It's very interesting... even if you don't gamble." No wonder we can't keep 'em down on the farm anymore.

Poof! It's Gone

Portland's $8.5 million emergency radio system got its first big test this winter and according to the Associated Press, it failed miserably. For more than 5-1/2 hours at the height of a storm, many police and firefighters could hear dispatchers but were unable to answer. Radios carried outside their vehicles were useless. Radios in police cars and fire trucks worked sporadically.

Motorola officials are working to find out what caused the 800 MHz system to buckle. It is known that the day that the system failed was an especially heavy one. On an average day, Portland handles about 50,000 calls. On this particular day, it handled 118,913. Still, city officials wonder what would happen in a bigger crisis, such as an earthquake.

Says police Sgt. Bob Baxter, "Here we have this multimillion-dollar system that allows us to talk to everyone but the Lord himself and when we need it most, it's gone."

FCC: Land, Ho!

The FCC has amended its rules to allow private land mobile users to share the 18 frequencies used for VHF marine telephones. There are nine frequency pairs at 157.20 through 157.40 MHz and 161.8 through 162.00 MHz. Operations will be allowed on a primary basis for stations located at least 116 miles from an existing public coast station or navigable waterway.

Interestingly, this is another case of the law following usage. Thousands of marine radios are purchased every year throughout the United States in places where the only boats seen are in bath tubs. In some communities in the Midwest, the law has been ignored for years and the marine bands are widely used for business and personal communications.

WJDM 1660 AM

After literally years of waiting, the first expanded-band AM station is on the air. Elizabethtown, New Jersey—the nation's biggest city without a full-time local radio station—now talks to the nation on 1660 kHz. And WJDM can be heard big-time.

John Quinn, the station's owner/manager, says he's received reports from as far away as Seaside Heights, Oregon. During the day the station broadcasts time-brokered foreign language and religious material. At 4:30 each afternoon, however, the station launches into a '60s and '70s oldies format with station IDs. There is no announcer, no news, no weather, and no spots. It has been signing off at 10:30 each evening.

Quinn says that a new format is forthcoming, but at press time it remains oldies only. WJDM, which also operates on 1530 kHz, is authorized on 1660 at 10 kW days and 1 kW nights. According to Quinn, there are 280 million receivers capable of picking up the expanded band.

Family Radio Service

Here is the proposed channel and frequency plan for the new Family Radio Service, initiated by Radio Shack. Channel 1: 462.5625; Channel 2: 462.5875; Channel 3: 462.6125; Channel 4: 462.6375; Channel 5; 462.6625; Channel 6: 462.6875; Channel 7: 462.7125; Channel 8: 467.5625; Channel 9: 467.5875; Channel 10: 467.6125; Channel 11: 467.6375; Channel 12: 467.6625; Channel 13: 467.6875; Channel 14: 467.7125.

Maximum power will be 1/2 watt; operation would be unlicensed. Motorola filed comments in support of the recently-filed petition.

Keep the Towers (?!)

Glance toward Annapolis as you cross the Bay Bridge and you see them. Nineteen antenna towers, ranging in height from 60 to 1,200 feet, stand at the Naval Radio Transmitting Facility on Greenbury Point just east of Annapolis, Maryland.

For decades an anchor in the Navy's global communications network, they are now Cold War dinosaurs, no longer of use to their nation. Navy officials say the time is coming to tear them down. But after 80 years of living in their shadow, something crazy is happening. In an area where neighborhoods regularly battle against cellular phone companies who want to install new towers, residents of Annapolis say they want the Navy towers to stay.

Those towers are as cherished a part of the Annapolis skyline as the dome of the State House, say some. Steve Carr, president of a group hoping to save at least one of the towers, pleads, "We can't throw away pieces of our culture."

Wonder if they'll be saying that about cell phone towers 80 years from now.

"Communications" is written by Larry Miller with help from Rachel Baughn and the following readers who are vital members of the Communications Media Monitoring Team: Mr. Anonymous, Anytown, USA; Bob Combs, Tome, NM; Ulis Fleming, Glen Burnie, MD; Bob Grove, Brasstown, NC; Michael Hilton, Scotia, NY; Robert Horford; Kevin John Klein, Appleton, WI; Fred Latus, Jr. Whitesboro, NY; Jack McCartan, Newark, DE; Richard Sklar, Seattle, WA; Larry Thomsen, Des Moines, IA; Phil Yasson, Vancouver, WA. We also consulted the following publications and organizations and list their names in appreciation: Associated Press, *National Scanning*, *W5YI Report*.

Become a member of the MT news monitoring team: send clippings and stories of interest to the hobby to "Communications," P.O. Box 98, Brasstown, NC 28902; fax 704-837-2216; e-mail mteditor@grove.net.

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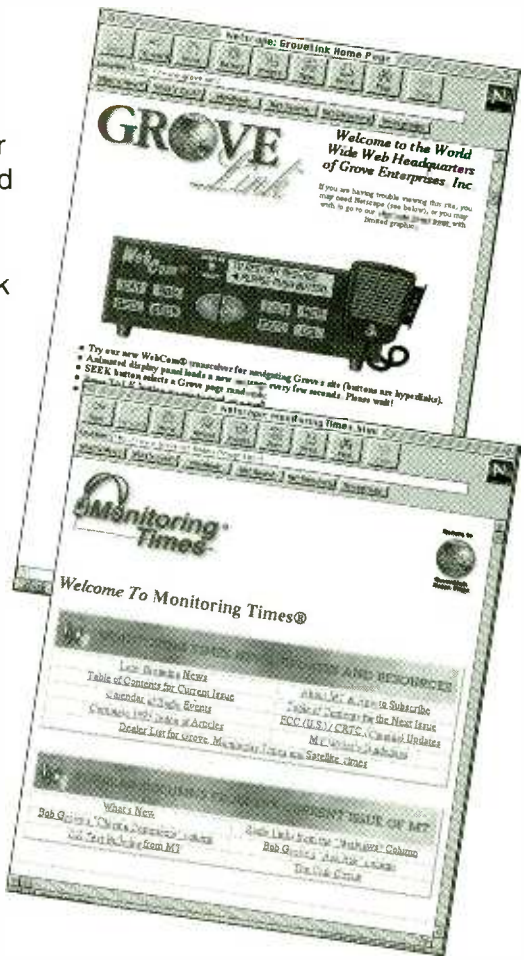

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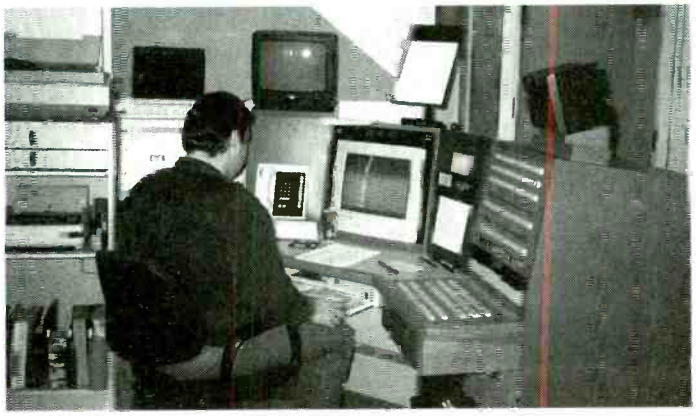
Will the Sun Set . . . on Radio Canada?

By Ian McFarland

What a way to wind up a fiftieth anniversary year! After several weeks of the usual rumors, the news was finally official on the morning of December 11, and was immediately included in RCI's newscasts. It was the most devastating news to hit the international broadcasting field in a very long time, if ever. The unthinkable was happening again!

The Canadian Broadcasting Corporation (CBC), RCI's parent organization, which is facing a budget cut of some $225 million in the coming fiscal year, announced that it could no longer afford its share of RCI's $16.5 million budget, and Canada's shortwave radio voice to the world would be closed down on March 31, 1996. The federal Ministry of Foreign Affairs, which funds the other half of the RCI budget at the moment, also announced that it could no longer afford to fund RCI.

As any regular RCI listener knows, the Canadian government is currently involved in a fierce round of spending cuts in an effort to reduce the country's unmanageable debt and deficit. RCI is simply one of the victims of these cuts, along with social programs like unemployment insurance, welfare, and medicare.



The master control room, newly opened in January 1994, demonstrates the irony of Radio Canada's predicament, as does the recent 50th Anniversary celebrations.

Within a matter of days the entire staff, from Executive Director Terry Hargreaves and Program Director Allan Familiant on down, had received their termination notices from the CBC.

Two days after the news broke on RCI, the *Montreal Gazette* gave the story a banner headline—"CBC Cuts World Service." The story was the topic of editorials in every major newspaper in Canada. The coverage in the Canadian media was unprecedented in RCI's history.

Those immortal words uttered some years ago by the late Yogi Berra come to mind to describe this latest RCI crisis...."it's like deja vu all over again." (Indeed, the MT cover of May 1991 shows how close it came once before.)

The news about RCI spread around the world with lightning speed via such modern marvels as the fax machine and the Internet. The level and speed of this response to RCI's plight was incredible, exclaimed RCI's Program Director Allan Familiant. "I'm overwhelmed at the very professional way that our staff reacted, and by the reaction from within Canada and from overseas."

Within hours of the news breaking, the letters of protest began coming in via fax to the offices of Canada's Prime Minister Jean Chretien, and the Minister for Foreign Affairs Andre Ouellet. One of many Canadian listeners to lodge a protest wrote in part: "Canada's good reputation abroad has been helped enormously by RCI. Do we really want to be the only G7 nation without a voice on the Air Waves? Do we really want to be the only country in that august group without the means to reach past local governments and their media, and speak to the people ourselves? We need to tell them about ourselves directly, about Canada, what we stand for and who we are." The listener also argued that RCI funding should be restored to pre-1991 levels, and its future assured and not constantly threatened.

As any Canadian who travels abroad will agree, Canadian news in foreign media is a very scarce commodity except on rare occasions, and this is very much the case in Canada's southern neighbour the United States. As one U.S. listener of 46 years standing pointed out in his letter to the Canadian Prime Minister, "Over that span of years I've come to know your country, your people, and the values they hold dear. That news could have come to me from no other source. The news about Canada in our newspapers and magazines is nonexistent. The same can be said of our radio and TV outlets. Given our common border, that state of journalism is wretched."

A listener in England ended his recent letter to Canada's Prime Minister with this plea: "RCI provides us with a window to look in on Canada, and for Canada to show itself to the world. Please do not shut this window forever."

Similar sentiments have been repeated many times in letters from RCI listeners around the world, during the many previous threats to RCI's existence. It's a message that seems to have eluded an endless string of Canadian politicians over RCI's 50 year history. One can't help but wonder if Canada, or at least the Canadian government, simply has such an entrenched inferiority complex that it just can't understand that there are millions of people in other countries who feel that Canada is worth hearing about, and greatly appreciate RCI's role in providing this information.

Money Well Spent

It's difficult in this latest RCI crisis to avoid making some comparisons with the overseas services of other countries. Switzerland, with a service that has virtually the same size staff as RCI, and the same number of broadcast languages, spends three times as much on Swiss Radio International as Canada spends on RCI. Holland, with its very popular Radio Netherlands, broadcasting in only four languages with a staff more than double that of RCI, gives its overseas service a budget that's four times that of RCI. For added contrast, the budgets of the BBC World Service and the VOA come to more than 17 and 21 times RCI's budget respectively.

RCI digital studio.

Those immortal words uttered some years ago by the late Yogi Berra come to mind to describe this latest RCI crisis...."it's like *deja vu* all over again." The decision to close down RCI came almost five years to the day after the previous crisis in 1990/91, when another CBC budget cut led to the devastating 35% cut in RCI funding, the dropping of 7 language services, and a staff reduction of some 50%, at the end of March 1991. For RCI's staff of 120 this *deja vu* keeps on happening every few years it seems.

What about commercial sponsorship and program underwriting as a possible solution to RCI's funding crisis? The VOA are trying it, and so is the Voice of Russia.

That's one suggestion that RCI Program Director Allan Familiant is very anxious to put to rest permanently. He says emphatically, "I don't want to sound like an old dinosaur, not interested in new ideas - but having gone through study after study, there is no way that underwriting, private business, privatization, commercials etc., can support an international service. We did myriad studies prior to 1990 and subsequently, and I would tell you, simply, that the studies have cost more than the monies that are predicted to come in from underwriting."

It's interesting to note that of the 126 international radio broadcasting organizations around the world 101 are funded by governments. For the most part the other 25 are funded by religious organizations.

Chris Greenway, Foreign Media Editor in the Foreign Media Unit of BBC Monitoring in Reading, England, says of RCI's possible demise, "It would in fact be the first time that I can remember that a whole country that used to have quite a substantial presence on shortwave has

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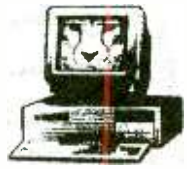

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2. Enter any two frequencies and scan between them with ANY increment, time delay or pause.
3. Scan a file of frequencies, search by description or wildcards.
4. Create Databases of frequency files. Sort by any field, and save to disk and/or send to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

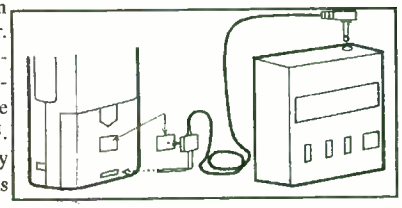
• Multiple Scanning Banks • Multiple Scanning Diskfile Banks
• Unlimited Files Sizes • Dual Radio Simultaneous Scanning
• Comma Delimited Conversion • D-Base Support, Scanport- Gold
• Direct Import of TRS • Macro Control per Record
• Command Line Control • Automatic Birdie Lockout
•Top Hits Table

Computer interface for the AR8000

Unlike some of the European devices sold today, this unit is smaller, lighter, and makes no power demands on your receiver. With the extra shielding and smaller size there is less chance of additional interference leaking into your radio. The AR8000INF is also the only interface that is upgradeable for use with the optional Tape recorder controller.

AOR SAC8000

The SAC8000 is a connection kit for the AR8000 Scanner. Once the SAC8000 is installed, the AR8000 can easily be connected to the OptoElectronics Scout™. Any frequency captured by the Scout™ instantly tunes the AR8000 receiver.



Other Available Accessories:

CR8000 - Tape Recorder Interface
SC8000 - Soft Case
DS8000 - Speech inversion descrambling chip

"It would in fact be the first time that I can remember that a whole country that used to have quite a substantial presence on shortwave has completely disappeared."

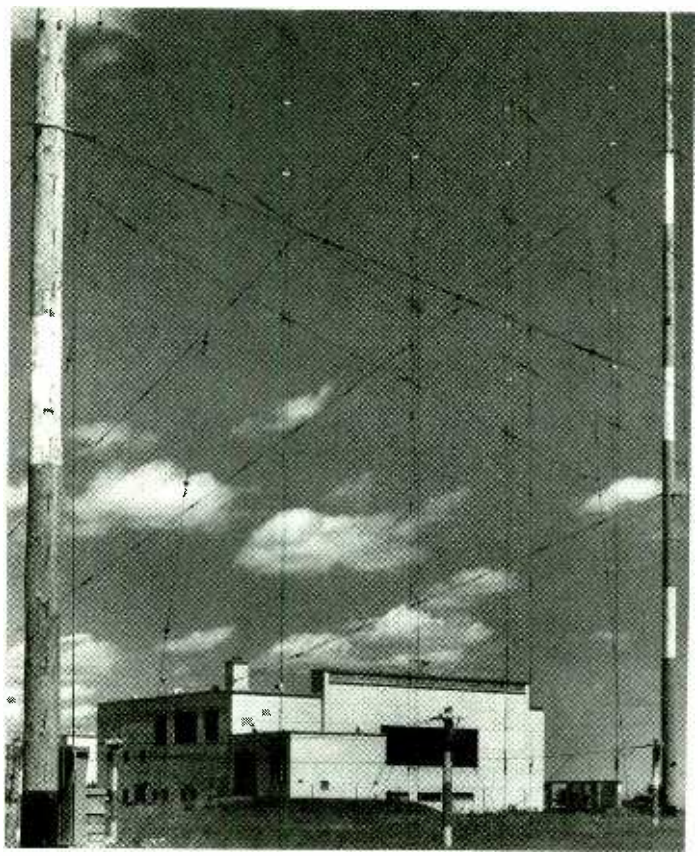
—Chris Greenway

completely disappeared." He adds, "There have been a few cases in past years where stations have disappeared. A few shortwave stations in Africa have fallen by the wayside, but these have been due to technical problems with transmitters and so forth."

Greenway points out that, "In Europe we've seen RTB, the French language external service from Belgium, go off the air, but Belgium itself stayed on shortwave via BRT, the Dutch network (known as Radio Vlaanderen International)." Greenway says he can't really think of anywhere else in the world where a whole country will lose its international radio voice.

"A country such as Canada has rather a unique role to play," says Lawrence Magne, *MT* columnist and editor-in-chief of the popular annual shortwave publication *Passport to World Band Radio*, "because people here in the U.S. tend to view Canada as a northern extension of the United States, which of course it's not. Canada has many of the democratic traditions of the U.S. well entrenched in it, and a definite role to play, which it has shown through peacekeeping and so forth, and which is a leadership role." Magne stresses that if Canada is to get its message across about what its values are, it needs a vehicle do do so. The private sector, he says, can provide the entertainment that people are looking for, but it isn't really concerned with reflecting the nation's values.

Magne feels that it's important that Americans understand Canada, and laments, "In this country—and it's suprising if you think about it—Canada is covered more poorly than a remote corner of Bosnia. And you could pick any number of countries—Israel for example—that are halfway around the world, that are very well covered, routinely, in our media, whereas Canada is virtually ignored, even during the recent Quebec referendum campaign." In terms of the United States, Magne concludes, "Since RCI is really the only means by which Americans who are interested in Canada can learn about it and understand what is going on there, to pull the plug on it is astonishing because the U.S. is so important to Canada."



RCI's transmitter site at Sackville, courtesy of MALAK, Ottawa.

One of the most astute and knowledgeable observers of the international broadcasting scene is Graham Mytton, the head of Audience research at the BBC World Service in London. Interviewed by Peter Gzowski, host of the CBC domestic AM network program Morningside, about the RCI situation, Mytton commented that Canada may be underestimating the quality of what it can do on shortwave.

He said, "Canada can do things that the British can't do. You can do programming with a different flavour, with a Canadian flavour. You've got a lot going for you in that country. Canada has a multi-ethnic, multicultural society, which is an example to so many of us. I think there is lots that Canada can tell the rest of the world. And the most important thing, I think, is that the BBC can't do all of this on its own." Mytton adds, "There's an enormous information need in the world which the BBC does something to provide, but it can't possibly, with its limited finances, do everything."

He feels that there is a big case to be made for broadcasters in the free world getting together and asking, what can we do to supplement what each other is doing? "The BBC," Mytton says, "feels that Canada and other countries in the West have a lot to offer to other countries in terms of supplying information to those parts of the world that continue to be short of information."

It's to be hoped that members of the Canadian government heard that interview, which Peter Gzowski commented was the best commercial for RCI that he'd ever heard, and it came from someone who works for "the competition."

■ Listener's Lobby Still Needed

While the 1991 cuts to the RCI operation were put into effect in just a few days, this time the decision to close RCI came three and a half months before the possible last day of the service. This valuable time is being used to mount a lobbying effort which is well underway, says Wojtek Gwiazda, an RCI staffer and key member of the Coalition to Restore Full RCI Funding. The ad hoc group

"What we're trying to get across to the politicians is that, if you're a country you have certain obligations, not only to your own population, but to the world . . . you have to have a voice, otherwise you disappear."

—Wojtek Gwiazda

was formed in the aftermath of the savage cuts that hit RCI in March 1991. Since that time, Gwiazda says, the coalition has been actively lobbying politicians to get RCI's funding restored to what it used to be. A few years back the coalition was successful in getting a Senate commitee to hold hearings on RCI funding. The committee's report was highly favourable to RCI's plight, and recommended that funding be restored to pre-1991 levels, and that the language services that were out in 1991 be restored as well.

The coalition's activities now are focussed more on survival for RCI than restored funding. RCI's Wojtek Gwiazda says that it's rather ironic that five years ago, when RCI was under threat when the Conservative Party government was in power in Ottawa, the Liberal Party opposition headed by Jean Chretien, now the Prime Minister, sent the coalition a copy of a position paper by the party's communications critic. The paper stated that cutting the service that RCI provided showed a shortsightedness and a lack of understanding of how Canada should behave on the international stage. It's truly amazing how a political party's views on any given subject can change depending on whether it's in opposition or in power.

"What we're trying to get across to the politicians is that, if you're a country you have certain obligations, not only to your own population, but to the world, and if you're a self-respecting nation on an international stage, you have to have a voice otherwise you disappear. The reality is, if you're not there you don't exist. The government has to decide that part of being a nation means having an international radio voice. Hopefully," says Gwiazda, "we can shame them with the help of reaction from RCI's international audience."

He can't emphasize strongly enough, Gwiazda says, just how important a role is played by the well thought out letters of concern that are being sent to the Canadian government by RCI listeners in Canada and abroad. These letters have been the key to RCI's survival a number of times in the past, and they continue to be so in the present crisis. He says the most important letters are the ones that explain, in personal terms, just what RCI has meant to the listener over the years, and just what it will mean in the future if the service is cut.

The Canadian Forces programming studio at RCI.

The clear danger in these latest difficulties is that listeners will throw up their hands and say - "Not again! Not another plea for help to save RCI." They could be forgiven for wondering if this foolishness is ever going to end, and how many times do they have to come to RCI's rescue. RCI's Gwiazda says he hopes that won't happen. "The reality is," he adds, "we're not crying wolf. It's actually happening. This time they've told us that the doors will shut on March 31. The government can save us," he says, "but the machinery is all set up to close RCI down."

On January 25, the day of a major reshuffling of the federal cabinet in Ottawa, the level of cautious optimism at RCI took a decided leap upward. The newly appointed Heritage Minister, Sheila Copps, who is also the Deputy Prime Minister, said in Ottawa that "We think that RCI was a strong voice for Canada internationally and we should not allow it to die."

She said that restoring RCI's funding was one of her first priorities. Copps added that she had already begun talks with the new Minister for Foreign Affairs, Lloyd Axworthy, aimed at saving RCI. Sources in Ottawa said that money for RCI's budget would be found and given to the CBC on a dedicated basis. At RCI headquarters in Montreal following Copps' announcement there was a mood of cautious glee. Sheldon Harvey, a member of the Coalition to Restore Full RCI Funding, commented, "It's too early to rejoice, but it's a good sign."

While the announcement that RCI's survival is indeed a priority for the Deputy Prime Minister was good news, at press time there were still a number of unanswered questions. Would RCI be given an assured budget for at least five years, or will they simply be getting a reprieve for a year and have to go through all this unbearable agony again in early 1997? The possibility of that happening is as unthinkable as RCI's possible demise.

■ Will the Ripples Spread?

The demise of RCI would doubtless come at a cost for Canada in terms of international recognition. The savage cuts that were made back in 1991 did in fact result in a sizeable drop in RCI's worldwide audience. But what about a possible domino effect on other international broadcasters which are experiencing

How to Support RCI

For those concerned readers who wish to write letters in support of RCI, here is the address:

The Rt. Honorable Jean Chretien,
Prime Minister, House of Commons,
Ottawa, Ontario, Canada, K1A 0A6.
Fax #: (613) 957-5556

"As a result of the massive lobby effort that has been going on, [we have] some indication that again, funding may come from somewhere.

—Allan Familiant

hard times, financial or otherwise? BBC Monitoring's Chris Greenway feels that this certainly couldn't be ruled out.

"Diplomatically," he says, "Canada is certainly a country that has a higher profile than one might otherwise expect from its size, in terms of population. So, for a country like that to withdraw from what is quite a major part of world of international diplomacy and so forth, is really rather a dramatic development. And," he adds, "it's certainly a possibility that other governments that have perhaps felt that they don't really want to keep running an external shortwave service, but because most countries in the world seem to want to do it we musn't be left behind. But if they can see that a country like Canada has actually cut its service then it might make them think that they can get away with it as well."

While the news of RCI's possible demise may be the worst news to hit the shortwave scene in many years, financial problems also exist for other international broadcasting services these days. One trend which is having a decided impact on a number of shortwave stations is the fact that a lot of the international broadcasting that's being done today includes television, whereas it used to be just the traditional shortwave radio medium. In terms of traditional shortwave broadcasting, funded by governments, there's no doubt that in recent years there's been a reduction in this form of broadcasting. However, the pattern of this development varies from one part of the world to another.

Germany's Deutsche Welle has for several years now been putting an increasing emphasis on international TV broadcasting. While the station may not in fact have its budget cut, the money being spent on TV effectively reduces the funds available for traditional shortwave broadcasting.

As BBC Monitoring's Chris Greenway points out, "There are also cases where some governments are no longer interested in any form of international broadcasting and want to get out of the business for political or financial reasons, or both. In other cases stations are very interested in maintaining, or even stepping up, their presence in international radio." Radio France International would be a good example of this latter trend.

Just how widespread is budget cutting and changing attitudes and priorities in international broadcasting? It's very much a mixed bag, says Chris Greenway.

A good example of how local and regional factors are affecting the changes we're seeing in international broadcasting is what is happening in Europe. As Chris Greenway explained in an interview, "It's quite a mixed picture in Europe. If we look at the countries of Eastern Europe—the former Soviet Bloc, for example—during the Communist era all of these countries operated an external shortwave radio service, really as a propaganda tool and to get their nations on the air. They probably had relatively few listeners in the target countries" he says. "There was a feeling amongst many observers that in view of the completely changed political climate in that part of the world, and also because many of these countries have gone through quite severe economic difficulties, that this would be an opportunity for the government to quite painlessly cut out these external services."

RADIO AUSTRIA INTERNATIONAL

However, adds Greenway, "When it comes right down to it, none of these external services have fallen by the wayside. All these former Communist countries of Eastern Europe still have an external radio service on shortwave." In many cases these stations are facing great financial hardship and are running on a shoestring. It's quite surprising really, that they're still on the air. Where there's a will there's a way, as the old saying goes.

The situation in Western Europe is more complicated, says Greenway. France, for example, is one country where international broadcasting remains a priority for the government, and they're quite explicit about it. Radio France International is very much in an expansion mode, and proceeding with ambitious plans for new services in both international radio and television. As well, many of Europe's international broadcasters are moving towards satellite radio services, in particular for the European audience—in some cases at the expense of traditional shortwave.

Radio Vlaanderen in Belgium, while it is not currently facing financial problems, has decided not to put any more money into new shortwave resources. When the present lineup of aging shortwave transmitters finally expires that will be the end of the line for Radio Vlaanderen on shortwave. Presumably they are hoping that the transmitters last long enough to see the station into the next era of international broadcasting technology.

In many areas of Asia these days one of the most striking developments in broadcasting as a whole concerns the emerging popularity of satellite TV. In India especially, a country that has long been a major target area for shortwave broadcasts, this is making great inroads. The Hong Kong based Star TV in particular, with its heavy emphasis on entertainment, is luring people's attention away from shortwave broadcasts—a medium with an often heavy news and current affairs content.

The Voice of America, RCI's fellow government-sponsored international broadcaster in North America, received a budget cut of some $25 million last spring. At the time of writing VOA was awaiting word on an additional cut of somewhere between $40 and $50 million.

In Japan, which has been venturing more into international TV over the past year or so, Radio Japan hasn't suffered any budget cuts *per se*, but, as with Deutsche Welle, there has been a reallocation of funds from the shortwave service to TV.

Radio Australia is also being affected by the increasing emphasis on TV. According to Derek White, General Manager of Radio Australia, the Australian government has effectively decided to close down RA's Carnarvon transmitter site at the end of June, leaving the remaining three sites to carry the load. The move is expected to provide savings of some two million dollars, which will be reallocated from RA's transmission resources to Australia Television. RA's transmission facilities are owned and operated by the federal government's National Transmission Agency. RA is having discussions with the agency about the possible relocation of one or more of the Carnarvon transmitters to other sites, and for extended transmission from the Darwin station. Apart from the cut in transmission resources, RA's overall budget has actually been increased.

In the Americas—North, South, and Central America—there are comparatively few international broadcasting stations compared to, say, Europe. While there are scores of stations on shortwave in South America for example, the vast majority are domestic, commercial and highly competitive. Their programming is closely attuned to their local listeners, and this is tough competition for the international broadcasters. However, says BBC Monitoring's Chris Greenway, with the increasing use of means such as cable radio and program placement on local stations, the situation is starting to change for the international broadcasters.

The Voice of America, RCI's fellow government-sponsored international broadcaster in North America, received a budget cut of some $25 million last spring. At the time of writing VOA was awaiting word on an additional cut of somewhere between $40 and $50 million. Early in 1995 the VOA's Bethany transmitter site was closed down.

VOICE OF AMERICA

In Canada and the United States, where each country's domestic radio market is a highly competitive mix of local commercial AM and FM stations, the competition for listeners is stiff for the international broadcasters. As in South America the local broadcasters know their audiences extremely well.

As far as the future of international broadcasting is concerned, whether it be via shortwave or some other means, the BBC's Greenway is optimistic, despite the financial woes being experienced by many broadcasters these days. In fact, the general feeling amongst international broadcasters generally, is one of optimism, even where shortwave is concerned. While Greenway and others agree that in some parts of the world shortwave has already begun what is going to be a long term decline, Greenway feels that generally speaking people are still interested in listening to broadcasts from abroad.

In Africa, though, he says shortwave will continue for a long time yet as the medium of choice for international broadcasting for listeners and broadcasters alike. He adds that pioneering efforts like the London-based World Radio Network are doing a tremendous job of sparking an interest in international broadcasting amongst those who wouldn't otherwise be tuning in on shortwave.

Let's hope that the optimism expressed by Chris Greenway and others in the international broadcasting field is borne out in the coming years, especially for Canada's beleaguered external service, Radio Canada International.

MT Goes Underground with Los Angeles Fire Department Operations

By Les Butler KB8WKE

You're driving home listening to the radio trying to catch up on the events that happened while you were at work. You hear about a fire in town and listen intently to the radio announcer.

Dispatcher in the temporary center. File on right is engine response cards. Note bottom right black box (extreme right) with printout tape is TTD machine for the deaf. Motorola radio display on left.

"Eleven companies of firefighters under the command of Battalion Chief Richard Markota responded to a greater alarm hi-rise structure fire at 11845 West Olympic Boulevard in the West Los Angeles area. The first units to arrive on scene reported a twelve story modern high rise office building with nothing showing. After securing the lobby and activating the control room, firefighters ascended to the ninth floor of the Westside Towers to discover a fire in a wall. Firefighters made an aggressive attack with handlines and extinguished the fire in 26 minutes. There were no injuries and no evacuations from the unoccupied structure."

You then wonder how the news crew ascertained so much from the scene. Well, chances are they didn't; they just called the LAFD's Public Information Officer. In the above instance it was Officer Brian E. Humphrey.

A Public Information Officer is the liaison between the city fire department and the press. The PIO fields all the calls from the press so they don't tie up the 9-1-1 operators. He also makes sure the press gets the correct information to avoid unnecessary speculation. In L.A.'s case a PIO is assigned to the dispatch floor 24 hours a day. Actually, the job title is Public Service Officer (PSO) but they find the PIO title is more familiar and self explanatory.

The Operations Center

The center is located under a parking garage on Los Angeles Street between 1st and Temple across from the famous Parker Center (LAPD

Captain Dave Murray sits at the supervisor post.

HQ). I pulled up to the guard shack and told the guard I was there to see Brian Humphrey. A phone call later I was driving down two stories *beneath* the city of Los Angeles to the parking area for the fire department's small vehicles—also the home of their fuel station.

After a hearty welcome from Brian we proceeded *another* two stories below L.A. to the "Operations Center." Surrounded by two-foot thick concrete walls located 80 feet below the city, this could have been a movie about NORAD or NASA. After all, this *was* the home of Hollywood.

Currently the operations center is housed in a temporary area while work is being completed on the new center. The Operations Control Division (Dispatch) is staffed by 23 people who rotate 24 hour shifts. Each shift has an "odd and even" watch so there are 11 people on the floor and 11 others who are exercising, studying, performing housework, or sleeping. The 23rd person is the one doing the cooking or an additional eight hours on the floor.

All the operators and dispatch personnel are certified E.M.T.'s and Firefighters. Each member also must have been in the field for at least four years and has to be recommended for the job. A rather large kitchen is staffed by the same people, who all take turns cooking meals for everyone on duty. I regretted having to turn down the invitation to share a meal which both looked and smelled delicious.

Another room which gets a good workout is the exercise room. Everyone is required to get one hour of exercise daily during leisure hours, since they may be called out into the field while on duty.

As you can see in the photos, the dispatcher has four PC's in front of them which provide Unit Summary, Radio Controller, Incident Summary, and Map Display. Quarters are small and crowded but it doesn't seem to bother the men and women on duty. The area doesn't look hi-tech at all, but the equipment is nonetheless impressive. Computers keep track of all the vehicles and all of the calls at various stages. Digicom Mobile Status Entry Units (MSEUs) perform the routine status updates (enroute, on scene, available, fire station district, location, transporting to the hospital, in hospital, and in quarters).

Also housed in this complex is the Emergency Operations Center (EOC). From behind a giant glass wall the Mayor, Police Chief, and Fire Chief assign tasks during an emergency to 70 other agency heads, who range from animal control to parks and recreation directors. The area is akin to a department head "Bullpen" with rows and rows of desks equipped with PCs, and TV's located around the room to monitor the media and several highway locations throughout the city.

The 9-1-1 System

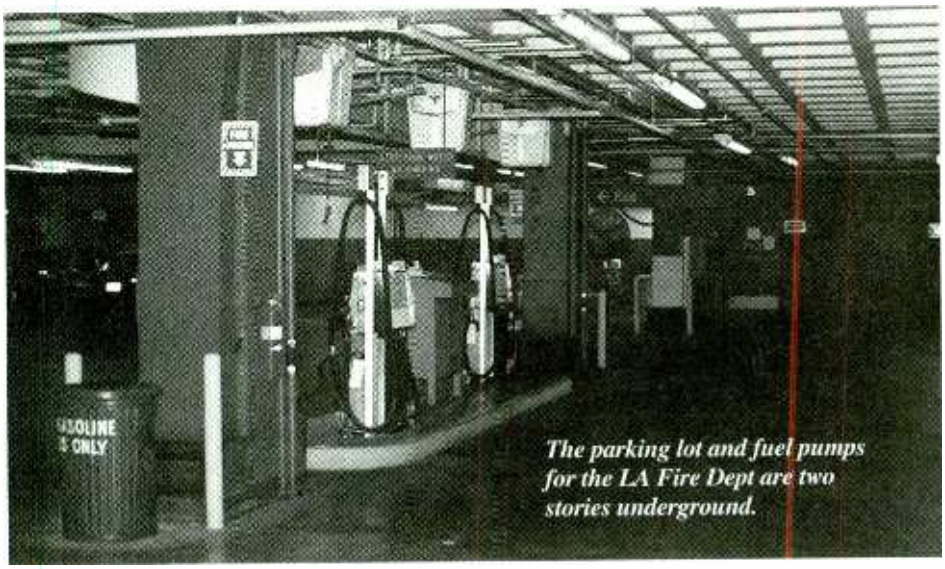
All of the state of California is wired for Enhanced 911, which means that the caller's address and phone number is displayed in front of the dispatcher.

The dispatchers hear in-coming calls in the left earpiece of their headphones and answer the calls by speaking into the attached microphone. The call taker verifies the enhanced 911 address displayed on the screen to ensure that the caller is located at the address of the incident. The address is automatically entered into the database or changed if the caller is calling from another location.

An incident number is assigned automatically. The computer checks the address and displays the nearest fire stations and available units. The dispatcher then assigns a response team after asking specific questions to determine exactly what is needed. Upon assignment the radio dispatcher is connected to the appropriate station via landline and dispatches the units over the station's PA system. Usually a brief moment of this can be heard over the radio system, but most of it goes over landline.

At the same time as the dispatch is issued, a text message is sent to the station and the station lights begin flashing. All of this is then tracked by computer until the units report that they are back in service. Future plans include a digitized voice which will be activated automatically when the dispatcher clicks his mouse on a station's I.D. number.

(Continued on p. 20)



The parking lot and fuel pumps for the LA Fire Dept are two stories underground.

Expo '96 Dates and Keynote Speaker Announced

By Larry Van Horn
Expo '96 Publicity Chairman

"Share the experience, bring a friend" is the theme for the 7th annual *Grove Communications Expo* that will be held on October 18-20, 1996 in Atlanta, Georgia.

In commenting on this year's theme Bob Grove, President of Grove Enterprises said, "Just as we host the Expo as a gesture of good will to the radio hobby community, you can be an ambassador for recreational monitoring by bringing a friend to the Expo. With growing pressure from commercial interests to own the radio spectrum and lock out listeners, our numbers are what speaks loudly to the law makers. I'm looking forward to seeing you all this year, and to seeing fresh faces as well."

Formerly known as the *Monitoring Times* convention, the name of this popular annual event was changed in 1995 to the *Grove Communications Expo*. The name change was made to broaden the scope of the annual event to cover new and emerging communications technologies.

To help foster the Expo theme, Grove is offering special rates to convention registrants who bring along someone who has not attended a previous convention. If you bring a full registrant to the Expo you can take $10.00 off your regular registration fee of $55.00 for the weekend full of activities. In order to get the special rate, both registrants must register at the same time.

The highlight of this year's Expo is the Saturday night banquet. NASA astronaut and astronomer, Ron Parise, WA4SIR will deliver the keynote speech. Dr. Parise has made two

Astronaut Ron Parise

trips into space aboard the space shuttle and during those missions operated the shuttle amateur radio experiments (SAREX). Tickets for the Saturday night banquet are $25.95 and seating is limited, so make your banquet and convention reservations early.

Several special events will be conducted in conjunction with this year's Expo. The Society of Amateur Radio Astronomers (SARA) will be conducting their fall conference for their members during the Expo weekend. Members of SARA can attend their conference for a $25.00 fee. SARA will also be conducting radio astronomy workshops, forums and exhibiting at the Expo throughout the weekend. Full registrants to the Grove Expo are welcome to attend any of these forums and workshops as part of their registration fee.

On Friday night, October 18, the Expo will sponsor an International Shortwave Broadcasters forum that will be hosted by noted broadcast host Ian McFarland. We expect broadcasters from stations around the world to be in attendance. Some of these broadcasters will also have exhibits at the Expo.

Exhibitors have already started signing up for displays at this year's Expo. Computer Aided Technologies, Grove Enterprises, *Monitoring Times*, *Satellite Times*, Optoelectronics, Radio Astronomy Supplies, the Society of Amateur Radio Astronomers, Sony, and Swagur Enterprises (manufacturer of weather satellite receiving systems) are just a few of the companies and organizations that have signed up for booths. Companies, clubs, and broadcasters can get more information or secure exhibition space by contacting one of the following:

Debbie Davis	*Satellite Times* Advertising Manager 704-837-6412
Beth Linebach	*Monitoring Times* Advertising Manager 704-389-4007

This year's seminar program has been expanded greatly. Over 40 seminars covering topics on computers, the Internet, radio astronomy, satellites and space, and scanning and shortwave radio by some of the world's leading experts in their fields will be conducted. Live demonstrations of equipment and listening techniques by convention speakers and exhibitors at the Grove Listening Post will also be a part of the program. Future *Expo Update* columns will have complete details on these seminars and the speakers.

"We are going to have the biggest and best Expo ever this year," said Judy Grove, this year's Grove Comm Expo coordinator. "We had a low turnout last year, due to some mistakes on our part, but that will change this year."

The Expo will be held at the Atlanta Airport Hilton and the hotel is offering a special convention rate of $76.00 plus tax per day, single or double occupancy. To make your hotel reservation for the three day event call the Hilton hotel chain toll free number 1-800-Hiltons. You must mention the Grove Communications Expo to receive the special convention rate.

Complete details on the Expo 96 are available at the Grove Internet home page on the Internet. Point your web browser to URL address: ***http://www.grove.net/hmpgexpo.html*** for the latest information and Expo updates. You can also register for the Expo by sending e-mail to the following address: ***expo96@grove.net***. An automatic Expo information service is available by sending e-mail to ***expo96-info@grove.net***. To register by phone, call the Grove order line at 1-800-438-8155 or by fax at 1-704-837-2216.

In the words of one attendee from last year's Expo, "The *Grove Communications Expo* is truly a unique event. I enjoyed the experience of meeting all the friendly hobbyists in a very relaxed atmosphere of learning, seeing, doing, and sharing. I will never miss another one." And neither should you.

Great prizes are always awarded at the Expo!

"Share the experience—bring a friend!"

New expanded program!

Come to Grove Communications EXPO '96

If you are interested in **electronic communications**, the **Grove Communications Expo** is your event of the year! Expo '96 in Atlanta, to be held **Oct. 18-20**, unites you with hundreds of like-minded communications enthusiasts who assemble to **exchange information, introduce new products, and offer technical help**. This is an outstanding opportunity for you to move into the information age! This year's expanded program includes over **50 seminars, forums, demonstrations and events** in the following areas:

- **Computers and the Internet**
- **Shortwave and scanner monitoring**
- **Satellite communications**
- **Radio astronomy**

Superb Forums and Seminars!

As in recent years, the Expo will feature exhibits by top-name vendors, a hands-on listening post, club booths and prizes. Tours will be conducted to the **Delta Communications Center, CNN, Marta Communications** and more.

Listening Post!

Keynote speaker at this year's banquet will be **Ron Parise, NASA astronaut** and astronomer. Parise, WA4SIR, has made two trips into space aboard the shuttle and operated the shuttle's amateur radio experiments (**SAREX**). Several special workshops, forums and exhibits will be sponsored this year by the Society of Radio Astronomers (**SARA**), which will be conducting their fall conference in conjuction with the Expo!

Other knowledgeable and enjoyable speakers include **Bob Grove, Larry Van Horn, Jacques d'Avignon, Ken Reitz, John Fulford, Bill Grove, Kevin Carey, Jeff Wallach, George Zeller, Keith Stein, John Catalano, T.S. Kelso, Doug Graham, Bob Wyman, Don Dickerson, Bob Evans, Tom Taylor, and Jorge Rodriguez**.

The bottom line is that the Grove Communications Expo is the only show of its kind—don't miss it!

Atlanta Airport Hilton October 18-20, 1996

Registration is $55 per person (take $10 off if you bring a first-time registrant with you). Rooms at the Airport Hilton available at the convention rate of $76 per night, single or double occupancy. Call 1-800-Hiltons.

GROVE COMMUNICATIONS EXPO

Grove Enterprises, Inc.

7540 Highway 64 W., Brasstown, N.C. 28902

For more information and schedules, set your web browser to **http://www.grove.net/hmpgexpo.html**, e-mail us at **expo96-info@grove.net**, phone us at **1-800-438-8155**, or fax us at **1-704-837-2216**.

Brian Humphrey sits at the console of the new dispatch center. Not quite visible in this shot are the giant screens at the front of the room.

Last year the center handled 309,000 incidents. By 6 pm of the day I was there in early December, they had already had 617 calls and 30 active calls were in progress at that moment. With an OK from Captain Dave Murray, I was allowed to don headphones and monitor live calls. I sat with Matt Johnson, Southern Cal. Fire Service Dispatcher of the year. Ten minutes with him and I knew why he received those honors: some callers are rude and crude, but he knows what to say and how to say it in a way that will calm people down and save lives.

All calls originating from within the city except cellphones are answered by L.A. dispatchers. Cellular calls are answered by the California Highway Patrol (CHP), then redirected to the city. What if a deaf person or a non-English-speaking person calls in? No problem: LAFD subscribes to the AT&T language line which can handle 140 different languages. LAFD uses a TTY/TTD machine to print out the calls from the deaf and to type back to them. The call takers are even trained in Deaf Cultures.

Eight call takers are on duty per shift as well as three dispatchers. The dispatchers have a series of index cards with a step-by-step procedure for every type of call. They can flip through the titles and, for instance, bring up CPR procedures (which they had to do while I was plugged in). This ensures that the call taker doesn't forget a step while caught up in the excitement of the call. On duty at all times in the operations complex are two fire department radio technicians and Pacific Bell telephone technicians who keep things running without interruptions.

The New Dispatch Center

The new center will debut in early 1996 if all goes well; it is located in the same complex 80 feet underground. The new facility looks like something out of *Batman Forever*, and truthfully, part of it is. A wall of Sony TVs and video recorders was donated by Warner Brothers in appreciation for the use of firehouse number 6 in filming of the movie. Now they're part of Operations Center and most certainly will be moved to the new location.

The new dispatch software system is designed by SHL Systemhouse. Many City employees are working until 3 am without compensation just to make sure all the little "gremlins" are out in time. The consoles are all ergonomically designed for user comfort. The mouse counter, chairs, and keypad tray were all designed to reduce fatigue among dispatchers. As in the old center, each dispatcher will have four monitors in front of him, displaying Unit Summary, Radio Controller, Incident Summary, and Map Display. The dispatcher will use a mouse that can travel across and click on any one of the four screens.

At the front of the room four very large screen monitors will keep track of all the units in the city, and the supervisor will be able to bring up any screen for all to see. The system is being developed with Pentium 75 MHz machines running OS/2 as the operating system. The supervisor control position at the rear of the room will have 10 monitor screens to watch; the mouse at his position will move among all 10 screens effortlessly.

All of the trucks will be directed to the scene of the emergency via the currently-installed dead reckoning system, but with the added benefit of GPS for an even more exacting guidance. The dispatcher will be able to tell the firefighters if they missed the street, or guide them to a difficult location street by street.

Coming in the near future will be a camera beaming live shots of the dispatch center to the Internet every 10-20 seconds. The wiring is already peeking through the ceiling. Brian and firefighters Lee Weber and Bud Gunderson already maintain a Web page on their own time. Visit it at **http://www.ci.la.ca.us/dept/LAFD/index.html**. It's a great looking page and very informative. As Brian Humphrey would say "It's 72 and fluorescent 24 hours a day down here in Operations."

Communications

I'll bet you thought I'd never get around to talking about radios! In the comm center they use Motorola CentraCom II Plus's. Pictured is one Motorola box sitting atop a PC. Eighteen channels are displayed on a monitor screen. To change channels all they need to do is click on the channel with a mouse. They can also patch into the L.A.P.D. with the click of a mouse.

Firefighters in the field are switching to Motorola Astros, which means they have the ability to go digital someday if needed to conserve bandwidth in the RF-crowded region of Southern Cal. The system is not trunked, but it is 800 MHz. Between EMS and Fire, the department has over 1,200 mobile radios and 1,400 portable

Motorola radio atop a PC display of frequencies that are on the monitor.

Ladder truck interior photo shows some of the radio equipment in use. Handheld transceivers used by the department are pictured on page 22.

radios, along with over 500 apparatus Mobile Status Entry Units. Table 1 is a list of frequencies and their assignments.

Every firefighter on duty is issued his own portable radio. In the past the radios were Motorola MX-800's which were capable of 40 channels. The new standard radio is now the Motorola Astro mentioned above, which can hold as many as 255 channels or talk groups. The L.A. radios are programmed with their 24 channel system and are capable of patching through to the P.D. The department also has about ten Motorola Visar's—very small 16-channel radios issued to some of the top brass who need to keep in touch.

In the vehicles are Motorola Syntor X-9000's. This unit is a combination radio and siren. The MDTs (mobile data terminals) used are Motorola KDT-480's which communicate via 6 UHF T-Band frequencies in the 506 MHz range.

A Summary of the Department

From their *Information Handbook and History Summary* we can pick up a lot about the department overall. The LAFD is the largest municipal Fire Department on the West Coast. Nearly 3,500 men and women are employed with nearly 3,100 uniformed firefighters and firefighter/paramedics, and more than 300 civilian personnel. They provide service to more than three and a half million citizens who live within the sprawling 468 square miles.

Complicating matters, also included within the city limits are two major airports, a major shipping and receiving harbor, several large refineries, and many industrial complexes. One third of the city is steep, mountainous terrain covered with highly flammable brush.

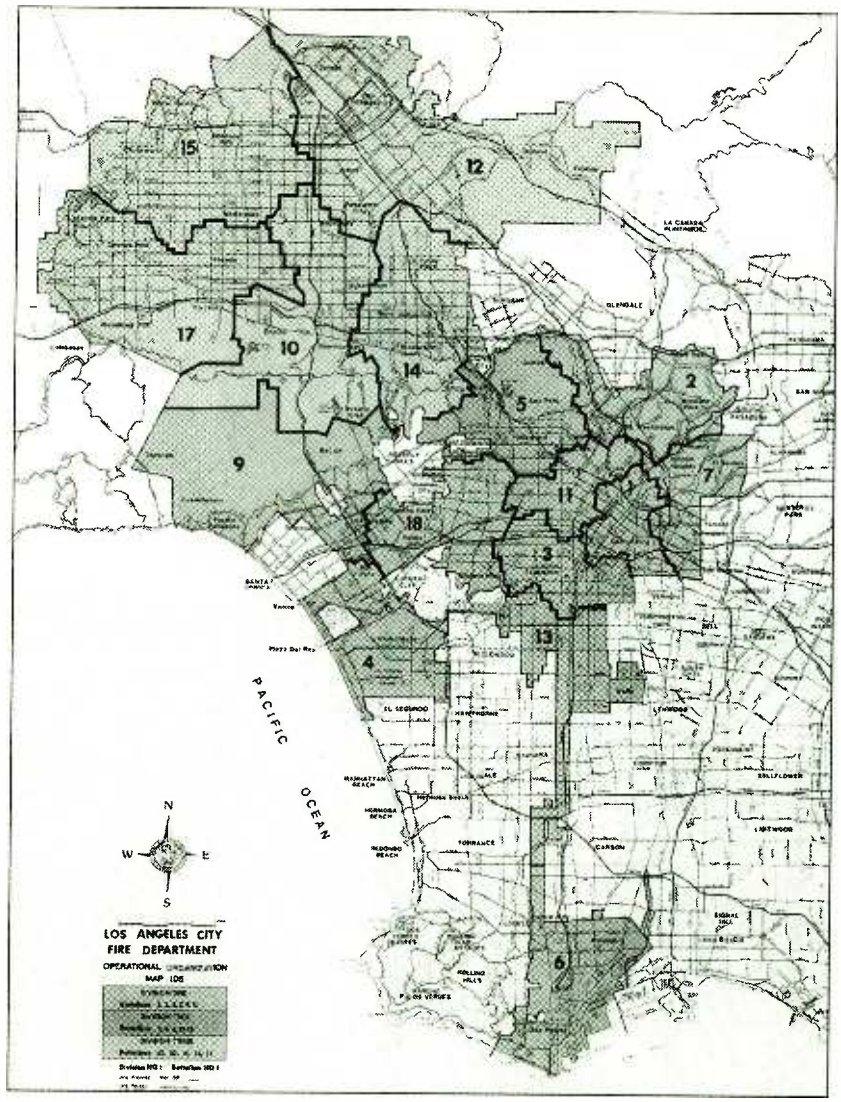
The department consists of 103 stations, and within those are 47 task forces (an aerial ladder truck and a two-piece engine company), 51 single-engine companies, five fire boats, six helicopters, three hazardous materials squad companies, two airport crash companies, and one tractor company. The EMS Bureau consists of 65 rescue ambulances (52 Advanced Life Support and 13 Basic Life Support). The Tractor Company is for hauling bulldozers/skiploaders used in Wildland Firefighting or for assistance during Haz-mat incidents. They even have a Mobile Command Post which is contained within a 48-foot tractor-drawn trailer, but it is not a staffed company. For all of you fire buffs, L.A.'s vehicles are red except for the all-yellow vehicles at the airport LAX.

I was privileged to visit the LAFD's Operation Center on two separate occasions. It's never boring. As you can see by the map, L.A. is a massive city and the responsibility of the radio dispatcher is monumental. It requires a knowledge of the city as well as expertise in life-saving techniques and how to deal with people.

It's always a pleasure being around such professionals, but their camaraderie and the relaxed atmosphere make even their guests feel at home. I wish to thank everyone at the LAFD, especially Brian Humphrey, for giving us a glimpse of the LAFD Operations Center, which is always active, keeping watch over the safety of the city four stories above.

LA Fire Dept. Channel Assignments

Handhelds used by LAFD include the new Astro (left), shown next to the old MX800.



FREQUENCY	CHANNEL #	PL	USAGE
860.9375R	01	YZ	OPERATIONS-DIVISION 1 (CENTRAL \ EAST \ WEST)
859.9375R	02	YB	OPERATIONS-DIVISION 2 (SOUTH / HARBOR)
858.9375R	03	ZZ	OPERATIONS-DIVISION 3 (SAN FERNANDO VALLEY)
857.9375R	04	ZA	DISPATCH/EMS- SOUTH OF MULHOLLAND
856.9375R	05	ZB	FIRE PREVENTION BUREAU
860.4375R	06	7Z	ADMINISTRATION
859.4375R	07	7A	DISPATCH FIRE - SOUTH OF MULHOLLAND
858.4375R	08	1A	DISPATCH FIRE / EMS NORTH OF MULHOLLAND
857.2375R	09	1B	DISPATCH / ALTERNATE
856.2375R	10	3Z	OPERATION EMS Citywide
860.7625R	11	3A	COMMAND
858.2375R	12	3B	TACTICAL
857.4375R	13	4A	TACTICAL
859.7625R	14	4B	TACTICAL
859.7625R	15	5Z	TACTICAL
858.7625R	16	5B	TACTICAL
857.7625R	17	6Z	TACTICAL
856.7625R	18	6A	TACTICAL
866.0125M	19		TACTICAL - FIREGROUND SIMPLEX / MUTUAL AID
866.5125M	20		TACTICAL - FIREGROUND SIMPLEX / MUTUAL AID
867.0125M	21		TACTICAL - FIREGROUND SIMPLEX / MUTUAL AID
867.5125M	22		TACTICAL - FIREGROUND SIMPLEX / MUTUAL AID
868.0125M	23		TACTICAL - FIREGROUND SIMPLEX / MUTUAL AID
868.5125M	24		TACTICAL - FIREGROUND SIMPLEX / MUTUAL AID

Road Trip for Your Radio

By Ken Reitz, KS4ZR

The author with his wife's Schwinn 21 speed mountain bike with antenna mount at rear. Note motorcycle battery under the seat and Alinco 110 2 meter transceiver on handlebars. The homebrew boom mic fits nicely under the helmet and, with PTT switch on the handlebars, makes for safe biking. (Photo by Jensen Montambault)

My neighbor is a lifelong bicycle enthusiast. For the last thirty years he has ridden, designed, and built bicycles of every description. He's even built one bike that defies description: a bicycle one major 'cycling magazine termed "unridable." The bike featured front wheel drive, rear wheel steering, pedals which were higher than the seat, a seat which was less than two feet off the ground and handlebars which were under the seat! His enthusiasm for riding bicycles was contagious and it was only a matter of time before I would succumb to that part of his illness.

Two years ago, after beginning to feel that nagging pressure to do something to stay in shape or at least keep from getting out of shape faster, I tried the sport. Fearing that I might, as with most fitness programs, come to my senses and find I had too much invested in it, I borrowed my wife's bike and hit the road. It's a 21-speed Schwinn mountain bike that's better than ten years old and my neighbor always has to stifle his tendency to alternately sneer and chuckle when I ride it. Still, it's a good beginner's bike.

Listening to the News

It was after my first week of riding, having finally worked my way up to a vigorous seven-mile ride, that it occurred to me that this fitness fad might not fade as quickly as the others. I had already bought a bicycle helmet and now I was yearning to do the next natural thing: put a radio on the bike.

My habit was to ride at a certain time of the day and it meant missing one of my regular radio news programs. To solve this problem I strapped a nice-sized AM/FM radio to the handle bars with Bungee cords. This was great! Sailing along the road at a brisk ten miles per hour, insects pinging off my forehead, listening to the news—it was exercise more fit for humans.

In the back of my mind was the desire to mount a two-meter transceiver on the bike and chat with some ham friends in the nearby town. It was no longer enough to just listen to the news; now I wanted to do a little hamming while pedaling my way to better health. I remembered seeing something in *QST* pertaining to bicycle-mobile, but at the time I hadn't paid any attention to it. Now I was digging through the back issues to find it.

The First Two Meter Project

It was in the March 1993 issue of *QST* that I found the article. The next day I was chasing down the necessary components and within hours I had a 5/8 wave two meter antenna on a resonant mount. The only problem was that I didn't have a handi-talkie. I had only a considerably larger 12-volt mobile two meter rig. I would have to add a twelve volt battery to the set up if I was to get on the air.

One of the things bicyclists are keen on is weight. The less of it the better. Between the clunky Schwinn, the antenna structure, the mobile rig, and now a motorcycle battery (itself weighing in at eight pounds), the bike was tipping the scales at nearly fifty pounds—unheard of in serious bicycling circles. It was time to shed some weight.

The next step was to get a used Kenwood TR2500 two meter HT. With this strapped to the handlebars in the original Bungee cord fashion, I managed to shed twelve pounds. It was the easiest diet I have ever been on!

The Never-Ending Quest

It wasn't long before I began experimenting with different antennas and microphones. I made a dandy little headset boom mic out of junked headset telephone parts and mounted a push-to-talk button on the handlebars. The headset fits nicely under the helmet and a little piece of foam over the mic cuts down on the wind noise. Now, with little effort or weight I can cruise the backroads and hit several of the repeaters in the area. I thought I'd really done something: "Bicycle-mobile, what a great idea," I said to myself. "I must be on the cutting edge of a new technology frontier!" But, in fact, I'm considerably behind the real pioneers and practitioners of this combined hobby by nearly twenty years.

The most famous bicycle-mobiler has to be Steven Roberts, N4RVE, who has logged tens of thousands of miles on all manner of sophisticated recumbent bicycles (a design in which the rider sits in a chair-like seat with the pedals forward so that the feet are outstretched), loaded with electronic equipment. His articles appear in all the bicycling, radio, and technology-related periodicals. Descriptions of his electro-mechanical creations barely do his art justice—I can only refer you to some articles that will help you understand the seriousness of his condition!

Getting Started

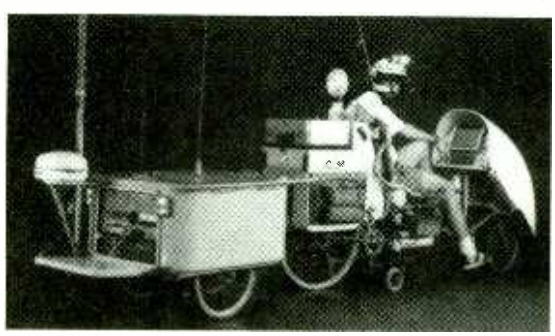
Whether your hobby is scanning, short wave listening, or amateur radio, you can outfit any bike with any gear and enjoy listening, talking, or as some do, operating SSB on 20 meters from the handlebars of your bike. You don't need a sophisticated mountain or touring bike, either. Any type of bicycle will do, but as you get further along in the hobby you'll find yourself migrating to a better bike. My advice is to wait until you've done a fair amount of riding to decide just what kind of bike is best suited to your needs.

Author's Nashbar 12 speed touring bike with antenna mount on back, TR2500 HT on handlebars. Note Berger Bottle in bottle cage. This features a 3 foot plastic tube which runs from the bottom of the bottle (an old vegetable oil bottle) to the handlebars. It makes for easy sipping while riding and holds 36 ounces. Total cost under $1.00. (Photo by author)

After I'd been biking for a year, my neighbor (the local bike guru) convinced me it was time to move up to a touring bike. He shopped around the local bike shops and found one he thought was perfect for me. Literally dragging me to the shop, pointing to the bike, he said, in his own guru-like fashion, "If you don't buy this bike, I'll kill you!" He was right. It was a great bike, and in the next six months I logged over 1,200 miles on it without a problem.

If you want to learn something about bicycles, check out your local newsstand for magazines on the hobby. Don't be put off by the tendency to hype the latest handlebar craze, special equipment, or expensive bicycling clothes. (One fellow cyclist I know paid more for his cycling wardrobe than I did for my bike!) There are, however, many good articles on riding techniques and reviews of bicycles which will help to find the one that's right for you. Try to be informed before going to a local bicycle shop. My experience is that many are staffed by people whose experience may not be greater than your own, or sales people on commission may not be interested in giving you a decent deal.

Above all, don't think that it's too late to start biking and hamming. There are many hams above retirement age who enjoy their radio hobby while they keep up their health. Consider Mary Duffield WA6KFA, of Santa Cruz, CA, who has been biking for 55 years and a ham for 18 years, or Hartley Alley, NA0A, Chairman of Bicycle Mobile Hams of America, who recently biked over two thousand miles to his 50th high school reunion!



Steve Roberts' "Behemoth" bike. Courtesy ICOM.

Protecting Your Radio

Whatever you come up with to mount your radio to the bike, take precautions to protect it from the wear and tear of the road. Most HTs are ruggedly built. Designers knew these rigs were going to get knocked around a bit. Even so, do what you can to cushion the road impact. I use a thick piece of styrofoam between the HT and the mount to even out the bumps. Several thousand miles has proved this method, while crude, does work.

Keep a plastic bag of some kind on board to keep the radio dry in the event of rain. I was once caught out in a summer downpour and the radio took quite a soaking. When I got back I opened the radio up and thoroughly dried it inside and out with a hair dryer. It worked just fine after that.

On long rides you may have to stop for refreshments along the way. Find a convenient way to secure your bike and take your HT with you when you go into the store.

Getting Your License

It's easier than ever to join the ranks of amateur radio with the new code-less Technician license. Since the two meter band is where all the code-less Technicians start, it's a perfect place to start your bicycling hobby as well. Contact your local amateur radio club for information on when and where they hold classes for license study. If there is no local

club, the American Radio Relay League (ARRL) has a video tape license study course which will prepare you for the exam in as little as a week.

There's a real sense of security in knowing that virtually everywhere you may travel in the U.S., there'll be a repeater from which you can call for road assistance, medical help, or just information about hotels, restaurants, and sights to see. And, if you're on a bike club outing, all the other riders will appreciate having a ham in their midst who can call for help.

Many repeaters feature direct access from your HT tone pad to 911 or State Police. Others have phone patch access so that you can contact family members directly. Even on repeaters without such options, hams are continuously monitoring the frequencies listening for ways in which they can help.

If you get your friends involved you can all work two meter simplex on the same frequency. It really adds to the fun to be able to chat with your friends. There's a safety bonus, too, as road and traffic information can be relayed to the group.

Safety Factors

Bicycling demands your full attention. You can't be tuning a radio, looking at the frequency readout, and riding at the same time. There are dangers everywhere you turn when you're on the road. Always wear a helmet. Falling off a bike is no fun and, though wearing a helmet will not protect exposed legs, arms, and shoulders, it's the least you can do to protect yourself.

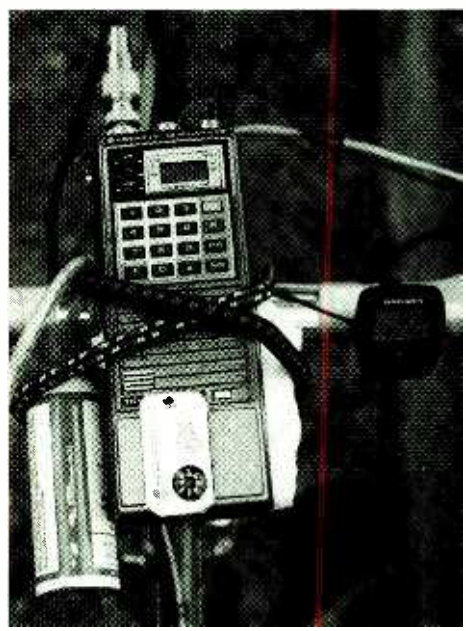
Assume that automobile drivers can't see you. They don't expect to see a bicyclist as they come screaming around the corner so it's up to you to anticipate them. Always be willing to take to the ditch. Use a rearview mirror and get in the habit of checking it. Listen for approaching traffic. Your state Department of Transportation has a pamphlet on laws and safety tips for bicycle riding; get a copy and become familiar with it. In my state it is unlawful to wear earphones while riding. A bicycle is considered a vehicle and must follow the rules of the road laid out for all vehicles (e.g. riding on the right side of the highway). This means obeying all the usual traffic signs and signals, too.

Be on the lookout for road hazards. Some bikers are so intent on the ride they don't see potentials for disaster until they're on top of them. Puddles can hide deep pot holes which could bust a tire and bend a rim. Look out for broken bottles, dead animals, or live ones crouching at the roadside looking for a nice juicy bicyclist's leg! Keep a can of pepper spray at easy reach for those dogs who are intent on injury. My rule is that as long as the dog is along the side of the road running and barking it's O.K. Once they come out into the road they subject themselves to a whiff of pepper spray. It's very effective and I've sent more than one slavering hound running in the opposite direction after tasting the pepper spray. It's available at all bicycling shops.

The Road Veteran

Once you've gotten the bicycle mobile bug you'll take off on your own quests. Some hams are taking advantage of the new line of small QRP transceivers such as the MFJ 9420X which is a 20 meter single sideband rig with 12 watts output. I imagine that when the next sun spot cycle gets hot there'll be more than a few 10 meter SSB rigs available and hams will be working DX world wide from their bikes! Serious long distance bikers take HF gear along and work the HF bands from the camp site.

My own goal is to work the MIR space station or the Space Shuttle via the bike, and you can bet that when there's a SAREX mission on board a Shuttle flight that I'll be trying to contact them.



Compact console on the handlebars features the Kenwood TR2500 HT with connections to the homebrew boom mic and antenna, tone pad and frequency are conveniently located. Note water bottle tube to left, pepper spray ready for action, Velcro mounted thermometer/compass (not very accurate but fun to look at) and speedometer on right (bike dealers like to call them "computers" so they can keep the price at around $30). (Photo by author)

Another venue of experimentation is solar energy. Long distance riders need to recharge their NiCads while riding because there are no outlets in the outback. Many have come up with various small solar panels which keep the spare battery pack charged up. Fully recharged batteries are a precious commodity when you're out on the open road.

For Further Reading

You might enjoy the on-going saga of those who are already experienced by subscribing to the Bicycle Mobile Hams of America Newsletter. The BMHA, whose logo was designed by Russ Dwarshuis, KB8U, is open to all, and you don't have to be a ham to join. Over 400 members from around North America and Europe enjoy the camaraderie of this hobby and share their adventures of traveling around the world or just around their states. You'll also get tips on building antennas, reviews of new equipment on the market, and great ideas for some very memorable vacations. The BMHA has a forum each year at the Dayton HamVention and members can be heard regularly on their HF nets on 20 meters

BICYCLE MOBILE

HAMS OF AMERICA

To find out more about being bicycle-mobile, the following is a list of articles of interest:

"Bicycle-Mobile Antennas" by Steve Cerwin, WA5FRF and Eric Juhre, K0KJ/5. *QST* Magazine, March 1993 pages 52 and 53.

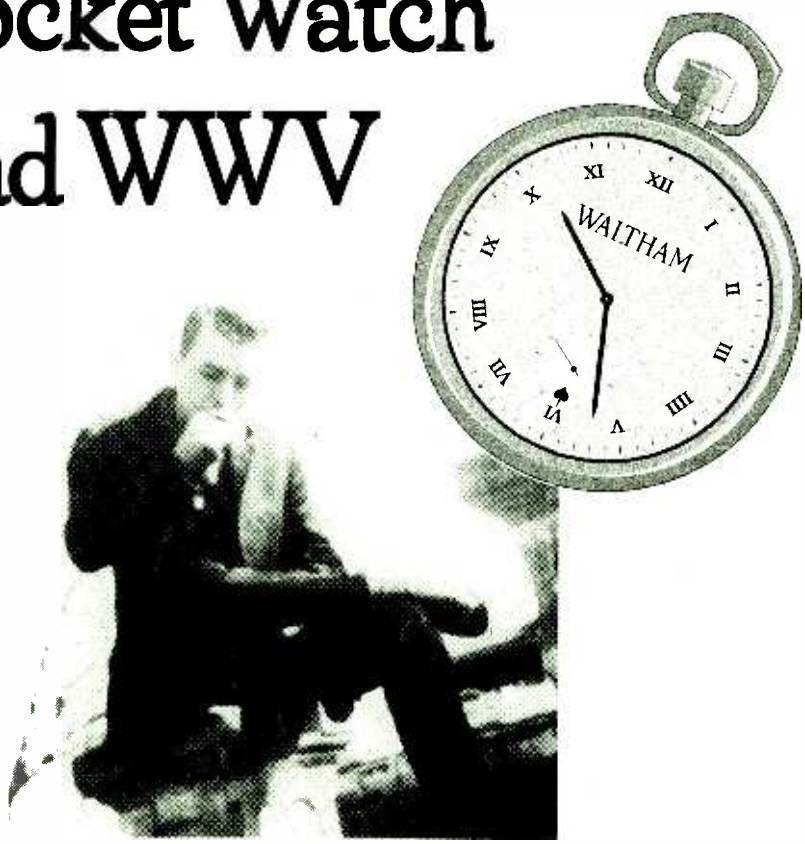
"A $5 Headset Mike" by Doug Brede, W3AS/7. *QST* Magazine, January 1993, pages 48 and 49. I adapted this design to accommodate the TR-2500 and added a PTT switch.

"Packet Radio and High-Tech Nomadics" by Steven Roberts, N4RVE. *73 Amateur Radio Today*, October 1989, pages 48 and 49.

"Bicycle In Dataspace" by Carl Zimmer. *Discover*, July 1991, pages 36-40. Details Steven Roberts' BEHEMOTH, the next generation bicycle-mobile following his Winnebiko II.

Bicycle Mobile Hams of America, Box 4009, Boulder, CO 80306. Membership open to amateur radio and non-hams alike. Publishes the quarterly BMHA Newsletter. Membership is $10/year. Has 20 meter SSB net at 2000 UTC and four hours later at 0000 UTC the first and third Sunday of each month. Frequency is 14.253 kHz plus or minus QRM. Listen for NF0N, Mike, net control or NU8N, Jim and K7RO, John, assistant net controls.

Grandpa John's Pocket Watch and WWV



By Havana Moon

I have an old Waltham pocket watch. It once belonged to my grandfather, and when my father gave it to me many years ago, he told me a story about the watch and a radio that I have never forgotten.

He loved that watch, he was a stickler for time. Never late. Ever. The worn pewter timepiece was a faithful companion. And only grudgingly did Grandpa John admit to himself that it might one day begin to fail. And when that day came, just as he knew it would, Grandpa and the watch made a trip to the White River. Out to the Cowboy's old, tumbledown barn, where high in the doorway, turning slowly at the end of a rusty chain, hung a huge, old pocket watch.

High atop the ramshackle building, strung between two rickety poles, was a sagging stretch of corroded wire which wound its way through a broken window to the back of an ancient radio.

Inside, in the dust and the shadows, lined up row after row, were old wooden benches covered with clocks and watches and radios.

A rough and ready man who walked with a limp, he never answered to any name but Cowboy. He'd been a desperado in his youth, my father told me—surely a man with a past. His size and reputation belied the delicate skill with which he handled the tired old watches and clocks that passed through that doorway for repair.

He was an odd man. Silent, intense. He waited each day at the railroad station for the Missouri Pacific to arrive. He never met anybody. Just waited. As though he were waiting for time itself.

As watched matters go, it took a long, long, time. Days stretched to weeks, weeks to a month and still the Waltham lay on the bench out in the barn at the White River. But Grandpa John wasn't known for his patience. He called or visited the Cowboy once—at least once—each day. It wasn't that it hadn't been repaired; the Cowboy was a craftsman who took great pride in his work. No, you see, the Cowboy was listening for WWV. Conditions were poor and the trustworthy, reliable old time signal couldn't be heard in the hot southern summer. But the Cowboy, knowing Grandpa's regard for accuracy, insisted on waiting for the signal from WWV. No compromise. That watch had to be set right. Just right.

I was just a kid when my father told me this story for the first time, and I really didn't understand the answers he patiently gave to my never ending questions about just what Grandpa's pocket watch had to do with a radio. That is, I didn't understand until the day that I became the proud owner of a Hallicrafters Sky Buddy, chosen with great care from among the dozens of others that made up the Cowboy's vast collection.

And then I did begin to understand. Comic books took a back seat to copper wire. I risked my life more than once climbing to the top of a pecan tree to hang that longwire just a little bit higher. Antenna design became an all-consuming pasttime for me and my buddy Don. Neither of us would be outdone. Steal hubcaps? Never. But copper wire? That was another story.

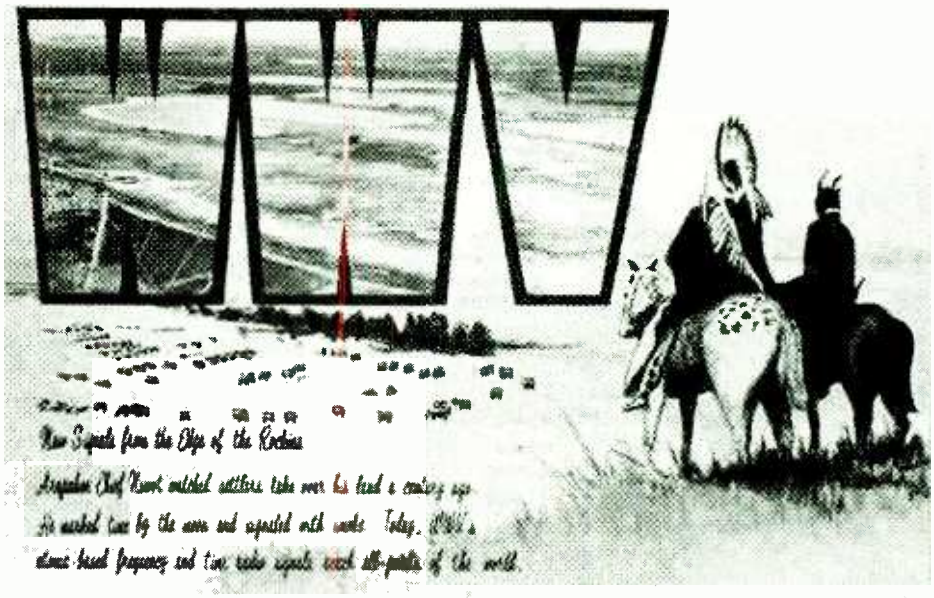
There were arguments each Saturday afternoon after the weekly Western at the Laura Movie Theater. Arguments that turned to fist fights on more than one occasion over whose letters had been read on HCJB or TGNA, whose antenna was longer—and if not longer, whose was higher—and most importantly, who could really hear WWV the best. I could. I'm sure of it. Because my Hallicrafters was bigger and better than his BC348—even though it, too, had been chosen with just as much care from the Cowboy's vast collection.

Grandpa's watch stopped one day at 6:51. But it didn't matter to him, because, y'see, Grandpa and the Cowboy had both gone some time before to a place where there is no time.

The watch now rests in a glass case on a shelf over my radio. That's where it's been for years. Oh, the radio has changed from time to time—Hallicrafters, Nationals, Hammarlunds and Yaesus have come and

gone. Today it's an NRD. But always, the shiny silver watch on the shelf over the radio. Except for one six-year period of my life when it was packed away in the dark—the radios that surrounded me then weren't the kind that lend themselves to the display of memories. Those years were spent in innocuous, lost and dangerous places. It was a time I've left behind me—and yet it's with me still.

I still tune to WWV. Its steady, quiet ticking is soothing, hypnotic. I especially like to listen when I'm alone in the dark and my eyes always turn to Grandpa's watch. It somehow catches the glow from the dial and reflects it back to me. In spite of its inefficiency and in spite of its age, it's still perfectly accurate. I know I can count on it. ... Two times, every day.



Adios, Havana Moon

Who was Havana Moon? Some readers may not even remember Havana Moon or the era in which numbers transmissions were much more a mystery than they are today.

Havana Moon was a pseudonym used by William T. Godbey, a former US Intelligence officer, who became known in the hobby as one of the foremost US experts on covert radio and shortwave numbers transmissions. Bill wrote a regular column for Monitoring Times from May 1983 to June 1986. He died on January 9, 1996, at the age of 59, after a brief illness.

Bill recently retired from numbers chasing and spent the last several years happily and quietly with his longtime sweetheart and companion, Christine Klauberg Paustian, and her family in Westchester County, New York. The following is a short sketch of Bill Godbey, the man behind Havana Moon, as remembered by Christine. She would welcome letters from fans and friends c/o NetSurf Technologies, 1858 Pleasantville Road, Briarcliff Manor, NY 10510. We wish to thank Christine for sharing the story of Grandpa John, which Bill Godbey wrote in 1990. It seems an appropriate gesture, at the end of a unique radio career, to acknowledge its beginnings.

When Bill first told me about Havana Moon I laughed. And so did he. He always relished a good joke—I can still hear that distinctive chuckle, and see the impish grin and the twinkle in his eyes.

The persona that became a legend was born out of a joke over twenty years ago, and in time, he came to be known as what may have been the foremost US expert of his time on the odd shortwave mystery broadcasts known as the Numbers Stations.

He was a radio buff for most of his life. Bill got his first ham call, W5YHS, back in Arkansas when he was just a kid of 12. He developed a fascination with codes and ciphers, and his expertise in cryptography took him into various military intelligence commands, which led in turn to a career as an intelligence officer in the National Security Agency. That affiliation was the reason for all the mystery, and for the pseudonym. Anonymity seemed the best way to handle the whole thing—who ever knew that it would take on a life of its own!

Bill earned a degree in broadcasting and journalism from Arkansas State College. He spent years as an air personality and Program Director at AM stations throughout the south, before moving on into the world of newspapers. He worked at the Oakland *Tribune* and the Palm Beach *Post* for many years. He was a talented and accomplished photographer, an avid gardener, and he knew more about rhythm & blues and rock & roll music than anyone I have ever known.

The Numbers columns and articles first appeared in the Newark News Radio Club *Bulletin*, and moved through the years to *Monitoring Times, Popular Communications, The A*C*E, Umbra et Lux, The Numbers Factsheet, Los Numeros Online, Clandestine Confidential*, Radioscan and SIGNALS. There were a couple of books, and countless radio and magazine interviews—all about numbers—an oddly arcane subject made all the more fascinating by the silent silhouette in the black fedora.

In the last years of his life, he pursued more traditional and ordinary things - he loved our house and garden, and competed in a good-natured way with the neighbors to make our home the showpiece of the block. He got a new ham license, KB2OOR, and hung out on 2 meters and in the diner with a bunch of his cronies. He loved his radios and tag sales, the lottery and pepperoni pizza—crossword puzzles, the Sunday *Times*, and a good cup of coffee—he loved the blues, the Honeymooners, and our menagerie of assorted children and pets.

I treasure the years we had together. And as much as I would like to have kept him all to myself, a part of me is glad—finally—to share the real man with all of you. William Thomas Godbey was born in McCrory, Arkansas, on September 5, 1936—he died peacefully in North Tarrytown, New York, on January 9, 1996.

—Christine Paustian

To paraphrase the now-famous sign-off of his pen-name persona: "Time now for a Tecate and ... adios, Havana Moon."

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How to Read Hauser (and other *MT* columns)

I have been reading material written by "The Global Forum's" author Glenn Hauser since the seventies in one magazine or another. Maybe I have read Glenn's and similar columns for *too* long, since it never dawned on me that this might be fodder for a column until it was suggested by our editor Rachel Baughn. She reminded me that folks who are just starting out might need a little help in translating some of the more common radio monitoring abbreviations and shorthand that appear, not only in Glenn's, but in many columns. A wealth of material goes to waste if readers are so daunted they don't even try to decipher it.

To help us get started, I've constructed a few fictitious entries as they might appear in the pages of *MT*. Since I began by invoking the name of Glenn Hauser, let's start out with a look at how something might appear in his column and take it apart bit by bit.

FREEDONIA Freedonian World Service heard in English Tues *1400-1430+ on 6955 with CW QRM // 7415 ex-7350 via RNJI (Mahatma Cane Jeeves)

The first thing you will see (all in capital letters and bold face, italic type) will be the name of the country that this item applies to. This is very helpful for folks who are trying to catch certain locations to increase their total number of countries heard.

Most country names are self-explanatory, with the possible exception of my favorite abbreviation: UKOGBANI. More than one beginner has tried to find this country on their maps without success. UKOGBANI stands for the United Kingdom of Great Britain and Northern Ireland. Just think "UK" when you see this abbreviation and you will never get lost again. International Vacuum usually reports information on radio-related programming carried on satellite. International Waters generally concerns off-shore (shipboard) broadcasting.

A country name followed by [non] indicates the transmitter is probably located outside the borders of that country (e.g., December's Tanzania entry in which Radio Tanzania was actually being being heard via a relay from Meyerton, South Africa.)

Next you see the name of the station or service that this item applies to. In this example it is the Freedonian World Service. The language used during the broadcast is English.

What usually follows at this point is the UTC day and time. To get a good handle on UTC time, look at the headings of "The Shortwave Guide" column, starting on page 48. The UTC day changes at 00:00 UTC. During Eastern Standard Time, this occurs at 7:00 pm. So if you are listening in New Jersey at 9:00 pm on a Monday evening, it is already Tuesday in Europe. In Glenn's column, an asterisk preceding the time indicates sign-on and an asterisk following a time means sign-off. In this example, the reporter monitored the beginning of the transmission, but it was still continuing when he stopped monitoring. He may have lost the signal, though the text will often indicate signal fade if that's the case.

In Glenn's column, frequency information is reported in terms of kilohertz (kHz). Our example indicates that the Freedonian World Service was monitored by this reporter on the frequency 6955 kHz.

The reporter further reports CW QRM. CW is the common abbreviation for Continuous Wave transmission. This is the appropriate technical term for "Morse Code." QRM is an old telegraphers' abbreviation for **interference** that has come into common usage by the radio monitoring community. So in this instance, the reporter listened to the entire Freedonian transmission with a Morse code signal getting in the way of the listening.

In this example the next thing you see are two "backslashes." This is a common shorthand used to indicate that a parallel broadcast is noted—the simultaneous transmission of identical programming over several different frequencies, or even from different locations. This information is very helpful when trying to catch the details of a program that might be weak on one frequency but strong on another. Using our example, the primary frequency of 6955 kHz was experiencing interference. The reporter may have been able to hear things more clearly by also listening in on the parallel broadcast, which in this case occurred on 7415 kHz.

This report not only indicates a parallel frequency but also an additional transmitting source, in this case, the transmitters of Radio New Jersey International (RNJI). The parallel frequency is a new one, shifted from a prior frequency of 7350 (ex-7350).

Note: As we enter the world of computer-assisted monitoring, don't confuse this usage of the double backslash with its appearance in Internet addresses for sites on the World Wide Web.

Finally, Glenn always credits his sources of information in parenthesis, usually at the end of the reported information. Many entries will have multiple reporters, but in this case the sole reporter of the radio monitoring event was none other than Mahatma Cane Jeeves. Only those items not credited or followed by (gh) are originated by Glenn.

Gradually the more common abbreviations will begin

to feel familiar. For example, BBCM stands for the BBC Monitoring Service, *W.O.R.* stands for *World of Radio* (Glenn's radio show), RN*MN* stands for Radio Nederland *Media Network*, *DXPL* stands for *DX Party Line*, etc.

Glenn's column always deserves a careful reading by beginners and advanced monitors alike. Glenn packs tons of information into a relatively small space and every column has information that will greatly improve your monitoring. "The Global Forum" is not a pure logging column; it reports information, changes, and patterns in shortwave broadcasting from around the world that can provide many new monitoring opportunities. Heck, I read Glenn's column before I turn to my own!

More on Shortwave Broadcasting

Gayle Van Horn's "Broadcast Loggings" column uses a similar format. Try this faux report and see if you can get all the meanings.

1800 UTC on 7979
EXPECTISTAN: REI. Expect? Traditional Expect folk music with ID and QSL info // 6969 (Fine, Howard, and Fine, NE)

Again we find the time listed in UTC and the primary monitored frequency listed in kilohertz (kHz). This is followed by the country name, in this case EXPECTISTAN. Next comes the transmitting station's name or identification; here, Radio Expectistan International. This report goes on to indicate that the language is possibly Expect, with a ? indicating that the monitor was not entirely sure. (When it comes to languages, do not be afraid to indicate your lack of certainty, in case someone more familiar with the various world tongues takes your advice and goes hunting for the station.)

Next, the report talks briefly about the details of the program's content. This part of the entry indicates that the station gave a clear identification (ID) and told anyone monitoring the program how to go about receiving confirmation of the broadcast (QSL). This information is very useful and gives anyone reading it an understanding that Radio Expectistan International is "monitor friendly."

The report also indicates that the REI signal was heard in a parallel broadcast on the frequency of 6969 kHz. Finally, credit is given to the intrepid team of DXers known as Fine, Howard, and Fine, monitoring from the fine state of Nebraska.

Before we move beyond the world of shortwave broadcasting, a quick comment on *MT*'s "Shortwave Guide" section. You will find all of the abbreviations used in the Shortwave Guide listed at the very beginning section of the column (p.43). A typical entry might look something like this.

0300-0400 mwf Sloblovia, Sloblovian Broadcast Corp. 7456af 9435na 15420eu

This entry indicates that the Sloblovian Broadcast Corporation can be heard (from Sloblovia) between the UTC hours of 0300 and 0400, Monday, Wednesday, and Friday. During this period of time they are broadcasting on three different frequencies (remember those parallel broadcasts we discussed) aimed at three different areas of the world. Folks in Africa would tune into 7456 kHz, folks in North America would want to try 9435 kHz first, and Europeans will want to give a listen to 15420 kHz.

If you are on the East Coast of the United States, you might first tune 9435 kHz and then try the other frequencies to see if you can hear either of them as well. Doing this will allow you to add those two backslashes to your report indicating that you have logged a parallel broadcast frequency.

HF Communications

If you are trying your hand at utility monitoring (two-way communications on shortwave), Larry Van Horn's Utility Loggings section of his Utility World column gives a list of the abbreviations used in that month's column—usually around fifty common utility abbreviations. This key is important because of all the different modes of communication you are likely to encounter when monitoring utility stations.

Let's try a couple of imitation reports to give some of these abbreviations a workout.

6715.0 M/V *Sowbelly* at 0428 in SITOR-B reporting cargo condition. (Presley,TN)

Okay, using Larry's handy key and some of the things we learned along the way from the other columns, we can translate this report with relative ease, even if we have never sought out a utility signal before.

From this report we learn that on 6715 kHz, the motor vessel "Sowbelly" was heard at 0428 UTC using the SITOR-B digital communications mode. The reporter obviously had a RTTY reader of some sort because he was able to copy the text of a message concerning the ship's cargo. The report ends with credit given to the reporter in the usual parenthesis.

Let's take a look at a slightly more mysterious entry.

3769.5 Unid German female 7-digit number station in USB at 0350. Ending with a 5-letter group at 0400. (Franklin, PA)

This is a report of one of those ubiquitous "spy numbers" stations. The report tells us that on the frequency 3769.5 kHz an unidentified female voice using the German language is heard repeating groups of seven numbers in succession in the Upper Side Band (USB) mode. The signal was copied by the reporter beginning at 0350 UTC. The reporter goes on to make the observation that the station ended its transmission at 0400 UTC with a single 5-letter group. This small change in operating procedure is a significant detail for folks trying to figure out the nature of the numbers stations.

Confirming the Logs

All of this reading and subsequent monitoring is sure to result in a few attempts at confirmation. So let's make one more stop: Gayle Van Horn's "QSL Report" column. Here is the place where folks let each other know what confirmations they have received. For example, supposing Mahatma Cane Jeeves successfully confirmed the report that appeared in Glenn Hauser's column. We might find a report such as this.

FREEDONIA
Freedonian World Service, 6955 kHz. Full data QSL card unsigned plus program schedule in 54 days for an English report and 2 IRCs (Mahatma Cane Jeeves, CA)

In addition to re-reporting some of the more pertinent information from his original report in "The Global Forum," Mr. Jeeves lets us know that he received confirmation in the form of a QSL card that contained an accurate reporting of the date, frequency, and other data such as transmitter location.

However, he goes on to indicate that the card was unsigned. While still a good QSL, a name or signature could have provided a more accurate address for other folks sending future confirmation reports. We learn that the card arrived 54 days after the report was sent out. We also discover that this station responded positively to a report that was written in English. (Getting a report out in a language that can be understood at the station can make all the difference in the world.) We find that the station QSLed thanks to the reporter's including two International reply Coupons along with his report.

If you look closely, you will also find another important bit of information that did not appear in the original report in Glenn's column. The acknowledgment, as always in parenthesis, indicated Mr. Jeeves' location as being in the state of California. This is a clue that this station, at this particular point in its schedule, might be better heard on the West Coast than on the East Coast. You see, all aspects of a report can prove useful when tracking those elusive stations.

As you chase those signals through the sky, keep in mind that sharing new or useful information is the sole purpose of the columns we've been learning to "read." Now that you have a notion of the form in which reports are presented, why not get *your* name in parenthesis in a few *MT* columns?

Richard Barnett
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Scanning at the Consumer Electronics Show

Meet your new Scanning Report columnist

Richard Barnett has been publishing and editing the *Scanner Master* series of comprehensive radio guides since 1978. He is also the editor of *Monitor America*, the national communications guide, and the editor of the *Beyond Police Call* section of the *Police Call* series. Mr. Barnett is a consultant to the scanner industry.

You can contact Rich by mail through the *Monitoring Times* offices or via e-mail at **ScanMaster@aol.com**, on CompuServe at **102354,3643**, or via the Grove Internet site **mt@grove.net**.

As I assume the privilege of being the new scanner editor for *Monitoring Times*, the first thing I want to do is to thank Bob Kay of behalf of all of us for his work in this post over many years. Having written for other monthly publications in the past, I am well aware of just how much of a challenge it is to come up with interesting articles every 30 days!

It is my intent to offer not only a new perspective on the scanning hobby; but also a unique viewpoint on the business end of manufacturing and selling scanners and accessories. I look forward to your comments, complaints, and suggestions on these topics.

Manufacturing and selling is on my mind right now, having recently returned from the January Consumer Electronics Show (CES) in Las Vegas. The show is attended by some 100,000 industry representatives annually. It can be a zoo at the show, with scores of people ranging from industry titans, to chain store buyers (the most sought-after folks), to the lowliest mom-and-pop CB dealer.

As at any trade show, each manufacturer has a booth, corresponding to their relative size, where they present their goods and try to write orders. It's fun to roam the show and see all the new toys from RCA, Sony, and Panasonic, as well as watch the stars and the Playmates sign autographs, but the show is not as much fun as it used to be. Back in the early 1980's, you could sit back and watch the honchos from Regency and Uniden eye each other carefully, check over each other's product line, and then nonchalantly, and without a trace of outward hostility, walk into the other's booth and shake hands with their competition.

Courtesy Michael Perlman

It was beneficial for the hobby to have two major "mass market" manufacturers back in the '70s and '80's. But then Uniden bought Regency out, and they haven't missed a beat as far as continuing to supply the hobbyist and professional market with scanner products.

Back in the mid-80's you could also find scanners at Cobra (their scanners were manufactured by Uniden - "OEM" work) and at Fanon, a company which made perhaps the last of the crystal scanners.

For the last few years, however, Uniden has been the only manufacturer displaying scanners at the electronics show. With the exception of Radio Shack, the industry cannot expect the scanning hobby to grow or even sustain itself, should scanners be totally absent from the electronics show altogether. It's imperative that the major retailers and wholesalers understand that scanners are still a legitimate and profitable product category for them, otherwise they will not restock, and we hobbyists in turn will have to look harder to find new products.

That scenario may be the unstated goal of certain two-way equipment manufacturers, but that is a story for another time. We should be grateful that Radio Shack, along with many other major retailers and mail-order houses, continues to sell scanners. It is unfortunate, however, that there are so few of those mom-and-pop CB/scanner stores left that, in their day, helped to grow the hobby.

This month's article will focus on Uniden to a large extent, but only because, as I mentioned, they were the only scanner manufacturer displaying radios at the annual electronics show. I hope to advise you of new products from Radio Shack and others in the future; the technical comparisons I'll leave to Bob Parnass to perform.

New Scanners

Among the new scanners and accessories Uniden was showing was its new Bearcat 230 scanner, which is a 220 with an extra battery pack and charger. The real news, however, is Uniden's introduction of the BearTracker BCT-10.

The BearTracker line was instituted back in late 1992 with the introduction of the BearTracker BCT-2. This was a pre-programmed radio in the same case size as the currently available Bearcat 560. The BCT-2 allowed the user to scroll through 49 states (no Hawaii) and the District of Columbia, to monitor either Highway Patrol, local/county law enforcement, or the state D.O.T. frequencies. These channels were pre-programmed by state so that you only scanned those channels which were allocated for the state.

This is very different from the general "service search" found on many scanners, which allows the user to scan all frequencies available for police or fire licenses in the nation. Service search is OK, but it is not specific enough for someone who wants to find active law enforcement or fire/EMS frequencies in a particular state. Too often you'll run across pagers, data channels, school buses, and other undesired signals.

The BearTracker BCT-2 also provided a warning alarm when mobile extender or certain other frequencies were active (more on mobile extenders in another article). The radio was sold primarily to the

trucker market, where 18-wheel drivers loved the fact that every time they changed states they didn't need to re-program their radio. The BearTracker 2 was a successful product, but it needed further enhancements. For its size vs. its features, there was some work to do on the radio.

The BearTracker BCT-7, which debuted in the fall of 1994, succeeded the BCT-2. This new radio has turned out to be a rousing success for Uniden among truckers, RV'ers, average motorists, and even many scanner buffs. Suffice it to say that, with the inclusion of 800 MHz, CB-radio scan, and 100 programmable channels, in addition to the thousands of pre-programmed frequencies, the BCT-7 is a fully developed device. However, there has always been one drawback with the BCT-7: its size. While the radio is approximately the size of the smallest mobile scanners, it still requires—as do all mobile scanners—a mobile mounting bracket. You either have to drill holes in your dash or remove a radio or cassette holder from your car dash to install the unit (although some other creative installations have surely been developed). Although the size has never been a problem for a trucker, for the average motorist size is an issue.

The BearTracker BCT-10 has the size and the look of a radar detector. It is the smallest mobile scanner ever produced. The "10" is pre-programmed by state. All 50 states, Washington, DC, and all the Canadian provinces and territories are included. The user presses the "state" button atop the unit and scrolls through the two-letter postal state codes (AK, AL, AR, etc.). After reaching WY (Wyoming), the user then begins to scroll through the postal codes which identify Canadian provinces and territories (AB for Alberta, for example). Pressing the "mode" key, the user selects whether he wishes to monitor highway patrol, local/county police (highway patrol frequencies are added into this mode also), or weather. The radio then begins scanning away.

The BCT-10 also offers a unique twist to the concept of a scanner in a radar box: a signal strength meter which is numerically displayed in a 1-through-10 scale. As the strength of the alarmed signals (as described above for the BCT-2) increases, the display on the unit will change from "HP" (Highway Patrol), to the relative signal strength. A red warning light will also flash and a beep alert tone, tied to the signal strength, will also sound. The beep audio level can be adjusted or muted.

A unique, angled, swivel antenna, mounted to a BNC connector, can be detached so that standard mobile antennas can be used. A cigarette lighter adapter with cord is provided for the "10," and mounting hardware for this unit includes both a visor-clip and windshield-mount suction cups—the unit mounts just like any radar detector!

The "10" is a very slick package that should pique the interest of the scanner buff, even if only as a toy. Better yet, it should be given serious consideration as a scanner for use in a rental car and especially for out-of-town business or vacation trips. Uniden is hopeful that the radio will have great appeal to the non-scanner user who does not want to drill holes in his or her car to mount a scanner and antenna, and for those who do not want to program frequencies. As the BearTracker 10 mounts just like their radar detector, installation and operation will be simple.

We can only hope that as these non-hobbyists use the new radio, they will become intrigued with what they hear, and then consider upgrading to more sophisticated programmable scanners. The entire hobby and industry would benefit greatly by having a large new group of enthusiasts join its ranks.

■ New Road-Hazard Alerting System

Whistler, B.E.L, and Uniden, along with others in the radar-detector industry, have announced standards for the new highway warning/information circuit that is built into their new radar detectors. The new warning system, developed in conjunction with Georgia Tech, allows state, county, local, and federal agencies to transmit a unique warning signal in the "K" band, with a data stream applied to the K-band signal.

In the data stream, over 60 different warning signals can be provided, such as "Bridge Out," "Emergency Vehicle Oncoming," "Accident Ahead," and the like. These warnings will be displayed alpha-numerically on new radar detectors, and an audio translation and annunciation of the warning is also planned. There will be many other applications for the technology, but widespread use of the device will, it seems, be dependent upon the purchase and deployment of the transmitters by public safety agencies. Though this is not exactly a scanner topic, any time public safety agencies are transmitting new signals, I want to know about it.

■ Lost, but finding frequencies, in Las Vegas

If you've ever been to other-worldly Las Vegas and roamed into the MGM or other mega-casinos, you've probably gotten lost, as have I. These gambling dens are the size of small countries, but you can always have a little scanning fun there, even if you do not gamble. I packed my

Optoelectronics Scout in my back pocket and waltzed through a couple of casino floors to see what frequencies I could sniff out.

A casino is probably the perfect place for a Scout. You have myriad groups of users, all operating on different frequencies in a confined space. Here's a chart of the potential casino-hotel radio usages to sniff out:

CASINO	HOTEL
Casino security guards	Hotel operations security
Plain-clothes security units	Housekeeping
General operations	Catering
Slots (jackpots, etc.)	Engineering
Casino floor maintenance	Valet parking
Radio-telephone	Paging
Paging	
	CONVENTIONS/SHOWS
	Convention management
	Show operations
	Wireless microphones

In the very short time I meandered around with the Scout, I picked off Bally's slots operations on the low-power frequency of 460.8875 and 900 MHz pagers. While outside of the casino, I picked up taxi mobile channels on 457.450. If you like to have something almost continuously buzzing in your pocket, try a Scout in Las Vegas. It's a kick.

Frequency & System News

■ Atlanta Goes Trunked

The city of Atlanta has switched over to their trunking radio system. It has been widely reported that Motorola is installing a digital trunked radio system for the Olympic Games this summer in Atlanta. That system will obviously have analog interconnect capability with the city of Atlanta system. Practically the entire Atlanta metropolitan area, on a county-by-county basis, uses Motorola trunking for public safety and public service operations. This should make for interesting monitoring and seamless inter-operability during the Olympics.

Roger Cravens reports that the big cut-over was made on November 27th and that, as of that date, the Atlanta Fire Department was still simulcasting on their old VHF frequencies. Roger reports that public safety units are using the following set of frequencies:

858.2375	858.4375	858.7625	858.9375
859.2375	859.4375	859.7625	859.9375
860.2375	860.4375	860.7625	860.9375

Roger also reports for reference that other trunking operations were set up as follows:

City Government: 856-860.4625, 856-860.4875
Hartsfield International Airport: 851.9625, 852.4625, 852.9625, 853.4625, 853.9875.

As I can tell from experience here in Massachusetts with the State Police system, frequencies are often switched around as the system is tested and implemented. Look for possible changes in the set-up as described above.

■ Jacksonville, Florida Scanning

Mr. W. R. Hazelwood from Jacksonville was kind enough to write us with his favorite frequencies to monitor:

453.150	Jacksonville Police Zone 1	453.100	Jacksonville Police Zone 2
453.050	Jacksonville Police Zone 3	453.450	Jacksonville Police Zone 4
453.250	J'ville Pol. Detectives 1	453.700	Jacksonville Beach Police
460.575	Jacksonville Fire Dispatch	460.600	Jacksonville Fire Rescue
460.625	Jacksonville Fire Fireground	155.700	Clay County Sheriff
154.205	Clay County Fire	154.665	Florida Highway Patrol
42.92	Florida Marine Patrol	161.445	Florida Fish & Game
158.160	Peoples Gas Company	153.935	Airport Security
451.225	Jacksonville Electric Authority	154.710	Orange Park Police
154.875	Atlantic Beach Police	154.785	Neptune Beach Police
160.530	FEC (Florida East Coast) RR	160.590	CSX Railroad
160.290	CSX Railroad	161.100	CSX Railroad
161.400	CSX Railroad	160.950	Southern Railroad

Mr. Hazelwood also writes that the Jacksonville Police use mobile data terminals (MDT's) in their patrol cars, but that there is still a lot of radio traffic over their regular UHF voice channels. He also writes that, "Scanning is far from dead in Jacksonville." That's great to hear; however, the city has licensed a large trunking system. Whether it is intended to be digital or analog is unknown.

■ I need your guidance!

I would like to request some direction from you, the scanner owners. As a new writer for *Monitoring Times*, I need to know what it is you would like to read about. Are you interested in the history and machinations of the scanner industry? Do you want me to focus more on frequency data or new scanner development?

Please write and tell me the areas of the hobby in which you have the most interest so that I can, to the best of my abilities and knowledge, cater to you whenever possible. You can contact me through the e-mail addresses given above or in care of *Monitoring Times* at PO Box 98, Brasstown, NC 28902.

Larry Van Horn, N5FPW
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A Trip to MARS

In last month's *Utility World* column, I mentioned that several of the full time U.S. Air Force MARS (Military Affiliate Radio System) stations were closing their doors. Shortly after the column hit the street I got one of those famous Ute World plain white envelopes in the mail. Someone has been kind enough to forward the latest list of USAF HF MARS frequencies, and you will get the benefit! I also had mail asking what MARS is and for a little of the history behind the program. So without further fanfare...

■ What is MARS?

The Military Affiliate Radio System (MARS) is an organization of Federal Communications Commission (FCC) licensed Amateur Radio Operators working with military stations who are interested in military communications and electronics. MARS has several purposes: it offers training designed to stimulate interest in military communications and electronics career fields. It provides a potential reserve of trained radio communications personnel who can provide auxiliary communications for military, civil, and/or disaster officials during periods of emergency. It provides Department of Defense sponsored emergency communications on a local, national, and international basis as an adjunct to normal communications.

MARS provides a volunteer, manned communications system for handling MARS administrative traffic, morale messages, and quasi-official written and voice communications traffic for U. S. Armed Forces and authorized U. S. government civilian personnel stationed throughout the world.

■ MARS History —A Service to the Nation

In November 1925, the Army Amateur Radio System (AARS) was initiated by a few dedicated pioneers in the United States Army Signal Corps. This organization continued until the United States' entry into World War II, at which time radio amateurs were denied the use of the air. Their activities were suspended until 1946 when, once again, AARS was allowed to go back on the air.

During the years 1925 through 1942, the AARS functioned more or less as an extracurricular activity of the U. S. Army Signal Corps, its scope being necessarily limited by the meager budget of the pre-World War II depression years. The best available figures indicate that as of the 7th of December 1941 there were approximately 60,000 FCC licensed amateurs within the United States and its possessions. Some 5600 of those amateurs were members of the AARS. About 20% of the pre-World War II AARS members eventually reached the service of their country either in the Army or in a civilian capacity.

The U. S. Army recognized the great importance of reactivating the AARS to train vitally needed communications personnel at a relatively low direct cost to the U. S. government. Therefore, in 1946 the AARS was reactivated and functioned as such until the creation of the Military Amateur Radio System in 1948, later renamed the Military Affiliate Radio System (MARS).

Originally, MARS was available only in the U. S. Army and the U. S. Air Force. In early 1963 the Navy-Marine Corps MARS was established.

I would like to thank our anonymous contributor of the US Air Force MARS frequencies presented in this month's column. Now, if I could only get the same kind of list for the US Army ... Who knows what next month's mail will bring?

■ Bosnia Update

I hope that last month's feature story on Bosnia has been of some use to you. We have received some additional information from a US Air Force flight crew member flying in the Bosnia theater regarding some of the NATO communications circuits being used over there. Four frequencies have been identified as being used by IFOR (Bosnia Implementation Force) airlift aircraft. These frequencies are:

2839.5 .... USB ..... India 9	2841.5 .... USB .... India ?
6721.5 .... USB ..... India 8	6723.0 .... USB .... India 2

NATO airlift callsigns that have been heard in association with Operation Joint Endeavor include:

IFB ##	CanForce transport aircraft. IFB 01-89 callsigns appear to be C-130 aircraft, and IFB 90-99 callsigns appear to be other CanForce airlift assets. The following aircraft have been identified specifically with this NATO operation (selcal in parenthesis): C-130 Hercules aircraft registration numbers: 130310, 130311, 130316 (GH-BD), 130317 (FM-DL), 130320 (GH-AC), 130328, 130331 (GJ-BF), 130335 (GJ-BE)
IFD ##	French Air Force transport aircraft
IFI ##	Royal Netherlands Air Force transport aircraft
IFN ##	Royal Air Force (UK) transport aircraft
IFO ##	U.S. Air Force transport aircraft. IFO 1-30 callsigns are USAF C-130 transport aircraft and IFO 50-80 are USAF C-5, C-17, C-141 transport aircraft.

At least one USAF Airlift Control Element (ALCE) station has been set up in support of Operation Joint Endeavor. ALCE Brindisi, using the callsign **Promenade**, has been noted on two frequencies: 10596 and 14511 kHz. Chit chat between two USAF airlift aircraft enroute to Bosnia was recently monitored on 11111.0 kHz, but this might not be an official frequency associated with the NATO operation.

As more information becomes available, we will pass it along here in the Ute World column. I would like to thank members of the WUN Utility Newsgroup for some of the information presented above.

■ Eight Years and Counting

I would like to take a second or two to thank the hundreds of individuals who have supported this *MT Utility World* column over the last eight years. Without the contributions from our loyal readership, there wouldn't be a *Ute World* column in *Monitoring Times*.

To each and every one of you who have sent logs, ute news, frequency list, and callsigns over the last eight years this old Chief wants to send to you a personal BZ (Bravo Zulu) for a job well done. I hope that as we go into our ninth year this month, the next 12 columns will receive the same warm and generous support enjoyed by the last 96 Ute World columns.

And now it is time to see what you have been hearing this month in the world of utility DX. Time for the Ute World logging section.

TABLE 1: U.S. Air Force MARS Frequencies

Freq (kHz)	Freq Code	Primary USAF MARS Assignment
2049.0		Unassigned
2624.0	CA (T)	Transcon Calling
3228.0	TRR-1	Transcon RTTY
3231.0		Unassigned
3292.0	RM (5)	Region 5
3296.0	RP (6)	Region 6
3299.0	RD (2)	Region 2
3308.0	RG (3)	Region 3
3311.0	CB (T)	Transcon Calling
3312.0	TVRS-1	TCON ADV Tech (Packet)
3315.0	RA (1)	Region 1
3370.5	RJ (4)	Region 4
3496.0	KOR IT	Korea Intertheater
3545.0	PNR IT	Panama Intertheater
3802.5	NL IT	Holland Intertheater
3841.0	J IT	Japan Intertheater
3875.0	ER-1	Germany Intratheater
3888.0	ER-2	Germany Intertheater
3966.0	GRC IT/ER-3	Greece Intertheater
4054.0	HWA II	Hawaii Interisland
4061.0	ALS IT	Alaska Intertheater
4447.0		Unassigned
4450.0	RN (5)	Region 5
4466.0		Unassigned
4500.0	2R1 (2)	Region 2 RTTY Net
4517.0	RH (3)	Region 3
4557.0	RK (4)	Region 4
4560.0	T4 (T)	Transcon Traffic
4575.0	RQ (6)	Region 6
4577.0	RE (2)	Region 2
4588.5	TVRS-2	TCON ADV Tech (Packet)
4590.0	CC (T)	Transcon Calling
4593.5	RB (1)	Region 1
4602.5	TX (T)	Transcon Traffic
4633.0	J IT	Japan Intertheater
4638.0	J IT	Japan Intertheater
4758.0	ALS IT	Alaska Intertheater
4765.0	TM (T)	Transcon Traffic
4815.0	ALS IT	Alaska Intertheater
4832.0	TN (T)	Transcon Traffic
4842.0	T2 (T)	Transcon Traffic
4872.0	TRR-2	Transcon RTTY
4882.0	ALS IT	Alaska Intertheater
4885.0	ALS IT	Alaska Intertheater
4912.0		Unassigned
6775.0	GRL/D GW	Greenland/Germany Gateway
	TVRS-3	TCON ADV Tech (Packet) Nationwide
6995.0	ALS IT	Alaska Intertheater
6996.0	WSDN-1/PCJ-1/ ER-4	Worldwide Frequency
7302.0	RL (4)	Region 4
7305.0	PNR IT	Panama Intertheater
	RI (3)/RT 5	Region 3
7312.0	HWA IT	Hawaii Intertheater
7313.5	RF (2)	Region 2 (Daytime operations only)
7315.0	HWA IT	Hawaii Intertheater
7324.0	RC (1)	Region 1
7329.0	RO (5)	Region 5
7331.0	ALS IT	Alaska Intertheater
7357.0	PAC IT	PAC AF Intertheater
7360.0	GUM II/HWA II	Guam/Hawaii Interisland
7407.0	JII	Japan Interisland
7457.0	D GW	Germany RTTY Gateway
	RR (6)	Region 6
7527.0	TQ (T)/WSDN-2	Transcon Traffic
7540.0	CSA GW	Cent/S America Gateway
	CD (T)	Transcon Calling
7545.0	TR (T)	Transcon Traffic
7632.0	TS (T)	Transcon Traffic
7633.5	ACJ	Azores Phone Patch
7680.0	TVRS-4	TCON ADV Tech (Packet)
7799.0	GRL GW	Greenland Gateway
7831.0	TRR-3	Transcon RTTY
7862.5		Unassigned
7913.5	TRR-4	Transcon RTTY
7930.0	AK-2	Alaska Gateway
8177.0	J II	Japan Interisland
8178.0	J/KOR IT	Japan/Korea Intertheater
9047.0	AK-3	Alaska Gateway
9224.0	AK-4	Alaska Gateway
9414.0	ER-6	Germany Intertheater
10139.0	ER-7	Germany Intertheater
10140.0	ALS IT	Alaska Intertheater
10267.0		Unassigned
10270.0		Unassigned
10273.5	New-1	Korea Intratheater
10576.0		Unassigned
11098.5		Unassigned
11121.0		Unassigned
11407.0	ACA/PCK-1	Germany/Pacific Phone Patch
11619.5	TRR-5/TVRS-5/ TRC-5	TCON TRR/TVRS/TRC-5 (Packet)
13498.0		Unassigned
13614.0	PCJ-2	Japan Phone Patch
13927.0	ACD	Azores Phone Patch
	CSA IT	Caribbean/Cent/S America Internet/ Phone Patch
13977.0	CSA IT	Cent/S America Internet
	T1(T)/ACC/APCN-1/ PPCN-1	Transcon Traffic
13985.0	AK-1/WSDN-3	Alaska Gateway
13993.0	D GW	Germany Phone Patch
	CE (T)	Transcon Calling
13996.0	TU (T)/TRC-6	Transcon Traffic
14372.5	ER-5/SA-1	Germany Internet/S America Net
14389.0	PCK-2/WSDN-4	Korea Phone Patch
14390.5	ACE	Germany Phone Patch
14402.0		Unassigned
14405.0	WSDN-5	Space Division Worldwide
14408.0		Unassigned
14411.0		Unassigned
14520.0		Unassigned
14529.5	TVRS-6	TCON ADV Tech (Packet)
14606.0	ACF	Azores Phone Patch
14829.0	PCJ-3/PRR-1	Japan Phone Patch
14832.0		Unassigned
14877.0		Unassigned
15513.5	TRR-6	Transcon RTTY
15632.0	PCK-3/PRR-4	Korea Phone Patch
15712.0	AK-5	Alaska Gateway
15803.5		Unassigned
15805.5	PS-2	Pacific Intratheater
15807.0	PAC RATT GW	Pacific RTTY Gateway
16452.0		Unassigned
17487.0	TVRS-7	TCON ADV Tech (Packet)
17670.0		Unassigned
18155.0	D GW	Germany RTTY Gateway
19200.0	AK-6	laska Gateway
19226.0		Unassigned
19612.0		Unassigned
19615.0		Unassigned
19937.0	PS-3/PCK-4	Pacific Intratheater
20188.5	ACG	Europe Phone Patch
20737.0	CF (T)	Transcon Calling
20740.0	TV (T)	Transcon Traffic
20763.0		Unassigned
20807.0	PCJ-4/PS-4/PRR-3	Japan Phone Patch
20870.0	WSDN-6	Space Division Worldwide
20873.0		Unassigned
20991.0	OCG-2/PS-6	Guam Phone Patch
20992.5		Unassigned
20994.0		Unassigned
22947.0		Unassigned
22950.0		Unassigned
23862.0	PCJ-5/PRR-6	Japan Phone Patch
23863.5	TRR-7	Transcon RTTY
23865.0		Unassigned
24019.0	PAC RATT CW/ PRR-7	Pacific RTTY Gateway
24573.5	AK-7	Alaska Gateway
26910.0	TVRS-8	TCON ADV Tech (Packet)
27736.0	PCG-3	Guam Phone Patch
27829.0	PCG-4	Guam Phone Patch
27877.0	TRR-8	Transcon RTTY
27978.5	Tinker/Howard AFB	Panama Phone Patch
27985.0	WSDN-7	Space Division Worldwide
27991.0		Unassigned

Utility Loggings

Larry Van Horn

UTILITY WORLD

Abbreviations used in this column

AFB	Air Force Base	NAOC	National
AirSta	Air Station	NAS	Naval Air Station
AM	Amplitude Modulation	NAT-D	North America MWARA-D
AMVER	Automated mutual assistance vessel rescue system	NORAD	North American Aerospace Command
		NOTSHIP	Notice to Shipping
ASSMS	Any stateside Mars station	Ops	Operations
AT&T	American Telephone and Telegraph	OM	Old Man (male operator)
		QSY	Q signal for "Shall I change frequency?"
CanForce	Canadian Forces		
CAR-A	Caribbean MWARA-A	RTTY	Radioteletype
CCG	Canadian Coast Guard	SAM	Special Air Mission
ComSta	Communications Station	SAR	Search and Rescue
CW	Continuous Wave (Morse Code)	SCACS	Strategic Command and Control System
DSN	Defense Switching Network	Selcal	Selective calling
		SITOR-A	Simplex teleprinting over radio, mode A
EAM	Emergency Action Message		
		SITOR-B	Simplex teleprinting over radio, mode B
ETA	Estimated Time of Arrival		
Fax	Facsimile	S/V	Sailing Vessel
GHFS	Global HF System	USB	Upper Sideband
HF	High Frequency	Unid	Unidentified
ID	Identification	U.S.	United States
LDOC	Long Distance Operational Control	USAF	U.S. Air Force
		USAV	U.S. Army Vessel
MFA	Ministry of Foreign Affairs	USB	Upper Sideband
MSC	Military Sealift Command	USCG	U.S. Coast Guard
M/S	Motor Ship	USCGC	U.S. Coast Guard Cutter
M/V	Motor Vessel	USMC	U.S. Marine Corps
MWARA	Major World Air Route Areas	USS	United States Ship
		YL	Young Lady (female operator)

All times are in UTC, all frequencies in kHz, and all transmissions are in USB unless otherwise indicated

518.0 VFN-CCG Montreal, PQ Canada, at 0740 with NavTex Code "W" Notship traffic in English. At 0800, same with NavTex Code "T" with Notships traffic for Great Lakes in French. At 0820, VCK-CCG Sept Isles, PQ Canada, with Navtex Code "C" traffic in English. At 0834, same with Navtex Code "D" traffic in French. At 1310, VBC-CCG Wiarton, ON Canada, with NavTex Code "H" with NotShip's for Detroit River. All in SITOR-B. (Rick Baker-Austintown, OH) *This is a worldwide NAVTEX frequency- Larry.*

2182.0 ZBM-Bermuda Harbor Radio at 0438 with pan pan announcement of man overboard from S/V *Salina.* (Baker, OH) *This is an International Emergency and Calling channel-Larry.*

3134.0 Roll Home working Nightwatch 01 here and on 6730. (Jeff Haverlah-Houston, TX) *Executive Net X-208-Larry*

3467.0 Karachi Aeradio, Pakistan, working Singapore 26 and Cathay 291 at 2250. (Robin Hood-UK)

3730.0 LYL-Klaipeda Harbour Radio with CW ID at 2308. (Hood-UK)

4203.5 C6BP9-M/V *Forest Hills* at 0542 in SITOR-A with telex for discharge report Genoa, login 29496 FHILS. (Baker, OH)

4214.0 IDR2-Rome Naval Radio, Italy, with V CW marker at 0106. (Dix-NY)

4268.0 VTG-Bombay Naval Radio with V CW marker at 2128. (Jack Dix-Yonkers, NY)

4270.0 PCD1-Israeli Mossad number station in AM at 2130. (Dix-NY)

4272.5 VID-Darwin Radio, Australia, with CW CQ marker at 1131. (Dix-NY)

4295.5 ROD9-Unid Russian sending CQ CW marker at 0958. (Dix-NY)

4448.0 SAM 27000 working Andrews AFB at 0321. (Haverlah-TX) *Mystic Star F-614-Larry.*

4478.0 Unid station sending five letter groups in CW at 2257. (Dix-NY)

4721.0 SAM 681 working Andrews AFB at 0141. Also on 6717.0. (Haverlah-TX) *Mystic Star F-877-Larry.*

4901.0 Unid station repeating "621/00" continuously in CW at 2304. (Dix-NY)

4950.0 Chalace Alpha at 2118 working Gulf Charlie, Gulf Alpha, others with what sounded like NORAD training. (Baker, OH)

5154.0 "C"-Single letter CW HF marker at 2148. (Dix-NY)

5342.0 FDY-French Air Force Orleans, France, with V CW marker at 2316. (Dix-NY)

5418.0 Unid station sending the following in CW at 2318, "B48W DE 4IZ6 QTC K." (Dix-NY)

5533.0 Speedbird 193 working Speedbird London LDOC for phone patch at 1131. (Hood-UK)

5670.0 Brittania 612 working Madras Aeradio for selcal check (CH-EM) at 2045. (Hood-UK)

5800.0 Proximate (not Approximate) working Nightwatch 01 at 0537. Also active on 6730. (Haverlah-TX) *NAOC Warning Net W-101 and 6730 is Executive Net X-903-Larry.*

5861.0 English female repeating "932" in AM at 2332. (Dix-NY)

6263.0 C4XH-M/V *Derby North* at 0710 in SITOR-A with telex regarding arrival at Columbia River pilot station. (Baker, OH)

6264.5 WLBV-M/V *Richard G. Matthiesen* (T-AOT-1124) MSC chartered oiler, at 0814 in SITOR-A with ETA telex. (Baker, OH)

6267.5 LNVP3-M/S *Song of Norway,* cruiseship, at 0213 in SITOR-A with telegram to crew member on board M/S *Legend of the Seas.* (Baker, OH)

6274.0 YLAO-TH *Mikhails Lomonosovs* at 2145 in SITOR-A with crew telegrams to Riga Radio. (Baker, OH)

6274.5 ELBM9-M/S *Tropicale* (Carnival Cruises 36,674 DWT cruiseship) at 2045 in SITOR-A with telex traffic to crewmember aboard cruiseship *Starship Atlantic.* (Baker, OH)

6275.5 UTWV-TH *Ivan Pereverzev* at 2036 in SITOR-A with crew telegram traffic to Mariopol Radio. (Baker, OH)

6300.5 SQRL-M/V *Kopalnia Borynia* at 2020 in SITOR-A with Polish telex via Szezecin Radio. (Baker, OH)

6303.0 LYDD-Lithuanian vessel ML *Sventoyi* at 2119 in 50/170 RTTY administrative message for ETA Casablanca. (Baker, OH)

6303.5 UTWY-TH *Svanetiya* at 2142 in 50/170 RTTY with ETA Damman, this is ex-UOIJ. (Baker, OH)

6303.8 ENVI-TH *Kapitan Soroka* at 2304 in 50/170 RTTY crew telegrams to Odessa Radio (ODS/UMF). (Baker, OH)

6305.0 LYES-TR *Suomiyos Ilanka* at 0031 in 50/170 RTTY RYRY/DE to LYL-Klaipeda Radio, Lithuania, and into crew telegrams to same. (Baker, OH)

6310.5 UVHA-Ukrainian super stern trawler/freezer RTMKS *Vasiliy Lozovskiy* at 2123 in 50/170 RYRY/DE to UDK2-Murmansk Radio, and with administrative telegrams to Murmansk Tralflot using hull#/ID MA-1823. (Baker, OH)

6341.5 YLQ-Riga Radio with urgent weather warning for Bay of Biscay (in English) for M/V *Pavel Sternberg* advising to shelter in English channel using 50 baud RTTY at 1515. (Hood-UK)

6465.5 ROD9-Unid Russian with CQ CW marker at 1009. (Dix-NY)

6491.5 PJC-Curacao Radio with CW ID at 0814. (Hood-UK)

6501.0 NMO-USCG ComSta Honolulu at 0626 with conclusion of scheduled weather broadcast. (Baker, OH)

6617.0 St. Petersburg VOLMET with aviation weather (in Russian) at 1555. (Hood-UK)

6712.0 Rhett 11 calling Andrews GHFS for radio check with no response at 0715. Andrews with their scheduled H+17 EAM broadcast interrupted by a busy signal and dropped circuit. McClellan GHFS immediately up on frequency with another system wide EAM broadcast at 0718. (Haverlah-TX)

6714.0 Rescue Ops (USAF) at 1857 calling KING 79 no joy, later ID'ing as "command post" (Baker, OH)

6730.0 Air Force Two working Andrews with phone patches at 0345. (Haverlah-TX) Curly Top working Nightwatch 01, also on 4742, 5700, and 11220. (Bob Wilczynski-Springfield, MA) *Mystic Star F-267 and Executive Net X-903-Larry.*

6739.0 Motorist working Hickam GHFS with phone patch to Nightwatch 01 using the patch to check into the net using the challenge process at 0452. (Haverlah-TX)

6761.0 Jambo 55 working Earle 52 at 1539. Heavy aerial refueling comms this morning on this frequency. (Haverlah-TX)

6815.0 MMAC-Unid U.S. Military (USMC?) at 1635 working MMAK with radio checks. At 1711, MICT with "any station this net," then calling MQUP, MMAK, MGLO. Per NavTex warnings there was to be simulated beach landings on the day this was heard by USMC. (Baker, OH)

6960.0 Radio DC CW beacon at 0415 and at other times and frequencies between 7400-7500. Sending the following CW message: "Radio DC, don't vote Republican, Newts program, wheeling, dealing and stealing." (John Fetcher-Fairfax, VA) *Interesting new pirate radio broadcast John, thanks for the report-Larry.*

6993.0 SAM 375 (a new Gulfstream 4 aircraft assigned to the 89 AW at Andrews) and SAM 27000 working Andrews at 1300. (Haverlah-TX) *Mystic Star F-117-Larry.*

7335.5 FDC-French Air Force Metz-Frascaty, France, with V CW marker at 2133. (Dix-NY)

8222.0 ELFT8-M/S *Celebration* (Carnival Lines 47,260 GWT, cruiseship) at 2049 working AT&T Coastal Station WOM with radiotelephone traffic. (Baker, OH)

8258.0 TCAG-M/V *Tahir Kiran* working Berne Radio with phone patch to Istanbul at 1555. (Hood-UK)

8295.5 "Navy Submarine Base" at 2359 working unid station, this ID usually heard on 8294. (Baker, OH)

8366.0 9HJT3-Mount Ymitos at 2030 in CW calling WCC. (Baker, OH)

8374.0 7TQD-M/T *Zaraitine* working Boufarik Radio in CW at 0820. (Hood-UK)

8383.0 SXYC-M/T *Prosperventure L.* at 2156 in SITOR-A with discharge report. (Baker, OH)

8384.5 C4DU-*Grigoroussa* at 0351 in SITOR-A with telex to Thenamaris Athens, login 27503 GRIG. (Baker, OH)

8386.0 NNUD-USNS *Silas Bent* (T-AGS-26) USN Survey ship, at 0544 in SITOR-A with inventory of 'sundries' items to NMC for relay to Navy system. (Baker, OH)

8386.5 KAAZ-U.S. flagged products tanker, M/T *Overseas Vivian* at 1050 in SITOR-A with discharge report for Port of Tampa. (Baker, OH)

8387.5 GBKU-*Maersk Ruler* at 0336 in SITOR-A with telex traffic. (Baker, OH)

8390.5 PPWF-M/N *Nacional Rio* at 0421 in SITOR-A with telex for ETA to sailing for Mariel via WLO. (Baker, OH)

8393.0 ENYP-Ukrainian super trawler/freezer RTMKS *Kapitan Butrimov* at 0700 in 50/170 RTTY with crew telegrams to Kerch Radio. (Baker, OH)

8393.5 USNM-Ukrainian Atlantic-class trawler/freezer RTMA *Pyatigorsk* at 2218 in 50/170 crew telegrams. (Baker, OH)

8399.5 UKOS-NIS *Akademik Sergey Vavilov*, Russian research vessel, at 0001 in 50/170 crew telegrams to Kaliningrad. (Baker, OH)

8401.0 UONC-TR *Omega* at 2054 in 50/170 RTTY crew telegrams to Sevastopol Radio. (Baker, OH)

8402.0 P3FZ6-TR *Motovskiy Zaliv* at 2312 in 50/170 RTTY crew telegrams, ex-UGTM. (Baker, OH)

8402.7 URCK-Fisheries Training Ship UPS *Kursun* at 2155 in 50/170 RTTY crew telegrams, no info on this vessel. (Baker, OH)

8403.5 UUZB-TH *Vostoch* at 2054 in 50/170 RTTY RYRY/DE to URL, Sevastopol Radio and into crew telegrams to same, no info on this vessel. (Baker, OH)

8404.5 SQPO-Polish bulk carrier M/S *Ignacy Daszynski* at 1614 in SITOR-A with operator chat in Polish to Szczecian Radio, location Canada. (Baker, OH)

8405.5 UCSA-Russian trawler RTMS *Eysk* at 2204 in 50/170 RTTY with crew telegrams to Novorossiysk, off with DE UCSA, no prior record of this vessel. (Baker, OH)

8406.5 LYMM-Factory trawler BATM *Zaostrov'e* at 2150 in 50/170 RTTY RYRY/DE to UIW, and with administrative traffic to same. (Baker, OH)

8409.0 UWGG-Factory Trawler *President Pik* (pendant number RTMS 7534) working UBF2-St. Petersburg Radio in 50 baud RTTY at 0906. (Hood-UK)

8450.0 RUF9-Krasnodar Radio with ID and traffic list. Gave frequencies as 4266/8450/12610.5 in CW at 0902. (Hood-UK)

8451.0 UBF2-St. Petersburg Radio with traffic list (addressed to 4LT3). Gave working frequencies as 3685/8451/12855 in CW at 1004. Listens on 6296/8370.5/12554.5. (Hood-UK)

8489.0 CLS-Havana Radio, Cuba, with CQ CW marker at 2329. (Dix-NY)

8690.0 6VA-Dakar Radio, Senegal, with CQ CW marker at 2153. (Dix-NY)

8696.0 9GX-Tema Radio, Ghana, with CQ marker at 1958. (Dix-NY)

8891.0 Baffin Radio, NWT Canada, (NAT-D MWARA) at 2135 working Martinair 940, selcal check (GM-DJ). (Baker, OH)

8964.0 Ascension, Andrews, and MacDill GHFS working SAM 56973 at 1745. Also heard on 11217, 11634, and 15043. SAM 973 working Andrews at 1840 then moved to 13960. (Wilczynski-MA)

8967.0 Darkstar Mike working Crisco for "voicetel on HF training" then switching back to 9023 ay 1701. (Haverlah-TX)

8968.0 Casey 01 working McClellan GHFS at 1804. At 1807 Look 85 working McClellan with a phone patch to Offutt and at 1812 on 8967 a station with an operator with a UK accent was calling McClellan. (Haverlah-TX)

8968.5 U.S. Navy comms: 9UB periodically calling Giant Killer and "any station this net," working unid station at 0600. 1.5 kHz offset from 8967.0. (Haverlah-TX)

8992.0 ACW360 at 2238 working MacDill GHFS with phone patch request. Weak and moved to 11175. At 2241, BH30136 calling Mainsail, then working MacDill GHFS with phone patch request. (Baker, OH) SAM 681 working Ascension GHFS at 0134. (Haverlah-TX)

9007.0 CanForce 6110 at 2047 working Trenton military with late departure message to 429 Squadron, Trenton Ops, departed Dannelly Field 1955, estimated Toronto 2315 and Trenton 0100, selcal check (GH-AK). (Baker, OH)

9014.0 Tuff 16 working Raymond 07 with phone patch to DSN 781-xxxx at 1801 and checking to see if IR 178BG was closed. (Haverlah-TX)

9016.0 Wise 01 at 2145 working Offutt GHFS with phone patch to unid DSN. (Baker, OH)

9057.0 Nightwatch 01 at 1605 working War 46 with communications check on S-309. (Baker, OH) Mangrove (EAM initiator on this day) working Nightwatch 01 in the clear and scrambled. Also active was Gold Digger (a rare 10 letter callsign in the nets). (Haverlah-TX)

9970.0 JMH-Tokyo Radio with 120/576 FAX weather chart at 2133. (Dix-NY)

11175.0 Music 51 at 1944 working Albrook GHFS for phone patch to Furious, gives tail as 91051, ETA with 42 passengers (pax). (Baker-OH) Chalice Foxtrot working Hickam GHFS and Sentry 38 (maybe the same) working Hickam with phone patch to Tinker at 0053. (Haverlah-TX)

11214.0 Sentry 50 (E-3 AWACS) at 2058 working Raymond 24 with ops message. (Baker, OH) SAM 049 working Andrews at 1725. Heavy SAM activity this afternoon with SAM 202 on 6683 at 2027, SAM 204 on 11226 at 2035. (Haverlah-TX) *Mystic Star F-064 and NORAD Charlie 6-Larry.*

11217.0 Nightwatch 01 at 1725 working MacDill, sounded like practice comms for MacDill GHFS radio operator. (Baker, OH) Headdancer working MacDill GHFS with phone patch to Ribbon Metro at 1740. (Wilczynski-MA)

11220.0 Trout 99 at 1549 working Andrews with comm checks. (Baker, OH) Sherlock working Nightwatch 01 at 1610. (Haverlah-TX) *Mystic Star F-311 and SCACS S-310-Larry.*

11226.0 Venus 78 at 2007 working Andrews with phone patch SAM command with departure message 2004, ETA in blocks 2138. (Baker, OH) Venus 78 and 79 working Andrews and carrying legislative liaisons or somesuch at 1839 and later moved to 6717. (Haverlah-TX) *Mystic Star F-287 and Executive Net X-905-Larry.*

11243.0 Nighthawk 7 working Venus 7 in clear and with scrambled comms at 1644. (Haverlah-TX)

11244.0 Testi 29 at 1910 calling Mainsail, Albrook answers, gives them an ops normal to be relayed to Offutt and authenticates. Offutt comes up to advise they copied the traffic direct. (Baker, OH)

11264.5 Heard units W0X and 0AV in communications at 1830. Any ideas? (Wilczynski-MA) *U.S. Navy units-Larry.*

12563.5 9VMP-M/V *Front Rider* at 1632 in SITOR-A with telex to Singapore. (Baker, OH)

12567.5 EVBD-RTMA *Dionis* at 1727 in 50/170 RTTY with crew telegrams to Kaliningrad, vessel bound "Lapland". (Baker, OH)

12568.5 YLFB-RTMS *Aitsinayams* at 1558 using 50/170 RTTY with administrative traffic using hull#/ID RTMS-7552, with traffic to Riga from master, KM Dozrikov. (Baker, OH)

12574.0 USRV-Factory trawler BATM *Marshal Yeremenko* at 1629 using 50/170 RTTY with crew telegrams using hull#/ID MA-0064 (MRM/KRH). (Baker, OH)

12637.5 UHS-Murmansk Radio with CW/SITOR ID at 0825. New call replaces UMV. (Hood-UK)

12729.0 UVA-Gelendzhik Radio working UHSJ-M/V *Pioner Koly* in CW at 0904. (Hood-UK)

12795.0 UCE-Archangel Radio with greetings traffic for the crew of the M/V *Lazaros* in CW at 1128. (Hood-UK)

12780.0 UFZ-Vladivostok Radio with CW ID at 1211. (Hood-UK)

13041.0 UUI-Odessa Radio with traffic for ENZN-M/V *Andrian Goncharov* in 50 baud RTTY at 1207. (Hood-UK)

13211.0 Andrews working SAM 681 and Nightwatch 01 and 02 at 1655. (Wilczynski-MA) *Mystic Star F-461 and SCACS S-312-Larry.*

13545.0 PCW1-MFA The Hague, Netherlands, with CW/SITOR ID at 1538. (Dix-NY)

14440.0 Ghost (YL) at 1532 attempting to work Casper (OM), can't copy, will try again same time tomorrow, apparently out-of-band husband/wife communications. (Baker, OH)

14441.5 NNN0CYU-USCGC *Vigilant* (WMEC-617) at 1724 calling ASSMS, NNN0EIZ answers and moves to 14470. At 1803, NNN0CWY-USS *Carl Vinson* (CVN-70), attempts to work NNN0ERA-Private shore sta, no joy. (Baker, OH)

15016.0 HORSE 95 (C-130) at 1953 working Ascension GHFS with phone patch TACC-America. Ascension GHFS advises to stand-by for Hilda America, IDs as a C-130 flying from NAS Roosevelt Roads, Puerto Rico, to NAS Norfolk, VA. (Baker, OH) Queensland calling Sunglass on this frequency at 1930, no reply then gone. (Haverlah-TX) *SCACS S-314-Larry.*

15041.0 Nightwatch 01 working Flawless at 2003, entering the net. (Haverlah-TX)

16684.0 UQRT-TH *Il'ya Ul'yanov* at 1628 in SITOR-A with a telex to BSC Morflot in English for ETA Tampico. (Baker, OH)

16690.5 P3VI2-*Antigonos* at 1732 in SITOR-A with telex to Port Capt of Balboa for ETA, login 29330 P3VI2. (Baker, OH)

16705.0 A8BK-SS *Chevron Nagasaki* at 1759 in SITOR-A with AMVER/DR message. (Baker, OH)

16706.5 3FTW4-Bulk carrier *Golden Duke* at 1754 in SITOR-A with departure report telex. (Baker, OH)

16713.5 P3OL4-*Clipper Alliance* at 1657 in SITOR-A with noon report to Oceanroutes San Francisco. (Baker, OH)

16802.0 UVKG-RTMS *Stratosfera* at 1528 with a 50/170 RTTY administrative messages to Sevastopol Radio. (Baker, OH)

16802.5 UHCF-Factory trawler BMRT *Novoukrainka* at 1614 with 50/170 RTTY crew telegrams to Kerch. (Baker, OH)

SHORTWAVE BROADCASTING

The Global Forum

Glenn Hauser, P.O. Box 1684-MT, Enid, OK 73702
fax: (405) 233-2948, or (704) 837-2216 ATT: Hauser

AFGHANISTAN [non?] New in Pashto and Dari is **R. Voice of Sharia** [Islamic Law] (Dari: *Sadoye Sharia*), with a 75-80 min broadcast from 0300 heard different days on 7090, 7060, 7070, 7000, sponsors unknown but with news of *Tahrik-e Eslami* [Islamic Movement] and *Taleban* [Islamic students], hostile to Pres. Rabbani. Another clandestine, since 1992, also varies in the 7000-7100 range as well as 6235v--**R. Message of Freedom** (Dari: *Pyam-e Azadi*), pro-Hekmatyar, times varying around 0230-0400, 0730-0900 (BBC Monitoring)

ANGOLA VORGAN: 0450-0900 9755, 1050-1430 11830, 1650-2100 7090, in Portuguese and local languages; irregular English Tue and Thu 1835-1900 (BBC Monitoring via HCJB *The Latest Catch*)

ANTARCTICA Andrew Wright of Antarctic Support Associates tells me AFAN SW equipment is still there, but not used since Superbowl 1995; possibly can get it to test again on 6012 (Hans Johnson, *Cumbre DX*)

ARGENTINA Four Buenos Aires MW stations appear erratically on the 6 MHz band, not spurs and relayer unknown, can be 24 hours, and all come and go at once: **R. Del Plata** 6437, **R. El Mundo** 6477, **R. Libertad** 6557, **R. Nacional** 6637 (Marcelo Cornaccioni, Argentina, via Gabriel Iván Barrera, R. Nederland *Radio-Enlace*) Something similar used to happen on the 25-26 MHz band (gh)

AUSTRALIA A low-power 50-watt SW station has been authorized in Albury, NSW, and has already tested; plans increase to 500 W in the 2.9-4.6 MHz range (*NZ DX Times* via *Wavescan* via WRMI)

BANGLADESH R.B. on 4879.2 with one minute English news at 1251 (Hans Johnson, CO, *Cumbre DX*)

BENIN ORTB had English on 4870 at 2022-2027 with African press review (Dave Valko, PA, HCJB *TLC*)

BOLIVIA R. Mauro Nùñez, 6142, reactivated at 1110, 2200, 0300* (Tony Jones, Paraguay, *DXing with Cumbre*)

BOTSWANA R.B. at *0254 on 4820 ex-4830, // 3356 and from 0345 also audible on //7255 (Marie Lamb, NY, *Cumbre DX*) Probably to escape neighboring Zimbabwe on 4828 (Hans Johnson, CO, *ibid.*)

CAMBODIA V. of Vietnam quoted Cambodian minister of info, Ieng Muli, that Cambodia will soon have three more SW channels (BBCM)

CANADA Following wave of protest, Foreign Minister André Ouellet gave RCI a 50-50 chance of surviving, with government funding, perhaps part from Defense Dept. Decision expected by mid-Feb (André Courey, RCI *Mailbags*) A reply from the Prime Minister's office said Hon. Michel Dupuy, Minister of Canadian Heritage, was also involved in the RCI matter. (Dave Jeffery, gh) A caller to RFPI's *Far Right Radio Review* reported that WRHI [sic—WHRI?] was interested in buying the Sackville site to broadcast legally to the U.S., according to an Internet rumor (gh) If RCI goes dark, do we also lose all the other stations relayed by them? All along, RCI should have kept the best evening frequency, 5960 for itself (Will Martin, MO) Decision may come in late Feb, with Parliament back considering budgets (Bill Westenhaver, RCI, *W.O.R.*)

COLOMBIA New station is Ecos del Orinoco, in Puerto Carreño, Vichada, on the Venezuelan border, very good at 0443 on 4905.25 (Ulis Fleming, MD, *NU* via HCJB *DX Partyline*) First heard on 4905.31 at 0217-0340+ (Dave Valko, PA, *ibid.*) Unheard 0900-1145 (Jerry Berg, *ibid.*)

R. Sonorama, 2679.9 around 0200 and 0400, 2 x 1340 (Don Moore, IA, *Cumbre DX*)

What happened to Caracol, missing from 5075? (Maryjo Ondrechen, MA, *ibid.*)

COSTA RICA RFPI lost 15050 for a while, then came back as 9400 disappeared. A bridge washout made access to and from the campus difficult. Then high winds damaged antennas and kept fixers from climbing towers. Minor stampede of cows pulled down antenna for 6200. RFPI planned to replace 9400 with a new 11 or 15.5+ MHz USB frequency using log-periodic. (RFPI *Mailbags*) *World of Radio* can now reach RFPI by Sat or even Fri for broadcasts same week as WWCR, rather than delayed (gh)

TIAWR used *La Onda Musical* as name for English DX program formerly known as *Wavescan*, Sun 2258 on 9725 but missing following week; misunderstanding? See USA--WRMI (John Norfolk, Diane Mauer, gh) Heard on 6205 SSB at 0600, but when rechecked at 1228 back on 6200 AM (gh, OK)

CROATIA Hrvatski Radio: 5895 at 1600-1700. 5920 at 0700-1600. 7370 at 2200-2000. 9830 at 0600-1230. 11635 at 2000-2200. 13830 at 0600-1000, 1230-2000 (via Wolfgang Büschel, BDXC *Communication*) Also back on 4770 erratically between 1600 and 0700, partly with domestic service (BBC Monitoring) Mixing product, 5895 minus 1125 (gh)

HRT
HRVATSKI RADIO

CUBA In Jan. RHC English at 2100-2200 on 9550 ex-11705; 2200-2300 on 9505-USB ex-11960 (George Thurman, gh) Contrary to announced plans to use 6000, RHC's 0500 broadcast on 9505 and SSB 9830; probably due to Bonaire on 5995 (gh) Maybe heard our complaint about clash with BBC on 5965 mornings, so RHC on 6070 instead around 1100-1400, bashing another Canadian transmitter, CFRX, not endearing them to Canadians visiting Florida, Cuba (gh) Wipes out CFRX; why are we putting up with Cuban jammers and QRM? (Ernie Behr, Ont.) Keith Perron, who worked 14 months for RHC, says at times RHC cut back its broadcasts in order for the authorities to increase jamming of foreign broadcasts (Jeff White, WRMI, via George Thurman, Bruce MacGibbon)

RADIO DANMARK

Nyheder verden rundt - døgnet rundt

DENMARK [non] R. Denmark International, via Norway, first monthly English quarter-hour Jan. 7 was very good at 1338 on 11840, and gave new simpler address, Post Box 666, 1506 Copenhagen. Check first Sundays—March 3, and after summer changes, April 7, etc. (gh, Diane Mauer)

DOMINICAN REPUBLIC R. Amanecer, 6025.05, had English radio drama 0340-0357*, poor and weak (Brian Alexander, PA, *World of Radio*) Getting new 10 kW transmitter, on by now?

All times UTC; All frequencies kHz; * before hr = sign on, * after hr = sign off; // = parallel programming; + = continuing but not monitored; 2 x freq = 2nd harmonic; W-95 = Winter season

(*Wavescan*, via WRMI)

R. Revelación, 2479.9 = 2 x 1240, Puerto Plata, heard at *0953 (Fred Kolhbrenner, PA, *Fine Tuning & Cumbre DX*) Also at 2342-0030 (Rich D'Angelo, *ibids.*)

ECUADOR The 12 monthly QSLs for 1996 from HCJB, when put side by side, form a panoramic view of Quito at night (HCJB *DXPL*) HCJB is awaiting two new 100-kW transmitters made at its Elkhart plant (Ken Mac Harg, HCJB, RN *Media Network*) 24h USB on 21455 upped to 30-kW unit until about mid-March while 1.5 kW is being repaired. (Rich McVicar, *DXPL*)

La Voz de Saquisilí reactivated 4900 after two years, heard at 1125. **R. El Buen Pastor**, 4830, in Quichua 1100-1400, 2100-2400; Spanish 1400-1500, 0000-0100; has applied for change to 4815 (HCJB *TLC*)

EGYPT R. Cairo, winter sked thru March for 9900 in English is: Europe 2115-2245, eastern N. America 2330-0030 (via Wolfgang Büschel, WDXC *Contact*) No, still from 2300 with news at 2315 (gh, OK, and Bob Thomas, CT)

ETHIOPIA [non] After 8-month break, V. of Oromo Liberation heard again in late Dec, from FSU? rather than WHRI, M/W/Sat 1600-1700 on 5960 (BBCM via HCJB *TLC*)

GEORGIA R. Georgia, English sked: 0630-0700 11805, 0830-0900 and 0930-1000 11910, 1630-1700 5990, 1830-1900 6000; sometimes missing due to electricity problems (Ruman Pankov, Bulgaria, via Wolfgang Büschel, HCJB *TLC*)

GERMANY [& non] Tho scheduled only on MW 930 from Montserrat, the Caribbean segment from DW at 0150-0200 is heard on 5960 via Canada and 6145 via Germany/Malta. 6085 must also be Sackville at 0100, in synch with 5960. (Jim Moats, OH) Also heard Carib music on 6085; Malta relay closed, *q.v.* (gh)

Due to expense, VOA and RFE/RL ended all relays via DW Wertachtal as of Jan. 1 (VOA *Communications World*)

GREECE Radiophonikos Stathmos Makedonias added 6245 at 2000-2305 due to WEWN 7425 splash on 7430; also on 9935 (John Babbis, MD)

INTL VACUUM & CYBERSPACE *World of Radio* via World Radio Network added times so: to Europe, Sat 0430, 1700, Sun 1130; N. America, Sat 0530, 2000. Latter provides RealAudio feed on demand after 0600, and live via Streamworks (Carlos, WRN)

ITALY See if 21 MHz is holding up as RAI uses it Sundays 1320-1650 for soccer and other sports to Africa on 21520, 21710, S. America on 21535; also N. America on 17780, Europe on 9855. [non] Ascension relays are in Italian only, 1700-1800 on 15320, 0130-0230 on 6110, 11765 (RAI via M. L. Flannagan, VA)

KASHMIR V. of Kashmir Freedom, anti-India, 0230-0330 Urdu on 6300, 5750, 5300; 1530-1730 Kashmiri on 6300, 5300, 4115v; may be AM or USB, not always in parallel (BBCM)

KAZAKHSTAN [or non] R. Almaty, some via Russia or Ukraine, in English: 0630-0700 on 9705, 9690, 9560, 7280, 7235, 7115, 6075, 6060, 5985; 1700-1730 on 9505, 5970, 5940. Fax +7-3272-631207 (BBCM) "Frequencies" announced in meters (via Arthur Cushen, RNZI)

LIBERIA ELWA, 4760 at 2203 announced power increase from 4 to 9 kW (David Sharp, *DXSF* via *Cumbre DX*)

LITHUANIA The 9043.8 station under Albania last month is actually from here, mixing product of 9710 and 666 kHz, also on the plus side at 10376, all from Sitkunai site, heard at 1500 (Dave Kenny, BBCM, and via Jim Frimmel)

[non] R. Vilnius relay via DW at 0000-0100 daily costs less than $75K per year, less than the previous cost via Russia for half the time; is 2-year contract (Saulius Girnius via Crawford, *Cumbre DX*) 5910 worked OK; perhaps higher for spring/summer (gh) English half hours were at 0030 weekdays, 0000 weekends (Bob Thomas, CT)

MADAGASCAR R. Mad, 5009.5 is most consistent long-path African, heard since Sept from *1400 choral music, 1500 pops (Hans Johnson, CO, *Cumbre-DX*, Jan)

MALTA **Deutsche Welle** closed Cyclops relay Jan 15, after 20-year treaty expired; to be dismantled, replaced by vacation resort. Plenty of transmitters in Germany to replace it (ORF *KW-Panorama* via Guido Schotmans, rec.radio.shortwave via Pete Costello) **V. of Mediterranean** also gone from 11925 (Schotmans, Belgium, *ibid*)

MÉXICO R. Huayacocotla presumed around 1300 on 2390.08, since Atitlán was a hair below 2390 at 1130 (Dave Valko, PA, *Cumbre DX*)

NEW ZEALAND On RNZI, *Around the World with Rudi Hill* heard Tue Jan. 16 on 9700 ending at 0953 so maybe started before 0930; 4-weekly pattern would now put it on March 12, April 9, etc., and repeated Fridays 0430 on 15115 (gh)

NICARAGUA I visited R. Miskut, 5770 in Puerto Cabezas; their transmitter is about to die, running only about 25 watts with exciter, so I am trying to get them a replacement needing little maintenance; they need SW, not MW to cover their audience to 250 km radius. Station is vital to preserving Miskito people and culture. DX reports are welcome (John Freeman, NC, *W.O.R.*) Usually signs off around sunset (gh) On late for Xmas eve to 0336* on suppressed carrier USB (Brian Alexander, PA, *W.O.R.*) Later for NY eve, past 0510 with IDs (Steve George, MA, *Cumbre DX*) Also heard at 1155-1237 (Dave Valko, PA, *Cumbre DX* via HCJB *TLC*)

PANAMA [non?] Relay of AFRTS on 2112 kHz USB at 0151-0305; no SCN ID but mentioned former Canal Zone locations (Don Moore, IA, HCJB *DXPL*)

PAPUA NEW GUINEA In mid Dec as early as 1930 a signal was heard on 4890 (Bob Hill, MA, *FT*) What else could it be but NBC? at 2050-2115 (Chuck Rippel, VA, *FT*) Peaking at 2030 (Jerry Berg, MA, *FT*) 2018-2100 fade, best on 100° Beverage (Dave Valko, PA) But note this sked: (gh) 2000-0800 on 9675, 0800-1400 on 4890; English news at 0700, 0900, 1000 (Arthur Cushen, *NZ DX Times*) R. Bougainville, 3325 at 1250-1302* (Dave Valko, PA, *FT*) It's the new government stn at Buka Island, 10 kW, ex-Kieta (David Martin, Australia, *FT*) PNG may get new name, new anthem (R. Australia via BBCM)

PARAGUAY R. Nacional out of control Dec-Jan around 9520v, distorted mess covering 1/3 of the band from 9470 to 9570v every night for at least a month. When will somebody wake up and shut off the transmitter? (Ernie Behr, Ont, *W.O.R.*)

PERÚ **R. San Francisco Solano**, Sondor sent QSL certificate; on 4750 only 4h a day due to generator costs, M-F 2300-0300; at Calle San Miguel 207, Distrito de Sondor, Provincia de Huancabamba, Departamento de Piura. Tentative on new 4182.41 is **R. La Voz de San Antonio**, ex-5646, Bambamarca, mumbled ID at 0520 (Rich McVicar, HCJB *DXPL & TLC*)

La República reported that more than nine stations in Rioja and elsewhere were busted by Transport Ministry in early Dec "to eliminate chaos"; includes SW outlets R. Ondas del Mayo, R. Naranjos, and

indeed Mayo is no longer heard (BBCM & HCJB *TLC*) R. Ondas del Rio Mayo was off a few days, then back on 6802.8 at 1330-1430+ (McVicar, *DXPL*)

PHILIPPINES R. Veritas Asia heard without really trying: *2256 on 9505 before Havana was finished, introducing Indonesian in English; *2227 on 7105 over Bulgaria, introducing Mandarin in English (gh, OK)

POLAND R. Maryja heard on 5970 1130-1430; believed via R. Warsaw transmitter on 7285 until 0825* abruptly off, and audio quality awful (Noël Green, UKOGBANI, DSWCI *SW News*) Also on 5900 around 0800, seems via 100 kW Polish Radio unit (Vladimir G. Titarev, Ukraine, *ibid.*) 5970 at 1100-1500, 5900 at 0700-0930 (Rumen Pankov via Büschel via HCJB *TLC*) Bishop Tadeusz Pieronek said "Conflict, slander and untruth" on R. Maryja, Torun, could not be tolerated, Polish Radio reported. PAP reported R. Maryja was previously accused of "strictly political" protests against presidential election results (BBCM)

QATAR QBS observed in Arabic: 0706-1306 11820, 15345.2v; 1307-1706 11750, 15345.2v; 0245-0706 & 1707-2125 7210.1v; 1707-2125 9570.2 (Noël Green, UK & Wolfgang Büschel, Germany, WDXC *Contact)*

RUSSIA VOR *Jazz Show* with Svetlana Yekimenko, but former host Carl Yegorov sometimes is heard with replays of old R. Moscow shows or comes in to do a new one. Best for us Mon & Fri 2131, Wed & Fri 0031, Thu & Sat 0231, Mon 0531 (Kevin Hecht, PA, *W.O.R.*) R. Station Pacific Ocean [see last month], audible only on 5940 and better 7175, had no English segment the Sat I checked 0815-0859 (Jerry Berg, MA, *FT*)

SÃO TOMÉ VOA QSLs via Internet, except during USG furloughs: **Dan_Ferguson@beng.voa.gov** (Ferguson, *NU* via *TLC* via Johnson, *Cumbre DX*) Or 330 Independence Ave SW, Rm. 4605, Washington, DC 20547. Besides the 4 and 13 MHz channels previously, these were available for brief daytime antenna tests: 5965, 5975, 6120, 7105, 7115, 7140, 7275, 7295, 9505, 9555, 9570, 9590, 9615, 9650, 9660, 9680, 9770, 11705, 11750, 11775, 11910, 11915, 11970, 15115, 15150, 15195, 15225, 15260, 15435, 17705, 17740, 17750, 17805, 21570, 21695 (Ferguson, NU via HCJB *TLC*)

SOMALIA R. Mogadishu, V. of the Masses of the Somali Rep. left 6870 for 6880-USB, late Dec. at 1952, and English at 2002; Jan. 1 at 2042 had moved again, to 6850-USB (Bob Hill, MA, *Cumbre DX*)

SUDAN [non] V. of Sudan, clandestine on new 8000 ex-9000 at *1715-1915*, also new time; opened with oriental-sounding march by local 5th-grade marching band, fair and clear (Bob Hill, MA, *FT* & *Cumbre DX*) Replaces 1300-1500 broadcast, and announces also at 0400-0600, both on exactly 10, 9 and 8 MHz; also heard on 10000, not 9000; direction-finding confirms Eritrea source. ID is "Voice of Sudan radio, voice of democracy and peace, National Democratic Alliance radio." (Arabic: *Idha'at Sawt al-Sudan, sawt al-dimuqratiyah wa'l-salam, idha'at al-Tajammu al-Watani al-Dimuqrati*) (BBCM)

SURINAM R. Apintie, 4991, nightly around 0200-0400* with mostly uninterrupted easy listening and jazz music; 0357 Dutch ID, drums IS, anthem, best on USB to avoid QRM (John H. Cobb, Jr., GA, *W.O.R.*) 4990.93 fair 0330-0400:45*, QRM from Ancash, Brazilian 4985, and +/-15 kHz splatter from Torbes 4980! (Randy Stewart, MO) Gornati, *Play-DX*, reports QSL listing power as 50 watts! Normally 350, so linear down again (Hans Johnson, *Cumbre-DX*)

TURKEY TRT Deputy Director General of Engineering Vural Tekeli writes that 7190 moved reluctantly to 9655 after complaints from hams, for English to us at 2300, 0400. Said no antennas available now toward us below 7100 kHz (Kevin Hecht, PA) At 0400, 9655 blocked by South Africa in Portuguese (Tony Jones, Paraguay, *DXing with Cumbre*)

VOT faxed long list of test frequencies for SSB to Europe: 1430-1530 on 7112.5, 7122.5, 7207.5, 7257.5, 7297.5, 7362.5, 7382.5, 7392.5, 7412.5, 7472.5, 7487.5. At 1830-1930 on 7157.5, 7292.5, 9592.5, 9642.5, 9647.5, 9697.5, 9747.5, 9767.5, 9797.5, 9942.5 (Wolfgang Büschel, Germany, WDXC *Contact*)

USA VOA started new *Dateline Bosnia* M-F 1906-1930 to Eu/ME/Af/Pac (*Communications World*) Unusual to hear a VOA spur, but 5995 and 6130 mixed to 6267.3v around 0100 in English; weak, slightly unstable, wobbly carrier; don't take for a Europirate (Brian Alexander, PA, *W.O.R.*)

R. Martí, already beset by internal divisions and the subject of three federal probes, is embroiled in yet another controversy as Congress and the Clinton administration clash over a proposal to relocate the station to Miami by April 1 (Christopher Marquis, Miami *Herald* via Aaron Pilchick)

WRMI, 9955, times for *Wavescan* as of Jan: Sat 2200, Sun 0030 (except 1st & 3rd Sats), Sun 1445, Mon 0100, 0215, Wed 2130. Also new Spanish edition of *Wavescan* called *La Onda Mundial*, Sun 0100; both repeated at times during *Viva Miami* (Jeff White via George Thurman) *La Onda Mundial* also supposed to be on TIAWR, HIAJ at unknown times (gh)

Heard Bro. Stair on WWCR criticizing WGTG, 9475, for not putting him on full time, so he's terminating the agreement (Diane Mauer, WI)

World of Radio times on WWCR as of early Feb: new first broadcast Thu 2130 on 9475, Fri 2215 on 9475, Sat 1128 on 5065, Sun 0130 & 0800 on 3315, 1900 or 1830 on 12160, Mon 1230 on 15685, 2130 on 9475, Tue 1330 on 15685. Listen for changes and new times on WWCR-4. Exclusive 2.5-minute *Olympic Report* with Bruce Jenner, M-F 1459:30 and 1900 on 15685, 2302:30 on 9475—mostly coin commercials (gh) Harvey Thomas' *View from Europe* moved to Sat 1205 on 15685. Planned for WWCR-4 were *The Net Connection*, early Sunday afternoon, and *Internet at Night* (Adam Lock, WWCR)

WINB was still looking for a new transmitter, hoped to be back by end of Feb (George Thurman, TX, *W.O.R.*) Lessee last year changed neutralization circuits, "cooked" the final tube, a 6697; got another rebuilt one, it too soon destroyed. S. American antenna bit the dust thanks to an overzealous weed mower operator, but European antenna modified so it is reversible, says Fred Wise (Jon L. Gorski, IA, *W.O.R.*)

Additional *DXing with Cumbre* time on WHRI: Sun 1930 on 13760 (Hans Johnson, CO)

UZBEKISTAN R. Tashkent in English; 0100-0130 on 7285, 5975, 5955; 1200-1230 & 1330-1400 on 9715, 6025, 5975, 5060. Fax +7-3712-440021 (BBCM) Best tho poor at 1200 on 5975, fair and clear at 1330 on 9715 (Brian Alexander, PA)

VENEZUELA R. Continental, Barinas, back on 4939.5 at 2305, 0403* and *0920 (Ed Rausch, NJ, *FT*)

VIETNAM VOV domestic services reorganized: both at 2155-1600, I on 5925 and 10060, II on 4960. Latter has ad-block with soft drinks, etc., 1045-1100. Sundays I and II are // (Isao Ugusa, Japan, R. Japan *Media Roundup*)

ZAIRE R. Candip, 5066.34, Bunia, on late New Year's Eve, greetings from 2224, clobbered by WWCR at 2300 (Terry Krueger & David Sharp, *DXSF* via *Cumbre DX*)

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

Broadcast Loggings

SHORTWAVE BROADCASTING

Gayle Van Horn

0030 UTC on 6950
CHINA: China Radio International. Portuguese. Interval signal to newscast. Traditional Chinese music to lady announcer's special feature. (John Hanz, Old Bridge, NJ)

0035 UTC on 11905
THAILAND: Radio Thailand. International news on the role of German troops in Bosnia. (J. Craig Patterson, Ogden, UT) Station monitored on 11905.15 at 2031 in English. Newscast heard on // 9655.5.(Giovanni Serra, Rome, Italy)

0104 UTC on 6040
ANTIGUA: Deutsche Welle relay. News bulletin at tune-in to *European Journal* to 0108. Comments on France's continued labor unrest. (Jim Moats, Ravenna, OH) Relay heard on 6075 at 0525. (Terry Jones, Plankinton, SD) Antigua's BBC relay heard on 17840 at 1715. (Bob Fraser, Cohasset, MA)

0145 UTC on 6140
ALBANIA: Radio Tirana. Station ID to regional music. News update on Bosnia to 0159*. (Jones, SD) Station monitored on 7270 at 1938, with commentary on privatization in Albania. // 9739.9. (Serra, Italy)

0145 UTC on 4755
BRAZIL: **Radio Educacao Rural**. Portuguese. Music to announcer's station ID at 0201. Additional Brazilian's observed as; **Radio Clube** on 3374.8 at 0420, **Radio Dif. Amazonas** on 4805 at 1116, **Radio Nacional** on 15445 at 1255 with IDs and Portuguese music vocals. (Maywoods DX Team, KY: Loy W. Lee, Edward C. Shaw, Jerry Johnston, Charles Everman, Dr. Joel Roitman) *Thanks to my favorite DX Team! - Gayle VH.*

0200 UTC on 7115
YUGOSLAVIA: Radio Yugoslavia. News on Bosnia and the Peace Agreement. (Fr. John Bellovich, Macclenny, FL)

0208 UTC on 6190
HUNGARY: Radio Budapest. *Business News* segment to interview with a listener on the importance of shortwave listening, Station ID and frequency/time quote to 0228 UTC. (Jones, SD) News on the Hungarian political scene, heard on 7250 at 2200. (Bellovich, FL; Tom Banks, Dallas, TX) *DX Show* heard on 7250 at 2207. (Hanz, NJ)

0242 UTC on 4790
PERU: **Radio Atlantida**. Spanish. Station ID at 0245 by male announcer to anthem at 0300. Peruvians monitored include; **Radio Cora** on 4914.45 at 0435; **Radio Villa Rica** on 4886.5 at 1120; **Radio Chanchamayo** on 4895 at 1130 with Andean vocals and talk under Colombian. (Maywoods DX Team, KY)

0400 UTC on 9585
SOUTH AFRICA: Channel Africa. Newscast to *Hit Parade* show. (Christopher M. Grawburg, Wilson, NC) via rec.radio.shortwave. Audible on 15240 at 1626 with pop music and *Sports Watch* program. Current affairs topics to abrupt sign-off at 1656. (Serra, Italy; Moats, OH; Jones, SD)

0400 UTC on 3270
NAMIBIA: Namibian BC Corp. *World At Six* program. News, weather and *Financial Report*. Rebroadcast of featured news reports from VOA, RFI, and BBC heard on // 3290. (Ken Loh, Portland, OR; Maywoods DX Team, KY)

0410 UTC on 5905
UKRAINE: Radio Ukraine International. Program on Ukrainian culture, specifically the cinema, with credit given to a Ukrainian inventor. (Jerry Witham, Keaau, HI)

0420 UTC on 15115
NEW ZEALAND: Radio New Zealand International. *Sports Roundup* program. (Grawburg, NC) RNZ Int'l heard on 5960 at 1730 with local news from Auckland to ID. (Witham, HI; Patterson, UT)

0425 UTC on 17765
NORTH KOREA: Radio Pyongyang. Program on the progress of Socialism in Korea. (Grawburg, NC) Monologue to 1745 on 6520. Frequency schedule, anthem to sign-off. (Witham, HI; Patterson, UT)

0501 UTC on 7480
BULGARIA: Radio Bulgaria. Station ID and news at 0515. *Bulgaria Presents* program with interviews and folk music. (Jones, SD) *Answering Your Letters* mailbag show heard on 9700 at 2015. (Fraser, MA; Schoop, NC)

0529 UTC on 9540
SPAIN: Radio Exterior de Espana. *People of Today* and *Entertainment in Spain* segment. Pop music to Spanish language lessons and 0556 sign-off. (Jones, SD; Patterson, UT) Heard on 9540 at 0035, with segment featuring U.S. author's travels in Spain during the Civil War. (Bellovich, FL; Hanz, NJ)

0628 UTC on 9660
VATICAN STATE: Vatican Radio. Interval signal to "African service of Vatican Radio" ID, followed by a schedule of African religious events. (Witham, HI; Grawburg, NC)

1040 UTC on 4753.28
INDONESIA: **RRI-Ujung Pandang**. Indonesian. Regional music to 1100 ID. Indo's **RRI-Jambi** audible on 4926.95 at 1050; **RRI-Jakarta** on 9680 at 1135 with talk about Jakarta.. (Maywoods DX Team, KY)

1135 UTC on 7180
HONG KONG: BBC relay. Easy listening music to announcers discussion on the economic future on the New Territories. (Maywoods, DX Team, KY)

1250 UTC on 11615
FRANCE: Radio France International. *Arts in France*-Henry Purcell's anniversary noted with his *Indian Queen* performed in Paris. (Fraser, MA)

1359 UTC on 13580
CZECH REPUBLIC: Radio Prague. Interval signal to ID and news bulletin. Report on Czech's role in Bosnia. (Moats, OH)

1411 UTC on 17885
SEYCHELLES: **BBC** Relay. English lesson to presumed Somalian program at 1415, with fair signal quality. (Moats, OH) Seychelles' **FEBA** heard in presumed Malagasy on 6140 at 1640. Children's choir to inspirational message. Station ID to 1655*. (Witham, HI) Heard 1930 on 9630 with *Heritage* program exploring a sunken Roman ship. (Fraser, MA; Maywoods DX Team, KY)

1600 UTC on 9735
OMAN: Radio Oman. Arabic. Male announcer's talk and music. A nice catch till Deutsche Welle wiped it out. (Maywoods DX Team, KY)

1630 UTC on 5090
CHINA: **Central People's BS**. Chinese music program of vocals with orchestral accompaniment. Intermittent announcement breaks past 1700. **China Radio International** heard on 7150 at 1700, with world, local and Pacific news to 1720. *Chinese Scrapbook*, a program about Chinese chess. (Witham, HI)

1650 UTC on 5985
TANZANIA: Radio Tanzania. Presumed Swahili. Commentary about Tanzania to regional pop music and commercials. Station ID at 1700, then covered by VOA on 5990. (Witham, HI; Dan Schopps, St. Louis, MO; Maywoods DX Team, KY)

1800 UTC on 9025
SUDAN: Sudan National Radio. Station ID with frequency announced as 9022. News and *Press Review* to regional music at 1817, // 9200 covered by RTTY. (Witham, HI) Monitored 2000 on 9025 with music and IDs. (Fraser, MA)

1800 UTC on 11990
KUWAIT: Radio Kuwait. ID to national anthem. Frequency quote to program preview. DJ format for pop music program. (Frank Hillton, Charleston, SC)

1820 UTC on 15265
BRAZIL: Radio Nacional Bras. Feature on American actors paid for commercials on Brazilian radio and television. Discussion on construction projects in northeast Brazil. (Hanz, NJ)

1915 UTC on 6105
ROMANIA: Radio Romania International. Report on the International Commission on Human Rights. (Fraser, MA) Station monitored on 7195 at 2115, with programming on various Romanian music releases and jazz festivals to station ID at 2130, // 5990. (Hanz, NJ)

2004 UTC on 6165
SWITZERLAND: Swiss Radio International. News bulletin, followed by report on Rwanda. (Moats, OH) Heard at 1630 on 13635 in Italian. (Serra, Italy)

2030 UTC on 9535
ANGOLA: Radio Nacional. World news to station ID. (Dan Schopp, St. Louis, MO) via gayle@grove.net. (Bellovich, FL) YL's English ID at 2100 heard on 9534. (Maywoods DX Team, KY)

2100 UTC on 11705
CUBA: Radio Havana. News on Castro's visit to China, including an editorial on how this visit will strengthen socialism in the western hemisphere. (Bellovich, FL) Station monitored on 9820 at 0200. (Patterson, UT) *Viewpoint* heard on 11960 at 2204. (Moats, OH)

2117 UTC on 12080
BOTSWANA: Voice of America relay. *Now Music USA* in progress at tune-in. Station ID and sign-off at 2130. (Moats, OH) Relay also monitored on 7415 at 1955. (Fraser, MA)

2120 UTC on 11865
JAPAN: NHK/Radio Japan. World news to Indonesian pop music. Feature on a Japanese female punk rock group to readings of national literature. (Bellovich, FL)

2130 UTC on 9965
ARMENIA: Voice of Armenia. Armenian/English/Spanish. IDs to frequency quote and national news. Pop music to cultural and Armenian topical news. Spanish mailbag show to Armenian programming at 2215. (Serra, Italy)

2021 UTC on 4965
ZAMBIA: Christian Voice. Religious text at tune-in. Hymns and prayers to 2030*. (Hillton, SC)

2305 UTC on 7170
SENEGAL: RTV du Senegal. Fair signal for French DJ's pop/rock music show. Local items to ID and 0005 national and 0008* (Gayle VH, Brasstown, NC)

Thanks to our contributors — Have you sent in YOUR logs?
Send to ***Gayle Van Horn,*** *c/o Monitoring Times (or e-mail gayle@grove.net)*
English broadcast unless otherwise noted.

Gayle Van Horn, gayle@grove.net

It's FREE for one stamp!

I knew that would get your attention! If the notion of saving some money appeals to you, but you don't know exactly where to start, ask Ian McFarland.

Each March and September, new frequency and program schedules are issued from international broadcasting stations, and in these days of recessions and cut backs, many stations have to be more careful with their money.

In an effort to give the stations and shortwave listeners a chance to get more value for their financial resources, Ian has organized a very successful endeavor. For the cost of the stamp on your postcard, you can receive for free a selection of current SW station program schedules from around the world. Send your postcard to; Marbian Productions International, 6 Coolbreeze Avenue, Pte. Claire, Quebec, Canada H9S 5G4. Save some cash and tell Ian that *MT* sent you!

BRAZIL

Radio Difusora Jatai, 4935 kHz. Full data prepared QSL card returned as verified, signed by Mario Lazao-Gerente Admin. Received in 18 days for a Portuguese report, cassette tape, Brazilian mint stamps, and souvenir postcard. Station address: Rue Jose Carvalho Bastos 542, Jatai, Goias, Brazil. (John C. Mello, North Scituate, RI)

Radio Difusora De Roraima, 4875 kHz. Full data prepared QSL returned as verified, signed by Francisco Geraldo Franca-Director. Received in 26 days for a Portuguese report, Brazilian mint stamps, and a souvenir postcard. Station address: Rua Capitao Ene Garcez 830, 69300 Boa Vista, Roraima, Brazil. (Mello, RI)

CANADA

CBC Northern Quebec, 9625 kHz. Verification letter signed by Nathalie Chamberland. Received in 42 days for a taped English report (returned with letter). Station address: Box 6000, Montreal, Canada H3C 3A8. (Walter J. Szczepaniak, Philadelphia, PA)

Time Station-CHU 7335, 14260 kHz. Partial data QSL card unsigned., plus letter. Received in 18 days for an English utility report. Station address: c/o Time & Frequency Standards, Bldg. M-36, National Research Council, Ottawa, ON Canada K1A OR6. (Jennifer Hull, New York City, NY; Eric M. Walton, Vancouver, BC Canada).

COSTA RICA

Radio For Peace International, 7385 kHz. Special verification sheet for station's 8th anniversary. Form letter and program schedule enclosed. Received in 46 days for a taped English report and one U.S. dollar. Station address: Apartado 88, Santa Ana, Costa Rica. (Szczepaniak, PA)

GUATEMALA

La Voz De Atitlan, 2390 kHz. Partial data verification letter signed by Juan Ajtzip Alvarado-Director, and 25th anniversary pennant enclosed. Received in 35 days for a prepared Spanish QSL card (not returned), cassette tape, Guatemalan mint stamps, and souvenir postcard. Station address: Santiago Atitlan Depto, Soloa, Guatemala. (Mello, RI)

MEDIUMWAVE

KOH, 780 AM kHz. No data confirmation on station letterhead, signed by Dan Mason-Program Director, station sticker enclosed. Received in 7 days for an English AM report. Station address: 595 East Plumb Lane, Reno, Nevada 89502. Ph:702-789-67000; FAX 702-789-6767. (Mark Redfox, Seattle, WA)

WLS, 890 AM kHz. Full data verification on station letterhead, signed by Warren Shulz-Chief Engineer. Received in 8 months for an English AM report and U.S. mint stamps. Station address: 190 N. State St., Chicago, IL 60601. (Gayle VH, NC)

NETHERLANDS ANTILLES

Radio Netherlands Bonaire relay, 6165 kHz. Full data *Satellite Antenna* card unsigned. Received in 20 days for an English report and no return postage. Station address: Radio Netherlands, P.O. Box 222, 1200 JG Hilversum, The Netherlands. (Charlie Washburn, North Perry, ME)

SHIP TRAFFIC

Sea Merchant ELQN2, 156.7 MHz (Container Vessel). Prepared QSL card verified, plus vessel photo and personal note. Received in 66 days for an English utility report and U.S. mint stamps. Ship address: c/o Crowley American Transport, Inc., P.O. Box 2110, Jacksonville, FL 32203-2110. (Hank Holbrook, Dunkirk, MD)

Regal Empress C6LW2, 156.8 MHz (Passenger Vessel). Full data QSL letter verified, plus postal view card of ship. Received in 6 months for an English utility report and U.S. mint stamps. Ship address: c/o Regal Cruise Lines, 4199 34th St. South, Suite B-103, St. Petersburg, FL 33711 (Holbrook, MD)

M/V Fuji Maru JHOK, 12.443 MHz (Fisheries Research Vessel). Full data prepared QSL card signed and stamped. Personal letter and color photo of vessel enclosed. Received in 33 days for an English utility report. Ship address: Yoshio Nitoh-Chief of Ship Managing Section, Shizuoka Pref. Fisheries Experimental Station, 3690 Shioiri Kogawa, Yaizu-City, Shizuoka Pref. Japan. (Steve McDonald, Port Coquitlam, BC Canada)

M/S Orient Venus JFYU, 8.355 MHz (Passenger Vessel). Full data prepared QSL card signed and stamped. Color photo of vessel enclosed. Received in 32 days for an English utility report. Ship address: c/o Japan Cruise Lines Inc., Osaka-Ekimae No.2, Building 13F, 1-2 Umeda, Kita-Ku, Osaka, Japan 530. (McDonald, Canada)

M/V Oglebay Norton WAQ3521,4.077 MHz (1,000 Ft. Ore Carrier). Full data prepared QSL card signed and stamped. Five page handwritten letter from Captain, enclosed with a photo of the vessel. Received in 30 days for an English utility report. Ship address:c/o Detroit Marine Post Office, River Station, Detroit, MI 48222. (McDonald, Canada)

SLOVAKIA

Adventist World Radio via Rimavska Sobota, Slovakia, 9455, 13715 kHz. Full data color cards of Jaerbeurs Convention Center in The Netherlands, initialed. Personal letter from Dr. Adrian M. Peterson on AWR letterhead. Received in 35 days for an English report, and mint stamps (used on reply). Station address: c/o International Relations, P.O. Box 29235, Indianapolis, IN 46229. Ph & FAX: 317-891-8540. (Gayle VH, Brasstown, NC)

Radio Slovakia, 5930 kHz. Partial data, unsigned QSL postcard. Received in 21 days for an English report. Station address: Slovensky Rozhlas, Mytna 1, 812 90 Bratislava, Slovakia. (Hull, NY) Contribution received via gayle@grove.net.

SOUTH KOREA

KBS/Radio Korea International, 15575 kHz. No data verification card, unsigned. Schedule newsletter enclosed. Received in 52 days for a taped reception report and one U.S. dollar. Station address: 18 Yoido-Dong, Youngdungpo-Gu, Seoul 150-790 Republic of Korea. (Szczepaniak, PA)

UNITED KINGDOM

Irish Overseas Broadcasting (via BBC transmitters) 9605 kHz. Full data *Map of Ireland* card. Received in 78 days for an English report and no return postage. Station address: P.O. Box 4950, Dublin 1, Republic of Ireland. (Washburn, ME)

UNITED STATES

USCG Station NOJ, 6501.0 USB kHz. Full data QSL card and personal letter signed by CW03 Curtis D. Law-Op/Comm. Officer. Received in 15 days for an English utility report. Station address: P.O. Box 190017 Kodiak, Alaska. (Walton, Canada)

How to Use the Shortwave Guide

1: Convert your time to UTC.

Eastern and Pacific Times are already converted to Coordinated Universal Time (UTC) at the top of each page. The rule is: convert your local time to 24-hour format; add (during Standard Time) 5, 6, 7, or 8 hours for Eastern, Central, Mountain or Pacific Times, respectively.

Note that all dates, as well as times, are in UTC; for example, a show which might air at 0030 UTC Sunday will be heard on Saturday evening in America (7:30 pm Eastern, 4:30 pm Pacific).

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

Some selected programs appear on the lower half of the page for prime listening hours—space does not permit 24-hour listings except for the "Newsline" listing, which begins on the next page.

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

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

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

Look at the page which corresponds to the time you will be listening. Comprehensive frequency information for English broadcasts can be found at the top half of the page. All frequencies are in kHz.

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

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

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

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

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

Hot News

Programming Tips by Jim Frimmel

•**ISRAEL** to North America at 1500 UTC in English on 9300/11685 begins this month. Programs are expected to be the same as now heard at 2000 hours.

•**VOICE OF AMERICA** (Africa Service) at 1906 UTC is now carrying a new program called Dateline Bosnia. The 24-minute (Mon-Fri) program provides all the latest news about the peacekeeping operation. This is the only transmission of the program.

•**WWCR** is offering a new program called The Pam Beasley Talk Radio Show from the American Freedom Network (formerly the USA Patriot Network). Check it out at 1800 hours on 12160.

•**SUGGESTED DAYTIME LISTENING** for the 1700-2300 time period. Most of these are easily heard in North America.

1700: BBC - Switch around the various streams at this time. They should all be audible except the Asia stream. You can catch Focus on Africa (1700-1730 on 17830/15400/15420), World Business Report (1715-1730 on 17840/9515 and again at 1730-1745 on 15070/12095), and Off the Shelf (1730-1745 on 11750/9740). Weekend programs vary.

1706: WRNO (Louisiana) - Dittoheads who have trouble getting Rush Limbaugh on local frequencies can hear his three hour broadcast on 15420 beginning at this time.

1706: Voice of America - Talk to America (live) (Mon-Fri), best heard in North America in the Africa Service but on all services at this time. Other fine programs on weekends, including Communications World at 1730, Sat.

1800: BBC (Americas Stream) (17840). Following 30 minutes of Newsdesk, it's a half-hour of music every day of the week with a different music program each day.

1800: WWCR #3 (12160). The Pam Beasley Talk Radio Show is a new addition to the weekday program lineup (described above).

1830: Radio Netherlands Intl to Africa. The Bonaire relays (15315/17605) offer good reception for two hours beginning at this time.

1900: Deutsche Welle (11865/9670). Check out the alternative programming on DW's Africa Service. Programs you don't hear in the broadcasts to North America at 0100 and 0300 include Hits in Germany, Africa in the German Press, Focus on Development, Spotlight on Sport, African News, and the main Mon-Fri program — Newsline Cologne.

1900: WHRI (Angel 1) (9495). Sometimes difficult to find on local stations, Chuck Harder's For the People talk radio program is carried live for three hours beginning at this time.

1906: VOA (Africa Service) - 15580/13710. Dateline Bosnia (described above).

1930: WWCR #3 (12160). A half-hour of news from and about Ireland on weekdays.

2000: Kol Israel (9435/7465/7420). This was the only broadcast in English to the Americas until the introduction of the new morning broadcast (described above).

2000: China Radio Intl (15110/11715). A good time for daytime listeners to hear CRI.

2100: Deutsche Welle (15270/11905). This African transmission carries different programs than the 1900 broadcast to Africa but repeats the weekday European Journal program. Alternative programs which can be heard include Behind the Headlines, Commentary/Sports Report, International Talking Point, People and Places, and Africa Highlight.

2100: Radio Havana Cuba (9550). This new frequency for the transmission to Europe is well-heard in North America. This is an early edition of the broadcasts to North America at 0100/0300/0430. Tune in for your dose of anti-American propaganda and some fine Cuban music.

2100: Voice of America. The program World Report (Mon-Fri) is best heard (in North America) in the Africa Service (17725/15580/13710). World report can only be heard at this time. Weekend fare includes New Horizons/Issues in the News on Sun and On the Line on Sat.

2200: Voice of Free China (Taiwan) (9985/5810). Enjoy excellent reception of all the regular programs via the WYFR relay in Florida.

2200: Monitor Radio Intl (7510/13770). Get a full hour of news and current events from a world news leader.

2230: Radio Austria Intl (9870/6155). The 9870 frequency is targeted to North America and the better of the two. Program content is identical to other broadcasts.

MT Monitoring Team

Gayle Van Horn, Frequency Manager
North Carolina

Dave Datko
California

Jeff Demers
New Hampshire

Next Reporting Deadline
March 20, 1995

Jim Frimmel, Program Manager
Texas

Jacques d'Avignon
Propagation Forecasts
Ontario, Canada

NewsLine

"Newsline" is your guide to news broadcasts on the air. • All broadcasts are world news reports unless followed by an asterisk, which means the broadcast is primarily national news. • All broadcasts are daily unless otherwise noted by the day codes.

0000 UTC
(7:00 PM EST, 4:00 PM PST)
[T-A]
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (south as)
Canada (North-Quebec) [S]
China Radio Intl
Croatian Radio
KWHR (Hawaii) [T-A]
Monitor Radio Intl [T-A]
Radio Australia
Radio Bulgaria
Radio Canada Intl
Radio Exterior de Espana
Radio New Zealand Intl
Radio Prague
Radio Thailand
Voice of America (am)
Voice of America (as)
Voice of America (ca)
Voice of Russia
0003
Radio Pyongyang
0010
China Radio Intl*
Voice of America (ca) [T-A]*
0015
Radio Cairo
0030
All India Radio
Radio Netherlands Intl
Radio New Zealand Intl [M-F]
Radio Sweden [T-A]
Radio Thailand [T-S]
Radio Vilnius
Radio Vlaanderen Intl
Voice of America (am) [T-S] (Special English)
Voice of America (as) (Special English)
Voice of Russia
0035
Voice of Iran
0045
BBC (am)*
BBC (as pac)*
BBC (south as)*
0050
RAI Italy

0100 UTC
(8:00 PM EST, 5:00 PM PST)
BBC (am) (Newsdesk)
BBC (as pac)
BBC (south as) (Newsdesk)
Canada (North-Quebec)
Croatian Radio
Deutsche Welle
HCJB (am)
Monitor Radio Intl [T-A]
R Slovakia Intl [A]*
R Slovakia Intl [S/T-F]
Radio Australia
Radio Exterior de Espana
Radio Havana Cuba [T-S]
Radio Japan
Radio New Zealand Intl
Radio Norway Intl [M]
Radio Prague
Radio Ukraine Intl
Radio Yugoslavia [M-A]
Swiss Radio Intl
Voice of America (am)
Voice of America (as)
Voice of America (ca)
Voice of Indonesia [F]
Voice of Russia
Voice of Vietnam
0110
Radio Australia [M-F]*
0113
Radio Havana Cuba [T-S]*
0130
Radio Austria Intl
Radio Havana Cuba [T-S]
Radio Netherlands Intl
Radio Sweden [T-A]
Voice of Greece
Voice of Russia
Voice of Vietnam
0145
Radio Tirana
0152
Vatican Radio
0155
Voice of Indonesia [F]

0200 UTC
(9:00 PM EST, 6:00 PM PST)
BBC (af) (Newsday)
BBC (am) (Newsday)
BBC (as pac) (Newsday)
BBC (eu) (Newsday)
BBC (south as) (Newsday)
Canada (North-Quebec) [S]
Croatian Radio
Deutsche Welle
Monitor Radio Intl [T-A]
Radio Australia
Radio Budapest
Radio Canada Intl
Radio Havana Cuba [T-S]
Radio Korea
Radio New Zealand Intl [M-A]
Radio Romania Intl
Radio Yugoslavia
RAE Argentina [T-A]
Voice of America (as)
Voice of Myanmar (Burma)
Voice of Russia
Voice of Vietnam
0203
Voice of Free China
0212
Radio Havana Cuba [T-S]*
0215
Radio Cairo
Radio Nepal
0228
Radio Havana Cuba [S]
0230
Radio Austria Intl
Radio Havana Cuba [T-A]
Radio Netherlands Intl
Radio Pakistan
Radio Portugal Intl [T-A]
Radio Sweden [T-A]
Radio Tirana
Voice of Russia [T-A]
Voice of Vietnam
0255
Radio Canada Intl [T-A]

0300 UTC
(10:00 PM EST, 7:00 PM PST)
[T-A]
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu) [S-F]
BBC (south as)
Canada (North-Quebec)
Channel Africa
China Radio Intl
Croatian Radio
Deutsche Welle
Monitor Radio Intl [T-A]
Radio Australia
Radio Canada Intl
Radio Havana Cuba [T-S]
Radio Japan
Radio New Zealand Intl [M-A]
Radio Norway Intl [M]
Radio Prague
Radio Thailand
Voice of America (af) [A-S]
Voice of Russia
WWCR #3 (Tennessee) [T-A]
0301
Voice of America (af) [M-F]*
0303
Voice of Free China
0310
China Radio Intl*
0313
Radio Havana Cuba [T-S]*
0315
Radio Cairo
0320
Radio Philipinas [M-A]
Vatican Radio
0330
BBC (eu) [A]
Radio Budapest
Radio Dubai
Radio Havana Cuba [T-S]
Radio Prague
Radio Sweden [T-A]
Voice of America (af) [M-F] (Special English)
Voice of Russia
0340
BBC (af) [S]*
Voice of Greece
0355
Radio Japan [W-M]

0400 UTC
(11:00 PM EST, 8:00 PM PST)
[T-A]
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac)
BBC (eu) [S-F] (Newsdesk)
BBC (south as) (Newsdesk)
Canada (North-Quebec)
Channel Africa
China Radio Intl
Croatian Radio
Deutsche Welle
Monitor Radio Intl [T-A]
Radio Australia
Radio Canada Intl
Radio Havana Cuba [T-S]
Radio New Zealand Intl [A]
Radio New Zealand Intl [M-F]*
Radio Romania Intl
Radio Tanzania
Radio Ukraine Intl
Swiss Radio Intl
Voice of America (af)
Voice of America (me)
Voice of Russia
Voice of Turkey
WWCR #3 (Tennessee) [T-A]
ZBC Zimbabwe
0403
Radio Pyongyang
0410
China Radio Intl*
0412
Radio Havana Cuba [T-S]*
0425
RAI Italy
0430
BBC (af) [A-S]*
BBC (eu) [A] (Newsdesk)
Radio Havana Cuba [T-A]
Radio Netherlands Intl
Voice of Russia
0431
Voice of America (af) [M-F]*

0500 UTC
(12:00 AM EST, 9:00 PM PST)
AWR Latin America [T-F]*
BBC (af) (Newsday)
BBC (am) (Newsday)
BBC (as pac) (Newsday)
BBC (eu) (Newsday)
BBC (south as)
Canada (North-Quebec)
Channel Africa
China Radio Intl
Deutsche Welle
HCJB (am)
Monitor Radio Intl [T-F]
Radio Australia
Radio Bulgaria
Radio Cameroon
Radio Exterior de Espana
Radio Japan
Radio New Zealand Intl [S-F]
Voice of America (af)
Voice of America (me)
Voice of Israel
Voice of Russia
WYFR (Satellite Network) [A]
0510
China Radio Intl*
Radio Australia [M-F]*
0530
BBC (af) [A-S]*
Radio Austria Intl
Radio Havana Cuba [T-S]
Radio Romania Intl
Voice of Nigeria
Voice of Russia
0543
Radio Havana Cuba [T-S]*
0555
Radio Japan [A]

0600 UTC
(1:00 AM EST, 10:00 PM PST)
BBC (af)
BBC (am) (Newsday)
BBC (as pac)
BBC (eu) (Newsday)
BBC (south as)
Canada (North-Quebec)
Deutsche Welle
Monitor Radio Intl [T-F]
Radio Australia
Radio Canada Intl [M-F]
Radio Havana Cuba [T-A]
Radio Japan
Radio Korea
Radio New Zealand Intl [M-A]
Swiss Radio Intl
Voice of America (af) [A-S]
Voice of America (me)
Voice of Kenya
Voice of Malaysia
Voice of Russia
WWCR #1 (Tennessee) [T-A]
0601
Voice of America (af) [M-F]*
0603
Croatian Radio
Radio Pyongyang
0615
Swiss Radio Intl (eu)
0630

BBC (af) [A-S]*
Radio Austria Intl
Radio Havana Cuba [T-S]
Voice of Nigeria [M-F]
Voice of Russia
0631
Radio Romania Intl
0642
Radio Havana Cuba [T-S]*
0645
Radio Romania Intl
Voice of Nigeria [T-F]*
0655
Radio Japan [W-M]
Voice of Med. (Malta) [M-F]
0658
Radio Havana Cuba [S]

0700 UTC
(2:00 AM EST, 11:00 PM PST)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
KWHR (Hawaii) [M-F]
Monitor Radio Intl [T-F]
Papua New Guinea
Radio Australia
Radio Havana Cuba [T-A]
Radio Japan
Radio New Zealand Intl [A]
Radio New Zealand Intl [M-F]*
Radio Norway Intl [S]
Voice of Myanmar (Burma)
Voice of Russia
WWCR #1 (Tennessee) [S]
WWCR #3 (Tennessee) [S-F]
0703
Radio Pyongyang
Voice of Free China
0710
Radio Australia [M-F]*
0715
Swiss Radio Intl (eu)
0730
HCJB (eu)
Radio Netherlands Intl
Radio Vlaanderen Intl
Voice of Greece
Voice of Russia
0750
Radio New Zealand Intl [M-F]*
0755
Radio Japan

0800 UTC
(3:00 AM EST, 12:00 AM PST)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
KNLS (Alaska)
Monitor Radio Intl [M-A]
Radio Australia
Radio Korea
Radio New Zealand Intl
Radio Pakistan
Radio Prague
Voice of Indonesia [A-H]
Voice of Malaysia
Voice of Russia
WWCR #3 (Tennessee) [M-F]
0803
Croatian Radio
Radio Pyongyang
0810
Radio New Zealand Intl [M-F]*
0830
R Slovakia Intl
Radio Austria Intl
Radio Netherlands Intl
Voice of Armenia [S]
Voice of Russia [T-A]
0855
Voice of Indonesia [A-H]

0900 UTC
(4:00 AM EST, 1:00 AM PST)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
China Radio Intl
Deutsche Welle
HCJB (pac)
Monitor Radio Intl [M-A]
Papua New Guinea [M]*
Radio Australia
Radio Japan
Radio New Zealand Intl [M-A]
Swiss Radio Intl
Voice of Russia
0910
China Radio Intl*
Radio Australia [M-F]*
0930
FEBC (Philippines) [M-A]
Radio Netherlands Intl
Voice of Russia
0945
Deutsche Welle [M-F]*
0950
Russia (Radio Pacific Ocean) [A]
0955
Radio Japan

1000 UTC
(5:00 AM EST, 2:00 AM PST)
All India Radio
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (eu) (Newsdesk)
China Radio Intl
Monitor Radio Intl
Papua New Guinea
Radio Australia
Radio New Zealand Intl [S-F]
Radio Prague
Radio Tanzania
Radio Vlaanderen Intl [M-A]
Voice of America (as)
Voice of America (ca)
Voice of Kenya
Voice of Russia
Voice of Vietnam
WWCR #1 (Tennessee) [M-F]
WYFR (Satellite Network) [M-A]
1010
China Radio Intl*
Radio New Zealand Intl [M-F]*
1020
Radio New Zealand Intl [H]*
1030
FEBC (Philippines) [M-F]*
Radio Austria Intl [M-A]
Radio Dubai
Radio Netherlands Intl
Voice of Nigeria
Voice of Russia
1045
Voice of Nigeria [A-S]*

1100 UTC
(6:00 AM EST, 3:00 AM PST)
[A]
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (eu) (Newsdesk)
BBC (south as) (Newsdesk)
Deutsche Welle
Monitor Radio Intl [M-A]
Papua New Guinea
Radio Australia
Radio Ghana [A-S]
Radio Japan
Radio New Zealand Intl (Newsdesk)
Radio Pakistan
Radio Singapore Intl
Swiss Radio Intl
Swiss Radio Intl (eu)
Voice of America (as)
Voice of America (ca)
Voice of Israel
Voice of Russia
WYFR (Satellite Network) [M-A]
1102
Radio Mozambique
1103
Radio Pyongyang
1110
Radio Australia*
1120
Vatican Radio [M-A]
1130
Radio Austria Intl
Radio Korea
Radio Netherlands Intl
Radio Prague
Radio Singapore Intl
Voice of Asia
Voice of Russia
1135
Voice of Iran
1145
Deutsche Welle [M-F]*
1155
Radio Japan [S-F]

1200 UTC
(7:00 AM EST, 4:00 AM PST)
[A]
BBC (af) [M-A]
BBC (am)
BBC (as pac) [M-A]
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A-S]
China Radio Intl
Croatian Radio
Monitor Radio Intl [M-A]
Papua New Guinea
Radio Australia
Radio France Intl
Radio Jordan
Radio Korea
Radio New Zealand Intl [H-T]
Radio Singapore Intl
Radio Tashkent
Voice of America (as)
Voice of Russia
WWCR #1 (Tennessee) [A]
WYFR (Satellite Network) [M-F]
1203
Voice of Free China
1204
HCJB (am) [M-F]
1210
China Radio Intl*
1215
BBC (af) [M-A]*
BBC (as pac) [M-F]*
BBC (eu)*
BBC (south as) [M-A]*
1230
HCJB (am) [M-F]*
Radio Bangladesh [S-M]
Radio Bulgaria
Radio Cairo
Radio Canada Intl
Radio Finland [M-F]
Radio Korea [S-W/A]
Radio Netherlands Intl
Radio Singapore Intl
Radio Sweden [M-F]
Voice of Russia
Voice of Vietnam
WYFR (Satellite Network) [M-F]
1231
Radio France Intl [T]*
1240
Voice of Greece

1300 UTC
(8:00 AM EST, 5:00 AM PST)
BBC (af) (Newshour)
BBC (am) (Newshour)
BBC (as pac) (Newshour)
BBC (eu) (Newshour)
BBC (south as) (Newshour)
Canada (North-Quebec) [A-S]
China Radio Intl
KNLS (Alaska)
Monitor Radio Intl [M-A]
Papua New Guinea
Polish Radio [A]
Polish Radio [M-F]*
Radio Australia
Radio Canada Intl
Radio Ghana
Radio Norway Intl [S]
Radio Romania Intl
Radio Singapore Intl
Radio Tanzania [A-S]
Swiss Radio Intl
Swiss Radio Intl (eu)
Voice of America (as)
Voice of Kenya
Voice of Russia
WYFR (Satellite Network) [M-F]
1303
Radio Pyongyang
1310
China Radio Intl*
Radiobras [M-F]*
1324
HCJB (am) [M-F]
1328
Radio Cairo
1330
All India Radio
FEBC (Philippines) [M-A]
Radio Austria Intl
Radio Canada Intl
Radio Dubai
Radio Finland
Radio Netherlands Intl
Radio Singapore Intl
Radio Sweden [M-F]
Radio Tashkent
Radio Vlaanderen Intl [S]
Radio Yugoslavia
Voice of America (as) (Special English)
Voice of Russia [M-A]
Voice of Turkey
Voice of Vietnam
WYFR (Satellite Network) [M-F]
1335
FEBC (Philippines) [M-F]*
1355
Radio Singapore Intl

1400 UTC
(9:00 AM EST, 6:00 AM PST)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A-S]
China Radio Intl
Monitor Radio Intl [M-A]
Radio Australia
Radio Cameroon
Radio Canada Intl [S-F]
Radio France Intl
Radio Ghana
Radio Japan
Radio Norway Intl [S]
Radio Pakistan
Radio Prague
Radio Vlaanderen Intl [M-A]
Voice of America (as)
Voice of America (me)
Voice of Russia
WYFR (Satellite Network) [M-F]
1410
China Radio Intl*
1415
Radio Nepal
1424
HCJB (am) [M-F]
1430
FEBC (Philippines) [M-A]
Radio Austria Intl
Radio Canada Intl
Radio Netherlands Intl
Radio Romania Intl
Radio Sweden [M-F]
RTM Morocco [S]
Voice of Myanmar (Burma)
Voice of Russia
1431
Radio France Intl [T]*
1435
Voice of Greece
1445
All India Radio
Voice of Myanmar (Burma)
1455
Radio Japan [A]
Voice of Med. (Malta) [M-F]

1500 UTC
(10:00 AM EST, 7:00 AM PST)
BBC (af)
BBC (am)
BBC (as pac) [A-S]
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A-S]
Channel Africa
China Radio Intl
Monitor Radio Intl [M-A]
Radio Australia
Radio Canada Intl [S]
Radio Japan
Radio Norway Intl [S]
Swiss Radio Intl

Voice of America (as)
Voice of America (me)
Voice of Israel
Voice of Russia
WWCR #1 (Tennessee) [M-F]
1503
Radio Pyongyang
1510
China Radio Intl*
1530
All India Radio*
FEBA (Seychelles)
FEBC (Philippines) [M-A]
Radio Netherlands Intl
Radio Portugal Intl [M-F]
Voice of Nigeria [M-F]
Voice of Russia
WYFR (Satellite Network) [M-F]
1535
Voice of Iran
1555
Radio Japan [A]

1600 UTC
(11:00 AM EST, 8:00 AM PST)
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
BBC (south as)
Canada (North-Quebec) [A-S]
Channel Africa
China Radio Intl
Deutsche Welle
Estonian Radio [M-F]
Monitor Radio Intl [M-A]
Radio Australia
Radio Canada Intl [S]
Radio France Intl
Radio Jordan
Radio Korea
Radio Pakistan
Radio Tanzania
Voice of America (af) [A-S]
Voice of America (as)
Voice of America (me)
Voice of Ethiopia
Voice of Kenya
Voice of Russia
Voice of Vietnam
WWCR #1 (Tennessee) [M-F]
WWCR #3 (Tennessee) [M-F]
WYFR (Satellite Network) [A]
1610
China Radio Intl*
1612
Vatican Radio [S-F]
1630
Channel Africa [F]*
Radio Austria Intl
Radio Canada Intl
Radio Dubai
Voice of America (af) [M-F]*
Voice of America (as) (Special English)
Voice of America (me) (Special English)
Voice of Ethiopia
Voice of Russia
1633
Deutsche Welle [M]*
1638
Deutsche Welle [T-F]*
1645
BBC (am) [S-F]*
BBC (as pac) [M-F]*
BBC (eu) [S-F]*

1700 UTC
(12:00 PM EST, 9:00 AM PST)
[M-A]
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu) [A]
BBC (south as)
Canada (North-Quebec) [A]
Channel Africa
China Radio Intl
Monitor Radio Intl [M-A]
Radio Australia
Radio France Intl
Radio Japan
Radio Jordan
Radio New Zealand Intl [M-F]*
Radio Pakistan
Radio Prague
Swiss Radio Intl
Swiss Radio Intl (eu)
Voice of America (af)
Voice of America (as)
Voice of America (me)
Voice of Russia
WRNO (Louisiana) [M-F]
WWCR #3 (Tennessee) [M-A]
1703
Radio Pyongyang
1710
China Radio Intl*
Radio Australia*
1715
Radio Sweden [M-F]
Radio Tirana
Vatican Radio
1725
Radio New Zealand Intl [F]*
1730
Radio Netherlands Intl
Radio Romania Intl
Voice of Russia [S-F]
1740
BBC (af)*
1745
Radio Canada Intl [M-F]
Voice of Armenia [M-F]
1755
Radio New Zealand Intl [M-W]*

1800 UTC
(1:00 PM EST, 10:00 AM PST)
All India Radio
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (eu) (Newsdesk)
BBC (south as) (Newsdesk)
Canada (North-Quebec) [A]
Monitor Radio Intl [M-A]
Polish Radio [A]
Polish Radio [M-F]*
Radio Australia
Radio Cameroon
Radio New Zealand Intl [M-F]*
Radio Omdurman
Radio Prague
Radio Tanzania
Radio Yemen
Voice of America (af) [A-S]
Voice of America (af) [M-F]*
Voice of America (me)
Voice of Kenya
Voice of Russia
Voice of Vietnam
WRNO (Louisiana) [M-F]
1802
Radio Mozambique
1830
BBC (af) [A-S]*
Radio Bangladesh
Radio Korea [S-W/A]
Radio Kuwait
Radio Netherlands Intl
Radio Sweden [M-F]
Radio Yemen
Voice of America (af) [A-S] (Special English)
Voice of America (me) (Special English)
Voice of Russia
1840
Voice of Greece [M-A]
1855
Radio New Zealand Intl [M-H]*

1900 UTC
(2:00 PM EST, 11:00 AM PST)
[M-F]
All India Radio
BBC (af)
BBC (as pac) [M-A]
BBC (eu) [M-A]
China Radio Intl
Deutsche Welle
HCJB (eu)
Monitor Radio Intl [M-A]
Radio Australia
Radio Japan
Radio Korea
Radio New Zealand Intl
Radio Norway Intl [S]
Radio Romania Intl
Radio Vlaanderen Intl
Voice of America (af)
Voice of America (as)
Voice of America (me)
Voice of Greece [M-A]
Voice of Russia
Voice of Vietnam
1910
China Radio Intl*
Radio Australia [M-F]*
Radiobras [M-F]*
1930
Deutsche Welle [M-F]*
R Slovakia Intl
Radio Austria Intl
Radio Netherlands Intl
Radio Tirana
Radio Yugoslavia
Voice of Russia
Voice of Turkey
1935
RAI Italy
Voice of Iran

2000 UTC
(3:00 PM EST, 12:00 PM PST)
[M-F]
BBC (af) (Newshour)
BBC (am) (Newshour)
BBC (as pac) [M-A] (Newshour)
BBC (eu) (Newshour)
China Radio Intl
Deutsche Welle
Estonian Radio [M/H]
Monitor Radio Intl [M-A]
Radio Australia
Radio Budapest
Radio Bulgaria
Radio Korea
Radio New Zealand Intl
Radio Portugal Intl [M-F]
Radio Vilnius
Swiss Radio Intl
Swiss Radio Intl (eu)
Voice of America (af) [A-S]
Voice of America (af) [M-F]*
Voice of America (me)
Voice of Indonesia
Voice of Israel
Voice of Nigeria [M-F]
Voice of Russia
WWCR #3 (Tennessee) [M-F]
2003
Radio Pyongyang
2007
Radio Damascus [M-F]
2010
China Radio Intl*
Radio New Zealand Intl [S-H]*
2025
RAI Italy
2030
Polish Radio [A-S]
Polish Radio [M-F]*
Radio Netherlands Intl
Radio Thailand
Voice of Armenia
Voice of Vietnam
2055
Voice of Indonesia [M]
2057
Radio Kuwait

2100 UTC
(4:00 PM EST, 1:00 PM PST)
[M-F]
All India Radio
BBC (af)
BBC (am)
BBC (as pac)
BBC (eu)
China Radio Intl
Deutsche Welle
Monitor Radio Intl [M-A]
Radio Australia
Radio Cameroon
Radio Canada Intl
Radio Damascus [F]
Radio Exterior de Espana
Radio Havana Cuba [M-A]
Radio Japan
Radio Korea
Radio New Zealand Intl [A-H]
Radio Prague
Radio Romania Intl
Voice of America (af)
Voice of America (as)
Voice of America (me)
Voice of Russia
2110
China Radio Intl*
Radio Damascus [S-M]
Radio New Zealand Intl [M-H]*
2112
Radio Damascus [F]
2115
BBC (af)*
BBC (eu)*
Radio Damascus [T]
2120
Radio Cairo
2130
Radio Cairo
Radio Dnestr (Moldova) [M/W-H/A]
Radio Havana Cuba [M-A]*
Radio Riga Intl [M-F]
Radio Sweden [M-F]
Voice of Russia
2135
Voice of Iran
2145
Radio Damascus [W]
2155
Radio Canada Intl [M-F]

2200 UTC
(5:00 PM EST, 2:00 PM PST)
All India Radio
BBC (af) (Newsdesk)
BBC (am) (Newsdesk)
BBC (as pac) (Newsdesk)
BBC (eu) (Newsdesk)
Canada (North-Quebec) [A-S]
China Radio Intl
Croatian Radio
Monitor Radio Intl [M-A]
Radio Australia
Radio Budapest
Radio Bulgaria
Radio Canada Intl
Radio Exterior de Espana
Radio Havana Cuba [M-A]
Radio New Zealand Intl [A-H]
Radio Norway Intl [S]
Radio Ukraine Intl
Radio Vlaanderen Intl [S-F]
Radio Yugoslavia
RAI Italy
Voice of America (as)
Voice of Russia
WWCR #1 (Tennessee) [M-F]
2203
Voice of Free China
2210
China Radio Intl*
2215
Radio Cairo
2230
Radio Austria Intl
Radio Finland
Radio Prague
Radio Sweden [M-F]
Radio Vilnius
Voice of America (as) (Special English)
Voice of Russia [M-F]
2240
Radio Cairo
Voice of Greece [S-F]

2300 UTC
(6:00 PM EST, 3:00 PM PST)
[M-F]
All India Radio
BBC (af) [S-F]
BBC (am) [S-F]
BBC (as pac)
BBC (eu) [S-F]
Canada (North-Quebec) [S]
Croatian Radio
Deutsche Welle
Monitor Radio Intl [M-A]
Radio Australia
Radio Canada Intl
Radio Japan
Radio New Zealand Intl [A-H]
Voice of America (as)
Voice of Russia
Voice of Turkey
2303
Radio Pyongyang
2315
Radio Cairo
2330
Radio Canada Intl [A]
Radio Netherlands Intl
Voice of Russia
Voice of Vietnam
2335
Voice of Greece [S-F]

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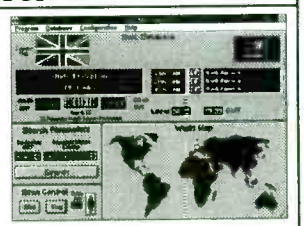
Scan Manager 1.0 Pro



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Scan Manager 1.0 Pro is a **High-Performance** Windows-Based program designed primarily for the Amateur Radio & SWL Enthusiast. Scan Manager 1.0 Pro **Seemlessly** integrates the NEW version of SWL Manager for **truely Powerful** HF monitoring! Scan Manager 1.0 Pro's Scan Category Concept is based upon the Classification of Services allocated by the ITU. These Classifications (refered to as Scan Categories in Scan Manager) are broken down into the following categories: Aeronautical, Amateur Broadcasting (SWL), Maritime, Standard Frequency & Time Signals, and Fixed Services. In addition, Scan Manager 1.0 Pro includes the AM Broadcast Band, the U.S. Citizens Band, W1AW Schedule (from the ARRL), Miscellaneous (Custom Scanning) and, of course, the User Database Scan Category (Create Custom Scan Categories). The Scan Categories are preprogrammed with the appropriate HF band assignments which makes scanning by Classification, or Category **Extremely Easy!**

Scan Manager 1.0 Pro Features SWL Manager 2.0

- **Intuitive** Color Display Screens with 3-D Graphics
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- **Colorful Graphics** for Tabbed Scan Categories
- Customize User DB Tab with Radio Bitmap (Popular Radio Bitmaps Included)
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- Local & GMT Time Displayed on Screen
- **Quickly Launch** your Favorite TNC/Terminal Prgm
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- Display Editable **Spreadsheet** type Views of either the SWL or User Database
- Print **Professional** Quality Reports from the Database
- **One Click** Logging of Scan Frequency to Database
- Help Assistant Provides Quick Access to Help Info
- Control Scan Functions with **Mouse** or **Keyboard**
- One Click Displays SWL Manager's Screen

- Includes **Editable** SWL Database with Hundreds of Broadcasts from Dozens of Countries
- **Powerful** Search Capabilities, tells you which Countries are Broadcasting **RIGHT NOW!**
- Displays Country Flag & Location of Broadcast Station Headquarters on World Map (Flag Bitmaps Included)
- Displays Local & GMT Time on Screen
- Simple to use with On-Line Help (Help Assistant)
- Display Editable **Spreadsheet** View of SWL Database & Print Two Styles of Database Reports
- Control Scan Functions with **Mouse** or **Keyboard**
- Fully Integrated with Scan Manager 1.0 Pro
- One Click Displays Scan Manager's Screen

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Frequencies

0000-0030	Australia, Radio	9610as	13605pa	13745as	17750as
0000-0100 vl	Australia, VL8A Alice Spg	2310do			
0000-0100 vl	Australia, VL8K Katherine	5025do			
0000-0100 vl	Australia, VL8T Tent Crk	4910do			
0000-0100	Bulgaria, Radio	7480na	9700na		
0000-0015	Cambodia, Natl Voice of	11940as			
0000-0100	Canada, CBC N Quebec Svc	9625do			
0000-0100	Canada, CFCX Montreal	6005do			
0000-0100	Canada, CFRX Toronto	6070do			
0000-0100	Canada, CFVP Calgary	6030do			
0000-0100	Canada, CHNX Halifax	6130do			
0000-0100	Canada, CKZN St John's	6160do			
0000-0100	Canada, CKZU Vancouver	6160do			
0000-0030 mtwhfa	Canada, RCI Montreal	6040am	9535am	11940am	
0000-0100	Canada, RCI Montreal	5960na	9755na		
0000-0100	China, China Radio Intl	9710na	11715na		
0000-0100	Costa Rica, AWR Alajuela	5030am	6150am	7375am	9725am
		13750am	15460am		
0000-0100	Costa Rica,RF Peace Intl	7385am	9400am		
0000-0005	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0000-0027	Czech Rep, Radio Prague	5930na	7345na		
0000-0030	Egypt, Radio Cairo	9900na			
0000-0015	Ghana, Ghana Broadc Corp	3366do	4915do		
0000-0045	India, All India Radio	9705as	9950as	11620as	13700as
		15145as			
0000-0100	Lebanon, Voice of Hope	6280va			
0000-0100	Lebanon, Wings of Hope	9960va			
0000-0100	Malaysia, Radio	7295do			
0000-0100	Malaysia, RTM Kuching	7160do			
0000-0100	Netherlands, Radio	6020na	6165na		
0000-0100	New Zealand, R NZ Intl	15115pa			
0000-0050	North Korea, R Pyongyang	11335na	13760na	15130na	
0000-0100	Palau, KHBN/Voice of Hope	9965as			
0000-0100 vl	Papua New Guinea, NBC	9675do			
0000-0100	Philippines, FEBC/R Intl	15450as			
0000-0100	Russia, Voice of	7105na	7125na	7180na	
0000-0100	Spain, R Exterior Espana	9540na			
0000-0030	Thailand, Radio	9680af			
0000-0100	United Kingdom,BBC London	5965as	5970sa	5975va	6175na
		6195as	7110as	7265as	7325va
		9590va	9915sa	11750sa	11955as
		15280as	15360as		
0000-0030	United Kingdom,BBC London	9580as	11945as		
0000-0100	USA, KAIJ Dallas TX	5810am			
0000-0100	USA, KTBN Salt Lk City UT	7510am			
0000-0100	USA, KWHR Naalehu HI	17510au			
0000-0100	USA, Monitor Radio Intl	7535am	9430ca		
0000-0100	USA, VOA Washington DC	5995na	6130am	7215va	7405na
		9455am	9775na	9890as	11695am
		11760va	13740na	15185va	15290va
		17735va	17820va		
0000-0100	USA, WEWN Birmingham AL	5825eu	7425na	7520sa	
0000-0100 asm	USA, WGTG McCaysville GA	9475am			
0000-0100	USA, WHRI Noblesville IN	5745am			
0000-0100	USA, WJCR Upton KY	7490na	13595na		
0000-0100 twhfa	USA, WRMI/R Miami Intl	9955am			
0000-0100	USA, WRNO New Orleans LA	7355am			
0000-0100	USA, WWCR Nashville TN	3315am	5065am	5935am	
0000-0044	USA, WYFR Okeechobee FL	6085na			
0030-0100	Australia, Radio	9580pa	9660pa	11795as	13605pa
		13755as	15240pa	15365pa	15415as
		15510as	17795pa	17860pa	
0030-0100 irreg	Belarus, Radiosta Belarus	5940eu	13640eu	17665eu	
0030-0055	Belgium, R Vlaanderen Int	6030na	9925sa		
0030-0100	Ecuador, HCJB Quito	9745am	21455va		
0030-0100	Iran, VOIRI Tehran	6015na	9022na		
0030-0100	Lithuania, Radio Vilnius	5910na			
0030-0100	Netherlands, Radio	5905as	7305as	9860as	11655as
0030-0100	Sri Lanka, SLBC Colombo	15425as			
0030-0100	Sweden, Radio	6065am	9850am		
0030-0100	Thailand, Radio	11905na	15370as		
0045-0100	USA, WYFR Okeechobee FL	6065na			
0050-0100	Italy, RAI Rome	6005na	9645na	11800na	

Selected Programs

Sundays

0000 USA, KTBN: The Coral Ridge Hour. D. James Kennedy talks about public education issues.
0004 Czech Rep, Radio Prague: Live in Prague. Jazz from one of Prague's night spots.
0010 USA, VOA (as): VOA Sunday. Interviews and features about science, sports, agriculture, and business, plus the latest American music.
0030 Ecuador. HCJB (am): Musical Mailbag. HCJB staffers read listener letters and play music.
0035 Belgium, R Vlaanderen Intl: Press Review. Stories on the front pages of the day's papers.
0040 USA, VOA (as): Words and Their Stories (Special English). The origin and use of common words and phrases in American English.
0045 USA, VOA (as): People in America (Special English). Stories about famous Americans.

Mondays

0000 USA, KTBN: E.V. Hill. Pastor Hill preaches.
0004 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0006 Czech Rep, Radio Prague: The Week and Politics.
0010 USA, VOA (as): VOA Business Report. A weekday review of business and financial matters.
0013 Czech Rep, Radio Prague: From the Weeklies. See S 1243.
0015 Bulgaria, Radio: Answering Your Letters. Replies to listener letters and requests.
0019 Czech Rep, Radio Prague: What's Up. See S 1249.
0030 Bulgaria, Radio: Plaza Bulgaria. Thirty minutes about Bulgaria and things Bulgarian.
0030 Ecuador, HCJB (am): Mountain Meditations. See S 1330.
0030 USA, KTBN: The Living Way. Jack Hayford preaches from The Church on the Way in Los Angeles.
0040 USA, VOA (as): Development Report (Special English). Information for developing nations.
0045 USA, VOA (as): This is America (Special English). Informative reports on life in the United States.

Tuesdays

0000 USA, KTBN: Let's Have Church. Mike Purkey
0004 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0007 Czech Rep, Radio Prague: Press Review. See M 1137.
0010 USA, VOA (as): VOA Business Report. See M 0010.
0030 USA, KTBN: Get Ready. See S 2300.
0035 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
0039 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
0040 USA, VOA (as): Agriculture Report (Special English). Developments and reports on farming and agriculture.
0045 USA, VOA (as): Science in the News (Special English). Recent scientific developments.
0049 Belgium, R Vlaanderen Intl: Sports Report. A roundup of the results of seasonal sports activities.

Wednesdays

0005 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0010 Czech Rep, Radio Prague: Press Review. See M 1137.
0010 USA, VOA (as): VOA Business Report. See M 0010.
0013 Czech Rep, Radio Prague: From the Archives. An historical look at the Czech people and their lifestyle.
0021 Czech Rep, Radio Prague: The Arts. Focus on an a particular topic concerning Czech art.
0030 USA, KTBN: Miracles Now. Richard Roberts evangelizes and heals at the Cathedral of Faith in San Jose, CA.
0035 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
0040 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
0040 USA, VOA (as): Science Report (Spec English). See M 1110.
0045 Belgium, R Vlaanderen Intl: Living in Belgium. Belgian lifestyles and activities.
0045 USA, VOA (as): Space and Man (Special English). Reports about outer space or about the human body.
0049 Belgium, R Vlaanderen Intl: Green Society. Environmental issues facing Belgium.

Thursdays

0000 USA, KTBN: Praise the Lord. See M 0300.
0005 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0010 USA, VOA (as): VOA Business Report. See M 0010.
0011 Czech Rep, Radio Prague: Press Review. See M 1137.
0021 Czech Rep, Radio Prague: The Arts. See W 0021.
0030 Ecuador, HCJB (am): Focus on the Family. See M 1330.
0034 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
0039 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
0040 USA, VOA (as): Science Report (Special English). See M 1110.
0045 USA, VOA (as): The Making of a Nation (Special English). Chapters from U.S. history in special English.
0050 Belgium, R Vlaanderen Intl: The Arts. Cultural events in the news.
0054 Radio Netherlands: Documentary. The Wannabees of New York (7th). See W 1154.
0054 Radio Netherlands: Documentary. You Say Either and I Say Either (13th). See A 2354.

Fridays

0000 USA, KTBN: Jerry Barnard. Services from the Cathedral of Faith in San Jose, CA.
0005 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0009 Czech Rep, Radio Prague: Press Review. See M 1137.
0010 USA, VOA (as): VOA Business Report. See M 0010.
0015 Bulgaria, Radio: Today. See T 0515.
0017 Czech Rep, Radio Prague: I'd Like You to Meet. See H 1147.
0030 Bulgaria, Radio: Lifestyle. A look at everyday life in Bulgaria.
0030 Ecuador, HCJB (am): Focus on the Family. See M 1330.
0030 USA, KTBN: Origins. An examination of biblical manuscripts and their translations.
0034 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
0039 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
0040 USA, VOA (as): Environment Report (Special English). A five-minute report on a specific environmental subject.
0043 Belgium, R Vlaanderen Intl: International Report. Commercial development in the European market.
0045 Bulgaria, Radio: Timeout for Music. See W 0540.
0045 USA, KTBN: Reaching Higher. Rick Godwin teaches how to be successful as well as a christian.
0045 USA, VOA (as): American Mosaic (Special English). Reports about music, books, movies, and student life in the USA.
0049 Belgium, R Vlaanderen Intl: Economics. Interview with a person in the field of business, finance, or consumerism or a updating report.

Saturdays

0000 USA, KTBN: Praise the Lord. See M 0300.
0006 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0010 USA, VOA (as): Newsline. Background and insight on the news from experienced VOA correspondents and journalists.
0011 Czech Rep, Radio Prague: Press Review. See M 1137.
0014 Czech Rep, Radio Prague: Calling All Listeners. See F 1114.
0030 Bulgaria, Radio: Folk Studio. See M 0530.
0030 Ecuador, HCJB (am): Focus on the Family. See M 1330.
0033 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
0038 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
0040 USA, VOA (as): In the News (Special English). Focus on a person, organization, or issue in news reports.
0045 Bulgaria, Radio: Radio Bulgaria Calling. See M 0545.
0045 USA, VOA (as): American Stories (Special English). Readings of short stories by American authors in slow English.
0049 Belgium, R Vlaanderen Intl: Tourism. See M 1421.

Frequencies

0100-0200	Australia, Radio	9580pa	9660pa	13605pa	13745as
		13755as	15240pa	15245as	15365pa
		15415as	15510as	17715as	17750as
		17795pa	17860pa	17880as	
0100-0200 vl	Australia, VL8A Alice Spg	2310do			
0100-0200 vl	Australia, VL8K Katherine	5025do			
0100-0200 vl	Australia, VL8T Tent Crk	4910do			
0100-0200	Australia,DefenseForces R	13525as			
0100-0200 vl	Canada, CBC N Quebec Svc	9625do			
0100-0200	Canada, CFCX Montreal	6005do			
0100-0200	Canada, CFRX Toronto	6070do			
0100-0200	Canada, CFVP Calgary	6030do			
0100-0200	Canada, CHNX Halifax	6130do			
0100-0200	Canada, CKZN St John's	6160do			
0100-0200	Canada, CKZU Vancouver	6160do			
0100-0200	Costa Rica,RF Peace Intl	7385am	9400am		
0100-0105	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0100-0200	Cuba, Radio Havana Cuba	6000na	9820na	9830na	
0100-0127	Czech Rep, Radio Prague	6200na	7345na		
0100-0200	Ecuador, HCJB Quito	9745am	21455va		
0100-0150	Germany, Deutsche Welle	5960na	6040na	6085na	6145na
		9555na	9640na	9670na	
0100-0115	Ghana, Ghana Broadc Corp	3366do	4915do		
0100-0200	Indonesia, Voice of	9525na			
0100-0127	Iran, VOIRI Tehran	6015na	6175na	9022na	
0100-0110	Italy, RAI Rome	6005na	9645na	11800na	
0100-0200	Japan, NHK/Radio	9605as	11840as	11860as	11890as
		11910as	17810as	17845as	
0100-0200	Lebanon, Wings of Hope	9960va			
0100-0200 smtwh	Malaysia, Radio	7295do			
0100-0200	Netherlands, Radio	5905as	7305as		
0100-0125	Netherlands, Radio	6020na	6165na		
0100-0200	New Zealand, R NZ Intl	15115pa			
0100-0130 m	Norway, Radio Norway Intl	6010na			
0100-0200 vl	Papua New Guinea, NBC	9675do			
0100-0200	Philippines, FEBC/R Intl	15450as			
0100-0200	Russia, Voice of	7105na	7125na		
0100-0127	Slovakia, R Slovakia Intl	5930na	7300na	9440sa	
0100-0200	Spain, R Exterior Espana	9540na			
0100-0200	Sri Lanka, SLBC Colombo	15425as			
0100-0130	Switzerland, Swiss R Intl	6135na	9885na	9905na	
0100-0200	Ukraine, R Ukraine Intl	5905na	5915na	6010na	6020na
		6055na	7205na		
0100-0200	United Kingdom,BBC London	5970sa	5975va	6175na	6195as
		7325va	9590va	9915sa	11750sa
		11955as	15360as		
0100-0200	USA, KAIJ Dallas TX	5810am			
0100-0200	USA, KTBN Salt Lk City UT	7510am			
0100-0200	USA, KVOH Los Angeles CA	9975am			
0100-0200	USA, KWHR Naalehu HI	17510au			
0100-0200	USA, Monitor Radio Intl	7535na	9430am		
0100-0200	USA, VOA Washington DC	5995na	6130na	7405na	9455na
		9775na	13740na	15205as	15250as
		15370as	17740as	21550as	
0100-0200	USA, WEWN Birmingham AL	5825eu	7425na	7520na	
0100-0200	USA, WHRI Noblesville IN	5745am			
0100-0200	USA, WJCR Upton KY	7490na	13595na		
0100-0200 m	USA, WRMI/R Miami Intl	9955am			
0100-0200	USA, WRNO New Orleans LA	7355am			
0100-0200	USA, WWCR Nashville TN	3315am	5065am	5935am	
0100-0200	USA, WYFR Okeechobee FL	6065na	9505na		
0100-0130	Uzbekistan, R Tashkent	5955as	5975as	7285as	
0100-0200	Vietnam, Voice of	5940na	9840na	15010na	
0100-0130 mtwhfa	Yugoslavia, Radio	6195af	7115na		
0130-0200	Austria, R Austria Intl	9655na			
0130-0150	Greece, Voice of	6245na	7448na	9420na	
0130-0200	Netherlands, Radio	9860as			
0130-0200	Sweden, Radio	7120as			
0140-0200	Vatican State, Vatican R	5980as	7335as		
0145-0200	Albania, R Tirana Intl	6140na	7160na		

Selected Programs

Sundays

0100 USA, KTBN: A Call to Action. Jay Sekulow takes an in-depth look at law and justice issues facing Christians.
0104 Czech Rep, Radio Prague: Live in Prague. See S 0004.
0109 Ecuador, HCJB (am): DX Partyline. Rich McVicar and Karen Schmidt share 35 minutes of DXing updates.
0110 Japan, NHK/Radio: Asia Weekly. A magazine of news from other Asian broadcasters, entertainment update and music.
0111 Japan, NHK/Radio: Asian News Summary. This ten-minute wrap-up of regional events is heard as a segment of the program Asia Weekly.
0121 Japan, NHK/Radio: Business Report. A summary of regional financial news heard as part of the program Asia Weekly.
0125 Japan, NHK/Radio: Entertaining in Asia. A segment of "Asian Report" which focuses on an aspect of entertainment in the region.
0145 Ecuador, HCJB (am): What in the World. Reflections on happenings in the news.
0146 Japan, NHK/Radio: Asia Kaleidoscope. A segment of the program "Asian Report" devoted to life in Japan and the region.
0154 Radio Netherlands: Documentary. The Wannabees of New York (10th). See W 1154.
0154 Radio Netherlands: Documentary. You Say Either and I Say Either (17th). See A 2354.
0155 Japan, NHK/Radio: Tokyo Pop-In. A sample of the Japanese music scene.

Mondays

0104 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0106 Czech Rep, Radio Prague: The Week and Politics. See S 1236.
0109 Ecuador, HCJB (am): Saludos Amigos. An international friendship program with listener contributions.
0110 Japan, NHK/Radio: Let's Learn Japanese. See S 0310.
0113 Czech Rep, Radio Prague: From the Weeklies. See S 1243.
0119 Czech Rep, Radio Prague: What's Up. See S 1249.
0125 Japan, NHK/Radio: Media Roundup. See S 0525.
0130 USA, KTBN: Eddie Long. Preaching from Atlanta, Georgia.
0150 Japan, NHK/Radio: Viewpoint. See S 0550.
0155 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Tuesdays

0100 Ecuador, HCJB (am): Studio 9. World news, features and interviews with Ralph Kurtenback and Curt Cole.
0100 USA, KTBN: Gospel America. See S 0400.
0104 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0107 Czech Rep, Radio Prague: Press Review. See M 1137.
0110 Ecuador, HCJB (am): Medicine Topics and Interviews. Twenty minutes of magazine programming on Studio 9.
0115 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
0125 Japan, NHK/Radio: Profile. See M 1525.
0130 Ecuador, HCJB (am): You Should Know. Len Kinzel looks inside and beyond world headlines.
0130 USA, KTBN: A Call to Action. See S 0100.
0155 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Wednesdays

0100 Ecuador, HCJB (am): Studio 9. See T 0100.
0100 USA, KTBN: Behind the Scenes. See S 0600.
0105 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0110 Czech Rep, Radio Prague: What's Up. See S 1249.
0110 Ecuador, HCJB (am): History Topics and Interviews. See T 0110.
0115 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
0115 USA, KTBN: Principles of Biblical Economics. See T 1115.
0125 Japan, NHK/Radio: Enjoy Japanese. See T 1525.
0125 USA, KTBN: The Word. See T 1125.
0130 Ecuador, HCJB (am): El Mundo Futuro. The world of science and technology and a "Computer Corner" segment.
0130 USA, KTBN: Up on Melody Mountain. Betty Jean Robinson sings in Brentwood, Tennessee.
0155 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Thursdays

0100 Ecuador, HCJB (am): Studio 9. See T 0100.
0100 USA, KTBN: Behind the Scenes. See S 0600.
0105 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0110 Czech Rep, Radio Prague: Press Review. See M 1137.
0110 Ecuador, HCJB (am): Earthwatch Topics and Interviews. See T 0110.
0113 Czech Rep, Radio Prague: From the Archives. See W 0013.
0115 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
0115 USA, KTBN: Principles of Biblical Economics. See T 1115.
0121 Czech Rep, Radio Prague: The Arts. See W 0021.
0125 Japan, NHK/Radio: History and Classics. See W 1525.
0125 USA, KTBN: The Word. See T 1125.
0130 Ecuador, HCJB (am): Ham Radio Today. John Beck with features, tips, news, and helps for radio amateurs.
0130 USA, KTBN: Changing Your World. See M 0630.
0155 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Fridays

0100 Ecuador, HCJB (am): Studio 9. See T 0100.
0100 USA, KTBN: Behind the Scenes. See S 0600.
0105 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0109 Czech Rep, Radio Prague: Press Review. See M 1137.
0110 Ecuador, HCJB (am): Business Topics and Interviews. See T 0110.
0115 Japan, NHK/Radio: Current Views. A Radio Japan editorial.
0115 USA, KTBN: Principles of Biblical Economics. See T 1115.
0117 Czech Rep, Radio Prague: I'd Like You to Meet. See H 1147.
0120 Japan, NHK/Radio: Enjoy Japanese. See T 1525.
0130 Ecuador, HCJB (am): What's Cooking in the Andes?. Peruse the foods, cooking, and culinary cultures of Latin America with Karen Mace.
0130 USA, KTBN: This Week in Bible Prophecy. With Peter and Paul LaLonde; Sue Rodgers is the host.
0155 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Saturdays

0100 Ecuador, HCJB (am): Studio 9. See T 0100.
0100 USA, KTBN: Behind the Scenes. See S 0600.
0106 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0110 Ecuador, HCJB (am): Travel Latin America Topics and Interviews. See T 0110.
0111 Czech Rep, Radio Prague: Press Review. See M 1137.
0114 Czech Rep, Radio Prague: Calling All Listeners. See F 1114.
0115 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
0115 USA, KTBN: Principles of Biblical Economics. See T 1115.
0125 Japan, NHK/Radio: Music and Book Beat. See F 1525.
0125 USA, KTBN: The Word. See T 1125.
0130 Ecuador, HCJB (am): Musica del Ecuador. Jorge Zambrano presents a unique mix of Ecuadorian music (highly rated).
0130 USA, KTBN: The Laverne Tripp Family. See W 1200.
0155 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Frequencies

0200-0300	Argentina, RAE	11710am			
0200-0300	Australia, Radio	9580pa	9660pa	13605pa	15240pa
		15365pa	15415as	15510as	17715as
		17750as	17795pa	17860pa	
0200-0300 vl	Australia, VL8A Alice Spg	2310do			
0200-0300 vl	Australia, VL8K Katherine	5025do			
0200-0300 vl	Australia, VL8T Tent Crk	4910do			
0200-0300	Australia,DefenseForces R	13525as			
0200-0300 vl	Canada, CBC N Quebec Svc	9625do			
0200-0300	Canada, CFCX Montreal	6005do			
0200-0300	Canada, CFRX Toronto	6070do			
0200-0300	Canada, CFVP Calgary	6030do			
0200-0300	Canada, CHNX Halifax	6130do			
0200-0300	Canada, CKZN St John's	6160do			
0200-0300	Canada, CKZU Vancouver	6160do			
0200-0300	Canada, RCI Montreal	5905na	9535am	9755na	11725am
0200-0300	Costa Rica,RF Peace Intl	7385am	9400am		
0200-0205	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0200-0300	Cuba, Radio Havana Cuba	6000na	9820na	9830na	
0200-0300	Ecuador, HCJB Quito	9745am	21455va		
0200-0300	Egypt, Radio Cairo	9475na			
0200-0250	Germany, Deutsche Welle	6035as	6130na	7265as	7285as
		7355as	9515as		
0200-0230	Hungary, Radio Budapest	6190na	9850na	11870na	
0200-0300 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
0200-0300	Lebanon, Wings of Hope	9960va			
0200-0300 smtwh	Malaysia, Radio	7295do			
0200-0230	Netherlands, Radio	5905as	7305as	9860as	11655as
0200-0300	New Zealand, R NZ Intl	15115pa			
0200-0300 vl	Papua New Guinea, NBC	9675do			
0200-0300	Romania, R Romania Intl	5990na	6155na	9510na	9570na
		11940na			
0200-0300	Russia, Voice of	5950na	7105na	7270na	7345na
		9580na	12030na	13640na	15425na
0200-0300	South Korea, R Korea Intl	7275am	11725am	11810am	
0200-0230	Sri Lanka, SLBC Colombo	15425as			
0200-0300	Taiwan, VO Free China	5950na	7130as	9680na	11740ca
		11825as	15345as		
0200-0300	United Kingdom,BBC London	5970sa	5975va	6135af	6175na
		7235va	7325va	9590va	9605as
		9915sa	11955as	15360as	
0200-0300	USA, KAIJ Dallas TX	5810am			
0200-0300	USA, KTBN Salt Lk City UT	7510am			
0200-0300	USA, KVOH Los Angeles CA	9975am			
0200-0300	USA, KWHR Naalehu HI	17510au			
0200-0300	USA, Monitor Radio Intl	5850na	9430am		
0200-0300	USA, VOA Washington DC	7115as	7205as	7215as	7651as
		9740as	11705as	15205as	17740as
		17820as			
0200-0300	USA, WEWN Birmingham AL	5825eu	7425na		
0200-0300 asm	USA, WGTG McCaysville GA	9475am			
0200-0300	USA, WHRI Noblesville IN	5745am	7315am		
0200-0300	USA, WJCR Upton KY	7490na	13595na		
0200-0230 m	USA, WRMI/R Miami Intl	9955am			
0200-0300	USA, WRNO New Orleans LA	7355am			
0200-0300	USA, WWCR Nashville TN	3315am	5065am	5935am	
0200-0300	USA, WYFR Okeechobee FL	6065na	9505na		
0200-0300	Vietnam, Voice of	5940na	9840na	15010na	
0200-0230	Yugoslavia, Radio	6195na	7115na		
0230-0300	Albania, R Tirana Intl	6140na	7160na		
0230-0300	Austria, R Austria Intl	9655na	9870ca	13730sa	
0230-0245	Pakistan, Radio	7290as	15190as	17705as	17725as
		21730as			
0230-0300	Philippines, R Pilipinas	17760me	17865me	21580me	
0230-0300 mtwhf	Portugal, R Portugal Intl	6175sa	9570na		
0230-0300	Sweden, Radio	7115na			
0250-0300	Vatican State, Vatican R	6095na	7305na		

Selected Programs

Sundays

0200 Ecuador, HCJB (am): Sounds of Joy. Bob Carlson plays contemporary Christian music.
0200 USA, KTBN: The Hour of Power. Robert Schuller conducts services from the Crystal Cathedral.
0200 USA, Monitor Radio Intl: Bible Lesson. Lesson-sermons from the King James Version of the Bible and Mary Baker Eddy's textbook.
0230 Ecuador, HCJB (am): Solstice. A musical program from New Zealand for young people.
0250 Vatican State, Vatican Radio: With Heart and Mind. How this week's liturgical readings apply to our everyday lives.
0258 Vatican State, Vatican Radio: On-the-Air. A preview of upcoming programs and broadcast changes.

Mondays

0200 Ecuador, HCJB (am): Radio Reading Room. Readings from new Christian books.
0200 USA, Monitor Radio Intl: Sunday from the Mother Church. From the First Church of Christ, Scientist, in Boston, MA, USA.
0230 Ecuador, HCJB (am): The Headlines of the Week. Happenings in Ecuador and HCJB.
0235 Ecuador, HCJB (am): HCJB Today. HCJB missionaries share experiences, catch up on events, and play music.
0250 Vatican State, Vatican Radio: To the Ends of the Earth. A 25-episode series of bible-based radio dramas.

Tuesdays

0200 Ecuador, HCJB (am): Master Control. A magazine program of current topics, lifestyle issues, and Christian themes.
0200 USA, KTBN: Benny Hinn. Evangelizing and healing by Benny Hinn from the Orlando Christian Center.
0200 USA, Monitor Radio Intl: Monitor Radio News. Five minutes of the latest world news at the beginning of the hour.
0206 USA, Monitor Radio Intl: Monitor Radio International. News, analysis, commentary, interviews and features in a magazine format.
0230 Ecuador, HCJB (am): Classical Favorites. Dawn Lowther and Bill Rapley play popular classical music.
0249 USA, Monitor Radio Intl: Letterbox. Listeners make their views known by telephone or letter to host Lisa Dale.
0250 Vatican State, Vatican Radio: A Room with a View of the Vatican. The look at the activities of the Catholic Church in Rome.
0252 USA, Monitor Radio Intl: Religious Article from the CSM. As published in the christian Science Monitor.

Wednesdays

0200 Ecuador, HCJB (am): Unshackled. Pacific Garden Mission's radio drama.
0200 USA, KTBN: Up on Melody Mountain. See W 0130.
0200 USA, Monitor Radio Intl: Monitor Radio News. See T 0200.
0206 USA, Monitor Radio Intl: Monitor Radio International. See T 0206.
0230 USA, KTBN: Cornerstone. See S 1300.
0249 USA, Monitor Radio Intl: Letterbox. See T 0249.
0250 Vatican State, Vatican Radio: The Rome Report. A behind the scenes review of issues currently confronting the church and the world.
0252 USA, Monitor Radio Intl: Religious Article from the CSM. See T 0252.

Thursdays

0200 Ecuador, HCJB (am): The Latest Catch. Richard McVicar presents a midweek update of the latest in shortwave listening.
0200 USA, Monitor Radio Intl: Monitor Radio News. See T 0200.
0206 USA, Monitor Radio Intl: Monitor Radio International. See T 0206.
0215 Ecuador, HCJB (am): The Book Nook. A new book-reading program hosted by Marita Regier.
0230 Ecuador, HCJB (am): Sounds of Joy. See S 0200.
0230 USA, KTBN: Jack Van Impe Presents. See T 0600.
0249 USA, Monitor Radio Intl: Letterbox. See T 0249.
0250 Vatican State, Vatican Radio: The Pope and the People. Recent public statements by the Pope and responses from the man on the street.
0252 USA, Monitor Radio Intl: Religious Article from the CSM. See T 0252.
0254 Radio Netherlands: Documentary. The Wannabees of New York (7th). See W 1154.
0254 Radio Netherlands: Documentary. You Say Either and I Say Either (14th). See A 2354.
0255 Vatican State, Vatican Radio: Pilgrim City. A look at whose been to Rome recently.

Fridays

0200 Ecuador, HCJB (am): Woman to Woman. Focus on topics of concern.
0200 USA, KTBN: Get Ready. See S 2300.
0200 USA, Monitor Radio Intl: Monitor Radio News. See T 0200.
0206 USA, Monitor Radio Intl: Monitor Radio International. See T 0206.
0230 Ecuador, HCJB (am): Inspirational Classics. A half-hour of recorded classical music with an ecclesiastical flavor.
0249 USA, Monitor Radio Intl: Letterbox. See T 0249.
0250 Vatican State, Vatican Radio: Then and Now. A look back at an event in history.
0252 USA, Monitor Radio Intl: Religious Article from the CSM. See T 0252.

Saturdays

0200 Ecuador, HCJB (am): On-Line. A magazine program of music, politics, arts, and science in Europe.
0200 USA, KTBN: Ever Increasing Faith. Dr. Frederick K.C. Price evangelizes.
0200 USA, Monitor Radio Intl: Monitor Radio News. See T 0200.
0206 USA, Monitor Radio Intl: Christian Science Sentinel Radio Edition. Discussions on how the Bible addresses the trends of thought of today.
0230 Ecuador, HCJB (am): On Track. Good comtemporary music and helpful thoughts.
0250 Vatican State, Vatican Radio: By the Way.... Putting a Catholic perspective on issues in the news.
0256 Vatican State, Vatican Radio: Roundtable Discussion. Conversation about today's religious questions.

FREQUENCIES

0300-0400	Australia, Radio	9580pa	9660pa	13605pa	15240pa
		15245as	15365pa	15510as	17750pa
		17795pa	17860pa		
0300-0400 vl	Australia, VL8A Alice Spg	2310do			
0300-0400 vl	Australia, VL8K Katherine	5025do			
0300-0400 vl	Australia, VL8T Tent Crk	4910do			
0300-0400 vl	Canada, CBC N Quebec Svc	9625do			
0300-0400	Canada, CFCX Montreal	6005do			
0300-0400	Canada, CFRX Toronto	6070do			
0300-0400	Canada, CFVP Calgary	6030do			
0300-0400	Canada, CHNX Halifax	6130do			
0300-0400	Canada, CKZN St John's	6160do			
0300-0400	Canada, CKZU Vancouver	6160do			
0300-0330 twhfa	Canada, RCI Montreal	6010na	9755na		
0300-0400 sm	Canada, RCI Montreal	6010na	9755na		
0300-0400	China, China Radio Intl	9690na	9710na	11715na	
0300-0400 vl	Costa Rica,Faro del Carib	5055do			
0300-0400	Costa Rica,RF Peace Intl	7385am	9400am		
0300-0305	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0300-0400	Cuba, Radio Havana Cuba	6000na	9820na	9830na	
0300-0327	Czech Rep, Radio Prague	5930na	7345na		
0300-0400	Ecuador, HCJB Quito	9745am	21455va		
0300-0330	Egypt, Radio Cairo	9475na			
0300-0350	Germany, Deutsche Welle	6045na	6085na	6120na	9530na
		9650na			
0300-0400	Guatemala, Radio Cultural	3300do			
0300-0400	Japan, NHK/Radio	5960na	9605na	11840as	
0300-0330	Japan, NHK/Radio	11885na	11895ca	11960na	
0300-0400 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
0300-0400	Lebanon, Wings of Hope	9960va			
0300-0330	Mongolia, R Ulan Bator	9960na	12000na		
0300-0325	Netherlands, Radio	5905as	7305as	9860as	11655as
0300-0400	New Zealand, R NZ Intl	15115pa			
0300-0330 m	Norway, Radio Norway Intl	6030na			
0300-0400 vl	Papua New Guinea, NBC	9675do			
0300-0330	Philippines, R Pilipinas	17760me	17865me	21580me	
0300-0400	Russia, Voice of	5930na	5940na	7105na	7175na
		7330na	7345na	9580na	12030na
		12050na	15425na		
0300-0400	S Africa, Channel Africa	5955af	9585af		
0300-0400	Taiwan, VO Free China	5950na	9680na	11745as	11825as
		15345as			
0300-0330	Thailand, Radio	9655na	11890na		
0300-0315	Uganda, Radio	4976do			
0300-0330	United Kingdom,BBC London	5970sa	6135af	7235va	7325sa
		15360as	15380as		
0300-0400	United Kingdom,BBC London	3255af	3955eu	5975va	6005af
		6175na	9410va	9590va	9600af
		9605as	11760va	12095af	15310as
0300-0400	USA, KAIJ Dallas TX	5810am			
0300-0400	USA, KTBN Salt Lk City UT	7510am			
0300-0400	USA, KVOH Los Angeles CA	9975am			
0300-0400	USA, KWHR Naalehu HI	17510au			
0300-0400	USA, Monitor Radio Intl	5850na	7535af		
0300-0400	USA, VOA Washington DC	6035af	7105af	7280af	7340af
		7405af	7415af	9575af	9885af
0300-0400	USA, WEWN Birmingham AL	5825eu	7425na		
0300-0400 asm	USA, WGTG McCaysville GA	9475am			
0300-0400	USA, WHRI Noblesville IN	5760am	7315am		
0300-0400	USA, WJCR Upton KY	7490na	13595na		
0300-0400	USA, WRNO New Orleans LA	7395am			
0300-0400	USA, WWCR Nashville TN	3315am	5065am	5935am	
0300-0400	USA, WYFR Okeechobee FL	6065na	7355eu	9505na	
0300-0315	Vatican State, Vatican R	6095na	7305na		
0300-0400	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
0315-0330 s	Greece, Voice of	6245na	7448na	9420na	
0320-0350	Vatican State, Vatican R	7360af			
0330-0357	Czech Rep, Radio Prague	6200as			
0330-0400	Hungary, Radio Budapest	5965na	9850na	11870na	
0330-0355	Moldova, R Moldova Intl	7500na			
0330-0400	Sweden, Radio	7115na			
0330-0400 vl	Tanzania, Radio	5050af			
0330-0400	UAE, Radio Dubai	13675na	15395eu	21605na	
0330-0400	United Kingdom,BBC London	9610af	11730af	11955as	15280as
0340-0350	Greece, Voice of	6245na	7448na	9420na	
0345-0400 irreg	Burundi, Radio Nationale	6140do			

SELECTED PROGRAMS

Sundays

0300 Ecuador, HCJB (am): Sports Spectrum. News
0300 USA, KTBN: A Call to Action. See S 0100.
0304 Czech Rep, Radio Prague: Live in Prague. See S 0004.
0309 S Africa, Channel Africa: Gospel Music. Authentic regional music on a Sunday morning in Africa.
0310 Japan, NHK/Radio: Hello from Tokyo. The weekend magazine program.
0310 Japan, NHK/Radio: Let's Learn Japanese language course.
0330 Ecuador, HCJB (am): Songtime Weekend. Evangelical teachings and music from Boston.
0330 USA, KTBN: A New Beginning. Greg Laurie evangelizes from Los Angeles.
0331 S Africa, Channel Africa: Religions of the World. An examination of religious belief.
0339 S Africa, Channel Africa: Choral Music. Church music for a Sunday morning.

Mondays

0300 Ecuador, HCJB (am): The Sower. Michael Guido presents music and inspiration.
0300 USA, KTBN: Praise the Lord. Music, talk, and guest evangelists from the PTL Network.
0304 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0308 S Africa, Channel Africa: Dateline Africa. A news magazine.
0313 Czech Rep, Radio Prague: From the Weeklies. See S 1243.
0315 Ecuador, HCJB (am): The Word Today. A discussion of Biblical themes.
0315 Japan, NHK/Radio: Radio Japan Magazine Hour. The weekday magazine program.
0316 Japan, NHK/Radio: Sports Spotlight. Focus on a current sporting event in the region.
0316 Japan, NHK/Radio: Sports Spotlight. See M 0316.
0319 Czech Rep, Radio Prague: What's Up. See S 1249.
0325 Japan, NHK/Radio: Japan Diary. Life in Japan as seen through the eyes of a foreign resident in Japan.
0330 Ecuador, HCJB (am): Sounds of Joy Worldwide. Dave Freeland hosts a program of Christian music.
0330 Japan, NHK/Radio: Close Up. Featuring a Japanese notable.
0334 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0343 Czech Rep, Radio Prague: From the Weeklies. See S 1243.
0347 Japan, NHK/Radio: News Commentary. An editorial opinion.
0349 Czech Rep, Radio Prague: What's Up. See S 1249.

Tuesdays

0300 Ecuador, HCJB (am): Chords of Love. Music to encourage.
0300 USA, KTBN: Praise the Lord (live). See M 0300.
0304 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0308 S Africa, Channel Africa: Dateline Africa. See M 0308.
0315 Ecuador, HCJB (am): Rendezvous. Dick Saunders presents Bible study and evangelism.
0315 Japan, NHK/Radio: Radio Japan Magazine.. See M 0315.
0320 Japan, NHK/Radio: Close Up. See M 0330.
0330 Ecuador, HCJB (am): Let My People Think. See M 1100.
0330 Japan, NHK/Radio: Japanese Culture Today. Comparing modern-day Japan with the customs of old.
0334 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0337 Czech Rep, Radio Prague: Press Review. See M 1137.
0345 Japan, NHK/Radio: Japan Diary. See M 0325.
0350 Japan, NHK/Radio: News Commentary. See M 0347.

Wednesdays

0300 Ecuador, HCJB (am): Psychology for Living. Christian advice on issues of today.
0300 USA, KTBN: Praise the Lord (live). See M 0300.
0305 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0310 Czech Rep, Radio Prague: What's Up. See S 1249.
0311 S Africa, Channel Africa: Popular Music. See S 0410.
0315 Ecuador, HCJB (am): Rendezvous. See T 0315.
0315 Japan, NHK/Radio: Radio Japan Magazine Hour.
0320 Japan, NHK/Radio: Asian Report. Current events in the Asia-Pacific region.
0320 Japan, NHK/Radio: Close Up. See M 0330.
0330 Ecuador, HCJB (am): Stories of Great Christians. Radio drama with Christian theme from the Moody Bible Institute.
0330 Japan, NHK/Radio: Close Up. See M 0330.
0335 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0340 Czech Rep, Radio Prague: What's Up. See S 1249.
0341 Japan, NHK/Radio: Japan Diary. See M 0325.
0345 Ecuador, HCJB (am): Wonderful Words of Life. Messages from the Salvation Army.
0347 Japan, NHK/Radio: News Commentary. See M 0347.

Thursdays

0300 Ecuador, HCJB (am): CBF Presents. Christian activities in the Caribbean.
0300 USA, KTBN: Praise the Lord (live). See M 0300.
0305 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0305 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0308 S Africa, Channel Africa: Dateline Africa. See M 0308.
0310 Czech Rep, Radio Prague: Press Review. See M 1137.
0313 Czech Rep, Radio Prague: From the Archives. See W 0013.
0315 Ecuador, HCJB (am): Rendezvous. See T 0315.
0315 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0321 Czech Rep, Radio Prague: The Arts. See W 0021.
0330 Ecuador, HCJB (am): The Living Word. See T 1100.
0330 Japan, NHK/Radio: Crosscurrents. Radio Japan's mailbag.
0340 Czech Rep, Radio Prague: Press Review. See M 1137.
0342 Japan, NHK/Radio: Japan Diary. See M 0325.
0343 Czech Rep, Radio Prague: From the Archives. See W 0013.
0348 Japan, NHK/Radio: News Commentary. See M 0347.
0351 Czech Rep, Radio Prague: The Arts. See W 0021.

Fridays

0300 Ecuador, HCJB (am): Connecting Points.
0300 USA, KTBN: Praise the Lord (live). See M 0300.
0305 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0308 S Africa, Channel Africa: Dateline Africa. See M 0308.
0309 Czech Rep, Radio Prague: Press Review. See M 1137.
0315 Ecuador, HCJB (am): Rendezvous. See T 0315.
0315 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0316 Japan, NHK/Radio: Japan Diary. See M 0325.
0317 Czech Rep, Radio Prague: I'd Like You to Meet. See H 1147.
0321 Japan, NHK/Radio: Close Up. See M 0330.
0330 Ecuador, HCJB (am): Christian Brotherhood Hour.
0330 Japan, NHK/Radio: Business Focus. Spotlights an aspect of business in Japan.
0335 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0345 Japan, NHK/Radio: News Commentary. See M 0347.
0347 Czech Rep, Radio Prague: I'd Like You to Meet. See H 1147.

Saturdays

0300 USA, KTBN: Praise the Lord (live). See M 0300.
0306 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0308 S Africa, Channel Africa: Africa and All That Jazz. News from the jazz music scene and selections of jazz recordings.
0310 Japan, NHK/Radio: This Week. A weekly variety show.
0311 Czech Rep, Radio Prague: Press Review. See M 1137.
0314 Czech Rep, Radio Prague: Calling All Listeners. See F 1114.
0315 Ecuador, HCJB (am): Rendezvous. See T 0315.
0330 Ecuador, HCJB (am): Adventures in Odyssey. Lively childrens' dramas from the "Focus on the Family" team.
0333 S Africa, Channel Africa: Historical Almanac. See S 0407.
0336 Czech Rep, Radio Prague: Current Affairs. See S 1134.
0340 S Africa, Channel Africa: Channel Africa Sports. See M 1627.
0341 Czech Rep, Radio Prague: Press Review. See M 1137.
0344 Czech Rep, Radio Prague: Calling All Listeners. See F 1114.

FREQUENCIES

0400-0500	Australia, Radio	9580pa	9660pa	11880pa	13605as
		15240pa	15365pa	15415pa	15510pa
		17715pa	17750as	17795pa	
0400-0500 vl	Australia, VL8A Alice Spg	2310do			
0400-0500 vl	Australia, VL8K Katherine	5025do			
0400-0500 vl	Australia, VL8T Tent Crk	4910do			
0400-0500 vl	Canada, CBC N Quebec Svc	9625do			
0400-0500	Canada, CFCX Montreal	6005do			
0400-0500	Canada, CFRX Toronto	6070do			
0400-0500	Canada, CFVP Calgary	6030do			
0400-0500	Canada, CHNX Halifax	6130do			
0400-0500	Canada, CKZN St John's	6160do			
0400-0500	Canada, CKZU Vancouver	6160do			
0400-0430	Canada, RCI Montreal	6150me	9505me	9645me	
0400-0500	China, China Radio Intl	9730na			
0400-0500	Costa Rica,RF Peace Intl	7385am	9400am		
0400-0405	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0400-0500	Cuba, Radio Havana Cuba	6000na	6180na	9820na	9830na
0400-0500	Ecuador, HCJB Quito	9745am	21455va		
0400-0450	Germany, Deutsche Welle	6015af	6045af	6065af	7225af
		7265af	9565af		
0400-0500 twtfa	Guatemala, Radio Cultural	3300do			
0400-0500 vl	Italy, IRRS Milan	7100va			
0400-0500 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
0400-0500	Lebanon, Wings of Hope	9960va			
0400-0458	New Zealand, R NZ Intl	15115pa			
0400-0450	North Korea, R Pyongyang	15180as	15230as	17765as	
0400-0500 vl	Papua New Guinea, NBC	9675do			
0400-0430	Romania, R Romania Intl	5990na	6155na	9510na	9570na
		11940na			
0400-0500	Russia, Voice of	5920na	7105na	7175na	7180na
		7330na	7345na	9580na	9825na
		12030na	12050na		
0400-0500	S Africa, Channel Africa	5955af	9585af		
0400-0427	S Africa, Trans World R	7165af			
0400-0500	Slovakia, AWR	9450af	9465af		
0400-0430	Switzerland, Swiss R Intl	6135na	9885na	9905na	
0400-0500	Switzerland, Swiss R Intl	9905na			
0400-0430	Tanzania, Radio	5050af			
0400-0500	Turkey, Voice of	9445na	9560as	9655na	9685eu
		9760au			
0400-0415	Uganda, Radio	4976do			
0400-0500	Ukraine, R Ukraine Intl	5905na	5915na	6010na	6020na
		6055na	7205na		
0400-0500	United Kingdom,BBC London	3255af	5975va	6005af	6175na
		7160af	9410va	9600af	11730af
		11760af	11955as	12095af	15280as
		15310as	15575va		
0400-0430	United Kingdom,BBC London	3955eu	6180eu	6195eu	9610af
0400-0500	USA, KAIJ Dallas TX	5810am			
0400-0500	USA, KTBN Salt Lk City UT	7510am			
0400-0500	USA, KVOH Los Angeles CA	9975am			
0400-0500	USA, KWHR Naalehu HI	17510as			
0400-0500	USA, Monitor Radio Intl	7535eu	9840af		
0400-0500	USA, VOA Washington DC	6035af	6110af	6145af	6873va
		7170va	7280af	7340af	7405af
		7415af	9575af	9630af	9885af
		15300af			
0400-0500	USA, WEWN Birmingham AL	5825eu	7425na		
0400-0500	USA, WHRI Noblesville IN	5760am			
0400-0500	USA, WJCR Upton KY	7490na	13595na		
0400-0500 smtwhf	USA, WMLK Bethel PA	9465eu			
0400-0500	USA, WRNO New Orleans LA	7395am			
0400-0500	USA, WWCR Nashville TN	3315am	5065am	5935am	
0400-0500	USA, WYFR Okeechobee FL	6065na	9505na		
0400-0500	USA, WYFR Okeechobee FL	9355eu			
0400-0430	Vietnam, Voice of	7360na	9840na	12020na	
0400-0500	Zambia, R Christian Voice	6065af			
0400-0500	Zimbabwe, ZBC/Radio 3	3306do	3396do		
0425-0440	Italy, RAI Rome	5990eu	7275eu		
0425-0500	Nigeria, FRCN/Radio	3326do	4990do		
0430-0500	Australia,DefenseForces R	13525as			
0430-0455	Moldova, R Moldova Intl	7500na			
0430-0500	Netherlands, Radio	5995na	6165na		
0430-0500	Swaziland, Trans World R	3200af	5055af	6070af	
0430-0500	United Kingdom,BBC London	7150eu			
0445-0500	Tajikistan, Tajik Radio	7245as			
0455-0500	Nigeria, Voice of	7255af			
0459-0500 mtwhf	New Zealand, R NZ Intl	11900pa			

SELECTED PROGRAMS

Sundays

0400 Ecuador, HCJB (am): Joni and Friends. Joni Erickson-Tada presents help and advice especially for the disabled.
0400 USA, KTBN: Gospel America. Pat Boone and his guests perform.
0405 Ecuador, HCJB (am): Hour of Decision. Evangelist Billy Graham's radio program.
0407 S Africa, Channel Africa: Historical Almanac. What happened on this date in the past.
0410 S Africa, Channel Africa: Popular Music. Selections of recordings of contemporary African music.
0410 USA, VOA (eu): VOA Sunday. Interviews and features about science, sports, agriculture, and business, plus the latest American music.
0415 S Africa, Channel Africa: Educational Rendezvous. Focus on public health problems and other issues.
0425 S Africa, Channel Africa: Popular Music. See S 0410.
0430 Ecuador, HCJB (am): Afterglow. Don Johnson plays religious music.
0430 USA, KTBN: Power Connection. John Jacobs and the power team perform feats of strength.
0431 S Africa, Channel Africa: Clinic of the Air. An examination of health problems and medicine.

Mondays

0400 Ecuador, HCJB (am): Songs in the Night. See S 1100.
0400 USA, KTBN: Praise the Lord. See M 0300.
0410 USA, VOA (eu): VOA Business Report. A weekday review of business and financial matters.
0412 S Africa, Channel Africa: Clinic of the Air. See S 0431.
0430 Ecuador, HCJB (am): Afterglow Classics. Don Johnson plays classical religious music.
0430 USA, VOA (eu): Stateside. Issues and personalities, science and politics, sports and entertainment inside America.

Tuesdays

0400 Ecuador, HCJB (am): Insight for Living. See M 1130.
0400 USA, KTBN: Praise the Lord (live). See M 0300.
0408 S Africa, Channel Africa: Historical Almanac. See S 0407.
0410 USA, VOA (eu): VOA Business Report. See M 0410.
0418 S Africa, Channel Africa: Did-You Know?. Interesting questions and their factual answers.
0423 S Africa, Channel Africa: English for Africa. Instructions in English grammar and language usage.
0430 Ecuador, HCJB (am): Nightsounds. See M 1100.
0430 USA, VOA (eu): Stateside. See M 0430.
0435 S Africa, Channel Africa: Off the Press. Selections of the latest popular music releases.

Wednesdays

0400 Ecuador, HCJB (am): Insight for Living. See M 1130.
0400 USA, KTBN: Praise the Lord (live). See M 0300.
0410 USA, VOA (eu): VOA Business Report. See M 0410.
0430 Ecuador, HCJB (am): Nightsounds. See M 1100.
0430 USA, VOA (eu): Stateside. See M 0430.
0444 S Africa, Channel Africa: Historical Almanac. See S 0407.

Thursdays

0400 Ecuador, HCJB (am): Insight for Living. See M 1130.
0400 USA, KTBN: Praise the Lord (live). See M 0300.
0407 S Africa, Channel Africa: Historical Almanac. See S 0407.
0410 USA, VOA (eu): VOA Business Report. See M 0410.
0411 S Africa, Channel Africa: Our Wild Heritage. Conservation and Wildlife in Southern Africa.
0430 Ecuador, HCJB (am): Nightsounds. See M 1100.
0430 USA, VOA (eu): Stateside. See M 0430.
0437 S Africa, Channel Africa: Artist of the Week. Featuring the music of a particular recording artist.
0454 Radio Netherlands: Documentary. The Wannabees of New York (7th). See W 1154.
0454 Radio Netherlands: Documentary. You Say Either and I Say Either (14th). See A 2354.

Fridays

0400 Ecuador, HCJB (am): Insight for Living. See M 1130.
0400 USA, KTBN: Praise the Lord (live). See M 0300.
0409 S Africa, Channel Africa: Dateline Africa. See M 0308.
0410 USA, VOA (eu): VOA Business Report. See M 0410.
0413 S Africa, Channel Africa: Historical Almanac. See S 0407.
0430 Ecuador, HCJB (am): Nightsounds. See M 1100.
0430 USA, VOA (eu): Stateside. See M 0430.

Saturdays

0400 Ecuador, HCJB (am): Insight for Living. See M 1130.
0400 USA, KTBN: Praise the Lord (live). See M 0300.
0408 S Africa, Channel Africa: First Light Africa. An early morning radio magazine of features and music.
0410 USA, VOA (eu): VOA Saturday. See S 0410.
0422 S Africa, Channel Africa: Focus on Africa. Current events on the continent.
0430 Ecuador, HCJB (am): Nightsounds. See M 1100.
0431 S Africa, Channel Africa: The Hit Parade. The top ten recordings of the week.

FREQUENCIES

0500-0600	Australia, Radio	9580pa	9660pa	11880pa	13605as
		15240pa	15245as	15365pa	15415as
		17715pa	17795pa		
0500-0600 vl	Australia, VL8A Alice Spg	2310do			
0500-0600 vl	Australia, VL8K Katherine	5025do			
0500-0600 vl	Australia, VL8T Tent Crk	4910do			
0500-0600	Australia,DefenseForces R	13525as			
0500-0600	Bulgaria, Radio	7480na	9700na		
0500-0600	Canada, CFCX Montreal	6005do			
0500-0600	Canada, CFRX Toronto	6070do			
0500-0600	Canada, CFVP Calgary	6030do			
0500-0600	Canada, CHNX Halifax	6130do			
0500-0600	Canada, CKZU Vancouver	6160do			
0500-0600	China, China Radio Intl	9560na			
0500-0600	Costa Rica, AWR Alajuela	9725ca			
0500-0600	Costa Rica,RF Peace Intl	7385am	9400am		
0500-0505	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0500-0600	Cuba, Radio Havana Cuba	9505na			
0500-0600	Ecuador, HCJB Quito	9745am	21455va		
0500-0550	Germany, Deutsche Welle	5960na	6045na	6120na	6185na
0500-0515	Israel, Kol Israel	5885na	7465na	17545na	
0500-0600 vl	Italy, IRRS Milan	7100va			
0500-0600	Japan, NHK/Radio	5975eu	6110na	6150eu	9605na
		11725as	11740as	11885na	17810as
0500-0600 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
0500-0600	Lebanon, Wings of Hope	9960va			
0500-0525	Netherlands, Radio	5995na	6165na		
0500-0600 mtwhf	New Zealand, R NZ Intl	11900pa			
0500-0505	Nigeria, FRCN/Radio	3326do	4990do		
0500-0600	Nigeria, Voice of	7255af			
0500-0600 vl	Papua New Guinea, NBC	9675do			
0500-0600	Russia, AWR	9895me			
0500-0600	Russia, Voice of	5920na	7105na	7175na	7180na
		7270na	7330na	7345na	9825na
0500-0600	S Africa, Channel Africa	7185af	11900af		
0500-0556	Spain, R Exterior Espana	9540na			
0500-0600	United Kingdom,BBC London	3255af	3955eu	5975va	6005af
		6175va	6180eu	6195af	7150eu
		7160af	9410va	9600af	9640sa
		9740as	11760va	11955va	12095af
		15280as	15310as	15360va	15420af
	15575va	17640af	17885af		
0500-0600	USA, KAIJ Dallas TX	5810am			
0500-0600	USA, KTBN Salt Lk City UT	7510am			
0500-0600	USA, KVOH Los Angeles CA	9975am			
0500-0600	USA, KWHR Naalehu HI	9930as			
0500-0600	USA, Monitor Radio Intl	7535eu			
0500-0600	USA, VOA Washington DC	5975af	6035af	6873va	7170va
		7295af	9630af	9700va	9885af
		11825va	11965va	15205va	
0500-0600	USA, WEWN Birmingham AL	5825eu	7425na		
0500-0600	USA, WHRI Noblesville IN	5760am	9495am		
0500-0600	USA, WJCR Upton KY	7490na	13595na		
0500-0600 mtwhfa	USA, WMLK Bethel PA	9465eu			
0500-0600	USA, WRNO New Orleans LA	7395am			
0500-0600	USA, WWCR Nashville TN	3315am	5065am	5935am	
0500-0600	USA, WYFR Okeechobee FL	5985na	9885af		
0500-0530	Vatican State, Vatican R	7360af	9660af	11625af	
0500-0530	Vietnam, Voice of	7360na	9840na	12030na	
0500-0600	Zambia, R Christian Voice	6065af			
0500-0600	Zimbabwe, ZBC/Radio 3	3306do	3396do		
0505-0600	Swaziland, Trans World R	3200af	5055af	6070af	9500af
0525-0600	Ghana, Ghana Broadc Corp	3366do	4915do		
0530-0600	Australia, Radio	15510as	15565as	17880as	
0530-0600	Austria, R Austria Intl	6015na	6155eu	13730eu	
0530-0600	Romania, R Romania Intl	11940af	15250af	15365af	17745af
		17790af			
0530-0600	Russia, Voice of	5905na			

SELECTED PROGRAMS

Sundays

0500 USA, KTBN: Real Videos. Music videos with a Christian theme.
0509 Ecuador, HCJB (am): DX Partyline. See S 0109.
0509 S Africa, Channel Africa: Talking of Books. Weekly book review.
0510 Japan, NHK/Radio: Let's Learn Japanese. See S 0310.
0510 USA, VOA (eu): VOA Sunday. See S 0410.
0515 Bulgaria, Radio: Rocking Chair. A look at Bulgarian rock, pop, jazz, youth subculture, favorite hangouts, and entertainment.
0525 Japan, NHK/Radio: Media Roundup. Reception reports, DX/media news, and equipment reviews.
0530 Bulgaria, Radio: Cultural Review. A 30-minute summary of cultural events in Bulgaria, cultural newstips, and regional music.
0530 USA, KTBN: Leon and Friends. Christian rap music.
0532 S Africa, Channel Africa: Gospel Music. See S 0309.
0545 Ecuador, HCJB (am): What in the World. See S 0145.
0550 Japan, NHK/Radio: Viewpoint. Opinions of a guest personality.
0555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Mondays

0500 USA, KTBN: Praise the Lord. See M 0300.
0508 S Africa, Channel Africa: Dateline Africa. See M 0308.
0509 Ecuador, HCJB (am): Saludos Amigos. See M 0109.
0510 USA, VOA (eu): VOA Today. Up-to-the-minute news summaries, hourly business and sports updates, interviews on world news events, plus features on topics from movies to medicine.
0515 Bulgaria, Radio: Answering Your Letters. See M 0015.
0515 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0516 Japan, NHK/Radio: Sports Spotlight. See M 0316.
0525 Japan, NHK/Radio: Japan Diary. See M 0325.
0530 Bulgaria, Radio: Folk Studio. Myths, legends, customs, and rituals associated with Bulgarian holidays.
0530 Japan, NHK/Radio: Close Up. See M 0330.
0545 Bulgaria, Radio: Radio Bulgaria Calling. DX program for radio amateurs and shortwave listeners.
0547 Japan, NHK/Radio: News Commentary. See M 0347.
0555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Tuesdays

0500 Ecuador, HCJB (am): Studio 9. See T 0100.
0500 USA, KTBN: Voice of Power. R W Schambach preaches from Tyler, Texas.
0508 S Africa, Channel Africa: Dateline Africa. See M 0308.
0510 Ecuador, HCJB (am): Medicine Topics and Interviews. See T 0110.
0510 USA, VOA (eu): VOA Today. See M 0510.
0515 Bulgaria, Radio: Today. Reports and analysis of current events in Bulgaria and the World. Press reviews from the weeklies on Monday.
0515 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0520 Japan, NHK/Radio: Close Up. See M 0330.
0530 Bulgaria, Radio: Science/Technology/Environment. A look at Bulgarian developments in these activities.
0530 Ecuador, HCJB (am): You Should Know. See T 0130.
0530 Japan, NHK/Radio: Japanese Culture Today. See T 0330.
0530 USA, KTBN: Doctor to Doctor. Helen Pensanti hosts this program about health.
0535 S Africa, Channel Africa: Sports. See M 1627.
0540 Bulgaria, Radio: Across the Map of Bulgaria. A travelogue program of historical sites and interesting places and people.
0545 Japan, NHK/Radio: Japan Diary. See M 0325.
0555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Wednesdays

0500 Ecuador, HCJB (am): Studio 9. See T 0100.
0500 USA, KTBN: Praise the Lord (live). See M 0300.
0508 S Africa, Channel Africa: Dateline Africa. See M 0308.
0510 Ecuador, HCJB (am): History Topics and Interviews. See T 0110.
0510 USA, VOA (eu): VOA Today. See M 0510.
0515 Bulgaria, Radio: Today. See T 0515.
0515 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0520 Japan, NHK/Radio: Asian Report. See W 0320.
0530 Bulgaria, Radio: Economy and Farming. The effects of agriculture on the Bulgarian economy.
0530 Ecuador, HCJB (am): El Mundo Futuro. See W 0130.
0530 Japan, NHK/Radio: Close Up. See M 0330.
0540 Bulgaria, Radio: Timeout for Music. A wide variety of Bulgarian classical, pop and folk music is played.
0541 Japan, NHK/Radio: Japan Diary. See M 0325.
0547 Japan, NHK/Radio: News Commentary. See M 0347.
0555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Thursdays

0500 Ecuador, HCJB (am): Studio 9. See T 0100.
0500 USA, KTBN: Adventures in Faith. Jerry Savelle.
0508 S Africa, Channel Africa: Dateline Africa. See M 0308.
0510 Ecuador, HCJB (am): Earthwatch Topics and Interviews. See T 0110.
0510 USA, VOA (eu): VOA Today. See M 0510.
0515 Bulgaria, Radio: Today. See T 0515.
0515 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0530 Bulgaria, Radio: History Club. True stories about the Ottoman Empire period.
0530 Ecuador, HCJB (am): Ham Radio Today. See H 0130.
0530 Japan, NHK/Radio: Crosscurrents. See H 0330.
0530 USA, KTBN: Jesse Duplantis. Evangelizing from New Orleans.
0533 S Africa, Channel Africa: Sports. See M 1627.
0542 Japan, NHK/Radio: Japan Diary. See M 0325.
0544 Bulgaria, Radio: Women's Own (biweekly). Discussion of the problems that Bulgarian women face today.
0548 Japan, NHK/Radio: News Commentary. See M 0347.
0550 Bulgaria, Radio: Questionline. See S 1320.
0555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Fridays

0500 Ecuador, HCJB (am): Studio 9. See T 0100.
0500 USA, KTBN: Praise the Lord (live). See M 0300.
0508 S Africa, Channel Africa: Dateline Africa. See M 0308.
0510 Ecuador, HCJB (am): Business Topics and Interviews. See T 0110.
0510 USA, VOA (eu): VOA Today. See M 0510.
0515 Bulgaria, Radio: Today. See T 0515.
0515 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0530 Bulgaria, Radio: From School to Campus. Secondary education and talent movement in Bulgaria.
0530 Ecuador, HCJB (am): What's Cooking in the Andes?. See F 0130.
0530 Japan, NHK/Radio: Close Up. See M 0330.
0535 S Africa, Channel Africa: Sports. See M 1627.
0542 Japan, NHK/Radio: Japan Diary. See M 0325.
0548 Japan, NHK/Radio: News Commentary. See M 0347.
0550 Bulgaria, Radio: People. Presenting outstanding Bulgarian historical figures, statesmen, and men-of-art.
0555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Saturdays

0500 Ecuador, HCJB (am): Studio 9. See T 0100.
0500 USA, KTBN: Dino. Christian music from Branson, Missouri.
0510 Ecuador, HCJB (am): Travel Latin America Topics and Interviews. See T 0110.
0510 Japan, NHK/Radio: This Week. See A 0310.
0510 S Africa, Channel Africa: Focus on Africa. See A 0422.
0510 USA, VOA (eu): VOA Saturday. See S 0410.
0515 S Africa, Channel Africa: Good Vibrations. Fifteen minutes of rock music and commentary.
0530 Bulgaria, Radio: Radio Bulgaria Spectrum. Thirty-minute digest on a wide variety of topics.
0530 Ecuador, HCJB (am): Musica del Ecuador. See A 0130.
0535 S Africa, Channel Africa: Channel Africa Sports. See M 1627.
0554 S Africa, Channel Africa: This Day in History. A look back on anniversary events.

FREQUENCIES

0600-0700	Australia, Radio	9860pa	11910pa	13605as	13755pa
		15240pa	15365pa	15510as	17715as
		17795pa			
0600-0630	Australia, Radio	9580pa	9660pa	15415pa	
0600-0700 vl	Australia, VL8A ALice Spg	2310do			
0600-0700 vl	Australia, VL8K Katherine	5025do			
0600-0700 vl	Australia, VL8T Tent Crk	4910do			
0600-0630	Australia,DefenseForces R	13525as			
0600-0700 vl	Canada, CBC N Quebec Svc	9625do			
0600-0700 vl	Canada, CBC N Quebec Svc	9625do			
0600-0700	Canada, CFCX Montreal	6005do			
0600-0700	Canada, CFRX Toronto	6070do			
0600-0700	Canada, CFVP Calgary	6030do			
0600-0700	Canada, CHNX Halifax	6130do			
0600-0700	Canada, CKZU Vancouver	6160do			
0600-0630	Canada, RCI Montreal	6050eu	6150eu	9740eu	9760eu
		11905eu			
0600-0700	Costa Rica,RF Peace Intl	7385am	9400am		
0600-0605	Croatia, Croatian Radio	5895eu	7370eu	13830eu	
0600-0700	Cuba, Radio Havana Cuba	9505na			
0600-0700	Ecuador, HCJB Quito	9745am	21455am		
0600-0650	Germany, Deutsche Welle	6100af	9565af	11765af	13790af
		15185af	17820af	21705me	
0600-0615	Ghana, Ghana Broadc Corp	3316do	4915do		
0600-0700 vl	Italy, IRRS Milan	3985va			
0600-0630 vl	Italy, IRRS Milan	7125va			
0600-0700	Japan, NHK/Radio	11725as	17810as		
0600-0700 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
0600-0700 vl	Kiribati, Radio	9825do			
0600-0700	Lebanon, Wings of Hope	9960va			
0600-0700 vl	Liberia, Radio ELBC	7275do			
0600-0700	Liberia, Radio ELWA	4760do			
0600-0700 mtwhfa	Malta, V of Mediterranean	9765me			
0600-0700 mtwhf	New Zealand, R NZ Intl	11900pa			
0600-0630	Nigeria, FRCN/Radio	3326do	4990do		
0600-0700	Nigeria, Voice of	7255af			
0600-0700	North Korea, R Pyongyang	15180as	15230as		
0600-0700 vl	Papua New Guinea, NBC	9675do			
0600-0700	Russia, Voice of	5905na	5920na	7175na	7270na
		7330na	7345na	9825na	12025na
0600-0700	S Africa, Trans World R	11730af			
0600-0700	Slovakia, AWR	5905eu	11655af		
0600-0630 vl	Solomon Islands, SIBC	5020do	9545do		
0600-0700	South Korea, R Korea Intl	7205am			
0600-0630	Switzerland, Swiss R Intl	9885af	12070af	13635af	
0600-0700	United Kingdom,BBC London	3955eu	5975va	6005af	6175va
		6195af	7145pa	7150eu	9410va
		9600af	9640sa	11760va	11780af
		11940af	11955as	12095af	15070va
		15280as	15310as	15360va	15420af
	15575va	17640af	17790as	17885af	
0600-0615	United Kingdom,BBC London	6155af			
0600-0700	USA, KAIJ Dallas TX	5810am			
0600-0700	USA, KTBN Salt Lk City UT	7510am			
0600-0700	USA, KVOH Los Angeles CA	9975am			
0600-0700	USA, KWHR Naalehu HI	9930as			
0600-0700	USA, Monitor Radio Intl	7535eu			
0600-0700	USA, VOA Washington DC	6035af	6873va	7170va	7285af
		9435af	11805va	11950af	12080af
		15205va	15600af		
0600-0700	USA, WEWN Birmingham AL	5825eu	7425na	7465eu	
0600-0700	USA, WHRI Noblesville IN	5760am	7315am		
0600-0700	USA, WJCR Upton KY	7490na	13595na		
0600-0700 smtwhf	USA, WMLK Bethel PA	9465eu			
0600-0700	USA, WWCR Nashville TN	3315am	5065am	5935am	
0600-0700	USA, WYFR Ochokebee FL	5985na	7355eu		
0600-0620	Vatican State, Vatican R	4005va	5880eu		
0600-0700	Yemen, Yemeni Rep Radio	9780as			
0600-0700	Zambia, R Christian Voice	6065af			
0600-0700	Zimbabwe, ZBC/Radio 3	5975do	6045do		
0605-0700	Swaziland, Trans World R	5055af	6070af	9500af	9650af
		11730af			
0615-0630	Switzerland, Swiss R Intl	6165eu	7410eu		
0630-0700	Australia, Radio	5995pa	6020pa	6080pa	9860pa
		15245as			
0630-0700	Austria, R Austria Intl	6015na			
0630-0700	Georgia, Georgian Radio	11805eu			
0630-0700	Kazakhstan, R Almaty	5985eu	6060eu	6075eu	7115eu
		7235eu	7280eu	9560eu	9690eu
		9705eu			
0630-0700	Vatican State, Vatican R	7360af	9660af		
0645-0700	Romania, R Romania Intl	15250pa	15405pa	17720pa	17805pa

SELECTED PROGRAMS

Sundays
0600 Ecuador, HCJB (am): Solstice. See S 0230.
0600 USA, KTBN: Behind the Scenes. TBN news, letters, and reports with Paul Krause.
0610 Japan, NHK/Radio: Hello from Tokyo. See S 0310.
0610 USA, VOA (eu): VOA Sunday. See S 0410.
0630 Ecuador, HCJB (am): Musical Mailbag. See S 0030.
0630 USA, KTBN: Highway to Heaven. Jeff Van Horn offers advice to juveniles.

Mondays
0600 Ecuador, HCJB (am): Radio Reading Room. See M 0200.
0610 USA, VOA (eu): VOA Today. See M 0510.
0615 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0616 Japan, NHK/Radio: Sports Spotlight. See M 0316.
0625 Japan, NHK/Radio: Japan Diary. See M 0325.
0630 Ecuador, HCJB (am): The Sower. See M 0300.
0630 Japan, NHK/Radio: Close Up. See M 0330.
0630 USA, KTBN: Changing Your World. Creflo A. Dollar, Jr. evangelizes.
0645 Ecuador, HCJB (am): Glorious Intentions. Paul Bell of HCJB examines principles to guide you in facing life in our times.
0647 Japan, NHK/Radio: News Commentary. See M 0347.

Tuesdays
0600 Ecuador, HCJB (am): Master Control. See T 0200.
0600 USA, KTBN: Jack Van Impe Presents. Reporting and interpreting international news.
0610 USA, VOA (eu): VOA Today. See M 0510.
0615 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0620 Japan, NHK/Radio: Close Up. See M 0330.
0630 Ecuador, HCJB (am): Classical Favorites. See T 0230.
0630 Japan, NHK/Radio: Japanese Culture Today. See T 0330.
0630 USA, KTBN: This is Your Day!. See T 0200.
0645 Japan, NHK/Radio: Japan Diary. See M 0325.
0650 Japan, NHK/Radio: News Commentary. See M 0347.

Wednesdays
0600 Ecuador, HCJB (am): Unshackled. See W 0200.
0600 USA, KTBN: Reinhard Bonnke Preaches. See S 1500.
0610 USA, VOA (eu): VOA Today. See M 0510.
0615 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0620 Japan, NHK/Radio: Asian Report. See W 0320.
0630 Japan, NHK/Radio: Close Up. See M 0330.
0630 USA, KTBN: This is Your Day!. See T 0200.
0641 Japan, NHK/Radio: Japan Diary. See M 0325.
0647 Japan, NHK/Radio: News Commentary. See M 0347.

Thursdays
0600 Ecuador, HCJB (am): The Latest Catch. See H 0200.
0610 USA, VOA (eu): VOA Today. See M 0510.
0615 Ecuador, HCJB (am): The Book Nook. See H 0215.
0615 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0630 Ecuador, HCJB (am): Sounds of Joy. See S 0200.
0630 Japan, NHK/Radio: Crosscurrents. See H 0330.
0630 USA, KTBN: This is Your Day!. See T 0200.
0642 Japan, NHK/Radio: Japan Diary. See M 0325.
0648 Japan, NHK/Radio: News Commentary. See M 0347.

Fridays
0600 Ecuador, HCJB (am): Woman to Woman. See F 0200.
0600 USA, KTBN: Precious Memories. Bill Gaither
0610 USA, VOA (eu): VOA Today. See M 0510.
0615 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
0630 Ecuador, HCJB (am): Inspirational Classics. See F 0230.
0630 Japan, NHK/Radio: Close Up. See M 0330.
0630 USA, KTBN: This is Your Day!. See T 0200.
0642 Japan, NHK/Radio: Japan Diary. See M 0325.
0648 Japan, NHK/Radio: News Commentary. See M 0347.

Saturdays
0600 Ecuador, HCJB (am): On-Line. See A 0200.
0610 Japan, NHK/Radio: This Week. See A 0310.
0610 USA, VOA (eu): VOA Saturday. See S 0410.
0630 Ecuador, HCJB (am): On Track. See A 0230.
0630 USA, KTBN: This is Your Day!. See T 0200.

THANK YOU ...
Additional contributors to this month's Shortwave Guide:

Capt. K.J. Barry, Blackpool, England; Bob Fraser, Cohasset, MA; Kevin Hecht, Devon, PA; Jim Moats, Ravenna, OH; Robert E. Thomas, Bridgeport, CT; Loyd Van Horn, Brasstown, NC; BBCMS; BBC *Worldwide*; BBC *Summary of World Broadcasts*; Internet Shortwave Newsgroups.

Frequencies

0700-0800	Australia, Radio	5995pa	6020pa	6080pa	9580pa
		9710pa	9860pa	15240pa	15565as
		17695as			
0700-0730	Australia, Radio	13605as	15415as	17795as	
0700-0800 vl	Australia, VL8A Alice Spg	4835do			
0700-0800 vl	Australia, VL8K KAtherine	5025do			
0700-0800 vl	Australia, VL8T Tent Crk	4910do			
0700-0800	Canada, CFCX Montreal	6005do			
0700-0800	Canada, CFRX Toronto	6070do			
0700-0800	Canada, CFVP Calgary	6030do			
0700-0800	Canada, CHNX Halifax	6130do			
0700-0800	Canada, CKZU Vancouver	6160do			
0700-0800	Costa Rica,RF Peace Intl	7385am	9400am		
0700-0800	Ecuador, HCJB Quito	5900pa	6050eu		
0700-0800 as	Eqt Guinea, R East Africa	15190af			
0700-0800 mtwhf	Eqt Guinea, Radio Africa	15190af			
0700-0715	Ghana, Ghana Broadc Corp	3366do	4915do		
0700-0800 vl	Italy, IRRS Milan	3985va			
0700-0800	Japan, NHK/Radio	5975eu	7230eu	11725as	11740as
		11850pa	15165me	17810va	17815af
		21610as			
0700-0800 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
0700-0800 vl	Kiribati, Radio	9825do			
0700-0800	Lebanon, Wings of Hope	9960va			
0700-0800 vl	Liberia, Radio ELBC	7275do			
0700-0800	Liberia, Radio ELWA	4760do			
0700-0800 asmtwh	Malaysia, Radio	7295do			
0700-0800	Malaysia, Voice of	15295as			
0700-0800 s	Malta, V of Mediterranean	9765me			
0700-0716 mtwhf	New Zealand, R NZ Intl	11900pa			
0700-0757 as	New Zealand, R NZ Intl	11900pa			
0700-0750	North Korea, R Pyongyang	15340af	17765me		
0700-0730 s	Norway, Radio Norway Intl	7180au			
0700-0800 vl	Papua NEw Guinea, NBC	9675do			
0700-0800	Russia, Voice of	5905na	5920na	7175na	7270na
		7330na	7345na	9825na	12025na
		17570na			
0700-0710	Sierra Leone, SLBS	3316do			
0700-0800 vl	Solomon Islands, SIBC	5020do	9545do		
0700-0800	Taiwan, VO Free China	5950na			
0700-0800	United Kingdom,BBC London	3955eu	5975va	6175na	6195va
		7145pa	7325va	9410va	9600af
		9640sa	11760va	11940af	11955va
		12095va	15070va	15280as	15310as
		15360va	15575va	17640af	17790as
	17830af				
0700-0730	United Kingdom,BBC London	6180eu	11780va		
0700-0715	United Kingdom,BBC London	6005af	7160af	11860af	
0700-0800	USA, KAIJ Dallas TX	5810am			
0700-0800	USA, KTBN Salt Lk City UT	7510am			
0700-0800	USA, KWHR Naalehu HI	9930as			
0700-0800	USA, Monitor Radio Intl	7535eu			
0700-0800	USA, WEWN Birmingham AL	5825eu	7425na	7465na	
0700-0800	USA, WHRI Noblesville IN	5760am	7315am		
0700-0800	USA, WJCR Upton KY	7490na	13595na		
0700-0800 smtwhf	USA, WMLK Bethel PA	9465eu			
0700-0800	USA, WWCR Nashville TN	3315am	5065am	5935am	
0700-0745	USA, WYFR Okeechobee FL	7355eu	9680eu		
0700-0745 mtwhf	Vatican State, Vatican R	4005va	5880va	7250eu	9645eu
0700-0800	Zambia, R Christian Voice	6065af			
0700-0800	Zimbabwe, ZBC/Radio 3	5975do	6045do		
0705-0800	Swaziland, Trans World R	5055af	6070af	9500af	9650af
0715-0730	Switzerland, Swiss R Intl	6165eu	7410eu		
0717-0800	New Zealand, R NZ Intl	9700pa			
0730-0800	Australia, Radio	9660pa	17880as		
0730-0800	Belgium, R Vlaanderen Int	5985eu	9925va		
0730-0745 s	Greece, Voice of	7450eu	9425eu	11645au	
0730-0800	Netherlands, Radio	9720au	11895pa		
0740-0800	Monaco, Trans World Radio	7115eu			
0745-0800 s	Ghana, Ghana Broadc Corp	3366do	4915do		
0745-0755	Greece, Voice of	7450eu	9425eu	11645au	
0755-0800	Guam, AWR/KTWR	15200as			

0800 UTC

0800-0900	Australia, Radio	5995pa	6020pa	6080pa	9580pa
		9710pa	9860pa	17715as	21725as
0800-0900 vl	Australia, VL8A Alice Spg	2310do			
0800-0830 vl	Australia, VL8K Katherine	5025do			
0800-0900 vl	Australia, VL8T Tent Crk	4910do			
0800-0900	Australia,DefenseForces R	15607af	18194af		
0800-0900 vl	Canada, CBC N Quebec Svc	9625do			
0800-0900 vl	Canada, CBC N Quebec Svc	9625do			
0800-0900	Canada, CFCX Montreal	6005do			
0800-0900	Canada, CFRX Toronto	6070do			
0800-0900	Canada, CFVP Calgary	6030do			
0800-0900	Canada, CHNX Halifax	6130do			
0800-0900	Canada, CKZU Vancouver	6160do			
0800-0900	Costa Rica,RF Peace Intl	7385am	9400am		
0800-0827	Czech Rep, Radio Prague	5930eu	7345eu		
0800-0830	Ecuador, HCJB Quito	6050eu			
0800-0900	Ecuador, HCJB Quito	5900pa			
0800-0900 as	Eqt Guinea, R East Africa	15190af			
0800-0900 mtwhf	Eqt Guinea, Radio Africa	15190af			
0800-0830	Georgia, Georgian Radio	11910eu			
0800-0805 s	Ghana, Ghana Broadc Corp	3366do			
0800-0900	Guam, TWR/KTWR	15200as			
0800-0900	Indonesia, Voice of	9525as			
0800-0830 vl	Italy, IRRS Milan	3985va			
0800-0900 vl	Kiribati, Radio	9825do			
0800-0900	Lebanon, Wings of Hope	9960va			
0800-0830	Liberia, Radio ELWA	4760do			
0800-0900	Malaysia, Radio	7295do			
0800-0825	Malaysia, Voice of	15295as			
0800-0830 s	Malta, V of Mediterranean	9765me			
0800-0900	Monaco, Trans World Radio	7115eu			
0800-0825	Netherlands, Radio	9720au	11895pa		
0800-0900	New Zealand, R NZ Intl	9700pa			
0800-0850	North Korea, R Pyongyang	15180as	15230as		
0800-0850	Pakistan, Radio	15470eu	15475eu	17895eu	
0800-0900 vl	Papua New Guinea, NBC	4890do			
0800-0900	Russia, Voice of	9685as	12005va	12025va	15160va
		17860va			
0800-0810	Sierra Leone, SLBS	3316do			
0800-0900 vl	Solomon Islands, SIBC	5020do	9545do		
0800-0900	South Korea, R Korea Intl	7550eu	13670eu		
0800-0900	United Kingdom,BBC London	3955eu	6190af	6195va	7325as
		9410va	11760va	11940af	11955va
		12095va	15070va	15280as	15310as
		15400va	15575va	17640va	17790as
		17830af			
0800-0815	United Kingdom,BBC London	7145pa			
0800-0830	United Kingdom,BBC London	3955eu	9640sa		
0800-0900	USA, KNLS Anchor Point AK	6150as			
0800-0900	USA, KTBN Salt Lk City UT	7510am			
0800-0900	USA, KWHR Naalehu HI	9930as			
0800-0900	USA, Monitor Radio Intl	7535eu	13615pa	15665eu	
0800-0900	USA, WEWN Birmingham AL	5825eu	5975na	7425na	
0800-0900	USA, WHRI Noblesville IN	5760am	7315am		
0800-0900	USA, WJCR Upton KY	7490na	13595na		
0800-0900 smtwhf	USA, WMLK Bethel PA	9465eu			
0800-0900	USA, WWCR Nashville TN	3315am	5065am	5935am	
0800-0900	Zambia, R Christian Voice	6065af			
0800-0900	Zimbabwe, ZBC/Radio 4	5975do	6045do	7285do	
0805-0835	Swaziland, Trans World R	5055af	6070af	9500af	9650af
0815-0900 mtwtf	Nigeria, FRCN/Radio	3326do	4990do		
0830-0900 vl	Australia, VL8K Katherine	2485do			
0830-0900	Austria, R Austria Intl	6155eu	13730eu	17870pa	
0830-0900 vl	Italy, IRRS Milan	7125va			
0830-0900	Netherlands, Radio	9720au	11895pa	13700pa	
0830-0857	Slovakia, R Slovakia Intl	11990au	17485au	21705au	
0855-0900	Guam, TWR/KTWR	11830pa			

Hauser's Highlights

CUBA: Radio Havana Cuba

programs in general

Tue & Sat	*DXers Unlimited*
Mon-Fri	*Spotlight on the Americas*
Mon-Fri	*RHC's Viewpoint*
Sun & Wed	*The Mailbag Show*
Fri & Sun	*Weekly Review*
Sun	*From Havana*
1st Sun	*Top Tens* (to N. Am.)
2nd Sun	*The Jazz Place* (to N. Am.)

(via Keith Perron, ex-RHC, CIDX *Messenger*

FREQUENCIES

0900-1000	Australia, Radio	5995as	7240as	9510as	9580pa
		9860pa	13605as	15170as	21725as
0900-1000 vl	Australia, VL8A Alice Spg	2310do			
0900-1000 vl	Australia, VL8K Katherine	2485do			
0900-1000 vl	Australia, VL8T Tent Crk	4910do			
0900-1000	Australia,DefenseForces R	15607af	18194af		
0900-1000	Canada, CFCX Montreal	6005do			
0900-1000	Canada, CFRX Toronto	6070do			
0900-1000	Canada, CFVP Calgary	6030do			
0900-1000	Canada, CHNX Halifax	6130do			
0900-1000	Canada, CKZU Vancouver	6160do			
0900-1000	China, China Radio Intl	11755pa	15440pa		
0900-1000	Costa Rica,RF Peace Intl	7385am	9400am		
0900-1000	Ecuador, HCJB Quito	5900pa			
0900-1000 as	Eqt Guinea, R East Africa	15190af			
0900-1000 mtwhf	Eqt Guinea, Radio Africa	15190af			
0900-0950	Germany, Deutsche Welle	6160pa	7380as	11725af	15145af
		15410af	17780pa	17820as	21600af
		21680as			
0900-0915 mtwtf	Ghana, Ghana Broadc Corp	3366do	4915do		
0900-1000	Guam, AWR/KSDA	9530as			
0900-0915	Guam, TWR/KTWR	15200as			
0900-1000	Guam, TWR/KTWR	11830pa			
0900-1000 vl	Italy, IRRS Milan	7125va			
0900-1000	Japan, NHK/Radio	6090as	11850au	15190as	
0900-0948 vl	Kiribati, Radio	9825do			
0900-1000	Lebanon, Voice of Hope	6280va			
0900-1000	Lebanon, Wings of Hope	9960va			
0900-1000	Malaysia, Radio	7295do			
0900-0905 a	Monaco, Trans World Radio	7115eu			
0900-0930	Netherlands, Radio	9720au	13700pa		
0900-1000	New Zealand, R NZ Intl	9700pa			
0900-1000 vl	Papua New Guinea, NBC	4890do			
0900-1000	Russia, Voice of	7305as	9450as	9685as	12005va
		12025va	17860va		
0900-1000	Slovakia, AWR	15620af			
0900-0930	Switzerland, Swiss R Intl	9885au	11640au	13685au	
0900-1000	United Kingdom,BBC London	6190af	6195va	9410va	9740as
		11750as	11940af	12095va	15070va
		15190sa	15280va	15380as	15400va
		15575va	17640va	17705eu	17830va
		17885af			
0900-0915	United Kingdom,BBC London	7180as	7325af	9580as	11760va
		11955va	15310as	15310as	15360va
		17790as			
0900-1000	USA, KTBN Salt Lk City UT	7510am			
0900-1000	USA, Monitor Radio Intl	7395sa	7535eu	9430as	
0900-0930	USA, Monitor Radio Intl	13615va			
0900-1000	USA, WEWN Birmingham AL	5825eu	7425na	7465na	
0900-1000	USA, WHRI Noblesville IN	5760am	7315am		
0900-1000	USA, WJCR Upton KY	7490na	13595na		
0900-1000 smtwhf	USA, WMLK Bethel PA	9465eu			
0900-1000	USA, WWCR Nashville TN	5065am	5935am	7435am	
0900-1000	Zambia, R Christian Voice	6065af			
0900-1000	Zimbabwe, ZBC/Radio 4	5975do	6045do	7285do	
0905-0920 smtwhf	Monaco, Trans World Radio	7115eu			
0910-0940	Mongolia, R Ulan Bator	9960au	12000au		
0915-1000	Ghana, Ghana Broadc Corp	6130do	7295do		
0930-1000 s	Armenia, Voice of	15270va			
0930-1000	Canada, CKZN St John's	6160do			
0930-1000	Netherlands, Radio	7260pa	9720au	9810pa	11895pa
		13700pa			
0930-1000	Philippines, FEBC/R Intl	11635as			
1000-1100	Australia, Radio	5995as	7240as	9580pa	9860pa
		13605as	15170as	21725as	
1000-1100 vl	Australia, VL8A Alice Spg	2310do			
1000-1100 vl	Australia, VL8K Katherine	2485do			
1000-1100 vl	Australia, VL8T Tent Crk	4910do			
1000-1100	Australia,DefenseForces R	13525as			
1000-1025 mtwhfa	Belgium, R Vlaanderen Int	6035eu	15510af	17595af	
1000-1100 vl	Canada, CBC N Quebec Svc	9625do			
1000-1100	Canada, CFCX Montreal	6005do			
1000-1100	Canada, CFRX Toronto	6070do			
1000-1100	Canada, CFVP Calgary	6030do			
1000-1100	Canada, CHNX Halifax	6130do			
1000-1100	Canada, CKZN St John's	6160do			
1000-1100	Canada, CKZU Vancouver	6160do			
1000-1100	China, China Radio Intl	11755pa	15440pa		
1000-1100	Costa Rica,RF Peace Intl	7385am	9400am		
1000-1030	Czech Rep, Radio Prague	15640as	17845af		
1000-1100	Ecuador, HCJB Quito	5900pa			
1000-1100 as	Eqt Guinea, R East Africa	15190af			
1000-1100 mtwhf	Eqt Guinea, Radio Africa	15190af			
1000-1100	India, All India Radio	13700as	15050as	17387au	17890as
1000-1100	Iraq, Radio Iraq Intl	13680eu			
1000-1100 vl	Italy, IRRS Milan	7125va			
1000-1100	Lebanon, Voice of Hope	6280va			
1000-1100	Lebanon, Wings of Hope	9960va			
1000-1100	Malaysia, Radio	7295do			
1000-1100 vl	Malaysia, RTM Kuching	7160do			
1000-1100 vl	Malaysia,RTM KotaKinabalu	5980do			
1000-1100	Netherlands, Radio	7260as	9720pa	9810pa	
1000-1100	New Zealand, R NZ Intl	9700pa			
1000-1100	Nigeria, Voice of	7255af			
1000-1100 vl	Papua New Guinea, NBC	4890do			
1000-1100	Philippines, FEBC/R Intl	11635as			
1000-1100	Russia, Voice of	7305as	9685as	13785as	15490va
		15560va	17755as	17860va	
1000-1100	Singapore, SBC Radio One	6155do			
1000-1100	United Kingdom,BBC London	6190af	6195va	9410va	9740as
		11750as	11760va	11940af	12095va
		15070va	15190sa	15310as	15400af
		15575va	17640va	17705va	17790as
		17830va	17885af		
1000-1030	United Kingdom,BBC London	15280as	15280va		
1000-1100	USA, KTBN Salt Lk City UT	7510am			
1000-1100	USA, Monitor Radio Intl	6095ca	7395sa	9430as	13625as
1000-1100	USA, VOA Washington DC	5985va	6165am	7405am	9590am
		11720va	15425va		
1000-1100	USA, WEWN Birmingham AL	7425na	7465eu		
1000-1100	USA, WHRI Noblesville IN	6040am	6185am		
1000-1100	USA, WJCR Upton KY	7490na	13595na		
1000-1100	USA, WWCR Nashville TN	5065am	5935am	7435am	
1000-1100	USA, WYFR Okeechobee FL	5950na			
1000-1030	Vietnam, Voice of	7360na	9840as	12020as	15010as
1000-1100	Zambia, R Christian Voice	6065af			
1030-1100 mtwhfa	Austria, R Austria Intl	6155eu	13730pa	17870pa	
1030-1055	UAE, Radio Dubai	13675eu	15395eu	17825eu	21605me

HAUSER'S HIGHLIGHTS
INDIA: ALL INDIA RADIO

G.O.S. in English

1000-1100	17890, 17387, 15050, 13700
1330-1500	13750, 11620
1745-1945	15075, 13750, 11935, 11620, 9950, 9650, 7410
2045-2230	15225, 11715, 11620, 9950, 9910, 7410
2245-2445	15145, 13700, 11620, 9950, 9705

(BBC Monitoring, as of Dec.)

FREQUENCIES

1100-1200	Australia, Radio	5995as	7240as	9510pa	9580pa
		9710pa	9860pa	13605as	15170as
		15530as	15565as		
1100-1200 vl	Australia, VL8A Alice Spg	2310do			
1100-1200 vl	Australia, VL8K Katherine	2485do			
1100-1200 vl	Australia, VL8T Tent Crk	4910do			
1100-1200	Australia,DefenseForces R	13525as			
1100-1200	Canada, CFCX Montreal	6005do			
1100-1200	Canada, CFRX Toronto	6070do			
1100-1200	Canada, CFVP Calgary	6030do			
1100-1200	Canada, CHNX Halifax	6130do			
1100-1200	Canada, CKZN St John's	6160do			
1100-1200	Canada, CKZU Vancouver	6160do			
1100-1200	Costa Rica, AWR Alajuela	5030am	7375am	9725am	13750am
1100-1200	Costa Rica,RF Peace Intl	7385am	9400am		
1100-1130	Ecuador, HCJB Quito	5900pa			
1100-1200	Ecuador, HCJB Quito	12005am	15115am		
1100-1200 as	Eqt Guinea, R East Africa	15190af			
1100-1200	Eqt Guinea, Radio Africa	9530as			
1100-1150	Germany, Deutsche Welle	15370af	15410af	17765af	17800af
1100-1200	Iraq, Radio Iraq Intl	13680eu			
1100-1105	Israel, Kol Israel	11605eu			
1100-1200 vl	Italy, IRRS Milan	7125va			
1100-1200	Japan, NHK/Radio	6090as	6120na	15350as	
1100-1200	Malaysia, Radio	7295do			
1100-1200 vl	Malaysia, RTM Kuching	7160do			
1100-1200 vl	Malaysia,RTM KotaKinabalu	5980do			
1100-1200	Nepal, Radio	3230do	5005do		
1100-1200	New Zealand, R NZ Intl	9700pa			
1100-1150	North Korea, R Pyongyang	6575na	9975na	11335na	
1100-1115	Pakistan, Radio	15470as	17895as		
1100-1200 vl	Papua New Guinea, NBC	4890do			
1100-1200	Russia, Voice of	12055va	13785as	15490va	15560va
		17675va	17755va	17860va	
1100-1200	Singapore, SBC Radio One	6155do			
1100-1200	Singapore,R Singapore Int	9530as			
1100-1130	Sri Lanka, SLBC Colombo	11835as	15120as	17850au	
1100-1130	Switzerland, Swiss R Intl	6165eu	9535eu	9885as	11640as
		13635as			
1100-1200	Taiwan, Voice of Asia	7445as			
1100-1200	United Kingdom,BBC London	5965na	6190af	6195va	7180as
		9410va	9580as	11760va	11940af
		11955as	12095va	15070va	15220am
		15310as	15575va	17640va	17750va
		17830af	17885af	21660af	
1100-1130	United Kingdom,BBC London	15190sa	15400eu	17790as	
1100-1200	USA, KTBN Salt Lk City UT	7510am			
1100-1200	USA, KWHR Naalehu HI	9930as			
1100-1200	USA, Monitor Radio Intl	6095na	7395ca	9355as	9430au
1100-1200	USA, VOA Washington DC	5985va	6110va	6165am	7405am
		9590am	9645va	9760va	11720va
		15160va	15425va		
1100-1200 vl	USA, WEWN Birmingham AL	7425na	7465na		
1100-1200	USA, WHRI Noblesville IN	6040am	6185am		
1100-1200	USA, WJCR Upton KY	7490na	13595na		
1100-1200	USA, WWCR Nashville TN	5065am	5935am	7435am	
1100-1200	USA, WYFR Okeechobee FL	5950na	7355na		
1100-1200	Zambia, R Christian Voice	6065af			
1120-1130	Vatican State, Vatican R	5880va	11740eu	15570af	17550af
1130-1200	Austria, R Austria Intl	13730eu			
1130-1200 vl	China, China Radio Intl	8660as	11445as	11700as	
1130-1157	Czech Rep, Radio Prague	7345eu	9505eu		
1130-1200	Ecuador, HCJB Quito	15115am			
1130-1200	Iran, VOIRI Tehran	11745as	11790as	11875me	11930me
		15260af	17750me		
1130-1200	Myanmar, Voice of	5990do			
1130-1200	Netherlands, Radio	6045eu	7190eu		
1130-1200	South Korea, R Korea Intl	9650eu			

SELECTED PROGRAMS

Sundays

1100 Ecuador, HCJB (am): Morning Song. Music and thoughts to start the day.
1100 Ecuador, HCJB (pa): Songs in the Night. Music and inspiration from Chicago's Moody Church.
1105 Singapore, R Singapore Intl: Dateline RSI. Listener interaction program.
1110 Japan, NHK/Radio: Hello from Tokyo. See S 0310.
1110 USA, VOA (as): New Horizons. A twenty-minute documentary on a scientific, technological, or medical subject.
1120 Singapore, R Singapore Intl: Asean Notes. A montage of events in the Asean region.
1130 Ecuador, HCJB (am): The Christian's Hour. Christian messages of inspiration by Gary York.
1130 USA, VOA (as): Issues in the News. Members of the Washington press corps discuss current topics.
1135 Singapore, R Singapore Intl: The Week Ahead. Events.
1140 Singapore, R Singapore Intl: The Sunday interview.

Mondays

1100 Ecuador, HCJB (am): Let My People Think. Addressing questions of today's thinking Christians.
1100 Ecuador, HCJB (pa): Nightsounds. Christian music and thoughtful words from Bill Pearce.
1105 Singapore, R Singapore Intl: Frontiers. See S 1215.
1110 USA, VOA (as): Science Report (Special English). Developments in the world of science and technology.
1115 USA, VOA (as): This is America (Spec. Eng.). See M 0045.
1120 Singapore, R Singapore Intl: Business and Market Report. A roundup of financial and business news.
1130 Ecuador, HCJB (am): Insight for Living. Chuck Swindoll applies the Bible to life today.
1130 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1130 USA, VOA (as): Music USA (Standards). Classic pop.
1131 Japan, NHK/Radio: Sports Spotlight. See M 0316.
1138 Singapore, R Singapore Intl: The Front Page. Headlines in the singapore and regional newspapers.
1144 Japan, NHK/Radio: Japan Diary. See M 0325.
1145 Singapore, R Singapore Intl: Newsline. An analysis of the headlines in Singapore, the region, and the world.
1149 Japan, NHK/Radio: News Commentary. See M 0347.

Tuesdays

1100 Ecuador, HCJB (am): The Living Word. A sermon from Southeast Christian Church.
1100 Ecuador, HCJB (pa): Nightsounds. See M 1100.
1105 Singapore, R Singapore Intl: Kaleidoscope. See S 1240.
1110 USA, VOA (as): Agriculture Report (Spec. Eng). See T 0040.
1115 USA, VOA (as): Science in the News (Spec. Eng. See T 0045.
1120 Singapore, R Singapore Intl: Business and Market Report.
1130 Ecuador, HCJB (am): Insight for Living. See M 1130.
1130 Japan, NHK/Radio: Radio Japan Magazine Hour.
1130 USA, VOA (as): Now Music USA. Rock and soul hits of today and yesterday.
1131 Japan, NHK/Radio: Japanese Culture Today. See T 0330.
1138 Singapore, R Singapore Intl: The Front Page. See M 1138.
1141 Japan, NHK/Radio: Japan Diary. See M 0325.
1145 Singapore, R Singapore Intl: Newsline. See M 1145.
1148 Japan, NHK/Radio: News Commentary. See M 0347.

Wednesdays

1100 Ecuador, HCJB (am): Back to God Hour. The Christian Reformed Church looks at life in light of the historic Christian faith.
1100 Ecuador, HCJB (pa): Nightsounds. See M 1100.
1105 Singapore, R Singapore Intl: Star Trax. A showcase of stars and events in the peop, movie, and entertainment beats.
1110 USA, VOA (as): Science Report (Spec. Eng.). See M 1110.
1115 USA, VOA (as): Space and Man (Spec. Eng.). See W 0045.
1120 Singapore, R Singapore Intl: Business and Market Report.
1130 Ecuador, HCJB (am): Insight for Living. See M 1130.
1130 Japan, NHK/Radio: Radio Japan Magazine Hour.
1130 USA, VOA (as): Now Music USA. See T 1130.
1138 Singapore, R Singapore Intl: The Front Page. See M 1138.
1141 Japan, NHK/Radio: Japan Diary. See M 0325.
1145 Singapore, R Singapore Intl: Newsline. See M 1145.
1147 Japan, NHK/Radio: News Commentary. See M 0347.
1154 Radio Netherlands: Documentary. The Wannabees of New York (6th). Dheera Sujan visits some of the Big Apple schools for the performing arts.
1154 Radio Netherlands: Documentary. You Say Either and I Say Either (13th). See S 2354.

Thursdays

1100 Ecuador, HCJB (am): Christian Brotherhood Hour. Christian messages of inspiration.
1100 Ecuador, HCJB (pa): Nightsounds. See M 1100.
1105 Singapore, R Singapore Intl: Arts Arena. A program devoted to the visual and performing arts.
1110 USA, VOA (as): Science Report (Special English).
1115 USA, VOA (as): The Making of a Nation (Special English). See H 0045.
1120 Singapore, R Singapore Intl: Business and Market Report.
1130 Ecuador, HCJB (am): Insight for Living. See M 1130.
1130 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1130 USA, VOA (as): Now Music USA (Top Ten). Top ten pop music hits of the week in the USA.
1131 Japan, NHK/Radio: Crosscurrents. See H 0330.
1138 Singapore, R Singapore Intl: The Front Page. See M 1138.
1144 Japan, NHK/Radio: Japan Diary. See M 0325.
1145 Singapore, R Singapore Intl: Newsline. See M 1145.
1148 Japan, NHK/Radio: News Commentary. See M 0347.

Fridays

1100 Ecuador, HCJB (am): Haven of Rest. Evangelizing and The Haven Quartet.
1100 Ecuador, HCJB (pa): Nightsounds. See M 1100.
1105 Singapore, R Singapore Intl: Bookmark. See M 1240.
1110 USA, VOA (as): Environment Report (Special English). F 0040.
1115 USA, VOA (as): American Mosaic (Spec. Eng.). See F 0045.
1120 Singapore, R Singapore Intl: Business and Market Report.
1130 Ecuador, HCJB (am): Insight for Living. See M 1130.
1130 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1130 USA, VOA (as): Country Music USA. Country, bluegrass, and western swing, plus conversations with country performers.
1131 Japan, NHK/Radio: Business Focus. See F 0330.
1138 Singapore, R Singapore Intl: The Front Page. See M 1138.
1144 Japan, NHK/Radio: Japan Diary. See M 0325.
1145 Singapore, R Singapore Intl: Newsline. See M 1145.
1148 Japan, NHK/Radio: News Commentary. See M 0347.

Saturdays

1100 Ecuador, HCJB (am): Hour of Decision. See S 0405.
1100 Ecuador, HCJB (pa): Afterglow. See S 0430.
1105 Singapore, R Singapore Intl: Star Trax. See W 1105.
1110 Japan, NHK/Radio: This Week. See A 0310.
1110 USA, VOA (as): Agriculture Today. Basic farming, biotechnology, food marketing, and related issues.
1120 Singapore, R Singapore Intl: Reflections. See T 1240.
1130 Ecuador, HCJB (am): We Kids. A fast-moving program for children.
1130 USA, VOA (as): Press Conference USA. Newsmakers are questioned by Washington journalists in the VOA studios.
1135 Singapore, R Singapore Intl: The Week Ahead. See S 1135.
1140 Singapore, R Singapore Intl: Regional Press Review. A review of editorials, comments, and headlines in the region's papers.
1150 Singapore, R Singapore Intl: Business World. The latest business and financial trends in Singapore and Asia.

Frequencies

1200-1300	Australia, Radio	5995pa	6060pa	6080pa	7260as
		9580pa	9610as	9860pa	11800pa
		15565as			
1200-1300	Brazil, Radiobras	15445na			
1200-1215	Cambodia, Natl Voice of	11940as			
1200-1300 vl	Canada, CBC N Quebec Svc	9625do			
1200-1300 vl	Canada, CBC N Quebec Svc	9625do			
1200-1300	Canada, CFCX Montreal	6005do			
1200-1300	Canada, CFRX Toronto	6070do			
1200-1300	Canada, CFVP Calgary	6030do			
1200-1300	Canada, CHNX Halifax	6130do			
1200-1300	Canada, CKZN St John's	6160do			
1200-1300	Canada, CKZU Vancouver	6160do			
1200-1300	China, China Radio Intl	7385na	7410as	9715as	11660as
		11795pa			
1200-1230 vl	China, China Radio Intl	8660as	11445as	11700as	12110as
1200-1300	Costa Rica, AWR Alajuela	5030am	7375am	9725am	13750am
1200-1300	Costa Rica,RF Peace Intl	6200am	7385am	9400am	15050am
1200-1300	Ecuador, HCJB Quito	12005am	15115am		
1200-1300 as	Eqt Guinea, R East Africa	15190af			
1200-1300	Eqt Guinea, Radio Africa	9530as			
1200-1300	Finland, YLE/R Finland	11735na	15400na		
1200-1300	France, Radio France Intl	9805eu	11615na	13625na	15155eu
		15195eu	15325af	15530na	17575ca
1200-1230	Iran, VOIRI Tehran	11745as	11790as	11875me	11930me
		15260af	17750me		
1200-1300	Iraq, Radio Iraq Intl	13680eu			
1200-1300 vl	Italy, IRRS Milan	7125va			
1200-1300	Jordan, Radio	11910na	11940na		
1200-1300	Malaysia, Radio	7295do			
1200-1300 vl	Malaysia,RTM KotaKinabalu	5980do			
1200-1250	Myanmar, Voice of	5990do			
1200-1300	Netherlands, Radio	6045eu	7190eu		
1200-1206	New Zealand, R NZ Intl	9700pa			
1200-1300 vl	Palau, KHBN/Voice of Hope	9965as			
1200-1300 vl	Papua New Guinea, NBC	4890do			
1200-1300	Russia, Voice of	4740as	9725as	9820as	13785va
		17755as	17860as		
1200-1300	Singapore, SBC Radio One	6155do			
1200-1300	Singapore,R Singapore Int	9530as			
1200-1300	South Korea, R Korea Intl	7285as			
1200-1300	Taiwan, VO Free China	7130au	9610as		
1200-1300	United Kingdom,BBC London	5965na	6190af	6195va	7180as
		9410va	9580as	9740as	11750as
		11760va	11940af	11955as	12095va
		15070va	15220va	15310as	15575va
		17640va	17705va	17830af	17885af
		21660af			
1200-1300	USA, KTBN Salt Lk City UT	7510am			
1200-1300	USA, KWHR Naalehu HI	9930as			
1200-1300	USA, Monitor Radio Intl	6095na	9355as	9430au	9455sa
1200-1300	USA, VOA Washington DC	6110va	9645va	9760va	11715va
		15160va	15425va		
1200-1300	USA, WEWN Birmingham AL	7425na	15115na		
1200-1300	USA, WHRI Noblesville IN	6040am	6185am		
1200-1300	USA, WJCR Upton KY	7490na	13595na		
1200-1300	USA, WWCR Nashville TN	5935am	7435am	15685am	
1200-1300	USA, WYFR Okeechobee FL	5950na	7355na	11830na	11970na
1200-1230	Uzbekistan, R Tashkent	5060as	5975as	6025as	9715as
1200-1300	Zambia, R Christian Voice	6065af			
1215-1300	Egypt, Radio Cairo	17595as			
1230-1300	Bangladesh, Radio	7185as	9648as	13615as	
1230-1300	Bulgaria, Radio	9810as	11605as		
1230-1300	Canada, RCI Montreal	6150as	11730as		
1230-1300 w	Indonesia, RRI Sorong	4875do			
1230-1300 a	Monaco, Trans World Radio	7115eu			
1230-1255 s	Monaco, Trans World Radio	7115eu			
1230-1300	Russia, Voice of	9755as	9875as		
1230-1300	South Korea, R Korea Intl	9570as	9640as	13670au	
1230-1300	Sweden, Radio	9835as	13740pa	15240pa	
1230-1300	Vietnam, Voice of	7360as	9840as	12030as	
1240-1250	Greece, Voice of	9915af	11645af	15650af	

Selected Programs

Sundays

1200 Ecuador, HCJB (am): Kids' Corner. Mr Lizard and friends present a program for children.
1200 USA, KTBN: Breakthrough. Rod Parsley conducts services from the World Harvest Church in Columbus, OH.
1203 Singapore, R Singapore Intl: E-Z Beat. Adult contemporary music program.
1210 USA, VOA (as): Encounter. Two experts debate their contrasting views on a subject of current importance.
1215 Singapore, R Singapore Intl: Frontiers. Developments in the medical, scientific and environmental fields.
1230 Ecuador, HCJB (am): Your Story Hour. Children's stories.
1230 USA, VOA (as): Studio One. Dramatizations and documentaries on significant events and personalities.
1236 Czech Rep, Radio Prague: The Week and Politics. A wrap-up of the previous week's political affairs.
1240 Singapore, R Singapore Intl: Kaleidoscope. A lifestyle magazine program.
1243 Czech Rep, Radio Prague: From the Weeklies. Items and editorial opinion from the weekend Czech papers.
1245 Bulgaria, Radio: Weekly Spotlight. The major political developments of the week with prominent political figures.
1249 Czech Rep, Radio Prague: What's Up. The latest opinions on the latest events in Prague.

Mondays

1200 Ecuador, HCJB (am): Morning in the Mountains. A light-hearted hour of music, conversation, news, and devotional features hosted by Dan Wales and Tania Manners.
1200 USA, KTBN: Good News Today!. T.L. Osborn evangelizes.
1203 Singapore, R Singapore Intl: E-Z Beat. See S 1203.
1210 USA, VOA (as): Stateside. Issues and personalities, science and politics, sports and entertainment inside America.
1220 Ecuador, HCJB (am): Insight. A few minutes of discernment from Joel Niederhood.
1220 Singapore, R Singapore Intl: Business and Market Report.
1230 Ecuador, HCJB (am): Latin News. Regional news summary.
1230 USA, KTBN: The Doctor and the Word. Reginald B. Cherry, MD talks about medicine.
1238 Ecuador, HCJB (am): A Reading from God's Word.
1240 Singapore, R Singapore Intl: Bookmark. Spotlighting books, authors and the written word.
1245 Bulgaria, Radio: Answering Your Letters. See M 0015.
1246 Ecuador, HCJB (am): Guidelines. A five-minute commentary on living from Harold Sala.

Tuesdays

1200 Ecuador, HCJB (am): Morning in the Mountains. See M 1200.
1200 USA, KTBN: Dean and Mary music that ministers.
1205 Singapore, R Singapore Intl: E-Z Beat. See S 1203.
1210 USA, VOA (as): Stateside. See M 1210.
1220 Ecuador, HCJB (am): Insight. See M 1220.
1220 Singapore, R Singapore Intl: Business and Market Report.
1230 Ecuador, HCJB (am): Latin News. See M 1230.
1230 USA, KTBN: A Date with Dale. See M 1630.
1238 Ecuador, HCJB (am): A Reading from God's Word. See M 1238.
1240 Singapore, R Singapore Intl: Reflections. Vignettes of life in Singapore and the region.
1245 Bulgaria, Radio: Today. See T 0515.
1246 Ecuador, HCJB (am): Guidelines. See M 1246.

Wednesdays

1200 Ecuador, HCJB (am): Morning in the Mountains. See M 1200.
1200 USA, KTBN: The Laverne Tripp Family. Country christian music performed by Laverne and Edith Tripp and their kin.
1203 Singapore, R Singapore Intl: E-Z Beat. See S 1203.
1210 USA, VOA (as): Stateside. See M 1210.
1220 Ecuador, HCJB (am): Insight. See M 1220.
1220 Singapore, R Singapore Intl: Business and Market Report. See M 1120.
1230 Ecuador, HCJB (am): Latin News. See M 1230.
1230 USA, KTBN: Up on Melody Mountain. See W 0130.
1238 Ecuador, HCJB (am): A Reading from God's Word.
1240 Singapore, R Singapore Intl: Frontiers. See S 1215.
1245 Bulgaria, Radio: Today. See T 0515.
1246 Ecuador, HCJB (am): Guidelines. See M 1246.

Thursdays

1200 Ecuador, HCJB (am): Morning in the Mountains. See M 1200.
1200 USA, KTBN: The Answer. Dan Sheaffer answers listener questions.
1205 Singapore, R Singapore Intl: E-Z Beat. See S 1203.
1210 USA, VOA (as): Stateside. See M 1210.
1220 Ecuador, HCJB (am): Insight. See M 1220.
1220 Singapore, R Singapore Intl: Business and Market Report.
1230 Ecuador, HCJB (am): Latin News. See M 1230.
1230 USA, KTBN: Revivals in the Land Today. Walt Mills
1238 Ecuador, HCJB (am): A Reading from God's Word.
1240 Singapore, R Singapore Intl: Singapore Snapshots. Zooming in on festivals and interesting people and places in Singapore.
1245 Bulgaria, Radio: Today. See T 0515.
1246 Ecuador, HCJB (am): Guidelines. See M 1246.
1250 Singapore, R Singapore Intl: Music. Selections by the program host.

Fridays

1200 Ecuador, HCJB (am): Morning in the Mountains. See M 1200.
1200 USA, KTBN: Origins. See F 0030.
1203 Singapore, R Singapore Intl: E-Z Beat. See S 1203.
1210 USA, VOA (as): Stateside. See M 1210.
1215 USA, KTBN: Reaching Higher. See F 0045.
1220 Ecuador, HCJB (am): Insight. See M 1220.
1220 Singapore, R Singapore Intl: Business and Market Report. See M 1120.
1230 Ecuador, HCJB (am): Latin News. See M 1230.
1230 USA, KTBN: Steve Brock. See H 1630.
1238 Ecuador, HCJB (am): A Reading from God's Word. See M 1238.
1240 Singapore, R Singapore Intl: Dateline RSI. See S 1105.
1245 Bulgaria, Radio: Weekly Spotlight. See S 1245.
1246 Ecuador, HCJB (am): Guidelines. See M 1246.

Saturdays

1200 Ecuador, HCJB (am): A Visit With Mrs. G. Bible stories for children.
1200 USA, KTBN: Gospel Bill. Kids program.
1205 Singapore, R Singapore Intl: E-Z Beat. See S 1203.
1210 USA, VOA (as): On the Line. A discussion of U.S. policies and contemporary issues.
1215 Ecuador, HCJB (am): Critter County. Christian Wyrtzen and her friendly critters present a children's program.
1215 Singapore, R Singapore Intl: Singapore Snapshots. See H 1240.
1225 Singapore, R Singapore Intl: Asean Notes. See S 1120.
1230 Ecuador, HCJB (am): Adventures in Odyssey. See A 0330.
1230 USA, VOA (as): Communications World. A look at the people, technologies, economics, and politics involved in modern telecommunications.
1240 Singapore, R Singapore Intl: Arts Arena. See H 1105.
1245 Bulgaria, Radio: Answering Your Letters. See M 0015.
1254 Radio Netherlands: Documentary. The Wannabees of New York (9th). See W 1154.
1254 Radio Netherlands: Documentary. You Say Either and I Say Either (16th). See A 2354.

Frequencies

1300-1400	Australia, Radio	5995pa	7240as	9560pa	9580pa
		9610as	11800pa		
1300-1330	Australia, Radio	6060pa	6080as	9510pa	
1300-1320	Brazil, Radiobras	15445na			
1300-1330	Bulgaria, Radio	9810as	11605as		
1300-1400 vl	Canada, CBC N Quebec Svc	9625do			
1300-1400	Canada, CFCX Montreal	6005do			
1300-1400	Canada, CFRX Toronto	6070do			
1300-1400	Canada, CFVP Calgary	6030do			
1300-1400	Canada, CHNX Halifax	6130do			
1300-1400	Canada, CKZN St John's	6160do			
1300-1400	Canada, CKZU Vancouver	6160do			
1300-1400	Canada, RCI Montreal	9640na	11855na		
1300-1400	China, China Radio Intl	7385na	9715as	11660pa	
1300-1330	China, China Radio Intl	7410as			
1300-1400	Costa Rica,RF Peace Intl	6200am	7385am	9400am	15050am
1300-1400	Ecuador, HCJB Quito	12005am	15115am		
1300-1330	Egypt, Radio Cairo	17595as			
1300-1400 as	Eqt Guinea, R East Africa	15190af			
1300-1400	Eqt Guinea, Radio Africa	9530as			
1300-1400	Iraq, Radio Iraq Intl	13680as			
1300-1400 vl	Italy, IRRS Milan	7125va			
1300-1400	Lebanon, Wings of Hope	9960va			
1300-1400	Malaysia, Radio	7295do			
1300-1400 vl	Malaysia, RTM Kuching	7160do			
1300-1400 vl	Malaysia,RTM KotaKinabalu	5980do			
1300-1325	Netherlands, Radio	6045eu	7190eu		
1300-1350	North Korea, R Pyongyang	9345as	9640eu	11740as	15230as
		15430as			
1300-1330 s	Norway, Radio Norway Intl	7315as	9590eu	9795as	15605as
1300-1400 vl	Palau, KHBN/Voice of Hope	9965as			
1300-1400 vl	Papua New Guinea, NBC	4890do			
1300-1400	Philippines, FEBC/R Intl	11995as			
1300-1355	Poland, Polish R Warsaw	6095eu	7145eu	7270eu	9525eu
		11815eu			
1300-1400	Romania, R Romania Intl	11940eu	15390eu	17745eu	
1300-1400	Russia, Voice of	4740va	4975va	15470va	17880as
1300-1400	Singapore, SBC Radio One	6155do			
1300-1400	Singapore,R Singapore Int	9530as			
1300-1330	Switzerland, Swiss R Intl	7230as	7480as	11640as	13625as
1300-1400	Switzerland, Swiss R Intl	6165eu	9535eu		
1300-1400	United Kingdom,BBC London	5965na	5990as	6190af	6195va
		9410va	9515na	9740as	11750as
		11760va	11940af	12095va	15070va
		15220va	15310as	15420af	15575va
		17640va	17705va	17830af	17885af
	21470af	21660af			
1300-1400	USA, KJES Mesquite NM	11715na			
1300-1400	USA, KNLS Anchor Point AK	7365as			
1300-1400	USA, KTBN Salt Lk City UT	7510am			
1300-1400	USA, Monitor Radio Intl	6095na	9355as	9455na	13625au
1300-1400	USA, VOA Washington DC	6110va	9645va	9760va	11715va
		15160va	15425va		
1300-1400	USA, WEWN Birmingham AL	7425na	11875na	15115na	15375na
1300-1400 fas	USA, WGTG McCaysville GA	9475am			
1300-1400	USA, WHRI Noblesville IN	6040am	15105am		
1300-1400	USA, WJCR Upton KY	7490na	13595na		
1300-1400 s	USA, WRMI/R Miami Intl	9955am			
1300-1400	USA, WWCR Nashville TN	5935am	7435am	15685am	
1300-1400	USA, WYFR Okeechobee FL	5950na	9705na	11830na	11970na
		13695na			
1300-1400	Zambia, R Christian Voice	6065af			
1307-1400 occsnal	New Zealand, R NZ Intl	9655pa			
1330-1400	Austria, R Austria Intl	15450as			
1330-1355 s	Belgium, R Vlaanderen Int	13670na			
1330-1357	Canada, RCI Montreal	6150as	9535as		
1330-1400	India, All India Radio	11620as	13750as		
1330-1400	Netherlands, Radio	9895as	13700as	15150as	
1330-1400	Sweden, Radio	11650na	15240na		
1330-1400	Turkey, Voice of	9445eu	9630as	9675as	
1330-1355	UAE, Radio Dubai	13675eu	15395eu	17825eu	21605me
1330-1400	Uzbekistan, R Tashkent	5060as	5975as	6025as	9715as
1330-1400	Vietnam, Voice of	7360as	9840as	12030as	
1330-1400	Yugoslavia, Radio	11835au			
1345-1400	Vatican State, Vatican R	9500as	11625as	15585as	

Selected Programs

Sundays

1300 Ecuador, HCJB (am): Telling the Truth. Stuart Briscoe presents a religious program.
1300 USA, KTBN: Cornerstone. Evangelizing by John Hagee and music by the Cornerstone Choir.
1305 Singapore, R Singapore Intl: You Asked for It. A request and dedication music program.
1310 USA, VOA (as): Critic's Choice. The performing arts in America.
1320 Bulgaria, Radio: Questionline. Ten minutes of answers to listeners' questions.
1330 Ecuador, HCJB (am): Mountain Meditations. A mixture of music and devotional thoughts in an Andean setting.
1330 Ecuador, HCJB (am): Mountain Meditations. See S 1330.
1336 Czech Rep, Radio Prague: The Week and Politics. See S 1236.
1340 Singapore, R Singapore Intl: The Sunday Interview. See S 1140.
1340 USA, VOA (as): Words and Their Stories (Special English). See S 0040.
1343 Czech Rep, Radio Prague: From the Weeklies. See S 1243.
1345 Belgium, R Vlaanderen Intl: PO Box 26. Listener letters are read and answered in this mailbox program.
1345 USA, VOA (as): People in America (Special English). See S 0045.
1349 Czech Rep, Radio Prague: What's Up. See S 1249.

Mondays

1300 Bulgaria, Radio: Folk Studio. See M 0530.
1300 USA, KTBN: Joy. Interviews with Christian authors and musicians.
1305 Singapore, R Singapore Intl: Singa-Pop. Homegrown Singaporean talents, hot favorites, and local songs.
1310 USA, VOA (as): Spotlight on Business and Finance. An examination of economic issues and events of regional or global concern.
1315 Bulgaria, Radio: Radio Bulgaria Calling. See M 0545.
1330 Ecuador, HCJB (am): Focus on the Family. Psychologist James Dobson on everyday family matters.
1340 Singapore, R Singapore Intl: Newsline. See M 1145.
1340 USA, VOA (as): Development Report (Special English). See M 0040.
1345 USA, VOA (as): This is America (Special English). See M 0045.

Tuesdays

1300 Bulgaria, Radio: Science/Technology/Environment. See T 0530.
1300 USA, KTBN: Joy. See M 1300.
1305 Ecuador, HCJB (am): Towards Tomorrow. Science program produced in New Zealand.
1305 Singapore, R Singapore Intl: The Vintage Years. A nostalgic musical trip featuring hits from yesteryear.
1310 USA, VOA (as): Inside USA. An in-depth look at political or social issues of major concern in the United States.
1315 Bulgaria, Radio: Across the Map of Bulgaria. See T 0540.
1330 Ecuador, HCJB (am): Focus on the Family. See M 1330.
1330 USA, KTBN: Alive!. Jesuit Priest Michael Manning teaches Christian principles.
1340 Singapore, R Singapore Intl: Newsline. See M 1145.
1340 USA, VOA (as): Agriculture Report (Special English). See T 0040.
1345 USA, VOA (as): Science in the News (Special English). See T 0045.

Wednesdays

1300 Bulgaria, Radio: Cultural Review. See S 0530.
1300 USA, KTBN: Get in Shape. Pamela Carter takes you through an exercise program.
1303 Singapore, R Singapore Intl: Hot Trax. Information about new music releases in Singapore.
1310 USA, VOA (as): International Focus. A look at international issues and developments of regional or global interest and impact.
1330 Ecuador, HCJB (am): Focus on the Family. See M 1330.
1330 USA, KTBN: Kids Club. Variety program for children.
1340 Singapore, R Singapore Intl: Newsline. See M 1145.
1340 USA, VOA (as): Science Report (Special English). See M 1110.
1345 USA, VOA (as): Space and Man (Special English). See W 0045.
1354 Radio Netherlands: Documentary. The Wannabees of New York (6th). See W 1154.
1354 Radio Netherlands: Documentary. You Say Either and I Say Either (13th). See A 2354.

Thursdays

1300 Bulgaria, Radio: History Club. See H 0530.
1300 USA, KTBN: Joy. See M 1300.
1303 Singapore, R Singapore Intl: Singa-Pop. See M 1305.
1310 USA, VOA (as): Reporter's Notebook. A look inside major news stories from a reporter's perspective.
1320 Bulgaria, Radio: Business and Finance. Economic news briefs and financial developments in Bulgaria.
1330 Ecuador, HCJB (am): Focus on the Family. See M 1330.
1330 USA, KTBN: Doctor to Doctor. See T 0530.
1340 Singapore, R Singapore Intl: Newsline. See M 1145.
1340 USA, VOA (as): Science Report (Special English). See M 1110.
1345 USA, VOA (as): The Making of a Nation (Special English). See H 0045.

Fridays

1300 Bulgaria, Radio: Lifestyle. See F 0030.
1300 USA, KTBN: Joy. See M 1300.
1303 Singapore, R Singapore Intl: Hot Trax. See W 1303.
1310 USA, VOA (as): Perspectives. Delving into religion, spiritual values, ethics, or morality in a contemporary global society.
1315 Bulgaria, Radio: Timeout for Music. See W 0540.
1330 Ecuador, HCJB (am): Focus on the Family. See M 1330.
1330 USA, KTBN: The Joy of Music. Diane Bish takes you on a world music tour and plays one of the great organs at each location.
1340 Singapore, R Singapore Intl: Newsline. See M 1145.
1340 USA, VOA (as): Environment Report (Special English). See F 0040.
1345 USA, VOA (as): American Mosaic (Special English). See F 0045.

Saturdays

1300 Ecuador, HCJB (am): Children's Bible Hour. Songs and stories for children.
1300 USA, KTBN: Kids Against Crime. Talk about programs making a difference in the lives of youth.
1305 Singapore, R Singapore Intl: Chartbeat. A countdown of chart-toppers on Singapore's radio stations.
1310 USA, VOA (as): Perspectives. See F 1310.
1315 Bulgaria, Radio: Radio Bulgaria Calling. See M 0545.
1330 Ecuador, HCJB (am): Morning in the Mountains. See M 1200.
1330 USA, KTBN: Kids Club. See W 1330.
1340 Singapore, R Singapore Intl: Regional Press Review. See A 1140.
1340 USA, VOA (as): In the News (Special English). See A 0040.
1345 USA, VOA (as): American Stories (Special English). See A 0045.

Frequencies

1400-1430	Australia, Radio	7240pa	9560as	9610pa	11695pa
1400-1500	Australia, Radio	5995pa	9580pa	11800pa	
1400-1500	Australia,DefenseForces R	8743af	10623af		
1400-1430 mtwhfa	Belgium, R Vlaanderen Int	13670na			
1400-1500 vl	Canada, CBC N Quebec Svc	9625do			
1400-1500	Canada, CFCX Montreal	6005do			
1400-1500	Canada, CFRX Toronto	6070do			
1400-1500	Canada, CFVP Calgary	6030do			
1400-1500	Canada, CHNX Halifax	6130do			
1400-1500	Canada, CKZN St John's	6160do			
1400-1500	Canada, CKZU Vancouver	6160do			
1400-1500	Canada, RCI Montreal	9640na	11855na		
1400-1500	China, China Radio Intl	7405na	9530as	9785as	
1400-1500	Costa Rica,RF Peace Intl	6200am	7385am	9400am	15050am
1400-1430	Czech Rep, Radio Prague	13580na	17845af		
1400-1500	Ecuador, HCJB Quito	12005am	15115am		
1400-1500 as	Eqt Guinea, R East Africa	15190af			
1400-1500	France, Radio France Intl	7110as	12030as	15405as	17560me
1400-1500	India, All India Radio	11620as	13750as		
1400-1430 vl	Italy, IRRS Milan	7125va			
1400-1500	Japan, NHK/Radio	6090as	9535na	9695as	11705na
		11895as			
1400-1500	Lebanon, Wings of Hope	9960va			
1400-1500	Malaysia, Radio	7295do			
1400-1500 vl	Malaysia, RTM Kuching	7160do			
1400-1500 vl	Malaysia,RTM KotaKinabalu	5980do			
1400-1500	Malta, V of Mediterranean	11925me			
1400-1500	Netherlands, Radio	9895as	13700as	15150as	
1400-1500 occsnal	New Zealand, R NZ Intl	6100pa			
1400-1430 s	Norway, Radio Norway Intl	11840na			
1400-1500 vl	Palau, KHBN/Voice of Hope	9965as			
1400-1500	Philippines, FEBC/R Intl	11995as			
1400-1500	Russia, Voice of	7130as	7165as	9470va	12065me
		17880as			
1400-1500	Singapore, SBC Radio One	6155do			
1400-1430	Turkey, Voice of	9445eu	9630as		
1400-1500	United Kingdom,BBC London	5965as	5990as	6190af	6195as
		9410va	9515na	9740as	11750as
		11940af	12095va	15070va	15260na
		15310as	15575va	17640va	17705va
		17830af	17840va	21470af	21660af
1400-1500	USA, KJES Mesquite NM	11715na			
1400-1500	USA, KTBN Salt Lk City UT	7510am			
1400-1500	USA, Monitor Radio Intl	9355as			
1400-1500	USA, VOA Washington DC	6110va	7125va	7215va	9645va
		9760va	15160va	15205as	15395as
		15425va			
1400-1500	USA, WEWN Birmingham AL	9455na	11875na	15235sa	
1400-1500 fas	USA, WGTG McCaysville GA	9475am			
1400-1500	USA, WHRI Noblesville IN	6040am	15105am		
1400-1500	USA, WJCR Upton KY	7490na	13595na		
1400-1500 s	USA, WRMI/R Miami Intl	9955am			
1400-1500	USA, WRNO New Orleans LA	15420am			
1400-1500 a	USA, WVHA Greenbush ME	15745eu			
1400-1500	USA, WWCR Nashville TN	12160am	13845am	15685am	
1400-1500	USA, WYFR Okeechobee FL	9705na	11830na	17760eu	
1400-1415	Vatican State, Vatican R	9500as	11625as	15585au	
1400-1500	Zambia, R Christian Voice	6065af			
1415-1500 mtwtfa	Bhutan, Bhutan BC Service	5025do			
1415-1425	Nepal, Radio	3230do	5005do		
1430-1500	Australia, Radio	6060pa	6080pa	7260as	9710pa
		11660as	11695pa		
1430-1500	Austria, R Austria Intl	6155eu	11780as	13730eu	
1430-1500	Canada, RCI Montreal	9555eu	11915eu	11935eu	15325eu
1430-1500 vl	China, China Radio Intl	8660as	9880as	11445as	15135as
1430-1440 mtwhf	Indonesia, RRI Uj Pandang	4753do			
1430-1500 vl	Italy, IRRS Milan	3985va			
1430-1500	Romania, R Romania Intl	11740as	11810as	15335as	
1430-1500	Sweden, Radio	11650na	15245na		
1430-1500	United Kingdom,BBC London	15400af			
1435-1445	Greece, Voice of	9420eu	15650na		
1440-1500	Myanmar, Voice of	5990do			
1445-1500	Mongolia, R Ulan Bator	7530as	9950as		
1458-1500 mtwhfa	Seychelles, FEBA Radio	9810as			
1458-1500 s	Seychelles, FEBA Radio	11870as			

Selected Programs

Sundays

1400 Ecuador, HCJB (am): Moody Presents. Christian messages from the Moody Bible Institute.
1400 USA, KTBN: Spiritual Protocol. Pastor Earl Paulk preaches from Atlanta.
1410 Japan, NHK/Radio: Let's Learn Japanese. See S 0310.
1410 USA, VOA (as/eu): The Concert Hall. Classical music and interviews with America's great artists and conductors.
1425 Japan, NHK/Radio: Media Roundup. See S 0525.
1430 Ecuador, HCJB (am): The Heaven and Home Hour. Jim Christianson discusses the Christian life.
1450 Japan, NHK/Radio: Viewpoint. See S 0550.
1455 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.
1455 USA, VOA (as/eu): VOA Editorial. Comments expressing the official position of the U.S. Government on various subjects.

Mondays

1400 Ecuador, HCJB (am): Hope for the Heart. June Hunt present's God's principles for today's marriage.
1400 USA, KTBN: A New Perspective. Richard and Lindsay Roberts evangelize from Tulsa, Oklahoma.
1405 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
1410 USA, VOA (as/eu): Asia Report. Correspondents' reports and background on the news, with emphasis on events in East and South Asia.
1412 Belgium, R Vlaanderen Intl: Belgium Today. Current affairs in Belgium.
1415 Ecuador, HCJB (am): Our Daily Bread. A daily devotional program from Radio Bible Class.
1415 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1420 Japan, NHK/Radio: Close Up. See M 0330.
1421 Belgium, R Vlaanderen Intl: Tourism. Take an audio tour of the sights and sounds of Belgium.
1425 Belgium, R Vlaanderen Intl: Music. Popular music wraps up this edition of the broadcast.
1430 Ecuador, HCJB (am): Back to the Bible. A mix of music and daily Bible study.
1430 Japan, NHK/Radio: Sports Spotlight. See M 0316.
1430 USA, KTBN: John Hagee Today. Evangelizing by John Hagee of the Cornerstone Church in San Antonio, TX.
1440 Japan, NHK/Radio: Japan Diary. See M 0325.
1446 Japan, NHK/Radio: News Commentary. See M 0347.
1455 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Tuesdays

1400 Ecuador, HCJB (am): Hope for the Heart. See M 1400.
1400 USA, KTBN: A New Perspective. See M 1400.
1405 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
1409 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
1410 USA, VOA (as): Asia Report. See M 1410.
1410 USA, VOA (eu): Asia Report. See M 1410.
1415 Ecuador, HCJB (am): Our Daily Bread. See M 1415.
1415 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1416 Belgium, R Vlaanderen Intl: Focus on Europe. A report on happenings in the European Economic Community (ECC).
1420 Belgium, R Vlaanderen Intl: Sports Report. See T 0049.
1420 Japan, NHK/Radio: Close Up. See M 0330.
1425 Belgium, R Vlaanderen Intl: Music. See M 1425.
1430 Ecuador, HCJB (am): Back to the Bible. See M 1430.
1430 Japan, NHK/Radio: Japanese Culture Today. See T 0330.
1430 USA, KTBN: John Hagee Today. See M 1430.
1445 Japan, NHK/Radio: Japan Diary. See M 0325.
1450 Japan, NHK/Radio: News Commentary. See M 0347.
1455 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Wednesdays

1400 Ecuador, HCJB (am): Hope for the Heart. See M 1400.
1400 USA, KTBN: A New Perspective. See M 1400.
1405 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
1409 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
1410 USA, VOA (as): Asia Report. See M 1410.
1410 USA, VOA (eu): Asia Report. See M 1410.
1415 Ecuador, HCJB (am): Our Daily Bread. See M 1415.
1415 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1416 Belgium, R Vlaanderen Intl: Living in Belgium. See W 0045.
1420 Belgium, R Vlaanderen Intl: Green Society. See W 0049.
1420 Japan, NHK/Radio: Asian Report. See W 0320.
1425 Belgium, R Vlaanderen Intl: Music. See M 1425.
1430 Ecuador, HCJB (am): Back to the Bible. See M 1430.
1430 Japan, NHK/Radio: Close Up. See M 0330.
1430 USA, KTBN: John Hagee Today. See M 1430.
1441 Japan, NHK/Radio: Japan Diary. See M 0325.
1447 Japan, NHK/Radio: News Commentary. See M 0347.
1455 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Thursdays

1400 Ecuador, HCJB (am): Hope for the Heart. See M 1400.
1400 USA, KTBN: A New Perspective. See M 1400.
1405 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
1409 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
1410 USA, VOA (as/eu): Asia Report. See M 1410.
1415 Belgium, R Vlaanderen Intl: The Arts. See H 0050.
1415 Ecuador, HCJB (am): Our Daily Bread. See M 1415.
1415 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1425 Belgium, R Vlaanderen Intl: Music. See M 1425.
1430 Ecuador, HCJB (am): Back to the Bible. See M 1430.
1430 Japan, NHK/Radio: Crosscurrents. See H 0330.
1430 USA, KTBN: John Hagee Today. See M 1430.
1442 Japan, NHK/Radio: Japan Diary. See M 0325.
1448 Japan, NHK/Radio: News Commentary. See M 0347.
1455 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Fridays

1400 Ecuador, HCJB (am): Hope for the Heart. See M 1400.
1400 USA, KTBN: A New Perspective. See M 1400.
1406 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
1410 USA, VOA (as/eu): Asia Report. See M 1410.
1411 Belgium, R Vlaanderen Intl: Belgium Today. See M 1412.
1415 Ecuador, HCJB (am): Our Daily Bread. See M 1415.
1415 Japan, NHK/Radio: Radio Japan Magazine Hour. See M 0315.
1416 Belgium, R Vlaanderen Intl: North-South. European development report.
1419 Belgium, R Vlaanderen Intl: Economics. See F 0049.
1425 Belgium, R Vlaanderen Intl: Music. See M 1425.
1430 Ecuador, HCJB (am): Back to the Bible. See M 1430.
1430 Japan, NHK/Radio: Close Up. See M 0330.
1430 USA, KTBN: John Hagee Today. See M 1430.
1442 Japan, NHK/Radio: Japan Diary. See M 0325.
1448 Japan, NHK/Radio: News Commentary. See M 0347.
1455 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Saturdays

1400 USA, KTBN: Flying House. A serialized cartoon program for children.
1405 Belgium, R Vlaanderen Intl: Press Review. See S 0035.
1410 Japan, NHK/Radio: This Week. See A 0310.
1410 USA, VOA (as/eu): Music USA (Jazz). Willis Conover hosts the VOA jazz hour.
1430 Ecuador, HCJB (am): Jungle Jam and Friends. A program for children.
1430 USA, KTBN: Becky's Barn. A puppet program for children.
1454 Radio Netherlands: Documentary. The Wannabees of New York (9th). See W 1154.
1454 Radio Netherlands: Documentary. You Say Either and I Say Either (16th). See A 2354.

Frequencies

1500-1600	Australia, Radio	5995pa	6060pa	6080pa	6090as
		7260as	9580pa	9615as	9710pa
		11660as	11695pa	11800pa	
1500-1600	Australia,DefenseForces R	8743af	10623af		
1500-1600 vl	Canada, CBC N Quebec Svc	9625do			
1500-1600	Canada, CFCX Montreal	6005do			
1500-1600	Canada, CFRX Toronto	6070do			
1500-1600	Canada, CFVP Calgary	6030do			
1500-1600	Canada, CHNX Halifax	6130do			
1500-1600	Canada, CKZN St John's	6160do			
1500-1600	Canada, CKZU Vancouver	6160do			
1500-1600 s	Canada, RCI Montreal	9640na	11855na		
1500-1600	China, China Radio Intl	7405na	9535as	9785as	
1500-1600	Costa Rica,RF Peace Intl	6200am	9400am	15050am	
1500-1600	Ecuador, HCJB Quito	12005am	15115sa		
1500-1600 as	Eqt Guinea, R East Africa	15190af			
1500-1600	Guam, TWR/KTWR	11580as			
1500-1600 vl	Italy, IRRS Milan	3985va			
1500-1600	Japan, NHK/Radio	7240as	9535na	9695as	15355af
1500-1600	Jordan, Radio	11910na	11940na		
1500-1600	Lebanon, Wings of Hope	9960va			
1500-1600	Malaysia, Radio	7295do			
1500-1600 vl	Malaysia, RTM Kuching	7160do			
1500-1600 vl	Malaysia,RTM KotaKinabalu	5980do			
1500-1515	Mongolia, R Ulan Bator	7530as	9950as		
1500-1515 s	Myanmar, Voice of	5990do			
1500-1525	Netherlands, Radio	9895as	13700as	15150as	
1500-1600 occsnal	New Zealand, R NZ Intl	6100pa			
1500-1600	Nigeria, Voice of	7255af			
1500-1550	North Korea, R Pyongyang	9325eu	9640eu	9975na	13785me
1500-1530 s	Norway, Radio Norway Intl	9520me	11730me		
1500-1600 vl	Palau, KHBN/Voice of Hope	9965as			
1500-1600	Philippines, FEBC/R Intl	11995as			
1500-1530	Romania, R Romania Intl	11740as	11810as	15335as	
1500-1600	Russia, Voice of	4740as	4940as	4975as	7115va
		7130va	7165va	7325va	9470va
		9635va	9905as	11765va	11945as
		12065me			
1500-1600	S Africa, Channel Africa	7240af	9545af		
1500-1600 mtwhfa	Seychelles, FEBA Radio	9810as			
1500-1530 s	Seychelles, FEBA Radio	11870as			
1500-1600	Singapore, SBC Radio One	6155do			
1500-1600	Sri Lanka, SLBC Colombo	9720as	15425as		
1500-1530	Switzerland, Swiss R Intl	9885as	12075as	13625as	
1500-1600	United Kingdom,BBC London	5965as	5990as	6190af	6195va
		7205as	9410va	9515na	9740as
		11750as	12095va	15070va	15260na
		15400va	17705va	17830af	17840va
		21470af	21660af		
1500-1530	United Kingdom,BBC London	11860af	11940af	15400eu	15420af
		17880af	21490af		
1500-1600	USA, KTBN Salt Lk City UT	7510am			
1500-1600	USA, KWHR Naalehu HI	9930as			
1500-1600	USA, Monitor Radio Intl	9355as			
1500-1600	USA, VOA Washington DC	6110as	7125as	7215as	9575as
		9645as	9700as	9760va	15205as
		15255as	15395as		
1500-1600	USA, WEWN Birmingham AL	9455na	11875na	15665na	
1500-1600 fas	USA, WGTG McCaysville GA	9475am			
1500-1600	USA, WHRI Noblesville IN	13760am	15105am		
1500-1600	USA, WJCR Upton KY	7490na	13595na		
1500-1600	USA, WRNO New Orleans LA	15420am			
1500-1600	USA, WWCR Nashville TN	12160am	13845am	15685am	
1500-1600	USA, WYFR Okeechobee FL	11830na	15215na	17760eu	
1500-1600	Zambia, R Christian Voice	6065af			
1515-1600 a	USA, WVHA Greenbush ME	15745eu			
1530-1600	Iran, VOIRI Tehran	11875as	15260as	17750as	
1530-1600	Netherlands, Radio	9895as	15150as		
1530-1600 mtwhf	Portugal, R Portugal Intl	21515me			
1530-1600	United Kingdom,BBC London	7180as			

Selected Programs

Sundays

1500 Ecuador, HCJB (am): The Urban Alternative. A program for inner-city America from Dallas.
1500 USA, KTBN: Reinhard Bonnke Preaches. Evangelizing in Africa.
1510 Japan, NHK/Radio: Hello from Tokyo. See S 0310.
1510 USA, VOA (eu): New Horizons. A twenty-minute documentary on a scientific, technological, or medical subject.
1530 Ecuador, HCJB (am): Methodist Hour. Music, interviews, and timely messages.
1530 USA, KTBN: Winning Walk. Ed Young sermonizes from Houston, TX.
1530 USA, VOA (eu): Studio One. Dramatizations and documentaries on significant events and personalities.
1555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Mondays

1500 Ecuador, HCJB (am): Gateway to Joy. Elizabeth Elliot with contemporary women's issues from a Biblical perspective.
1500 USA, KTBN: Breakthrough. See S 1200.
1510 USA, VOA (eu): Newsline. Background and insight on the news from experienced VOA correspondents and journalists.
1515 Ecuador, HCJB (am): Key Life. Steve Brown presents truthful teachings.
1515 Japan, NHK/Radio: Today's Top News Asia. The most important stories from other Asian media organizations are summarized in a new 10-minute format.
1525 Japan, NHK/Radio: Profile. An in-depth interview with a Japanese personality.
1530 Ecuador, HCJB (am): Thru the Bible. J. Vernon McGee presents a book-by-book study of the Bible.
1530 USA, KTBN: Today with Marilyn. Marilyn Hickey teaches.
1530 USA, VOA (eu): Music USA (Standards). Classics of American popular music.
1555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Tuesdays

1500 Ecuador, HCJB (am): Gateway to Joy. See M 1500.
1500 USA, KTBN: Breakthrough. See S 1200.
1510 USA, VOA (eu): Newsline. See M 1510.
1515 Ecuador, HCJB (am): Key Life. See M 1515.
1515 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
1525 Japan, NHK/Radio: Enjoy Japanese. Learn and practice the Japanese language.
1530 Ecuador, HCJB (am): Thru the Bible. See M 1530.
1530 USA, KTBN: Today with Marilyn. See M 1530.
1530 USA, VOA (eu): Now Music USA. Rock and soul hits of today and yesterday.
1555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Wednesdays

1500 Ecuador, HCJB (am): Gateway to Joy. See M 1500.
1500 USA, KTBN: Breakthrough. See S 1200.
1510 USA, VOA (eu): Newsline. See M 1510.
1515 Ecuador, HCJB (am): Key Life. See M 1515.
1515 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
1525 Japan, NHK/Radio: History and Classics. A look at Japanese historical figures and art forms.
1530 Ecuador, HCJB (am): Thru the Bible. See M 1530.
1530 USA, KTBN: Today with Marilyn. See M 1530.
1530 USA, VOA (eu): Now Music USA. See T 1530.
1554 Radio Netherlands: Documentary. The Wannabees of New York (6th). See W 1154.
1554 Radio Netherlands: Documentary. You Say Either and I Say Either (13th). See A 2354.
1555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Thursdays

1500 Ecuador, HCJB (am): Gateway to Joy. See M 1500.
1500 USA, KTBN: Breakthrough. See S 1200.
1510 USA, VOA (eu): Newsline. See M 1510.
1515 Ecuador, HCJB (am): Key Life. See M 1515.
1515 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
1525 Japan, NHK/Radio: Enjoy Japanese. See T 1525.
1530 Ecuador, HCJB (am): Thru the Bible. See M 1530.
1530 USA, KTBN: Today with Marilyn. See M 1530.
1530 USA, VOA (eu): Now Music USA (Top Ten). Top ten pop music hits of the week in the USA.
1555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Fridays

1500 Ecuador, HCJB (am): Gateway to Joy. See M 1500.
1500 USA, KTBN: Breakthrough. See S 1200.
1510 USA, VOA (eu): Newsline. See M 1510.
1515 Ecuador, HCJB (am): Key Life. See M 1515.
1515 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
1525 Japan, NHK/Radio: Music and Book Beat. What people in Japan are listening to and reading.
1530 Ecuador, HCJB (am): Thru the Bible. See M 1530.
1530 USA, KTBN: Today with Marilyn. See M 1530.
1530 USA, VOA (eu): Country Music USA. Country, bluegrass, and western swing, plus conversations with country performers.
1555 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Saturdays

1500 Ecuador, HCJB (am): Words of Hope. David Bass provides the message.
1500 USA, KTBN: Joy Junction. Fun and games for children from the Christian Television Network (CTN).
1510 Japan, NHK/Radio: Asia Weekly. See S 0110.
1510 USA, VOA (eu): International Focus. See W 1610.
1511 Japan, NHK/Radio: Asian News Summary. See S 0111.
1521 Japan, NHK/Radio: Business Report. See S 0121.
1525 Japan, NHK/Radio: Entertaining in Asia. See S 0125.
1530 Ecuador, HCJB (am): Family Foundations. Interviews and discussions about issues affecting today's family.
1530 USA, KTBN: Circle Square. A program for children in a hotel setting.
1530 USA, VOA (eu): Press Conference USA. Newsmakers are questioned by Washington journalists in the VOA studios.
1546 Japan, NHK/Radio: Asia Kaleidoscope. See S 0146.

Your Name in Lights!

... or at least in ink within the *Monitoring Times* Shortwave Guide. Please send us your "best catches" on the worldwide shortwave bands — QSLs, that is — and we will try to use them in future issues of *MT*. Your QSLs will be returned.

Frequencies

1600-1700	Australia, Radio	5995pa	6060pa	6080pa	6090pa
		7260as	9580pa	9710pa	9770as
		11660pa	11695pa	11800pa	
1600-1613	Bangladesh, Radio	15520as			
1600-1700 vl	Canada, CBC N Quebec Svc	9625do			
1600-1700	Canada, CFCX Montreal	6005do			
1600-1700	Canada, CFRX Toronto	6070do			
1600-1700	Canada, CFVP Calgary	6030do			
1600-1700	Canada, CHNX Halifax	6130do			
1600-1700	Canada, CKZN St John's	6160do			
1600-1700	Canada, CKZU Vancouver	6160do			
1600-1700 s	Canada, RCI Montreal	9640na	11955na		
1600-1700	China, China Radio Intl	11575as	15110af	15130af	
1600-1700	Costa Rica,RF Peace Intl	6200am	9400am	15050am	
1600-1630	Ethiopia, Radio	7165af			
1600-1700	France, Radio France Intl	6175eu	9485eu	11615af	11700af
		12015af	15210af	15460af	15530af
1600-1650	Germany, Deutsche Welle	6170as	7225as	7305as	9585as
1600-1700	Germany, Deutsche Welle	7195af	9735af	11965af	
1600-1700	Guam, AWR/KSDA	9370as			
1600-1615 mt	Guam, TWR/KTWR	11580as			
1600-1630 whfas	Guam, TWR/KTWR	11580as			
1600-1630	Iran, VOIRI Tehran	11875as	15260as	17750as	
1600-1700	Italy, AWR Europe	7230eu			
1600-1700 vl	Italy, IRRS Milan	3985va			
1600-1700	Jordan, Radio	11910na	11940na		
1600-1700	Lebanon, Voice of Hope	6280va			
1600-1700	Malaysia, Radio	7295do			
1600-1625	Netherlands, Radio	9895as	13700as	15150as	
1600-1649 occsnal	New Zealand, R NZ Intl	9655pa			
1600-1700	Nigeria, Voice of	7255af			
1600-1700	Pakistan, Radio	9485af	9785af	11570af	11745af
		13590af	15555af		
1600-1700 vl	Palau, KHBN/Voice of Hope	9965as			
1600-1700	Russia, Voice of	4740va	4940va	4975va	7115va
		7180as	7325eu	9470va	9490va
		9635as	9760va	9905as	11895va
		11945as	12055va	13670as	
1600-1700	S Africa, Channel Africa	7240af	9545af	15240af	
1600-1700	S Africa, Trans World R	9500af			
1600-1700	Singapore, SBC Radio One	6155do			
1600-1700	South Korea, R Korea Intl	5975eu	9515eu	9870af	15575me
1600-1630	Sri Lanka, SLBC Colombo	9720as	15425as		
1600-1700	Swaziland, Trans World R	9500af			
1600-1640	UAE, Radio Dubai	13675eu	15395me	17825me	21605me
1600-1700	United Kingdom,BBC London	3915as	5965as	6190af	6195va
		7135as	7205af	9410va	9515na
		9740va	11750as	11780eu	12095va
		15070va	15260na	15400va	17830af
		17840va	21470va	21660af	
1600-1615	United Kingdom,BBC London	5990as	7180as	17705va	
1600-1700	USA, KTBN Salt Lk City UT	15590am			
1600-1700	USA, KWHR Naalehu HI	6120as			
1600-1700	USA, Monitor Radio Intl	9355af	21640af		
1600-1700	USA, VOA Washington DC	3970af	6110as	7125as	7215as
		9575as	9645as	9700as	9760as
		11920af	12040af	13710af	15205as
		15225af	15395as	15410af	15445af
		17895af			
1600-1700	USA, WEWN Birmingham AL	11580na	13615na	15340na	
1600-1700 fas	USA, WGTG McCaysville GA	9475am			
1600-1700	USA, WHRI Noblesville IN	13760am	15105am		
1600-1700	USA, WJCR Upton KY	7490na	13595na		
1600-1700	USA, WRNO New Orleans LA	15420am			
1600-1700 a	USA, WVHA Greenbush ME	15745eu			
1600-1700	USA, WWCR Nashville TN	12160am	13845am	15685am	
1600-1700	USA, WYFR Okeechobee FL	11580na	11830na	15215na	15566eu
		17760eu	21525af	21745eu	
1600-1630 a	Vatican State, Vatican R	9940va	11640va		
1600-1620 smtwhf	Vatican State, Vatican R	9940va	11640va		
1600-1630	Vietnam, Voice of	7360na	9840eu	12030as	
1600-1700	Zambia, R Christian Voice	6065af			
1615-1625	Egypt, Radio Cairo	11874af			
1615-1700	United Kingdom,BBC London	9630af	11860af	15420af	
1630-1700	Austria, R Austria Intl	11780as			
1630-1657	Canada, RCI Montreal	7150as	9550as		
1630-1700	Egypt, Radio Cairo	15255af			
1645-1700 mtwhf	Canada, RCI Montreal	9555eu	11935eu	15325eu	17820eu
1650-1700	Eqt Guinea, Radio Africa	15190af			
1650-1700 mtwhf	New Zealand, R NZ Intl	5960pa			

Selected Programs

Sundays

1600 USA, KTBN: The Coral Ridge Hour. See S 0000.
1609 S Africa, Channel Africa: Africa This Week. A review of this week's major news events.
1610 USA, VOA (eu): Encounter. Two experts debate their contrasting views on a subject of current importance.
1640 USA, VOA (eu): Words and Their Stories (Special English). The origin and use of common words and phrases in American English.
1645 USA, VOA (eu): People in America (Special English). Stories about famous Americans.

Mondays

1600 USA, Monitor Radio Intl: Monitor Radio News. Five minutes of the latest world news at the beginning of the hour.
1606 USA, Monitor Radio Intl: Monitor Radio International. News, analysis, commentary, interviews and features in a magazine format.
1610 USA, VOA (eu): Spotlight on Business and Finance. An examination of economic issues and events of regional or global concern.
1627 S Africa, Channel Africa: Sports Watch. The latest in sports from around the continent.
1630 USA, KTBN: A Date with Dale. Dale Evans Rogers sings and talks with a guest.
1640 USA, VOA (eu): Development Report (Special English). Helpful information for developing nations.
1645 USA, VOA (eu): This is America (Special English). Informative reports on life in the United States.
1648 S Africa, Channel Africa: Techno Watch. The latest advances in technology in Africa.
1649 USA, Monitor Radio Intl: Letterbox. Listeners make their views known by telephone or letter to host Lisa Dale.
1652 USA, Monitor Radio Intl: Religious Article from the CSM. As published in the christian Science Monitor.

Tuesdays

1600 USA, Monitor Radio Intl: Monitor Radio News. See M 1600.
1606 USA, Monitor Radio Intl: Monitor Radio International. See M 1606.
1610 USA, VOA (eu): Inside USA. An in-depth look at political or social issues of major concern in the United States.
1630 S Africa, Channel Africa: Sports Watch. See M 1627.
1630 USA, KTBN: Doctor to Doctor. See T 0530.
1640 USA, VOA (eu): Agriculture Report (Special English). Developments and reports on farming and agriculture.
1645 USA, VOA (eu): Science in the News (Special English). Recent scientific developments.
1649 USA, Monitor Radio Intl: Letterbox. See M 1649.
1652 USA, Monitor Radio Intl: Religious Article from the CSM. See M 1652.

Wednesdays

1600 USA, Monitor Radio Intl: Monitor Radio News. See M 1600.
1606 USA, Monitor Radio Intl: Monitor Radio International. See M 1606.
1610 USA, VOA (eu): International Focus. A look at international issues and developments of regional or global interest and impact.
1630 S Africa, Channel Africa: Sports Watch. See M 1627.
1630 USA, KTBN: Get in Shape. See W 1300.
1640 USA, VOA (eu): Science Report (Special English). Developments in the world of science and technology.
1641 S Africa, Channel Africa: Eco Watch. Reports on environmental issues.
1645 USA, VOA (eu): Space and Man (Special English). Reports about outer space or about the human body.
1649 USA, Monitor Radio Intl: Letterbox. See M 1649.
1652 USA, Monitor Radio Intl: Religious Article from the CSM. See M 1652.

Thursdays

1600 USA, Monitor Radio Intl: Monitor Radio News. See M 1600.
1606 USA, Monitor Radio Intl: Monitor Radlo International. See M 1606.
1610 USA, VOA (eu): Reporter's Notebook. A look inside major news stories from a reporter's perspective.
1630 S Africa, Channel Africa: Sports Watch. See M 1627.
1630 USA, KTBN: Steve Brock. Steve sings songs of praise.
1640 USA, VOA (eu): Science Report (Special English). See W 1640.
1645 USA, VOA (eu): The Making of a Nation (Special English). Chapters from U.S. history in special English.
1649 USA, Monitor Radio Intl: Letterbox. See M 1649.
1652 USA, Monitor Radio Intl: Religious Article from the CSM. See M 1652.

Fridays

1600 USA, Monitor Radio Intl: Monitor Radio News. See M 1600.
1606 USA, Monitor Radio Intl: Monitor Radio International. See M 1606.
1610 USA, VOA (eu): Perspectives. Delving into religion, spiritual values, ethics, or morality in a contemporary global society.
1630 USA, KTBN: Praise the Lord. See M 0300.
1640 USA, VOA (eu): Environment Report (Special English). A five-minute report on a specific environmental subject.
1645 USA, VOA (eu): American Mosaic (Special English). Reports about music, books, movies, and student life in the USA.
1649 USA, Monitor Radio Intl: Letterbox. See M 1649.
1652 USA, Monitor Radio Intl: Religious Article from the CSM. See M 1652.

Saturdays

1600 USA, KTBN: Superbook. Animated stories from the bible for children.
1600 USA, Monitor Radio Intl: Monitor Radio News. See M 1600.
1606 USA, Monitor Radio Intl: Christian Science Sentinel Radio Edition. Discussions on how the Bible addresses the trends of thought of today.
1609 S Africa, Channel Africa: Today's Dream. A musical magazine for Africa's youth.
1610 USA, VOA (eu): On the Line. A discussion of U.S. policies and contemporary issues.
1630 USA, KTBN: Quigley's Village. Mr. Quigley and his puppet friends offer wholesome entertainment for children.
1639 S Africa, Channel Africa: Music in the Sun. Pop music for a Saturday morning.
1640 USA, VOA (eu): In the News (Special English). Focus on a person, organization, or issue in news reports.
1645 USA, VOA (eu): American Stories (Special English). Readings of short stories by American authors in slow English.

FREQUENCIES

1700-1800	Australia, Radio	6060pa	6080pa	6090pa	7260as
		9580pa	9615as	9710pa	9860pa
		11660pa	11695pa	11880pa	
1700-1800 vl	Canada, CBC N Quebec Svc	9625do			
1700-1800	Canada, CFCX Montreal	6005do			
1700-1800	Canada, CFRX Toronto	6070do			
1700-1800	Canada, CFVP Calgary	6030do			
1700-1800	Canada, CHNX Halifax	6130do			
1700-1800	Canada, CKZN St John's	6160do			
1700-1800	Canada, CKZU Vancouver	6160do			
1700-1800	China, China Radio Intl	5220af	7150af	7405af	9535as
		11575af			
1700-1800 as	Costa Rica, AWR Alajuela	13750am			
1700-1800	Costa Rica,RF Peace Intl	6200am	9400am	15050am	
1700-1727	Czech Rep, Radio Prague	5930eu	9430eu		
1700-1800	Ecuador, HCJB Quito	15540eu			
1700-1800	Egypt, Radio Cairo	15255af			
1700-1800	Eqt Guinea, Radio Africa	15190af			
1700-1730	France, Radio France Intl	9485af	11615af	15210af	15460af
1700-1730	Georgia, Georgian Radio	11910eu			
1700-1800 vl	Italy, IRRS Milan	3985va			
1700-1800	Japan, NHK/Radio	6150as	7280as	9535na	9580as
		11930me			
1700-1730	Jordan, Radio	11910na	11940na		
1700-1730	Kazakhstan, R Almaty	5940eu	5970eu	9505eu	
1700-1800	Lebanon, Voice of Hope	6280va			
1700-1730	Lebanon, Wings of Hope	9960va			
1700-1800 mtwhf	New Zealand, R NZ Intl	5960pa			
1700-1750	North Korea, R Pyongyang	9325eu	9640af	9975af	13785me
1700-1750	Pakistan, Radio	5825eu	11570eu		
1700-1800 vl	Palau, KHBN/Voice of Hope	9965as			
1700-1800	Russia, Voice of	5935va	5940va	5995va	6055va
		7115va	7130va	7205va	7255va
		7325va	7330eu	9470va	9490va
		12055va	13670af		
1700-1800	S Africa, Channel Africa	7240af	9545af		
1700-1800	Slovakia, AWR	9465af	9475af		
1700-1800	Swaziland, Trans World R	9500af			
1700-1730	Switzerland, Swiss R Intl	5850va	9885va	13635va	
1700-1800	United Kingdom,BBC London	3955eu	6180eu	6190af	6195va
		7135as	7160me	7205as	9410va
		9515na	9740va	11750as	11780eu
		12095va	15070va	15400af	15420af
		17830af	17840va		
1700-1745	United Kingdom,BBC London	3915as	9630af	11860af	
1700-1800	USA, KTBN Salt Lk City UT	15590am			
1700-1800	USA, KWHR Naalehu HI	6120as			
1700-1800	USA, Monitor Radio Intl	9355af	21640af		
1700-1800	USA, VOA Washington DC	6040va	6110as	7215as	9760va
		11920af	11945va	12005va	12040af
		13710af	15205va	15255as	15410af
		15445af	17895af	19379me	
1700-1800 mtwhf	USA, VOA Washington DC	5990va	6045va	9525as	9670as
		9770as			
1700-1800	USA, WEWN Birmingham AL	11580na	13615na	15340sa	
1700-1800 fas	USA, WGTG McCaysville GA	9475am			
1700-1800	USA, WHRI Noblesville IN	13760am	15105ca		
1700-1800	USA, WJCR Upton KY	7490na	13595na		
1700-1800 smtwhf	USA, WMLK Bethel PA	9465eu			
1700-1800	USA, WRNO New Orleans LA	15420am			
1700-1800 a	USA, WVHA Greenbush ME	15745eu			
1700-1800	USA, WWCR Nashville TN	12160am	13845am	15685am	
1700-1800	USA, WYFR Okeechobee FL	15566eu	17760eu		
1700-1800	Zambia, R Christian Voice	4965af			
1715-1730	Albania, R Tirana Intl	7155eu	9740eu		
1715-1730	Vatican State, Vatican R	4005eu	6245eu	7250eu	11810af
1730-1800	Romania, R Romania Intl	9750af	11740af	11940af	
1730-1800	Russia, Voice of	9585eu			
1730-1745	Sweden, Radio	6065eu			
1730-1800	Vatican State, Vatican R	9660af	11625af	11635af	
1745-1800 mtwhf	Canada, RCI Montreal	5995eu	9555eu	11915eu	11935eu
		15325eu	17820eu		
1745-1800	India, All India Radio	7410eu	9650eu	9950af	11620af
		11935af	13750as	15075me	
1745-1800	Swaziland, Trans World R	3200af			
1800-1900	Algeria, R Algiers Intl	11715me	15160eu		
1800-1900	Australia, Radio	6060pa	6080pa	6090pa	9580pa
		9860pa	11660as	11695pa	11880pa
1800-1900	Brazil, Radiobras	15265eu			
1800-1900	Canada, CFCX Montreal	6005do			
1800-1900	Canada, CFRX Toronto	6070do			
1800-1900	Canada, CFVP Calgary	6030do			
1800-1900	Canada, CHNX Halifax	6130do			
1800-1900	Canada, CKZN St John's	6160do			
1800-1900	Canada, CKZU Vancouver	6160do			
1800-1900	Costa Rica,RF Peace Intl	6200am	9400am	15050am	
1800-1827	Czech Rep, Radio Prague	5835eu	9430eu		
1800-1900	Ecuador, HCJB Quito	15540eu			
1800-1830	Egypt, Radio Cairo	15255af			
1800-1900	Eqt Guinea, Radio Africa	15190af			
1800-1900	India, All India Radio	7410eu	9650eu	9950af	11620af
		11935me	13750as	15075as	
1800-1900 vl	Italy, IRRS Milan	3985va			
1800-1900	Kuwait, Radio	11990na			
1800-1900	Lebanon, Voice of Hope	6280va			
1800-1825	Netherlands, Radio	6020af	9605af	11655af	
1800-1849 mtwhf	New Zealand, R NZ Intl	5960pa			
1800-1900 vl	Palau, KHBN/Voice of Hope	9965as			
1800-1855	Poland, Polish R Warsaw	6095eu	7270eu	7285eu	
1800-1900	Russia, Voice of	7180eu	7205va	7255va	9490va
		9830va	13670af		
1800-1900	Sudan, Radio Omdurman	9000af	9025af		
1800-1830	Swaziland, Trans World R	9500af			
1800-1900	United Kingdom,BBC London	3255af	3955eu	6180eu	6190af
		6195eu	9410va	9740as	11860af
		11955au	12095va	15070va	15400va
		17830af	17840am		
1800-1830	United Kingdom,BBC London	7160me	7205as	11750as	
1800-1900	USA, KJES Mesquite NM	15385na			
1800-1900	USA, KTBN Salt Lk City UT	15590am			
1800-1900	USA, KWHR Naalehu HI	13625au			
1800-1900	USA, Monitor Radio Intl	9355va	9370eu	21640af	
1800-1900	USA, VOA Washington DC	6040va	9760va	11920af	12040af
		13710af	15410af	15580af	18275va
		19379va			
1800-1900 mtwhf	USA, VOA Washington DC	4875af			
1800-1900	USA, WEWN Birmingham AL	11580eu	13615na	13695na	
1800-1900 fas	USA, WGTG McCaysville GA	9475am			
1800-1900	USA, WHRI Noblesville IN	9495am	13760eu		
1800-1900	USA, WJCR Upton KY	7490na	13595na		
1800-1900	USA, WMLK Bethel PA	9465eu			
1800-1900	USA, WRNO New Orleans LA	15420am			
1800-1900 th	USA, WVHA Greenbush ME	15745af			
1800-1830 s	USA, WVHA Greenbush ME	9930eu			
1800-1900 mwf	USA, WVHA Greenbush ME	9930eu			
1800-1900	USA, WWCR Nashville TN	12160am	13845am	15685am	
1800-1900	USA, WYFR Okeechobee FL	15566eu	17760ca		
1800-1830	Vietnam, Voice of	7360na	9840eu	12030as	
1800-1900	Yemen, Yemeni Rep Radio	9780as			
1802-1500 s	Morocco, RTVM Marocaine	17815af			
1815-1900	Bangladesh, Radio	7185eu	9648as	15520as	
1830-1900	Netherlands, Radio	4945af	6015af	6020af	9605af
		9860af	9895af	11655af	15315af
		17605af			
1830-1857	S Africa, Trans World R	9525af			
1830-1855 irreg	Somalia, Radio Mogadishu	6710af			
1830-1900	South Korea, R Korea Intl	6480eu			
1830-1900	Sweden, Radio	6065eu	7240af	9655me	
1830-1900	United Kingdom,BBC London	6005af	9630af		
1833-1900	Cote D' Ivoire, RDTV	11920do			
1840-1850	Greece, Voice of	11645af	15150af		
1845-1900 irreg s	Mali, RDTV Malienne	4783do	4835do	5995do	
1850-1900	New Zealand, R NZ Intl	11735pa			

FREQUENCIES

1900-2000 mtwhf	Argentina, RAE	15345eu			
1900-2000	Australia, Radio	6060pa	6080pa	6150as	7240pa
		7260as	9560as	9580pa	9860pa
		11660pa	11695pa	11880pa	
1900-1930	Azerbaijan, Voice of	4957eu			
1900-1945	Bangladesh, Radio	7185eu	9648as	15520as	
1900-1930	Belgium, R Vlaanderen Int	5910eu	9925af		
1900-1920	Brazil, Radiobras	15265eu			
1900-2000	Canada, CFCX Montreal	6005do			
1900-2000	Canada, CFRX Toronto	6070do			
1900-2000	Canada, CFVP Calgary	6030do			
1900-2000	Canada, CHNX Halifax	6130do			
1900-2000	Canada, CKZN St John's	6160do			
1900-2000	Canada, CKZU Vancouver	6160do			
1900-2000	China, China Radio Intl	6955me	9440af		
1900-2000	Costa Rica, AWR Alajuela	13750am	15460am		
1900-2000	Costa Rica,RF Peace Intl	6200am	9400am	15050am	
1900-1930	Cote D' Ivoire, RDTV	11920do			
1900-2000	Ecuador, HCJB Quito	11960eu			
1900-2000	Eqt Guinea, Radio Africa	15190af			
1900-1950	Germany, Deutsche Welle	9670af	9765af	11785af	11810af
		11865af	13790as	15145af	15425af
1900-1910	Greece, Voice of	9375eu			
1900-2000	Guatemala, AWR	5980am			
1900-1945	India, All India Radio	7410eu	9650eu	9950me	11620eu
		11715af	15225as		
1900-2000 vl	Italy, IRRS Milan	3985va			
1900-2000	Japan, NHK/Radio	6150as	7140pa	9535na	9580as
		11850pa			
1900-2000 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
1900-2000	Kuwait, Radio	11990eu			
1900-2000	Lebanon, Wings of Hope	9960va			
1900-2000	Liberia, Radio ELBC	7275do			
1900-2000	Liberia, Radio ELWA	4760do			
1900-2000	Netherlands, Radio	4945af	6015af	6020af	9605af
		9860af	9895af	11655af	15315af
		17605af			
1900-2000	New Zealand, R NZ Intl	11735pa			
1900-2000	Nigeria, Voice of	7255af			
1900-1930 s	Norway, Radio Norway Intl	5960eu	6195eu	7485af	9590af
1900-2000	Romania, R Romania Intl	6105eu	7195eu	9510eu	
1900-2000	Russia, Voice of	5940eu	5995eu	6055eu	7180eu
		7205eu	7255va	7325va	9470va
		9490va	9585eu	9830eu	11895va
		13670af			
1900-2000	South Korea, R Korea Intl	5975eu	7275as		
1900-2000	Swaziland, Trans World R	3200af			
1900-2000	Thailand, Radio	9655eu	11805eu		
1900-2000	United Kingdom,BBC London	3255af	3955eu	5975va	6005af
		6180eu	6190af	6195va	7325af
		9410va	9630af	9740as	11780eu
		12095eu	15070eu	15400af	17830af
1900-1915	United Kingdom,BBC London	15105af	17880af		
1900-2000	USA, KTBN Salt Lk City UT	15590am			
1900-2000	USA, KWHR Naalehu HI	13625au			
1900-2000	USA, Monitor Radio Intl	9355eu	9370eu	17510af	
1900-2000	USA, VOA Washington DC	7415af	9525va	9760va	11870va
		11920af	12040af	13710af	15180va
		15410af	15580af	19379va	
1900-2000	USA, WEWN Birmingham AL	11580na	13615na	13695af	
1900-2000 fas	USA, WGTG McCaysville GA	9475am			
1900-2000	USA, WHRI Noblesville IN	9495am	13760eu		
1900-2000	USA, WJCR Upton KY	7490na	13595na		
1900-2000	USA, WMLK Bethel PA	9465eu			
1900-2000	USA, WRNO New Orleans LA	15420am			
1900-2000 ths	USA, WVHA Greenbush ME	15745af			
1900-2000 mwf	USA, WVHA Greenbush ME	9930eu			
1900-2000	USA, WWCR Nashville TN	12160am	13845am	15685am	
1900-2000	USA, WYFR Okeechobee FL	17760eu			
1900-1930	Vietnam, Voice of	7360na	9840eu	12030as	
1900-2000	Zambia, R Christian Voice	4965af			
1900-2000	Zimbabwe, ZBC/Radio 4	3306do	3396do	4828do	
1930-2000	Albania, R Tirana Intl	7270eu	9740eu		
1930-2000	Austria, R Austria Intl	5945eu	6155eu	9655me	13730af
1930-2000 irreg t	Belarus, Radiosta Belarus	5940eu	7105eu	7205eu	7210eu
1930-2000	Iran, VOIRI Tehran	7260af	9022eu		
1930-2000	Mongolia, R Ulan Bator	4080as	7530as		
1930-2000	Slovakia, R Slovakia Intl	5915eu	6055eu	7345eu	
1930-2000	Turkey, Voice of	9445eu			
1930-2000	Yugoslavia, Radio	6100eu	9720eu		
1935-1955	Italy, RAI Rome	6030eu	7235eu		
1945-2000	Togo, Radio	5047do			

2000-2100	Algeria, R Algiers Intl	11715me	15160eu		
2000-2100	Angola, Radio Nacional	3355do	9535do		
2000-2100	Australia, Radio	6060pa	6080pa	6150pa	7260as
		9580pa	9860pa	11660pa	11695pa
		11855as	11880pa		
2000-2100	Bulgaria, Radio	7335eu	9700eu		
2000-2100	Canada, CFCX Montreal	6005do			
2000-2100	Canada, CFRX Toronto	6070do			
2000-2100	Canada, CFVP Calgary	6030do			
2000-2100	Canada, CHNX Halifax	6130do			
2000-2100	Canada, CKZN St John's	6160do			
2000-2100	Canada, CKZU Vancouver	6160do			
2000-2100	China, China Radio Intl	6950eu	9440af	9920eu	11715af
		15110af			
2000-2100	Costa Rica,RF Peace Intl	6200am	9400am	15050am	
2000-2100	Ecuador, HCJB Quito	11960eu			
2000-2100	Eqt Guinea, Radio Africa	15190af			
2000-2050	Germany, Deutsche Welle	5960eu	7285eu		
2000-2030	Ghana, Ghana Broadc Corp	3366do	4915do		
2000-2100	Guatemala, AWR	5980am			
2000-2030	Hungary, Radio Budapest	3975eu	5970eu	7250eu	9835eu
2000-2100	Indonesia, Voice of	9525as			
2000-2030	Iran, VOIRI Tehran	7260af	9022eu		
2000-2030	Israel, Kol Israel	7415na	9435eu	9845ca	13750sa
2000-2100 vl	Italy, IRRS Milan	3985va			
2000-2100 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
2000-2100	Kuwait, Radio	11990eu			
2000-2030 as	Latvia, Radio	5935eu			
2000-2100	Lebanon, Wings of Hope	9960va			
2000-2100	Liberia, Radio ELBC	7275do			
2000-2100	Liberia, Radio ELWA	4760do			
2000-2025	Netherlands, Radio	4945af	6020af	9605af	9860af
		9895af	11655af	15315af	17605af
2000-2100	New Zealand, R NZ Intl	11735pa			
2000-2005	Nigeria, FRCN/Radio	3326do	4990do		
2000-2100	Nigeria, Voice of	7255af			
2000-2050	North Korea, R Pyongyang	6575eu	9345as	9640af	9975as
2000-2100 vl	Papua New Guinea, NBC	9675do			
2000-2100	Russia, Voice of	5940eu	5995eu	6055eu	7180eu
		7205eu	9470va	9490va	9585af
		13670af			
2000-2030	South Korea, R Korea Intl	3970eu			
2000-2015	Swaziland, Trans World R	3200af			
2000-2030	Switzerland, Swiss R Intl	6165eu	9770af	9885af	11640af
2000-2030	Turkey, Voice of	9445eu			
2000-2015	Uganda, Radio	4976do			
2000-2100	United Kingdom,BBC London	3255af	3955eu	6005af	6180eu
		6195va	9630af	9740as	11750sa
		11780eu	11835va	11955va	15400af
		17830af			
2000-2100	USA, KAIJ Dallas TX	13815am			
2000-2100	USA, KTBN Salt Lk City UT	15590am			
2000-2100	USA, KWHR Naalehu HI	11980as			
2000-2100	USA, Monitor Radio Intl	7510eu	9355eu		
2000-2100	USA, VOA Washington DC	7415af	9760va	9770va	11855af
		13710af	15205va	15410af	15580af
		17725af	17755af	19379va	
2000-2100	USA, WEWN Birmingham AL	7425na	13615na	13615na	
2000-2100 fas	USA, WGTG McCaysville GA	9475am			
2000-2100	USA, WHRI Noblesville IN	9495am	13760eu		
2000-2100	USA, WJCR Upton KY	7490na	13595na		
2000-2100	USA, WMLK Bethel PA	9465eu			
2000-2100	USA, WRNO New Orleans LA	15420am			
2000-2100 ths	USA, WVHA Greenbush ME	15745af			
2000-2100 mwfa	USA, WVHA Greenbush ME	9930eu			
2000-2100	USA, WWCR Nashville TN	12160am	13845am	15685am	
2000-2100	USA, WYFR Okeechobee FL	7355eu	15566eu	21525af	
2000-2030	Vatican State, Vatican R	7365af	9645af		
2000-2030	Zambia, R Christian Voice	4965af			
2000-2100	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
2005-2100	Syria, Radio Damascus	15095na			
2015-2045 s	Swaziland, Trans World R	3200af			
2025-2045	Italy, RAI Rome	5990af	7110af	9710af	
2030-2100	Egypt, Radio Cairo	15375af			
2030-2100	Lithuania, Radio Vilnius	9675eu	9710eu		
2030-2100	Poland, Polish R Warsaw	6035eu	6095eu	7285eu	
2030-2045	Thailand, Radio	9655eu	11805eu		
2030-2100	Vietnam, Voice of	7360as	9840eu	12020eu	
2045-2100	India, All India Radio	7410eu	9910au	9950eu	11620eu
		11715pa	15225pa		
2050-2100	Vatican State, Vatican R	4055eu	5880eu	7250eu	

FREQUENCIES

2100-2200	Australia, Radio	6060pa	6080pa	7240pa	7260as
	9580pa 9660pa	11660pa	11855as	11880pa	11955pa
2100-2110	Bahrain, Radio	6010do			
2100-2200 vl	Canada, CBC N Quebec Svc	9625do			
2100-2200	Canada, CFCX Montreal	6005do			
2100-2200	Canada, CFRX Toronto	6070do			
2100-2200	Canada, CFVP Calgary	6030do			
2100-2200	Canada, CHNX Halifax	6130do			
2100-2200	Canada, CKZN St John's	6160do			
2100-2200	Canada, CKZU Vancouver	6160do			
2100-2200	Canada, RCI Montreal	5925eu	5995eu	7260eu	9755eu
		9805eu	11945eu	13650eu	13690eu
		15150eu	17820eu		
2100-2200	China, China Radio Intl	5220eu	6950eu	9920eu	
2100-2130	China, China Radio Intl	11715af	15110af		
2100-2200	Costa Rica,RF Peace Intl	6200am	9400am	15050am	
2100-2200	Cuba, Radio Havana Cuba	9550eu			
2100-2127	Czech Rep, Radio Prague	5930na	7345na		
2100-2200	Ecuador, HCJB Quito	11960eu			
2100-2200	Egypt, Radio Cairo	15375af			
2100-2200	Eqt Guinea, Radio Africa	15190af			
2100-2150	Germany, Deutsche Welle	6185as	7225af	9670as	9690af
		9765as	11785as	11810af	11905af
		15270af			
2100-2200	Guatemala, AWR	5980am			
2100-2200	India, All India Radio	7410eu	9910eu	9950eu	11620au
		11715au	15225au		
2100-2200 vl	Italy, IRRS Milan	3980va			
2100-2200	Japan, NHK/Radio	6035as	7125as	7140as	11850pa
		11865eu			
2100-2115	Japan, NHK/Radio	7190as	7280as		
2100-2105 vl	Kenya, Kenya Broadc Corp	4885do	4935do	6150do	
2100-2200	Lebanon, Voice of Hope	6280va			
2100-2200	Lebanon, Wings of Hope	9960va			
2100-2200 mtwhfa	Liberia, Radio ELWA	4760do			
2100-2200	New Zealand, R NZ Intl	11735pa			
2100-2200	Nigeria, FRCN/Radio	3326do	4990do		
2100-2200 vl	Papua New Guinea, NBC	9675do			
2100-2125	Poland, Polish R Warsaw	6035eu	6095eu	7285eu	
2100-2130 mtwhf	Portugal, R Portugal Intl	6130eu	9780eu	9815eu	15515af
2100-2200	Romania, R Romania Intl	5955eu	5990eu	7105eu	7195eu
		9510eu			
2100-2200	Russia, Voice of	5940eu	5995eu	6055eu	7180eu
		7205eu	9890eu		
2100-2200	Slovakia, AWR	9465af			
2100-2200	South Korea, R Korea Intl	6480eu	15575eu		
2100-2200	Spain, R Exterior Espana	6125eu			
2100-2200	Turkey, Voice of	9445eu			
2100-2110	Uganda, Radio	4976do			
2100-2200	United Kingdom,BBC London	3255af	3915as	3955eu	5975am
	6005af 6120as	6180eu	6190as	6195va	7325va
	9410va 9740as	11750sa	11780eu	11835va	11955va
2100-2130	United Kingdom,BBC London	9630af			
2100-2200	USA, KAIJ Dallas TX	13815am			
2100-2200	USA, KTBN Salt Lk City UT	15590am			
2100-2200 s	USA, KVOH Los Angeles CA	17775am			
2100-2200	USA, Monitor Radio Intl	7510na	9355na		
2100-2200	USA, VOA Washington DC	6070va	7415af	9595va	9760va
	11870va 13710af	15185va	15205va	15375sa	15410af
	15580af 17725af	18275va	19379va		
2100-2200	USA, WEWN Birmingham AL	5825am	7425na	13615na	15375sa
2100-2200	USA, WHRI Noblesville IN	9495am	13760am		
2100-2200	USA, WJCR Upton KY	7490na	13595na		
2100-2200	USA, WMLK Bethel PA	9465eu			
2100-2200	USA, WRNO New Orleans LA	15420am			
2100-2200 ths	USA, WVHA Greenbush ME	15745af			
2100-2200 mwfa	USA, WVHA Greenbush ME	5850eu			
2100-2200	USA, WWCR Nashville TN	9475am	12160am	13845am	
2100-2200	USA, WYFR Okeechobee FL	7355eu	11580af	15566af	
2100-2200	Zimbabwe, ZBC/Radio 3	3306do	3396do	4828do	
2105-2200	Syria, Radio Damascus	12085na	15095na		
2115-2200	Egypt, Radio Cairo	9900eu			
2115-2130 mtwhf	United Kingdom,BBC London	15390ca	17715ca		
2120-2130 mh	Estonia, Estonian Radio	5925eu			
2130-2200	Armenia, Voice of	7480na	9965na		
2130-2200	Australia, Radio	9610as	9645as	15365pa	17775pa
		17860pa			
2130-2200	Iran, VOIRI Tehran	6175au			
2130-2135 mtwhf	Latvia, Radio	5935eu			
2130-2200	Liberia, Radio ELWA	4760do			
2130-2200 mwh	Moldova, R Dniester Intl	6205na			
2130-2200	Russia, Voice of	7170eu	7400eu		
2130-2200	Sweden, Radio	6065eu	7230af		
2130-2200	USA, WRMI/R Miami Intl	9955am			
2145-2200 s	Greece, Voice of	9425au			
2145-2200	United Kingdom,BBC London	5990as	7160as	9580as	

2200-2300	Australia, Radio	9580pa	9610as	9645as	9660pa
		11660pa	11695pa	11855as	11880pa
		11955pa	13755as	15365pa	17795pa
		17860pa			
2200-2230	Belgium, R Vlaanderen Int	5910eu	7250eu		
2200-2300	Bulgaria, Radio	7105eu	9700eu		
2200-2300	Canada, CBC N Quebec Svc	9625do			
2200-2300	Canada, CFCX Montreal	6005do			
2200-2300	Canada, CFRX Toronto	6070do			
2200-2300	Canada, CFVP Calgary	6030do			
2200-2300	Canada, CHNX Halifax	6130do			
2200-2300	Canada, CKZN St John's	6160do			
2200-2300	Canada, CKZU Vancouver	6160do			
2200-2230	Canada, RCI Montreal	5960am	5995eu	7260eu	9755am
		9805eu	11705as	11945eu	13690eu
2200-2230	China, China Radio Intl	3985eu			
2200-2300	China, China Radio Intl	7170eu			
2200-2300	Costa Rica,RF Peace Intl	7385am	9400am	15050am	
2200-2300	Cuba, Radio Havana Cuba	9505na			
2200-2245	Egypt, Radio Cairo	9900eu			
2200-2300	Eqt Guinea, Radio Africa	15190af			
2200-2215	Ghana, Ghana Broadc Corp	4915do			
2200-2300	Guatemala, AWR	5980am			
2200-2230	Hungary, Radio Budapest	3975eu	5935eu	7250eu	9835eu
2200-2230	India, All India Radio	7410eu	9910eu	9950eu	11620au
		11715au	15225au		
2200-2230	Iran, VOIRI Tehran	6175au			
2200-2300 vl	Italy, IRRS Milan	3980va			
2200-2225	Italy, RAI Rome	5990as	9710as	11815as	
2200-2300	Lebanon, Voice of Hope	6280va			
2200-2300	Lebanon, Wings of Hope	9960va			
2200-2300	Malaysia, Radio	7295do			
2200-2225 mtwhf	Moldova, R Moldova Intl	7500eu			
2200-2205	New Zealand, R NZ Intl	11735pa			
2200-2215	Nigeria, FRCN/Radio	3326do	4990do		
2200-2230 s	Norway, Radio Norway Intl	6170as	6200na		
2200-2300 vl	Papua New Guinea, NBC	9675do			
2200-2300	Russia, Voice of	5940eu	6055eu	7140eu	7180eu
		7205eu	7360eu	7400eu	9890eu
2200-2215	Sierra Leone, SLBS	3316do			
2200-2300	Slovakia, AWR	9440eu			
2200-2230	South Korea, R Korea Intl	5965eu			
2200-2300	Spain, R Exterior Espana	11775af			
2200-2205	Syria, Radio Damascus	12085na	15095na		
2200-2300	Taiwan, VO Free China	5810eu	9985eu		
2200-2300	UAE, Radio Abu Dhabi	9605na	9695na	9770na	
2200-2300	Ukraine, R Ukraine Intl	4795eu	4820eu	5905eu	5940eu
		6010eu	6020eu	6055eu	6080eu
		6130eu	7135eu	7205eu	7240eu
		9620eu			
2200-2300	United Kingdom,BBC London	3955eu	5975am	6175na	6195va
		7110as	9410va	9590na	9915sa
		11750sa	11835va	11955va	11965pa
2200-2230	United Kingdom,BBC London	11780eu			
2200-2300	USA, KAIJ Dallas TX	13815am			
2200-2300	USA, KTBN Salt Lk City UT	15590am			
2200-2300	USA, Monitor Radio Intl	7510eu	9430as	13770sa	
2200-2300	USA, VOA Washington DC	7215va	9770va	9890af	11760va
		15185va	15290va	15305va	17735va
		17820va	18275va		
2200-2230 mtwhf	USA, VOA Washington DC	7415af	12080af	13710af	
2200-2300	USA, WEWN Birmingham AL	5825am	7425na	13615na	15375sa
2200-2300	USA, WHRI Noblesville IN	9495am			
2200-2300	USA, WJCR Upton KY	7490na	13595na		
2200-2300 s	USA, WRMI/R Miami Intl	9955am			
2200-2300	USA, WRNO New Orleans LA	15420am			
2200-2300 w	USA, WVHA Greenbush ME	9852eu			
2200-2300 s	USA, WVHA Greenbush ME	15745af			
2200-2300	USA, WWCR Nashville TN	12160am	13845am		
2200-2245	USA, WYFR Okeechobee FL	9985eu	11580eu	15566af	
2200-2230	Yugoslavia, Radio	6100eu	6185eu		
2206-2300	New Zealand, R NZ Intl	15115pa			
2230-2300	Austria, R Austria Intl	5945eu	6155eu	9870ca	
2230-2257	Czech Rep, Radio Prague	5930na	7345na		
2230-2300	Lithuania, Radio Vilnius	9675eu	9710eu		
2230-2300	Russia, Voice of	7105eu			
2230-2300	Sweden, Radio	6065eu			
2240-2250	Greece, Voice of	9425au			
2245-2300	Ghana, Ghana Broadc Corp	3366do	4915do		
2245-2300	India, All India Radio	9705as	9950as	11620as	13700as
		15145as			
2245-2300	Vatican State, Vatican R	6065as	9600au	11830au	

Frequencies

2300-0000	Australia, Radio	9610as	9660pa	11645as	11660pa
		11695as	11855as	13755as	15365pa
		17795pa	17860pa		
2300-0000	Canada, CBC N Quebec Svc	9625do			
2300-0000	Canada, CFCX Montreal	6005do			
2300-0000	Canada, CFRX Toronto	6070do			
2300-0000	Canada, CFVP Calgary	6030do			
2300-0000	Canada, CHNX Halifax	6130do			
2300-0000	Canada, CKZN St John's	6160do			
2300-0000	Canada, CKZU Vancouver	6160do			
2300-0000	Canada, RCI Montreal	5960am	6040am	9535am	9755am
		11940am			
2300-0000	Costa Rica, AWR Alajuela	5030am	6150am	7375am	9725am
		13750am	15460am		
2300-0000	Costa Rica,RF Peace Intl	7385am	9400am	15050am	
2300-2305	Croatia, Croatian Radio	5895eu	7370eu	11635eu	13830eu
2300-0000	Egypt, Radio Cairo	9900na			
2300-2350	Germany, Deutsche Welle	6000as	6160as	7250as	
2300-0000	Guam, AWR/KSDA	11980as			
2300-0000	Guatemala, AWR	5980am			
2300-0000	India, All India Radio	9705as	9950as	11620as	13700as
		15145as			
2300-0000	Japan, NHK/Radio	6055eu	6155eu	7125as	7140as
		11850pa			
2300-0000	Lebanon, Voice of Hope	6280va			
2300-0000	Lebanon, Wings of Hope	9960va			
2300-0000	Malaysia, Radio	7295do			
2300-2325 mtwhf	Moldova, R Moldova Intl	7500eu			
2300-0000	New Zealand, R NZ Intl	15115pa			
2300-2315	Nigeria, FRCN/Radio	3326do	4990do		
2300-2350	North Korea, R Pyongyang	11700na	13650na		
2300-0000	Papua New Guinea, NBC	9675do			
2300-0000	Russia, Voice of	5940na	7105na	7125na	7170na
		7180na	7205na	7330na	9550na
2300-0000	Turkey, Voice of	7280eu	9560as	9655na	
2300-0000	UAE, Radio Abu Dhabi	9605na	9695na	9770na	
2300-0000	United Kingdom,BBC London	5975am	6175na	6195va	7110as
		7180as	7250as	7325va	9580as
		9590na	11750sa	11945as	11955va
2300-2330	United Kingdom,BBC London	9915sa			
2300-2315	United Kingdom,BBC London	9410af	11835va		
2300-0000	USA, KAIJ Dallas TX	13815am			
2300-0000	USA, KTBN Salt Lk City UT	15590am			
2300-0000	USA, KWHR Naalehu HI	17510as			
2300-0000	USA, Monitor Radio Intl	7510eu	9430as	13625pa	13770sa
2300-0000	USA, VOA Washington DC	7215va	9705va	9770va	9890af
		11760va	15185va	15290va	15305va
		17735va	17820va	18275va	
2300-0000	USA, WEWN Birmingham AL	5825eu	7425na	13615na	
2300-0000	USA, WHRI Noblesville IN	5745am			
2300-0000	USA, WJCR Upton KY	7490na	13595na		
2300-0000	USA, WRNO New Orleans LA	7355am			
2300-0000 w	USA, WVHA Greenbush ME	9852eu			
2300-0000	USA, WWCR Nashville TN	5065am	9475am	13845am	
2330-0000	Australia, Radio	9645as	9850as	13605as	15240pa
2330-0000	Netherlands, Radio	6020na	6165na		
2330-0000	Palau, KHBN/Voice of Hope	15140as			
2335-2345	Greece, Voice of	7450sa	9935sa	11640sa	

Selected Programs

Sundays

2300 USA, KTBN: Get Ready. Bishop Jakes preaches from Crenshaw Christian Center in Los Angeles.
2310 Japan, NHK/Radio: Let's Learn Japanese. See S 0310.
2310 USA, VOA (as): VOA Today. Up-to-the-minute news summaries, hourly business and sports updates, interviews on world news events, plus features on topics from movies to medicine.
2325 Japan, NHK/Radio: Media Roundup. See S 0525.
2350 Japan, NHK/Radio: Viewpoint. See S 0550.
2355 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Mondays

2300 USA, KTBN: Praise the Lord. See M 0300.
2310 USA, VOA (as): VOA Today. See S 2310.
2315 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
2325 Japan, NHK/Radio: Profile. See M 1525.
2355 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Tuesdays

2300 USA, KTBN: Praise the Lord. See M 0300.
2310 USA, VOA (as): VOA Today. See S 2310.
2315 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
2325 Japan, NHK/Radio: Enjoy Japanese. See T 1525.
2355 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Wednesdays

2300 USA, KTBN: Praise the Lord. See M 0300.
2310 USA, VOA (as): VOA Today. See S 2310.
2315 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
2325 Japan, NHK/Radio: History and Classics. See W 1525.
2355 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Thursdays

2300 USA, KTBN: Praise the Lord. See M 0300.
2310 USA, VOA (as): VOA Today. See S 2310.
2315 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
2325 Japan, NHK/Radio: Enjoy Japanese. See T 1525.
2355 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Fridays

2300 USA, KTBN: Praise the Lord. See M 0300.
2310 USA, VOA (as): VOA Saturday. See S 0010.
2315 Japan, NHK/Radio: Today's Top News Asia. See M 1515.
2325 Japan, NHK/Radio: Music and Book Beat. See F 1525.
2355 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Saturdays

2300 USA, KTBN: PowerPoint. Jack Graham provides the message.
2310 Japan, NHK/Radio: Asia Weekly. See S 0110.
2310 USA, VOA (as): VOA Sunday. See S 0010.
2311 Japan, NHK/Radio: Asian News Summary. See S 0111.
2321 Japan, NHK/Radio: Business Report. See S 0121.
2325 Japan, NHK/Radio: Entertaining in Asia. See S 0125.
2330 USA, KTBN: Unto the Gentiles. Zola Levitt presents.
2346 Japan, NHK/Radio: Asia Kaleidoscope. See S 0146.
2354 Radio Netherlands: Documentary. The Wannabees of New York (9th). See W 1154.
2354 Radio Netherlands: Documentary. You Say Either and I Say Either (16th). Ann Blair Gould and Robert Chesal take a light-hearted look at the on-going battle between American English and British English.
2355 Japan, NHK/Radio: Tokyo Pop-In. See S 0155.

Hauser's Highlights
KUWAIT: R. Kuwait

English at 1800-2100 on 11990
1802 Sat *Aftermath*
1802 Sun *Kuwait the Home and the Land*
1802 Tue *History of Journalism in Kuwait*
1802 Wed, 2000 Fri-Tue *Human Civilization*
1802 Fri *Our Best Friend*
1815 Wed, 2030 Fri-Tue *Scientifically Unattainable Marvels of the Quran*
1930 Wed *Bits & Bytes*
1800-2100 Thu Relay of FM Super Station 99.7 (listener call-ins, dedications)
(R. Kuwait, as of December)

Illinois Scanner Newsletter

Alex Blaha has started a newsletter devoted to scanning in Illinois with the purpose of building a network of hobbyists. He hopes this will fill in the areas of the state that get neglected in nationwide publications. To subscribe and/or contribute frequencies for your area, send $12 for twelve monthly issues to Alex Blaha, Scanning Illinois, 2054 Hawthorne, Joliet, IL 60435. A sample copy is available for $2 plus SASE.

Ontario DX Association: Harold Sellers, General Mgr., P.O. Box 161, Station A, Willowdale, Ontario M2N 5S8, Canada: Internet 73737.3453@compuserve.com; (905) 853-3169 voice & fax, (416) 444-3526 DX-Change information svce; (905) 841-6490 BBS. Predominantly Province of Ontario; All bands. *DX Ontario.* Meet 3rd Wednesdays, Toronto

Pacific NW/BC DX Club: Bruce Portzer, 6546 19th Ave NE, Seattle, WA 98115. Pacific NW and BC Canada. DXing all bands. $9 US, $10 Canada. *PNBCDXC Newsletter.* Irregular meetings.

Pitt Co SW/Scanner Listeners Club: L. Neal Sumrell, P.O. Box 1818, Winterville, NC 28590-1818. Eastern NC; All bands. *The DX Listener.* Irregular meetings.

Puna DX Club: Jerry Witham, P.O. Box 596, Keaau, HI 96749, (808) 982-9444; Puna, HI; SW and MW. Meet 1st Tuesdays. No dues.

Listeners' Nets

You are invited to post your North American amateur radio net in this bi-monthly listing if its primary emphasis is devoted to the radio monitoring hobby (not amateur radio)

Capitol Hill Monitors
146.91 MHz 1st & 3rd Mon 7:30pm ET, DC, Md, N.Va, S.Del; Scanning and amateur radio
Frequency Forum BBS 703-207-9622 [8-N-1]
Net Mgr: N3RDC, John Korman
Call Alan Henney 301-270-2531 or John Korman 301-299-5455 for info
Newsletter $8; 6912 Prince George's Ave, Takoma Park, MD 20912-5414

Central Florida Listeners Group
146.730 MHz, Sun 8pm ET, Central Florida; any radio communications outside amateur bands
Net Mgr: Andy Fountain, KD4OKJ
Telephone gateways announced; CFLG BBS conference on LASER BBS 407-647-0031
Call Andy Fountain, KD4OKJ, (407)898-6784 for info

Larkfield's ARC SW-Scanner Net
147.210 MHz, Fri 9pm ET, Long Island, NYC, NJ, Conn; Shortwave BCers & utes, MW, amateur radio, scanning
Net Mgr: Hank Lukas, N2GCN
Open to all amateurs on air; by letter for scanner listeners
Contact: P.O.Box 115, Plainview, NY 11803-0115

Listening Post
147.03, 224.96, 447.725 (W3DID/R), Sun 8pm, Baltimore and metro area; non-amateur transmissions DC to Daylight except ECPA-related items or tacticals
Net Mgr: Mike Agner KA3JJZ
Open to all amateurs on air; by maildrop at: 6710-F Ritchie Hwy #236, Glen Burnie, MD 21060.
Packet: KA3JJZ @ WB3FFV.md.ena.usa

Montreal DX Listeners Net
146.910 MHz, Sun 8:15 pm ET, Montreal PQ area; MW SW, & Scanner
Net Mgr: Sheldon Harvey VE2SHW
Telephone gateways announced

Monitoring the Long Island Sounds Net
146.805 Tues 8pm ET, Long Island, NY; Primarily scanning
Net Mgr: WB2RVA, 2134 Decker Ave, North Merrick, NY 11566

Monix SW and Scanner Listeners Info Net
146.835 MHz, Thurs. 9:30 pm ET; Cincinnati/Tri-State Area; All band
Net Mgr: Mark Meece, N8ICW, (513) 777-2909 (no collect calls)
Open to all amateurs; Telephone gateways to net mgr up to 1/2 hr before net; The Listening Post BBS (513) 474-3719

New York DX Association
145.190 (PL 141.3) Wed 8pm ET, Montclair, NJ/NYC area; "DC to Light"
Net Mgr: Charles Hargrove N2NOV, 723 Port Richmond Avenue, Staten Island, NY 10302-1736. Meet World Financial Center last Sundays @ 4pm
Gateways: telephone (212) 978-3375 up to 1/2 before net. email: n2nov@planet.earthcom.net. TCP/IP: n2nov@n2nov.ampr.org. BBS/packet 145.630 MHz or 718-876-7928 24hrs. Hams use callsign as username, others use 1st initial and lastname.

Northeast SW Listeners and Scanners Net; Rip Van Winkle Society
147.21 MHz (WB2UEB) Wed 8pm, Albany, NY, area.
Net Mgr: Ray Loeper N2RAD

Ontario DX Association - Listeners Net
442.375+ (VA3ODX; 103.4Hz CTCSS tone), Sun 8:30pm ET; Toronto area coverage; LW, MW, SW, FM, VHF/UHF topics discussed
Net Mgr: Stephen Canney, VA3ID
Open to all; repeater used daily by ODXA members

Rocky Mountain Monitoring Net
147.225, 224.980 Denver; 145.460 Boulder; 145.160 Colorado Springs Sun 20:00; communications monitoring
Brian Gould, KB0MEP, Mt. News Net

Shortwave Listeners Net, Association of North American Radio Clubs
7.240 MHz LSB, Sun 10am ET, Eastern US (may move to 3940+/- after the 7.240 net closes); Shortwave broadcasts and utilities
Net Mgr: W2XQ, WB4JSP, W1EXZ. 238 Cricklewood Circle, Lansdale, PA 19446
Telephone gateways announced

Southern Wisconsin SW Listeners Net; MARA
147.150 MHz, alt 146.760 MHz. Madison, WI, area
First Sun 8pm CT. Shortwave, scanning, dc to daylight, equipment notes and comments.
Net Mgrs: N9LTD, KA9SRU, N9EWO
Contact: N9EWO, Dave Zantow, 1609 Ontario Drive, Janesville, WI 53545

Radio Monitors of Maryland: Ron Bruckman, P.O. Box 394, Hampstead, MD 21074. Maryland, (410) 239-7366; VHF/UHF/HF utilities. *Radio Monitors Newsletter of MD.* Meet irregularly.

RCMA (Radio Communications Monitoring Assn.): Carol Ruth, Gen'l Mgr., P.O. Box 542, Silverado, CA 92676. North America, Europe, Australia; All modes above 30 MHz. *Scanning Journal.*

Regional Communications Network (RCN): Jay Delgado or Public Information Unit, Box 83-M, Carlstadt, NJ 07072-0083. 50 mile radius of NY City; 2-way Radio Public safety notification group.#10 SASE for info.

Rocky Mountain Radio Listeners: Mike Curta, P.O. Box 470776, Aurora, CO 80047-0776. Metro Denver, Colorado. All bands. Meets monthly 2nd or 3rd Sundays 1-4pm, Aurora Central Library.

Sandy River SW Radio DXers Assoc: Duncan or Brenda Steele, R.R. 1, P.O. Box 1560, Norridgewock, ME 04957. Worldwide. *The QSL* - irregular. No dues.

Scanning Wisconsin: Ken Bitter, Dept. MT, S. 67 W. 17912 Pearl Dr., Muskego, WI 53150-9608, (414) 679-9442. Wisconsin. VHF/UHF. *Scanning Wisconsin* ($2 for sample)

Signal Surfer DX Club: Darcy Jabs, RR2, Burns Lake, BC, Canada, V0J 1E0; (604) 694-3760. Canada and worldwide. MW and SW DXing.

Southern California Area DXers (S.C.A.D.S.): Don R. Schmidt, 3809 Rose Ave., Long Beach, CA 90807-4334, (310) 424-4634. California area; AM, FM, TV, scanner and shortwave broadcasting.

Susquehanna Co Scanner Club: Alan D. Grick, P.O. Box 23, Prospect St., Montrose, PA 18801-0023. PA area; Scanning. Meets irregularly.

Toledo Area Radio Enthusiasts: Ernie Dellinger, N8PFA, 6629 Sue Lane, Maumee, OH 43537. NW Ohio and SE Michigan; Shortwave, scanning, amateur. Meets 3rd Thursdays 7pm Holland Big Boy.

Triangle Area Scanner/SW Listening Group: Curt Phillips, KD4YU, P.O. Box 28587, Raleigh, NC 27611. Central NC.

Vancouver Shortwave Association Box 500, 2245 Eton St., Vancouver, BC Canada V5L 1C9, (604) 255-8987 fax. Shortwave. *LOGJAM.* Meets 3rd Thurs. 7pm at 920 Davie St.

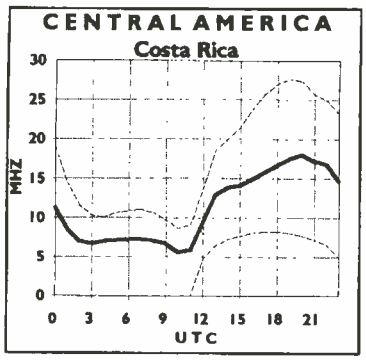
World DX Club: Arthur Ward, 17 Motspur Drive, Northampton, England NN2 6LY (in USA-Richard D'Angelo, 2216 Burkey Drive, Wyomissing, PA 19610). Worldwide.
All bands with emphasis on SW. *Contact.* $20 overseas airmail. Meets every 6 weeks in Reading, UK.

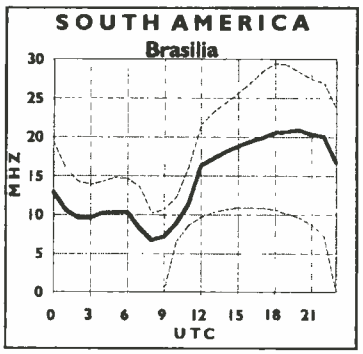
Worldwide TV/FM DXers Association (WTFDA): P.O. Box 514, Buffalo, NY 14205-0514. Worldwide membership; TV DX, FM BC, VHF utilities. *VHF-UHF Digest.* Annual convention. $24 annual in U.S. $2 for sample.

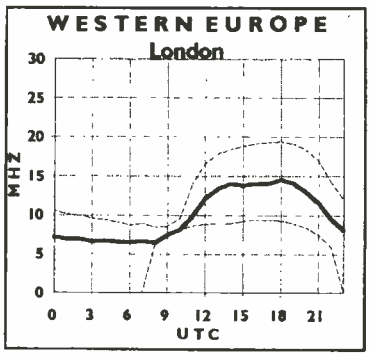
Worldwide Ute News: Rick Baker, ae411@yfn.ysu.edu for info - worldwide membership; non-broadcast under 30 MHz. Free electronic newsletter WUNNEWS, join by sending e-mail to majordomo@grove.net with following in e-mail message: "subscribe wun." Through World Wide Web: http://www.leonardo.net/berri/wun. For paper version: $18/yr to Tim Braun, PO Box 16533, Washington, D.C. 20041-6533. Sample $1.50.

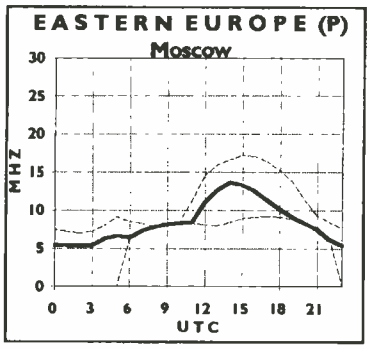
Propagation Conditions: Eastern United States

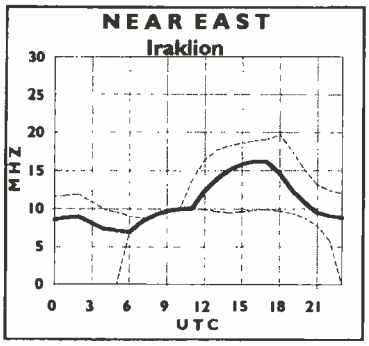
How to use the propagation charts: Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location. Then look for the one most closely describing the geographic location of the station you want to hear. The Sun Spot Number used this month for forecasting purposes is 3.

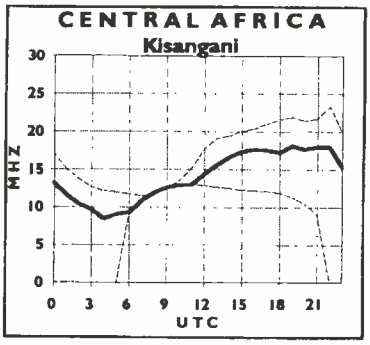


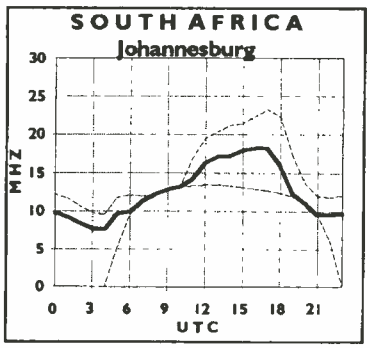


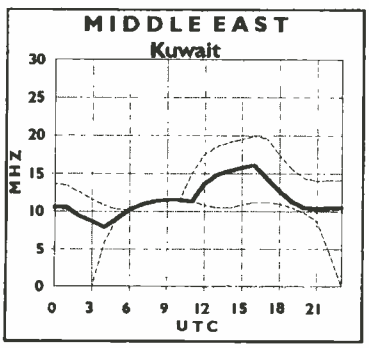


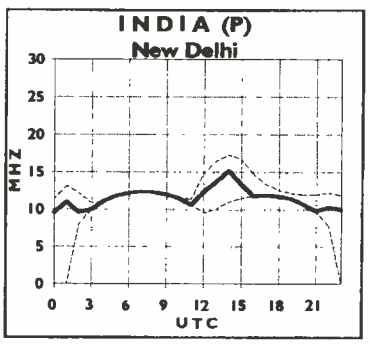


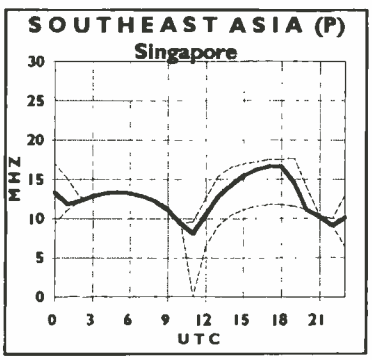


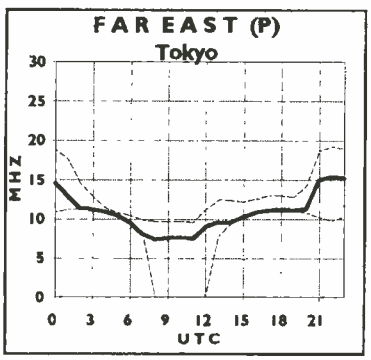


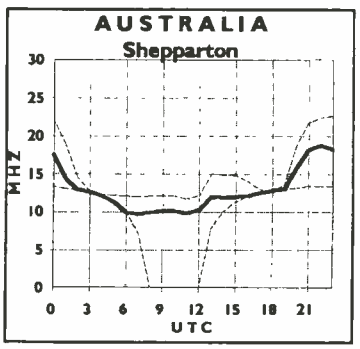






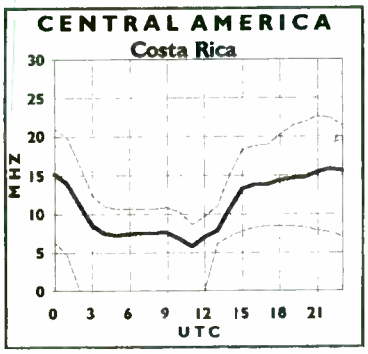


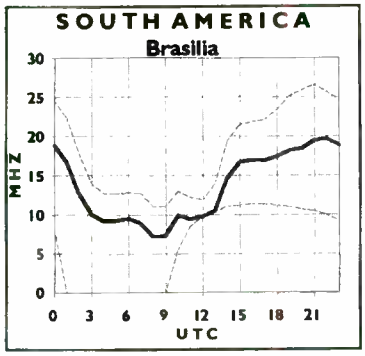


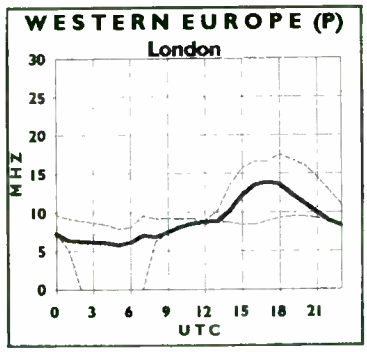


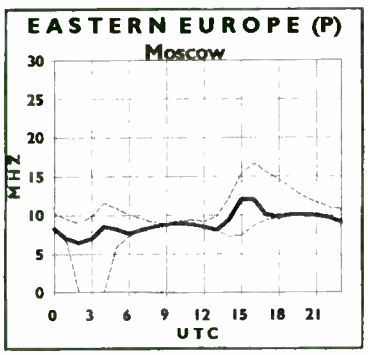
Propagation Conditions: Western United States

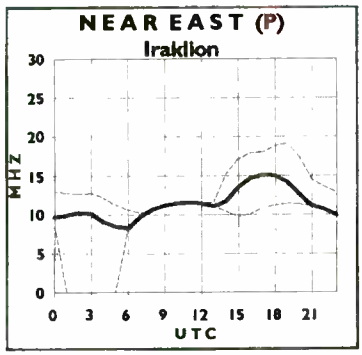
Once you've located the correct charts, look along the horizontal axis of the graph for the time you are listening. The top line of the graph shows the maximum usable frequency (MUF), the heavy middle line is the frequency for best reception, or optimum working frequency (OWF), and finally, the bottom line is the lowest usable frequency (LUF). You will find the best reception along the heavy middle line. Circuits labeled (P) cross the polar auroral zone. Expect poor reception on these circuits during ionospheric disturbances.

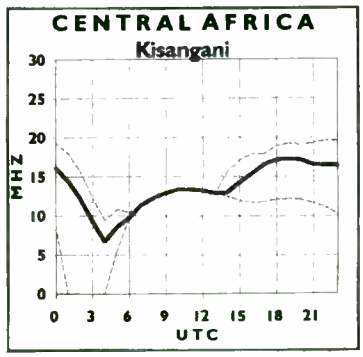


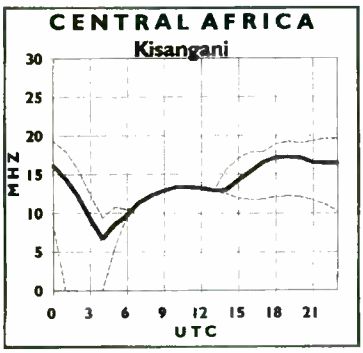


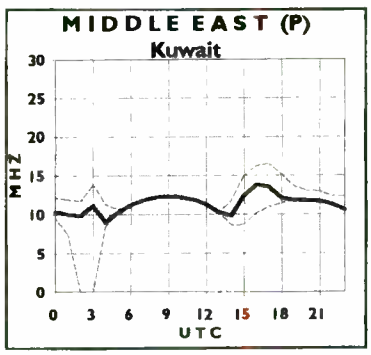


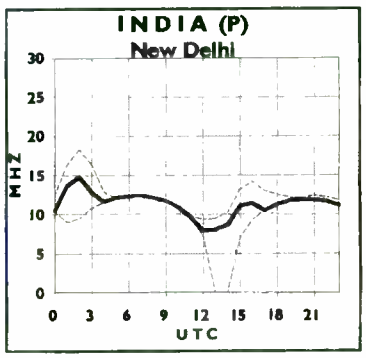


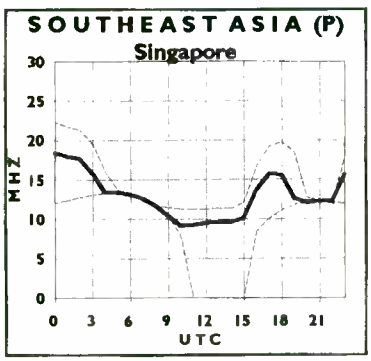


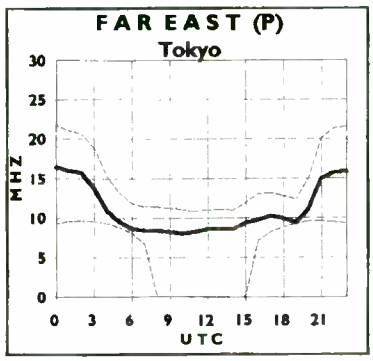


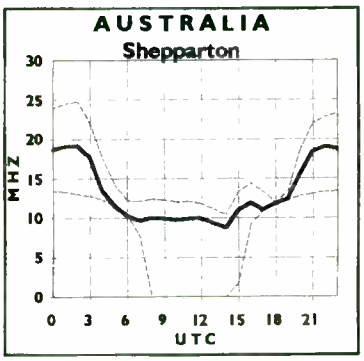












Kevin Carey, WB2QMY
koc@mdsroc.com

Lowfer Update

If you've been tuning the longwaves for any length of time, you've probably heard about "Lowfers"—short for *Low Frequency Experimental Radio Stations*. The authority for these stations is given in Part 15 of the FCC rules. In essence, the rules allow for unlicensed operation between 160 and 190 kHz as long as the transmitter power does not exceed 1 watt and the antenna is no more than 15 meters long (about 50 feet).

With tough restrictions like these, you might expect Lowfer transmitting range to be severely limited. However, during the winter months when conditions are quiet, ranges of 50 to 400 miles are quite common. DX reports over 1000 miles are not unknown.

For maximum range, most Lowfers transmit with plain Morse code (slow speed), although some operators are experimenting with advanced digital modes as well. Lowfer transmissions are usually sent "beacon style" and the message typically contains the operator's self-assigned ID and a mailing address for sending reception reports.

Make no mistake—hearing a Lowfer is not going to be easy. You'll need a good antenna, a sensitive (and selective) receiver, headphones, and *lots* of patience. Eventually, however, you're likely to hear that first signal, and the effort will be well worth it. A QSL card from a Lowfer is one of the most prized veries!

Table 1 is a sample listing of active stations. The list is by no means exhaustive. If you'd like more information on Lowfers, I recommend sending for *The Lowdown*. It is published monthly by the Longwave Club of America (LWCA) and includes numerous listening tips, homebrew circuits, and up-to-date station listings.

The LWCA's address is 45 Wildflower Road, Dept. MT, Levittown, PA 19057. Membership and a one-year subscription to *The Lowdown* costs $18.00 in the U.S., $19.00 in Canada, and $26.00 by airmail delivery overseas.

A Lowfer Ham Band?

There's been talk recently of creating an official (licensed) ham band on the longwaves. In the past, this idea was met with lukewarm enthusiasm, but with renewed hobby interest in the low frequencies, it is being considered once again. One proposal is to place the new ham band in the 160 to 190 kHz Lowfer slot.

In one sense, this seems like a good idea as this spectrum is already established as the home of LF "amateur" operation in the U.S. By creating a ham band there, the spectrum would take on more prominent status, and therefore be afforded some protection from interference. (Lowfers have no such protection and must accept any interference received.)

On the other hand, the creation of a ham band would likely mean the end of unlicensed Lowfer work as we know it today. Understandably, many Lowfers are concerned about this. They have worked very hard to achieve success with flea power transmitters and small antennas. With the coming of a ham band, it could mean higher power, less experimental work, and fierce contesting on weekends. (Anyone who has heard the manners of some hams during a contest knows just what I mean.)

While few Lowfers oppose the basic principle of an LF ham band, many would prefer to see it at a different frequency range. According to Ken Cornell, LF experimenter and Author of the popular *Low & Medium Frequency Radio Scrapbook*, German officials are expected to permit amateur operation around 140 to 150 kHz in the near future.

TABLE 1

Selected Lowfer Beacons

FREQ.	ID	LOCATION
166.667	IUY	Youngsville, NC
175.000	D	Des Moines, IA
175.388	KRY	Chardon, OH
175.750	X	Wheatland, WY
177.900	MPK	Chittenango, NY
178.600	ZWI	Baldwinsville, NY
179.010	YB	Maplewood, MN
181.167	IZJ	San Gabriel, CA
182.500	TFQ	Centertown, KY
183.500	PLI	Burbank, CA
183.500	Z	Layton, UT
183.544	MEL	San Jose, CA
184.877	R	Durant, OK
185.700	AL	St. Louis, MO
186.375	BA	Lancaster, IL
186.750	LEK	Aitkin, MN
187.500	YD	White City, FL
187.650	C	Morro Bay, CA
188.500	GEC	Mansfield, OH
188.700	WI	Pickens, SC
188.840	GSR	Frederick, MD
189.360	TH	Colts Neck, NJ
189.800	RM	Duluth, MN
189.900	OK	Davenport, OK

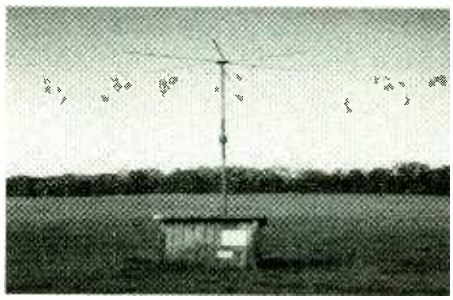


Photo of LLX (353 kHz), Lyndonville, VT

This, says Ken, would be a more practical choice because it is below the European broadcast band (150–280 kHz), and if adopted in the U.S., it would not have an adverse effect on existing Part 15 operations in the 160 to 190 kHz Lowfer band.

In the United States, a major voice representing the interests of amateurs is the American Radio Relay League. If you have an opinion on this issue, I would encourage you to write to the ARRL with your views. The address for the ARRL is: 225 Main Street, Newington, CT 06111. If you prefer, you can also write directly to the FCC with your comments. Address your letter to: Federal Communications Commission, 1919 M Street N.W., Washington, DC 20554.

Mailbag

Dick Pearce (VT) has been on a "longwave crusade" to locate and photograph several non-directional beacons in his area. His travels have taken him to many interesting sites ranging from tiny private installations to well established commercial beacon shelters.

During one of the searches, Dick stopped at the local Shop & Save market for a soda. Before leaving the parking lot, he pulled out his SW-55 to take one more bearing on his target (LLX, 353 kHz). Then came a surprise—Just as he tuned in the station, a guy on a bike pulled up behind him and said *"Hey, that's my beacon!"* It turned out to be none other than the airport manager! How's that for instant QSLing? When he got to the beacon site Dick snapped a picture of LLX and it is shown above.

Two updates to e-mail addresses given in the January column: McGreevy's site for natural radio audio had a typo. It should read **http://www.pw.physics.uiowa.edu/mcgreevy/**. Secondly, here is the new address to subscribe to the Worldwide Utilities Network (WUN): send e-mail to **majordomo@grove.net** with text *subscribe WUN your address*.

Price Reduction on the Grove SP-200A!

Don't miss this opportunity to own the most revolutionary audio accessory on the market for shortwave and scanner listeners—now reduced in price by over 28%! Grove's new and improved **SP-200A Sound Enhancer** is really six products in one. Just look at its many features and capabilities:

- **Top quality speaker**
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- **Audio amplifier**
- **Audio activated squelch**
- **Noise limiter**

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Now just $199.95 while supplies last!

Why pay over $400 for separate audio components for your listening post—such as a speaker, adjustable notch/peak filter, audio amplifier, bass and treble equalizers, audio squelch, recorder activator and noise limiter—when you can have them all in one attractively styled solid oak cabinet! This quality accessory is guaranteed to improve reception on any receiver, scanner or transceiver.

Peak desired signals while reducing or even eliminating interference. Ideal for voice, music, CW or data. Equipped with stereo-mono headphone jack for privacy. Heavy-duty AC power supply is included at no extra charge!

The cabinet is hand-crafted in the mountains of North Carolina. Textured metal front panel resists fingerprints.

SPECIFICATIONS:
Power required: 12 to 14 VDC @500 mA; 120 VAC adaptor included
Audio power output: 2.5 W @ 10% THD (8 ohms)
Audio selectivity: Peak/notch 30 dB or greater, 0.3-6 kHz
Squelch hold: 0-10 seconds
Noise limiter: Adjustable-threshold pulse noise clamp
Tape activator: Audio activated (VOX), 3 second hold
Tape output: 55- mV P-P @ 600 ohms (nom.)
Headphone jack: Universal mono-wired stereo jack
Dimensions: 10-7/8"W x 6-7/8"H x 7-1/4"D

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Doug Smith, W9WI
72777.3143@compuserve.com

Anatomy of an AM antenna

Back in September, I gave some tips on identifying radio towers. At the time, I touched on some of the technical concepts of the towers themselves, but really didn't explain them. This month, I'll try to explain how an AM transmitting antenna works, and what the various components are.

Of course, every radio station requires an antenna. (I've often told fellow hams that radio would be more fun if antennas were unnecessary, but we can't change the laws of physics!) The antenna serves to "couple" the signals generated by the transmitter into the atmosphere. These signals are then carried to the receiving antenna, which picks up some of the energy and transfers it to the receiver circuits.

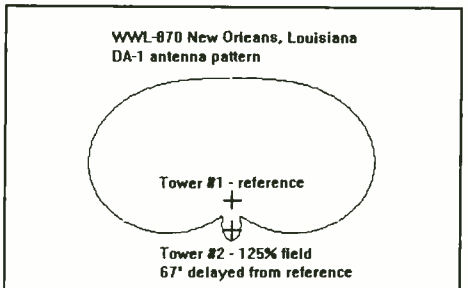
I'll start with the simplest, non-directional, antennas. If you're also a CBer or ham, you might think the easiest thing to use is a 1/4 wavelength tower. This arrangement has a low SWR and doesn't require any antenna tuner. A few stations do use such an antenna—but a quick check of the FCC database shows that most stations' antennas differ significantly from 1/4 wave. Indeed, for many stations a 1/4 wave antenna would be *illegal*!

Shorter towers radiate a significant amount of power above the horizon. This power is reflected back to earth. The reflected power is what we hear as DX—unfortunately, the distant signals we enjoy also cause interference to other stations. They're also responsible for fading, when the reflected signals interfere with the direct signals along the earth's surface. Because of this, the FCC requires many stations to use towers higher than 1/4 wave. Quarter-wave towers are legal only for local-channel stations and for regional and secondary stations operating above 1120 kHz.

So, we know that many stations use non-resonant antennas. And as any ham could tell you, this means there must be an antenna tuner. This is the reason for the small "sheds" at the bases of many AM towers; they protect the antenna tuner from the elements.

Most AM towers are "base-fed." That is, the power from the transmitter is coupled to the bottom of the antenna. Of course, broadcast stations use much more power than your average CB, so there's high voltage at the base of the tower. A 50 kW station would have almost 1600 volts at the base, assuming a 1/4 wave antenna. With other tower heights, the voltage could be much higher! This is part of the reason for the rather large ceramic insulator at the bottom of the tower. (The other reason is strictly mechanical.)

Also for mechanical reasons, most AM towers require guy wires. However, these wires are longer than the tower is tall, and would act as part of the antenna. That's undesirable; it might increase the amount of power radiated above the horizon (increasing fading) or distort the pattern of a directional antenna. To prevent this, insulators are installed every few feet. This ensures no single piece of wire is long enough to affect the operation of the tower.



Here's WWL-870's directional antenna pattern. In most cases, a directional antenna is used to protect other stations from interference. WWL, however, uses this pattern to avoid wasting power over the Gulf of Mexico. The crosses in this drawing represent the relative locations of WWL's two towers.

You can't see one of the most important parts of the AM broadcast tower—the ground system. The ground itself is a part of most vertical antennas. It's critical to make a good "connection" to the earth. Any resistance in the ground connection is essentially a resistor in series with the antenna, wasting power. The ground system is so critical that the FCC specifies a minimum system in its regulations. At least 90 buried wires of 1/4 wave or longer must be used, and 120 wires of 0.35 wavelength are recommended. If you look closely, you may see the ends of these buried wires near the base of the tower.

Many stations use directional antennas. These systems seem simple enough, just a bunch of single towers arranged in some kind of pattern. But a lot of work went into determining the precise location and orientation of each tower, and the amount and relative phase of the transmitter power fed to that tower. I've developed a lot of respect for those who designed these systems in the days before computers!

Directional antennas make productive use of the interference phenomena that causes fading. When you have two radio waves on the same frequency arriving at the same receiver, they can either add (making a stronger signal) or subtract (making a weaker signal). What happens depends on the relative distances traveled by the two waves, and their strengths. Fading happens when the atmosphere is responsible for the second signal. Since the atmosphere is constantly changing, the second interfering signal changes, and so does the total strength at the receiver.

Note that I mentioned "amount and relative phase of the transmitter power." Maybe the most complicated part of designing a directional antenna is designing the phasing unit. This device must ensure that the right amount of power reaches each tower, and that it takes the right amount of time to get there. It must also be stable with changing weather conditions, adjustable to compensate for minor changes in the towers, and reasonably resistant to lightning. This unit is usually located in the main building with the transmitter. However, sometimes parts are located in the sheds under the towers, and in any case the tower matching networks in the sheds are really part of the phasing unit.

How does the power get from the transmitter, or phasing unit, to the towers? As with your typical ham or CB station, coaxial cable is used. Very low-power stations may indeed use the same RG-8 coax you find on most CBs. But RG-8 isn't rated for use much beyond 1 kW of power, so it's obviously not adequate for many stations. Instead, a special "rigid coax" is used. It looks like a copper water pipe, with flanges every 20 feet or so. Inside this pipe is a second, smaller pipe, supported inside the larger pipe with insulators (usually Teflon). Rigid coax is available in several standard diameters; the largest (6-1/8") can handle 150 kW of power.

Bits and Pieces

Broadcasters have been seriously affected

by the government shutdown. Those FCC employees who process broadcast-station applications were considered "non-essential." Between the budget stalemate and the severe winter weather, the FCC only operated for one day between mid-December and mid-January.

DX TEST BULLETIN

Sun, Mar 3 - HCJB-690, Casilla 17-17-691, Quito, Ecuador. 1 - 1:15am EST. Morse code IDs and "other unique items." Correct reception reports verified with a special QSL card. *If you hear code, you must report exactly when you heard it and what characters you heard.* Tape recordings are welcome, but cannot be returned. Include 1 international reply coupon or first class postage in US to: Mr. Rich McVicar (HC1JMN)-Frequency Manager, Attn: 690 DX Test, c/o English Language Service, HCJB. Arranged by Rich McVicar for the benefit of all DXers.

Mon, Mar 4 - KBSU-730, 1910 University Drive, Boise, ID 83725. 2 - 3am EST. March music, voice IDs, test tones, Morse code IDs. *Power will be 15 kilowatts using their daytime antenna pattern.* Send reception reports to: Mr. Ralph Hogan - Director of Engineering.

Mon, Mar 11 - WCMB-1460, 3605 Vartan Way, Harrisburg, PA, 17110. 12:30-1am EST. Voice IDs, test tones, Morse code IDs. Send reception reports to Mr. Bobby Gray - Engineer.

Mon, Mar 25 - WSBA-910, PO Box 910, York, PA 17405. 12:30-1:30am EST. Voice IDs, test tones, Morse code IDs. Send reception reports to Mr. Steve Johnston - Engineering Manager.

Unless otherwise noted, these tests were arranged by J.D. Stephens for the International Radio Club of America (P.O. Box 1831, Perris, CA 92572-1831); 32-cent stamp (US$1 or 1 IRC overseas) for sample bulletin.

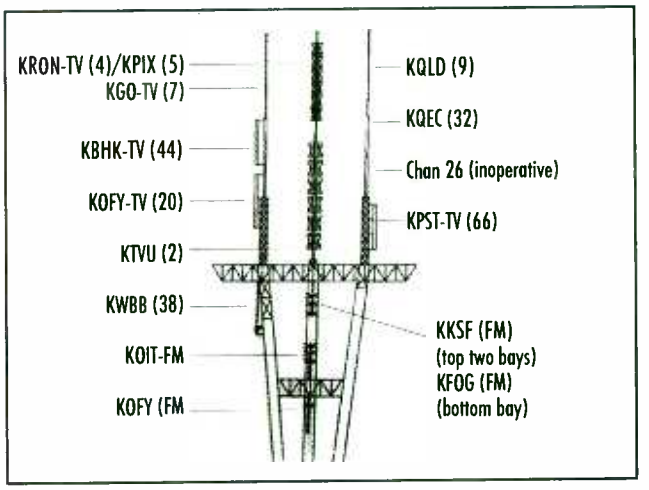
Skipping In

It's Frank Glaza's turn. Frank DXs in Cass City, Michigan, with a variety of radios and antennas. ("Does this hobby's expense ever end?")

680kHz	WISR, Butler, PA
1260kHz	WNRK, Newark, DE
1280kHz	WHVR, Hanover, PA
1570kHz	WPTW, Piqua, OH
1620kHz	WNYD-218, Glen Ellyn, IL
1660kHz	WJDM, Elizabeth, NJ
1760kHz	KFRU, Columbia, MO

See "Bits and Pieces" for more information on Frank's loggings of WNYD and KFRU.

• Simon Hachikian of Upper Darby, PA, heard something unusual in late December. "I noticed that one AM station in Philadelphia has a stronger lower sideband than an upper sideband." Simon found this is intentional, part of a scheme called "Kahn Power-Side." The idea is to reduce some of the effects of fading, and overcome the annoying 10 kHz whine from the station on the next lower frequency. Simon doesn't say which Philadelphia station is involved.



While AM towers usually only support one station, many FM and TV towers are used by multiple stations. The Mt. Sutro tower in San Francisco, depicted in this drawing, is especially efficient. It supports eleven *TV stations and four FMs!*

• Terry Powers in La Mesa, CA, forwarded an item of interest to West Coast DXers. XETRA-690 is building a new seven-tower directional antenna at Rosarito Beach in northern Baja California, Mexico. When completed, XETRA will increase power to 77 kW, which they claim is the highest power of any North American AM station. I believe several other Mexican stations operating at powers between 100 and 250 kW would dispute that! XETRA broadcasts in English, with all-sports programming for San Diego and Los Angeles. (Some DXers believe the new site is already on the air.)

Also in the San Diego area, Terry sends word of some confusing programming changes. The owners of KCBQ AM/FM 1170/105.3 have sold their stations for $68,000,000 and KIOZ-FM 102.1. KCBQ's new owners already own KKLQ AM/FM 1320/106.5 and KOGO-600. After everything is approved by the FCC, KCBQ-FM will take over KIOZ's old rock music format. KCBQ-AM will simulcast KKLQ-FM but won't change call letters. And KKLQ-AM will be donated to Palomar College.

In a completely different deal, religious KECR-FM 93.3 there has been sold to a secular group. Right now, it's relaying WDUV-103.3 Bradenton, FL, but another format is expected soon.

• Twice in November, Frank Glaza heard KFRU Columbia, MO, on 1760 kHz. The problem is, KFRU is supposed to broadcast on 1400! It sounds like KFRU was having transmitter problems. Certain "parasitic oscillations" in the transmitter can cause a station to broadcast a weaker signal on frequencies from a few dozen to a few hundred kHz from their normal frequency. On a clear frequency like 1760, these spurious signals can cover a lot of distance! The WNYD-218 Frank logged is a TIS (see last month's column).

OUTER LIMITS

THE CLANDESTINE, THE UNUSUAL, THE UNLICENSED

George Zeller
George.Zeller@acclink.com

Pirate Activity Massive in 1995 and 1996

About 40 different pirate stations were reported by *Monitoring Times* readers this month. At this time last year, pirate activity went into a 90 day lull after coordinated FCC "visits" to three alleged station operators. This lull did not last, despite propagation conditions at night on the 43 meter pirate band that are often dim because of the currently low sunspot levels. People from all over North America are hearing pirate broadcasts. Why not check out the area around 6955 kHz this weekend, particularly around the times listed in our loggings section?

■ WRMI Relaying Pirates

WRMI maven Jeff White announces that this licensed Miami international broadcaster is now transmitting shows from both European and North American pirates. The second and fourth Saturdays of every month will feature stations such as **Southern Music Radio** in New Zealand, European pirate **Radio Marabu,** and North America's **Solid Rock Radio.** If you'd like to sample pirate radio fare with a known schedule and a good signal, check out WRMI on these days in the 2000-2200 UTC period. Station coverage may vary, so a SASE to Jeff at PO Box 526852, Miami, FL 33152 might be wise to request information on the latest lineup.

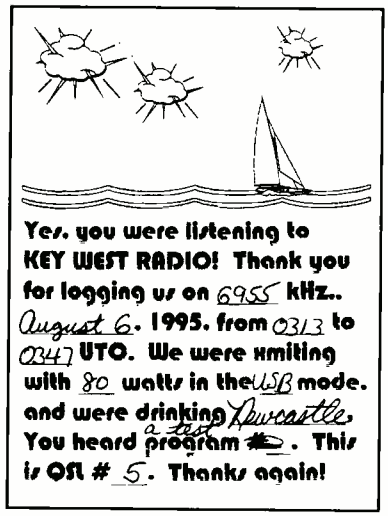
Allan Weiner's New Ship?

Legendary offshore pirate organizer Allan Weiner, most famous for his previous involvement in **Radio New York International** off the Long Island coast and Brother Stair's abortive 1994 attempt to outfit a mobile international broadcasting transmitter on the m/v *Fury*, is in the news again. Weiner says that he's searching for a partner "to put another radio station on another ship."

In a widely posted e-mail message from Kennebunk, Maine, Weiner said, "I have a ship. I want to build another offshore broadcasting station to travel the world's seas and broadcast wherever a radio voice is needed. It will be safe, it will be legal, and it will be good. This world needs at least one good fully-operational radio ship." Stay tuned for details. Thanks go to Anita McCormack of Huntington, WV, for forwarding the e-mail.

■ Ham Band Pirate

Satellite Times "Air and Space Report" editor Keith Stein of Woodbridge, VA, checks in with a log of a rock music pirate on 3878 kHz for an hour at 0730 UTC in early 1996. Occasionally he heard "**WBFS** testing" announcements by a male announcer, who gave no address. Most pirates have the good sense to stay out of places like the 80 meter amateur band, since hams properly take a dim view of unauthorized use of their limited frequencies. But, it pays to occasionally scan 80 meters while searching for unusual pirate operations.



Lucky recipient Randy Ruger's Key West Radio QSL.

■ New Pirate Book

LS Publikationen announces publication of a new book by Björn Quäck, *Vogelfreies Radio.* The catch is that the book is written in German, but it looks like a very interesting 180 page discussion of pirate radio activity in Germany and Switzerland. A 28.40 DM price includes postage and handling via the author's address at Postfach 103113, 44031 Dortmund, Germany. Thanks go to **Radio Titanic International** for this tip.

■ Pirate Talk at Fest

Harold "Dr. DX" Cones of the Winter SWL Festival announces that a forum on Pirate Radio will once again be on the program at this year's Fest. Your editor George Zeller and noted pirate expert Andrew Yoder are on the agenda. A $35 registration fee for the March 14-16 event, held at the Holiday Inn in Kulpsville, PA, goes to PO Box 591, Colmar, PA 18915. Hotel registrations at $59 single and $64 double should be made ASAP at (215) 368-3800.

■ What We Are Hearing

Your pirate loggings are always welcome for this column via PO Box 98, Brasstown, NC 28902. You can use e-mail address above if you have internet access.

Addresses used by pirate stations reported this month include PO Box 452, Wellsville, NY 14895; PO Box 109, Blue Ridge Summit, PA 17214; PO Box 28413, Providence, RI 02908; PO Box 146, Stoneham, MA 02180; PO Box 605, Huntsville, AL 35804; PO Box 17534, Atlanta, GA 30316; PO Box 40554, Washington, DC 20016; 640 Seabrook Parkway, Jacksonville, FL 32211; PO Box 293, Merlin, Ontario N0P 1W0; Postfach 220342, D-42373 Wuppertal, Germany; and PO Box 3103, Onekawa, Napier, New Zealand. For return postage, enclose three 32¢ stamps in the envelope to USA addresses; $2 US or two International Reply Coupons go to foreign drops.

6YVOS- 66955 at 2330. The "Voice of Smoke" in Jamaica has added comedy sketches to its normal lineup of reggae music. Addr: Wellsville. (Pat Murphy, Chesapeake, VA)

Alan Masyga Project- 6954 at 2230. This new one mainly features Alan Parsons Project rock music, but it honors (or tweaks) one of our regular pirate DX contributors, Alan Masyga of Winona, MN. Addr: None, gave an invalid address over the air. (Robert Ross, London, Ontario)

Big Johnson Radio- 6955 at 2345. The station's sometimes lurid programming was widely heard during a flurry of late 1995 transmissions, but as with most pirates, it's hard to tell if and when they will show up in 1996. Addr: Providence. (Jesse Rose, Hampton, VA)

Cell Block 13- The Warden has been producing entertaining mixes of rock, seasonal music, collages, and plugs for *The ACE*. Addr: Stoneham. (Barry Williams, Enterprise, AL)

Free Hope Experience- 6955 at 0745. Michael found that Major Spook sometimes fires up his transmitter very late at night. They replayed their Halloween show around Christmas, oddly enough. Addr: None. (Michael Prindle, New Suffolk, NY; Dennis Myhand, Mercedes, TX; Isaac Kelly, Houston, TX)

Friday Radio- 6954 at 2345. Dick sends in a copy of their new QSL that we picture this month. The station promotes Friday and the weekend with rock music and comedy. Addr: Providence. (Dick Pearce, Brattleboro, VT)
Happy Hanukkah- 6955 at 1500. Not all late year holiday activity is focused on Christmas. This one resurfaced again in 1995 with Jewish music, comedy, and show tunes. Addr: Merlin. (Williams; Murphy; Prindle)
He Man Radio- 6955 at 2130. He Man has supplemented his focus on male advocacy lately, including a Glenn Hauser "World of Radio" parody, pirate radio commentary, and remarks about Cleveland sports teams. Addr: Blue Ridge Summit. (Robert Ross, London, Ontario)
KDED- 6955 at 0300. Among the stations plugging Pirate Radio Insanity (see below) was this one, normally noted as being the Voice of the Grateful Dead. Addr: Providence. (Ruger; Kelly)
Key West Radio- 6955 at 0030. Some DXers have received QSL's from them, including the one on these pages that landed in Randy's mailbox. Addr: None, but responding to some loggings in *The ACE*. (Randy Ruger, North Hollywood, CA; Kelly)
KIWI- 7445 at 0800. This New Zealand pirate still puts a signal into diverse parts of North America on most UTC Sundays that it operates. Michael heard them relaying the Australian pirate **Radio G'Day.** Addr: Napier. (Murphy; Prindle; Ruger; Ross)
KNBS- 6955 at 1915. Phil Muzik's marijuana advocacy shows have been with us for more than a decade now, but you have to listen for an ID, since Phil often is heard with ads and promotional announcements on other stations. Addr: Wellsville. (Prindle; Ross; Murphy)
KOLD- 6955 at 0100. Aldo Batista says that he's the only current pirate with a format of big band music, and he's right. He played lots of Guy Lombardo around New Years, but other 1940's swing bands are common fare. Addr: Stoneham. (William Hassig, Mt. Prospect, IL; Jerry Coatsworth, Merlin, Ontario; John Fisher, Brights Grove, Ontario; Ross; Kelly)
KTLA- 6955 at 2230. Their ancient rock oldies format was a new pirate band entry last year, but they have already been heard in 1996. Addr: Providence. (Coatsworth)
North American Pirate Relay Service- 6955 at 1730. Many of the Europirate stations that we hear in North America are courtesy of Richard T. Pistek's NAPRS, who also relays several domestic pirates. Addr: Wellsville. (J. C. Mello, North Scituate, RI; ; Prindle; Pearce)
Pirate Radio Insanity- 6955 at 0030. Although last year's coordinated pirate marathon did not materialize in January 1996, promotional announcements for it were relayed on many occasions. Addr: None. (Murphy)
Radio Azteca- 6955 at 1945. Bram Stoker has produced 17 programs now, all of which are excellent parodies of DXers and DXing. Look for his music from the old Bullwinkle TV series. Addr: Wellsville. (Ross; Prindle; Mello; Murphy; Pearce)
Radio Beaver- 6955 at 2015. Bucky Beaver has returned to the pirate bands after a brief hibernation. His squeaky voice hosts shows with overtly Canadian content, often including political commentary. Addr: Merlin. (Ross)
Radio City- 6955 at 1515. Several European pirate stations produced special holiday shows for North American relay this year. Here's an example. Addr: Wuppertal. (Prindle; Fisher)
Radio Free Euphoria- 6955 at 0345. Samantha and Captain Ganga mix rock music and comedy, a staple pirate radio format. Their productions, including suggestive moans from the Captain's sidekick, are generally funny. Addr: Wellsville. (Murphy; Fisher)
Radio Free Speech- 6955 at 2000. Bill O. Rights increased his already frequent transmission schedule when Federal Government shutdowns paralyzed the FCC. He offers to read your views over the air during his editorials, and he now publishes a newsletter. Addr: Wellsville. (Skip Arey, Waterford Works, NJ; Mello; Fisher; Prindle; Williams; Murphy; direct from the station)
Radio Fusion Radio- 6955 at 0115. The rap music on this station is easy to spot; few pirates use this format. They often include features on urban social issues like homelessness. Addr: Providence. (Murphy)
Radio Titanic International- 6957 at 2200. This Europirate rocker has a really sharp new QSL that features an original color postcard of the m/v *Titanic* before it sank to the bottom of the Atlantic. Addr: Wuppertal. (Pearce; direct from the station)
RBCN- 6955 at 1530. Radio Bob's Communications Network not only features original hilarious comedy productions, but it also is the only pirate that prefers reception reports that *do not* contain return postage. Addr: Atlanta. (Mello, Pearce)
RFM- 1630 at 0200. H. V. (as in Victor) Short has been heard on multiple occasions with medium wave transmissions; you might want to check this frequency. Addr: Wellsville. (butala via internet, MA)
Star Club Radio- 6955 at 1545. This Europirate was once busted, but it has returned with programming for North American relay. I confused this with **Starshine Radio** at first, so should listen closely for the ID's! Addr: Wuppertal. (George Zeller, Cleveland, OH; Coatsworth; Murphy; Williams)
The Crooked Man- 6955 at 1830. This guy is a legendary example of stream of consciousness programming. He blames his disjointed ravings on the fact that he fell out of the Hindenberg Zeppelin while he was a baby. Addr: Washington, replies rare. (Murphy)
The Real Radio USA- 6955 at 1500. Despite its name, this imposter has returned with attacks on Andrew Yoder and plugs for Hitler. Addr: None, but sometimes verifies logs in *The ACE*. (Murphy)
Up Against the Wall Radio- 6955 at 2230. Owsley's 60's-70's nostalgia station sometimes offers a computerized QSL by special request that arrives on disk. Addr: Providence. (Prindle; Pearce; Murphy; Kelly; Williams; direct from the station)
Voice of Christmas- 6955 at 2330. This new one made several broadcasts both before and during the holidays. A chipmunk-style announcer plays novelty Christmas music, using "O Tannenbaum" on a music box as an interval signal. Addr: Providence. (Hassig; Williams; Prindle; Murphy; Coatsworth; Fisher)
Voice of Indigestion- 6955 at 1900. It's ironic that we list this new one after the Voice of Christmas. Their announcer sounded like he had eaten plenty during the holidays, given his extended burping. Addr: None. (Coatsworth; Murphy)
Voice of the Runaway Maharishi- 6955 at 1345. The Maharishi has returned with his mix of drug advocacy, rock and sitar music, and other unusual stuff. Addr: Wellsville. (Murphy; Ross)
WAOJ- 6955 at 2115. We haven't heard the last of the O. J. Simpson parodies, at least as long as this one is around. Addr: None, said it would verify logs in *The ACE*. (David Chapchuk, Scranton, PA)
WJTS- 1630 at 0200. This micropowered AM station has been widely reported to be coming from Florida. It carries some original shows, but often relays various licensed broadcasters. As Dave found, the signal gets out well north of the transmitter site. Addr: Jacksonville. (Dave Schmidt, Wilmington, DE)
WKND- 6955 at 2015. Radio Animal has been relatively inactive lately on the pirate bands, possibly because of the effort he is putting into building low power AM shortwave pirate transmitters. But, he put in a holiday appearance with a long mailbag and discussions of pirates. Addr: Blue Ridge Summit. (Murphy; Ross; Fisher)
WLIS- 6956 at 2330. Jack Boggan always features rock music, but his main focus is replays of actual interval signals used by shortwave international broadcasters. Addr: Blue Ridge Summit. (Williams; Ross; Murphy; Coatsworth; Fisher)
WPN, World Parody Network- 6955 at 2230. Captain Squirtlong has been pretty active since he burst on the scene in October. His broadcasts are dominated by comedy sketches and novelty music. Addr: Huntsville. (Kelly; Prindle; Hassig; Williams; Murphy; Fisher)
WREC- 6955 at 0000. You never know what P. J. Sparx might have up his sleeve. He produces rock music shows, has comedy specials, relays other pirates, tests innovative low power AM transmitters, and generally supports the pirate radio movement. Addr: Wellsville. (Jim Laughlan, Youngstown, NY; Pearce; Prindle; Williams; Hassig; Mello; Fisher; Murphy; Ross)
WRV- 6958 at 0130. Pete the Pirate's slogan may be "The Radio Virus, the station that nobody wants to catch," but Larry was glad to find that Pete QSL's all accurate reception reports, often enclosing a station bumper sticker. Addr: Wellsville. (Larry Gotts, Edinboro, PA: Rose; Ross; Murphy; direct from the station)

Dick Pearce's new Friday Radio verie.

Ike Kerschner, N3IK

A Computer in the Ham Shack

I often come across hams who feel computers mean the downfall of amateur radio. Nothing could be further from the truth! If there is no computer in your shack there should be.

Computers not only make light work of duties like log keeping, QSLing, antenna pointing, propagation prediction, and record keeping—they allow us to explore new facets of our hobby. That exploration is the life blood of ham radio. If we are happy sitting back doing the same thing day after day, our hobby is in serious trouble.

N7OCV at the ham shack keyboard

The Cost Factor

There is no need to purchase the latest and greatest computer. For about half the cost of a modest rig a computer can be purchased that will allow us to experiment and have a lot of fun. The general trend today is towards the Windows operating environment and away from DOS (Disk Operating System). There is nothing wrong with this, but the majority of ham software is in DOS, for which a machine with 640K of memory is adequate. Such machines are advertised at less than $250.00.

Add a dot matrix printer for an additional $160.00 and you have the basics for a ham shack machine. Perfectly satisfactory, used machines are advertised at extremely low cost. I recently purchased a used IBM with Epson dot matrix printer for $125.00 complete (it works perfectly). I would urge you, however, to purchase the best computer affordable for easier expansion later on when you learn to love computers as most of us do.

OK, I got one. Now what?

Of course the first thing you want to do is learn to use the machine to run the applications you want. In most cases you will need to learn DOS. DOS is a system that allows us to talk to the computer and run the applications. This does not mean learning programming—unless you want to. For the most part, enough DOS commands can be learned in an hour or two to allow us to start having a lot of fun with our new computer. I recommend the book *DOS for Dummies*. While the title might sound a bit insulting, it is one of the best books of the type around for teaching newcomers how to get around in DOS.

Our next step is to decide what we want to do with the computer and order the software to do the job. Software is available from many sources, and the best way to decide what to buy is to talk to other hams and read the advertisements in the ham magazines.

One of my favorite computer functions is operating SSTV (slow scan television), joining in on RTTY and AMTOR QSO's. In addition, Packet and ASCII are made possible with the computer.

In order to use any of the above functions with your computer, some hardware is required between the computer and the rig. You can build or buy an interface; every ham magazine carries advertisements for a wide variety. Make your choice and pay your money (I might add that the 1996 *ARRL Handbook* has a simple-to-build interface for SSTV and a disk with a program to operate in that mode.)

I also use my computer to predict propagation to any part of the world I'd like to QSO, to aim the beam in the proper direction, to model an antenna that looks interesting, and to perform hundreds of complex operations that would take hours by paper and pencil. Most hams also keep their log on a computer and print QSL card labels (and cards too).

I particularly like being able to design antennas electronically. The program I use allows me to build a short antenna for any band I desire. It first asks what frequency I want to build the antenna for, and how long I want it to be; it will tell me where to place the loading coils and design the coils for me. If I make an error the program will alert me to it and offer a correction. The same program helps me design traps for multiband antennas and optimize beam and quad antennas.

Another program lets me design PC boards for various projects and has many engineering programs so I can model circuits to see how they will perform before actually building them. Best of all, most of the above mentioned programs cost less than $30.00. Of course, many programs are much more expensive—it all depends on what you want to do. The point is that a computer opens us a whole new world of ham radio.

Few computer users are satisfied using their computer for only one application, and before long you will be exploring many facets of life with your machine, and of course spending more money on your new hobby. This is good: for you, the economy, and the world in general. You'll love it.

ARRL 1996 Handbook

At $38 this is still the best bargain in ham radio! As usual, this year's handbook covers everything in radio. In truth, the handbook gives you a complete education in electronics, dozens of projects, and insights into every modern communication technique.

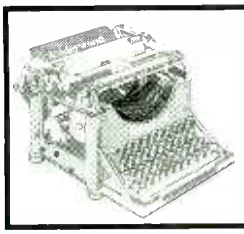
Included with this year's handbook is a computer diskette which features a Windows based program called TISFIND. It will help you source parts suppliers and addresses for any of the projects in the handbook. Also included are programs to design Pi networks, shortened dipoles, active filters, and solenoidal coils; engage in Slow Scan TV; and find true North.

The ARRL Handbook is available from most amateur suppliers, Grove Enterprises, or your local bookstore. Buy one—you need it!

SPECIAL EVENT CALENDAR

Monitoring Times is pleased to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Special Events Calendar, P.O. Box 98, Brasstown, NC 28902-0098. Fax 704-837-2216; e-mail mteditor@grove.net

Mar 2	Tuscaloosa, AL	Black Warrior Swapfest / Kelly Bruce WD4DAT, PO Box 03171, Tuscaloosa, AL 35403; 205-339-7882
Mar 2	Absecon, NJ	Shore Points ARC / SPARC, PO Box 142, Absecon, NJ 08201. Location: Holy Spirit HS, Rte 9 so. of Rte 30. Talk-in 146.385/.985, 9 am, $5 admission.
Mar 2	Bismarck, ND	Central Dakota ARC / Tim Rasset N0SDB, 4109 38th Ave NW, Mandan, ND 58554, 701-663-6620
Mar 8-10	Lafayette, LA	Acadiana ARA / Nolen Griffith K5ARH, 123 Normandy Rd, Lafayette, LA 70503; 318-989-9039
Mar 8-10	Norfolk, NE	NE State Convention / Patrick Adams N0AZC, 2002 Sunset Ave, Norfolk, NE 68701; 402-371-7295
Mar 9	Scottsdale, AZ	Scottsdale ARC / Ron Reynolds N7WTF, 2514 E Turney Ave, Phoenix, AZ 85016-5617; 602-240-0473
Mar 9	Colby, KS	Trojan ARC / Jim Robison KG0PI, 140 North Garfield, Colby, KS 66701, 913-462-4548
Mar 9	Hazard, KY	KY Mountains ARC / John Farler K4AVX, 109 Hall St, Hazard, KY 41701, 606-436-5354
Mar 9	Victoria, TX	Victoria ARC / Robert Whitaker KI5PG, 121 South Main St, Suite 205, Victoria, TX 77901
Mar 9	Puyallup, WA	Mike & Key ARC / Michael Dinkelman WA7UVJ, 637 2nd Ave South, Kent, WA 98032-6137
Mar 9-10	Charlotte, NC	Mecklenburg ARS / Mary Hunt KA4EXP, 3213 Bridgemere Terrace, Matthews, NC 28105; 704-841-HAMS
Mar 10	Conneaut, OH	Conneaut ARC / Jack Marttila KA8TUU, PO Box 661, Conneaut, OH 44030, 216-593-3353
Mar 14-16	Kulpsville, PA	Winter SWL Festival / PO Box 591, Colmar, PA 18915. Location: Holiday Inn (215-368-3800) $35 registration
Mar 15-16	Little Rock, AR	AR State Convention / Jim Blackmon KB5IFV, 1008 Pine St, Arkadelphia, AR 71923-4919 - 501-246-7833. Location: Little Rock Expo Center, Exit 125, I-30.
Mar 16	Englewood, FL	Englewood ARS / Dennis Babcock NT9K, 1960 Mississippi Ave, Grove City, FL 34224, 941-698-0248
Mar 16	Marietta, GA	Kennehoochee ARC / Margaret Durham KB4QKW, 1097 Seven Springs Circle, Marietta, GA 30068; 770-977-4405
Mar 16	Marshall, MI	So MI ARS / Wes Chaney N8BDM, 4405 South Minges Rd, Battle Creek, MI 49017-8321; 616-979-3433
Mar 16-17	Midland, TX	Midland ARC / Larry Nix N5TQU, 3900 Douglas Ave, Midland, TX 79703; 915-699-5441
Mar 16-17	Ft Walton Bch, FL	Playground ARC / Scott Stowell KE4BFT, 134 Bryn Mawr Blvd, Mary Esther, FL 32569, 904-243-3182
Mar 17	Maumee, OH	Toledo Mobile RA / Robt Hanna K8ADK, 2154 Circular Drive, Toledo, OH 43614-4205
Mar 17	York, PA	Keystone VHF Club / John Shaffer W3SST, 2596 Church Rd, York, PA 17404; 717-764-4805
Mar 17	Milton-Freewater,OR	Walla Walla Valley ARC / David Pence KB7WRT, 810 E Sumach St, Walla Walla, WA 99362-1348, 509-525-2529
Mar 18	Chesterfield, MO	St Louis Co SKYWARN Severe Weather Observation Training. Michael Redman KA0YXU, 314-889-2362. Location St. Luke's Hospital Education Center, Hwy 141 North of Hwy 40-61 in Chesterfield, MO. 6:45-10 pm. No advance registration required.
Mar 23	Kansas City, MO	Ararat AR Shrine Club / Roger Bessmer KB0IIG, 2525 SW Blvd, Kansas City, MO 64108, 816-842-0400
Mar 23-24	Tulsa, OK	Okla Convention / Merlin Griffin WB5OSM, 11671 E 80th St N, #BB, Owasso, OK 74055-3363; 918-272-3081
Mar 24	Sterling, IL	Sterling-Rock Falls ARS / Lloyd Sherman KB9APW, PO Box 521, Sterling, IL 61081-0521; 815-336-2434
Mar 24	Madison, OH	Lake Co ARA / Roxanne, 5777 Fenwood Court, Mentor, OH 44060; 216-256-0320
Mar 24	Trenton, NJ	Del Valley RA / HAMCOMP, PO Box 7024, W Trenton, NJ 08628. Location: Student Rec Ctr, Trenton State College, Rt 31. Talk-in 146.67, 442.650. $5 admission.
Mar 24	Yonkers, NY	Westchester Emerg Comms Assoc / Tom Raffaelli, PO Box 831, North Tarrytown, NY 10591-0831; 914-741-6606. Location: Yonkers Raceway. Talk-in 147.06/66. $6 admission.
Mar 24	Charleston, WV	Charleston Area Hamfest & Computer show / Jimmie Hewlett WD8MKS, PO Box 916, St. Albans, WV 25177, 304-768-1142
Mar 29-30	Columbus, GA	Columbus ARC / Randy Hancock KE4KBU, 5631 Lorenzo Rd, Columbus, GA 31904, 706-596-8820
Mar 30	Waterford, CT	RAS of Norwich / Mark Venable N1RSK, PO Box 429, Ledyard, CT 06339, 860-572-9380
Mar 30	Tullahoma, TN	Middle TN ARS / Ernest Moore AD4AT, 1213 McCord Dr, Manchester, TN 37355, 615-728-9473
Mar 30-31	Timonium, MD	MD Convention,Gtr Baltimore / William Dobson WA3ZER, 12315 Boncrest Dr, Reisterstown, MD 21136; 410-526-2154 Location: Timonium Fairgrounds, 8am-5pm Sat, 8am-4pm Sun. $5 daily admission.
Mar 31	Grayslake, IL	Libertyville & Mundelein ARS / Francis Avellone W9GLO, 650 Green Bay Rd, Lake Bluff, IL 60044; 708-234-4124
Mar 31	Kinston, NC	Down East Hamfest Assoc / Jean DuPree KB4OHX, 212 E Capitola Ave, Kinston, NC 28501, 919-523-2703
Apr 6	Wichita Falls, TX	Wichita ARS / Jimmy Dodson KB5TGO, PO Box 4363, Wichita Falls, TX 76308, 817-586-0215
Apr 6	Virginia Bch, VA	Chesapeake ARS / Preston Ipock N4SHI, 1026 Calloway Ave, Chesapeake, VA 23324, 804-543-4610
Apr 12-13	Tupelo, MS	Tup,Boonvle,Monrro Co ARCs / Jack Ellis KI5QV, Rte 4 Box 198-B, Tupelo MS 38801, 601-842-7255.
Apr 12-13	Lawton, OK	Okla State Conv / Robt Morford KA5YED, 1415 NW 33rd, Lawton, OK 73505, 405-353-8074
Apr 13	Bowling Green, KY	Ky Colonels ARC / Leon Garrett K4CIT, 2901 Smallhouse Rd, Bowling Green, KY 42104, 502-842-5307
Apr 13	Joplin, MO	Joplin ARC / Andy Gabbert KA0TUD, 1020 Carl Junction Rd, Webb City, MO 64870-1029, 417-673-8371
Apr 13	Fredericksburg, PA	Appalachian AR Group / Homer Luckenbill WA3YMU, AARG, 105 Walnut St, Pine Grove, PA 17963, 717-345-3780. Location: N Lebanon High School. Talk-in 146.04/64. 8am $4 gen admission
Apr 13	Spokane, WA	Inland NW Hamfest Assoc / Al Lafky K7YY, PO BHox 14643, Spokane, WA 99214, 509-924-3475
Apr 14	Aurora, CO	Aurora Rprt Assoc / Wayne Heinen N0POH. Location: Adams Co Fairgrounds, US 85 North and follow signs. Talk-in 147.15 rptr. 8am.
Apr 14	Raleigh, NC	NC State Conv / Rollin Ransom NF4P, 1421 Parks Village Rd, Zebulon, NC 27597, 919-269-4406
Apr 19-21	Visalia, CA	Intl DX Convention / Don Bostrom N6IC, 4447 Atoll Ave, Sheman Oaks, CA 91423, 818-784-2590
Apr 20	Muskegon, MI	Muskegon Co ARES/RACES / Tom Vander Mel KB8VEE, 2350 Tryon Ave, Muskegon, MI 49444, 616-733-2963
Apr 21	Newcastle, DE	Penn-Del ARC / Hal Frantz KA3TWG, 950 Ridge Road, Suite C-27, Claymont, DE 19703, 302-798-7270
Apr 21	Arthur, IL	Moultrie ARK / Ralph Zancha WC9V, PO Box 55, Lovington, IL 61937, 217-873-5287
Apr 21	Cambridge, MA	MIT RS & Harvard Wireless Club / Steve Finberg W1GSL, PO Box 397082, MIT Branch, Cambridge, MA 02139, 617-253-3776 (Nick KA1MQX)
Apr 27	Owensboro, KY	Owensboro ARC / Suzie Young N9LJF, 2427 Latrobe Ave, Owensboro, KY 42301, 502-684-5157
Apr 27	Butte, MT	Butte ARS / Bob Evans AA7LU, Rte 1, Box 260, Butte, MT 59701, 406-494-3066
Apr 27	Roseburg, OR	Umpqua Valley ARC / Ed Pahl W5PII, 1440 Wild Iris Lane, Roseburg, OR 97470-9469
Apr 27	Vancouver, WA	Clark Co ARC / Wayne Schuler AI9Q, 13901 SE 18th Circle #12, Vancouver, WA 98684-4710, 360-896-8909
Apr 28	Grosse Pt Woods, MI	SE MI ARA / Thomas Orlicki N8HLY, 15835 Novara, Detroit, MI 48205, 313-527-3497
Apr 28	Poughkeepsie, NY	Mt. Beacon ARC / Ken Akasofu KL7JCQ, 316 Titusville Rd, Apt 4, Poughkeepsie, NY 12603-2944, 914-485-9617
Apr 28	Athens, OH	Athens Co ARA / Drew McDaniel W8MHV, 61 Briarwood Dr, Athens, OH 45701, 614-592-2106



Just do it!

Do you have a topic you've always "thought about" writing up for Monitoring Times? Now is the time! Given our full-spectrum coverage, plus the interest in new technology on the one hand and nostalgia for the past on the other, there is no limit to appropriate subject matter to write about. Bone up on your research, warm up your pen, and you, too, can earn a little spending money!

Pitch your idea to the editor at mteditor@grove.net or call 704-837-9200 and ask for Rachel. Writer's Guidelines are available on the MT homepage at www.grove.net, on the Grove BBS, or for an SASE.

Circuit Boards - The Easy Way

Most of the solid-state circuits we experimenters build are assembled on some type of circuit board. While some builders prefer to use perforated phenolic boards for their projects, others opt for etched circuit boards. I prefer the latter approach because it yields a more professional end product. Also, it is much easier to obtain an effective ground system when utilizing the copper ground foils on an etched board.

I have received many letters from builders who would make their own etched circuit boards if they understood the basics for getting started in this relatively simple process. This article is aimed at those who have yet to try their hand at laying out and producing PC boards.

Developing a PC-Board Pattern

The first step in creating your own PC board is to design the pattern for the etched copper conductors. This can be done by gathering the component parts and using them as scale models for the spacing between circuit-board pads. Start with a piece of quadrille paper (paper with small grid squares), which is available in pads at office supply stores. The grid of squares will help you to place the parts in an orderly fashion with straight lines from point A to point B.

Develop your pencil-sketch layout by starting at one end of the schematic diagram — usually the first stage of the circuit. Identify each component with sequential part numbers, such as C1, C2, etc. Don't worry about your possible lack of artistic skill during this phase of the effort.

Place the various parts, one by one, on the paper and determine where they will be situated on the completed board. Draw an outline of that part and assign the appropriate part number to it, per the circuit diagram. Next, draw a circular pad at those points where the parts will be soldered to the PC board. Then, sketch in the connecting conductors that join the pads to one another, ground, the operating-voltage bus, and to other components in the circuit. Be careful to avoid having the components too close to one another. They should have sufficient clearance to allow mounting them snugly against the PC board.

Continue this process until the entire layout is complete. Once this is done you need to go back to the beginning and check the entire PC board pattern for errors or omissions. Figure 1 shows a typical pencil-sketch layout.

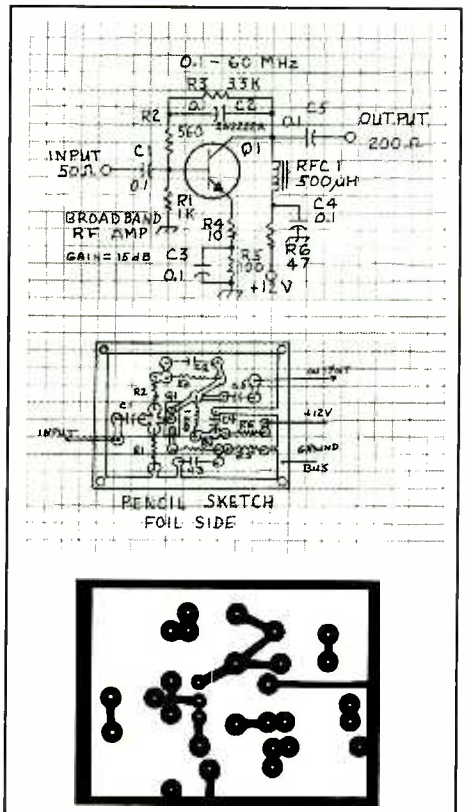


Figure 1 — Example of a preliminary pencil sketch that has been drawn on quadrille paper.

A Clear Film Pattern

Step no. 2 in the process involves transferring the pencil sketch pattern to a piece of clear plastic. This phase can be omitted if you have computer graphics that allow you to create PC layouts. More on this later.

I use the protective covers for the pages in three-ring notebooks for my clear-film layouts. These can be purchased inexpensively at office supply stores. Cut out a piece of plastic that is somewhat larger than your pencil sketch. Affix the sketch to the plastic at two points with Scotch brand tape to prevent movement. Use peel-off or press-on donut pads (Datak Corp. or equivalent)[1] and layout tape to duplicate the pencil drawing on the clear plastic.

Make a 1/8 to 1/4 inch border around the outer perimeter of the tape layout. This can be done with PC board layout tape. This border is connected to the various ground foils of the PC board. See Figure 2. A hole can be drilled at each corner of the etched PC board for use as mounting points. The outer copper border on the board will then provide a good ground connection to the chassis or box in which the circuit is mounted.

Using Etch-Resist Film

An excellent iron-on etch-resist film is manufactured by Techniks, Inc. It is sold as PnP-Blue.[2] The results are far superior to those obtained from a product known as TEC-200. There is no resultant grainy quality to the copper conductors, and there are no partially washed-out PC board traces to repair with an etch-resist pen.

The clear-film pattern is transferred to the PnP-Blue by means of a laser printer or laser style photocopy machine. In order to avoid a mirror-image reversal of the pattern, always copy the board pattern, as viewed from the component side, onto the PnP-Blue. When copying PC patterns from paper, rather than from a clear-film master, the pattern must be laid out as seen from the component side of the board (Figure 3). The clear film master enables you to flip flop the layout so that it can be seen from the component side. This is essential if you do your layouts as viewed from the etched side of the board.

The image is copied onto the dull side of the PnP-Blue. This etch-resist film is supplied in packets of five 8-1/5 x 11 inch sheets. Don't waste an entire sheet on a small pattern. Cut out a section that is about an inch wider on each side than is your PC pattern. Tape this piece of PnP-Blue to a sheet of 8-1/2 x 11 inch plain paper (use Scotch Brand tape) before inserting it in the copy machine. Make certain that the clear film pattern registers with the PnP-Blue. This will ensure that all of the PC pattern will be transferred to the etch-resist film.

The Final Steps

The unetched PC board stock must be clean and free of oxidation before the PnP-Blue image is transferred to the copper. Polish the copper with steel wool, then clean it with rubbing alcohol. Avoid touching the

clean board with your fingers, to avoid any transfer of natural oil.

Lay the PnP-Blue on the clean surface of the PC board, dull side to the copper. Use a household iron that is set for silk (about 275 degrees F) to tack one corner of the PnP-Blue to the PC board. Now, hold the iron firmly against all of the PnP-Blue for approximately 60 seconds. The heat will transfer more quickly to the PC board if you place a paper towel between the board and the hard surface it rests on during the iron-on process.

Allow sufficient time for the PC board to cool after the pattern has been ironed onto it. Next, grasp one corner of the film and peel it carefully from the PC board. A glossy blue covering will appear over all of the conductors that you wish to retain.

The Etching Process

Ferric chloride or ammonium persulphate etching solution is fine for removing the unwanted copper from the PC board. Ferric chloride solution is available in most Radio Shack stores. You may also purchase ferric chloride and ammonium persulphate crystals and mix your own etching solution (see notes 1 and 2).

It is advisable to preheat the etching fluid to a temperature of 90-100 degrees F maximum before immersing the PC board. This will hasten the etching process. I warm my solution slightly in a microwave oven prior to use. WARNING: Do not allow the etchant to boil. Always use care to keep it off your skin and out of your eyes. Wash the affected areas immediately if you get the solution on your skin.

The PC board should be agitated several times during the etching process. This will rid the board of depleted etchant and copper residue. Most PC boards (depending upon the thickness of the copper layer) will etch within 30 minutes.

Thoroughly wash the etched board with soap and water after it is removed from the solution. Use a fine grade of sandpaper to remove the PnP-Blue etch resist. A final polishing of the copper with steel wool will restore the metal to a luster.

Drill the holes into which the components will be inserted, solder the parts in place, then admire your masterpiece!

Tag Ends

PC board patterns that are found in magazine articles may be transferred to clear film by means of a laser type of photocopy machine. Make sure the image is nice and dense when doing this. I use laser printer transparency film in my work. It is excellent also for producing computer-generated PC patterns[3] that are fed to a laser printer, such as my Panasonic KX-P4410. Universal Office Products Co. no. 65125 is the material I use, purchased at a local office supply store. The transferred image can be flip-flopped to represent either the etched-foil or component sides of the board prior to ironing the pattern onto the PC board.

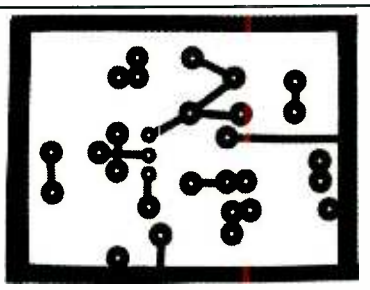


Figure 2 — The PC pattern after it has been transferred to clear film by means of donut pads and layout tape.

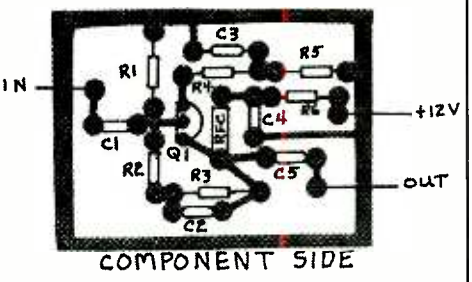


Figure 3 — The Figure 2 PC board pattern as seen from the component side of the board.

Notes:

[1] Donut pads, layout tape, IC layout pads, ferric chloride, ammonium persulphate and blank PC board stock is available from Mouser Electronics, 958 N. Main St., Mansfield, TX 76063-4827. Phone:1-800-346-6873 to order. Catalog available.

[2] PnP-Blue and other PC board supplies are available from All Electronics Corp., 14928 Oxnard St., Van Nuys, CA 91411. Phone: 1-800-826-5432 for orders. Catalog available.

[3] PC board patterns can be created with a computer via Windows by using the Paintbrush program. Software for use in designing PC board layouts in Windows (no. PCBL-ND on 3.5-inch diskette) is available from Digi-Key Corp., 701 Brooks Ave. South, P.O. Box 677, Thief River Falls, MN 56701-0677. Phone 1-800-344-4539 to order. Catalog available.

Jean Baker, KIN9DD

Frequently Asked Questions

Welcome aboard! Have you noticed that those ol' spring propagation problems are beginning to affect the lower portion of the HF aero bands? This tells me that although there may be snow still on the rooftops, warm weather is not far behind.

Today we'll answer some of the most frequently-asked questions sent in by our readers over the years. If you have a question that isn't answered today, or want more info on any of the material discussed, please drop me a note and a business-sized SASE, and I'll answer you by mail.

Q: Sometimes I'll hear an air traffic controller tell a pilot to change his "squawk" (transponder code) identification; why would this happen? (Grant B., NM)

A: Probably because another aircraft in the controller's center has the same code. Each ATC facility across the country has a bank of transponder codes to use when a change is warranted. The ATC computer automatically detects duplication and notifies the controller that there are two aircraft with the same transponder code. It is critical that one of the pilots receive a new code because transponder-equipped aircraft are identified on the radarscope by their codes; if two aircraft had the same code, it could lead to confusion—or worse.

Q: I monitor HF aero comms quite a bit and find that it's awfully baffling listening to Atlantic freqs because almost every one is used by two to four different ground stations. Is there any way to block out all others except the one I'm listening to? (Tim, TN)

A: No. The Atlantic families of frequencies *are* all used by numerous ground stations, and there are several reasons for this. One is to allow the flow of traffic from one FIR (Flight Information Region) to the next, and another is to provide continuity of information to all ground stations involved in working traffic.

Q: How far can en route (Center) ATC radar reach? (Ken, FL)

A: About 200 miles.

Q: With the advent of satcom communications usage by commercial aircraft flying over oceanic areas, does this mean that HF voice transmissions are going the way of the dinosaur? (Polly, HI)

A: Absolutely not. The aircraft equipped to use the satcom system must still keep HF radios for backups; also, a lot of charters and third-world airlines will not be able to afford to outfit their aircraft with the necessary equipment to utilize satellite communications.

Remember that transmissions to and from LDOC stations will continue to be heard on HF, so don't give away your HF receivers!

Q: Sometimes I hear pilot and controllers refer to this or that intersection. What do they mean by an intersection? (Alan, IL)

A: An intersection is where two or more airways intersect or cross. They are depicted on aero navigational charts and usually consist of 5-letter names.

Q: How does a nautical mile differ from a regular (statute) mile? (Andy, TX)

A: A nautical mile is 6080 feet, 15% longer than a statute mile (5280 feet).

Q: What is a "knot"; also, how does ground speed differ from true airspeed? (Dave, KY)

A: A knot is a measurement of speed, one knot being equal to one nautical mile per hour. Ground speed is the speed of the aircraft relative to the ground, and true air speed is the speed of the aircraft relative to the air through which it is flying.

Q: I hear controllers and pilots refer to DME; what are they talking about—is it a navigation aid? (Dan, KS)

A: DME (distance measuring equipment) is not a separate navaid; it is equipment used in conjunction *with* navaids, such as VORs, TACANs, VORTACs (omnidirectional navigation facilities), and ILS (instrument landing systems).

The DME operates in the ultra high frequency (UHF) range from 962 to 1213 MHz with a maximum range of 300 nautical miles. 252 frequencies are paired 63 MHz apart, one frequency for air-to-ground interrogation and the other for ground-to-air response. Reliable signals may be received by airborne DME at distances up to 199 nm at line-of-sight altitude with an accuracy of better than 1/2 mile or 3% of the distance—whichever is greater.

DME aids the controller by making a greater portion of his airspace usable. DME-equipped aircraft can hold at any point within reception range of a DME-equipped facility, and are not limited to intersections or radio fixes based on two facilities. They can fly arcs about navaids, restricted use airspace, or congested traffic areas, aiding in reducing general airway and terminal area congestion.

Distance information received from DME equipment is *Slant Range Distance* and not actual horizontal distance. DME measures the slant difference from the aircraft to the beacon, which is slightly longer than the ground distance, but only about 0.5 nm more at 50 nm range. The frequency of the DME is automatically tuned when the frequency of the navaid is dialed, and the distance to go appears when the facility is within range.

Q: How many Air Route Traffic Control Centers are there in the United States? (Dana, CA)

A:There are 21 in the continental U.S. (including Alaska), plus one each in Hawaii, Puerto Rico, and Guam.

■ Readers Corner

Charles Bernth (NY) contributed the photo of the U.S. Coast Guard HU-25 (Falcon 20). He also says that Midway Airlines and USAir have been using Fokker F-100s at ISL Airport (Islip, NY).

Gordon Levine (CA) reports the following military and civilian "catches" on HF:

2887: KLM 787 working New York (ARINC)
5598: JAMBO 34 working New York;
11175:SHARK 63 (C-130) working McDill;
RAIDR 03 (The pilot spelled out the call sign twice at request of McClellan AFB) working McClellan; CHILL 34 working Ascension

US Coast Guard (Falcon 20) on ramp

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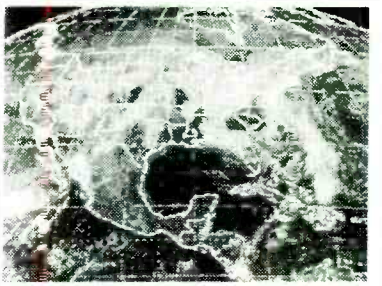

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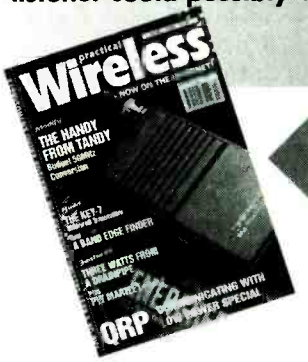

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John Fulford, WA4VPY

Guarding the Royal Visitors

I was watching a television news program showing Fergie, the Dutchess of York, arriving in New York after a first class flight from London. No doubt she hopes to get away from the bad publicity regarding her financial problems, spend some more money, and spread good will to her "American Cousins."

What does this have to do with radio and federal monitoring? The federal agency that met her as soon as she departed from the airplane was the Department of State's Office of Security. Sound familiar?

The motorcade was composed of vehicles from the British Embassy and Department of State vehicles. Vehicles from both agencies were outfitted with cellular telephones. They also had UHF magnetic mount antennas on them. These antennas were connected to the radios of the State Department. We have discussed their frequencies before, but this event is a good reminder that it never hurts to keep them programmed in your scanner. They are:

Dept of State

Chan	Freq	Use
01	409.625	rptr out
	407.200	rptr in
02	409.625	simplex
03	407.600	simplex
04	408.600	simplex

Private line tone is Motorola 5Z, which is 151.5 Hz.

Any foreign diplomatic visitor, other than a head of state, will most likely receive Department of State protection. One exception, however, was the recent peace mission in which diplomats were quartered at Wright-Patterson AFB. In this case, base protection frequencies may be used—but the point is that you never know what royal family member or other dignitary you might find visiting your town.

Military Freqs South of the Border

The United States military operates many frequencies throughout Central and South America. As with most other military ops, their operating frequencies are in the 30-75 MHz band—remember our article on the PRC25 and PRC/77 radios (Aug 95). A majority of the operations are in the 30-40 MHz band and can be heard in the USA when the conditions are correct.

Two frequencies that have active in the past are 37.000 and 41.000 MHz. The first, 37.0 MHz, is used by the Coast Guard in their maritime interdiction program and has used the callsign "Deathdealer" in the past. The 41 MHz frequency has been used extensively by the Drug Enforcement Administration (DEA) in Panama. DEA also uses their 418-420 MHz channels, as was shown in a recent television documentary which showed the DEA agents using UHF radios.

The United States Military Aid Group (USMAG) has been around for many years. It is a network of military attaches at U.S. embassies through Latin and South America. Callsigns of AFF3 and AFF4 are military bases in Texas. No classified traffic is transmitted, but you will hear a lot of day to day traffic involving agencies of our government down in South America. Their shortwave frequencies are:

US Military Aid Group

Chan	Freq (kHz)	Use
C-1	3503	SIMPLEX
C-2	7430	NIGHT PRIMARY
C-3	10935	TACTICAL COMMAND 1
	13937	COMMAND AND CONTROL
C-4	13950	DAY PRIMARY
C-5	20885	DAY SECONDARY

Creeping Paranoia

--or is that click on your phone line just old telephone cables?

I recently ran across some old FBI bid specifications from a few years ago. The FBI, as you have probably noticed, is very worried about outsiders listening in on their conversations. Here is an actual quote from their bid specs regarding scanner listeners:

Degree of Voice Privacy

It is imperative that the degree of privacy proposed be consistent with the following threats to the Bureau:

Hobbyist—The hobbyist is one who gains a vicarious thrill from being "IN" on law enforcement operations.

Entrepreneur—The entrepreneur is one who listens for profit, such as news media or the person who markets lists of government frequencies exhibiting increasing activity.

Criminal—The criminal is one who listens to evade enforcement operations.

The order of the listed "threats" are those of the Department of Justice. I leave any speculation regarding the federal law enforcement mentality or paranoia up to you...

Slick Simplex Trick

While I am sitting here writing this, my scanner is on in the background. I am monitoring the Sheriff's Office tactical and narcotics unit operating on their tactical repeater input channel. The signal is not being repeated on the output. Why?

The subaudible tone needed for the repeater to kick in is not turned on. With programmable radios in use now, it is very easy *not* to program in a private line tone. This allows a virtually secret simplex channel. If repeater operation is needed, the next channel in the radio is selected—this is the same frequency, but with the private line turned on.

The federal agencies are starting to do this also. You need to program the input channels into your scanner next to the output channels. You never know what you will hear.

Frequency Input

A reader from down in Gulfport, Mississippi, sent in the following channels used by the **Navy Seabee Center**.

Freq	Use
138.550	TRANSPORTATION
138.600	FIRE
148.300	COMMAND/CONTROL
149.100	SECURITY

The following information, sent in by an anonymous reader in the San Francisco area, was originally published in the Bay Area Scanner Club's newsletter, *The Listening Post.* The **United States Forest Service** operates an extensive radio system throughout the State of California. The city which follows in parenthesis is the area dispatch center.

The Bay Area Scanner Enthusiasts Club is a good resource for California frequencies. Address: Bruce Ames, P.A.O., 105 Serra Way #363, Milpitas, CA 95035

(photograph by Harry Baughn)

Lassen National Forest (Susanville, Cal.)

Chan	Freq	Use
01	172.225	FOREST NET--SIMPLEX
02	172.225	RPTR OUT
	171.475	RPTR IN
03	166.4875	BUR. OF LAND MGT. (Fire)
04	167.075	Same as Ch.3
05	151.250	ST. OF CALIFORNIA
06	151.250	Same as ch.5
07	168.200	USFS TAC 2
08	170.000	USFS AIR TO GND

Mendocino National Forest (Willows, Cal.)

Chan	Freq	Use
01	169.175	FOREST NET
02	171.550	ADMIN NET
03	171.700	FIRE CAMP SERV NET
04	169.150	INITIAL AIR ATTACK

Medoc National Forest (Alturas, Cal.)

Chan	Freq	Use
01	168.750	FOREST NET
02	170.175	ADMIN NET
03	164.800	FIRE CAMP SERV NET
04	169.200	INITIAL AIR ATTACK

Plumas National Forest (Quincy, Cal.)

Chan	Freq	Use
01	170.550	FOREST NET
02	170.550	FOREST NET RPTR OUT
	169.900	RPTR IN
03	171.425	FOREST NET 2
04	172.350	ADMIN NET
05	164.125	FIRE CAMP SERV NET
06	169.150	INITIAL AIR ATTACK

Sequoia National Forest (Porterville, Cal.)

Chan	Freq	Use
01	168.675	FOREST NET
02	168.775	ADMIN NET
03	171.500	FIRE CAMP SERV NET
04	169.150	INITIAL AIR ATTACK

Shasta/Trinity National Forest (Redding, Cal.)

Chan	Freq	Use
01	171.575	FOREST NET
02	170.4875	ADMIN NET 3
03	172.275	ADMIN NET 4
04	172.375	ADMIN NET 5
05	168.875	ADMIN NET 6
06	164.125	FIRE CAMP SERV NET
07	169.200	INITIAL AIR ATTACK

Sierra National Forest (Fresno, Cal.)

Chan	Freq	Use
01	171.400	FOREST NET
02	171.475	FOREST NET 3
03	164.125	FIRE CAMP SERV NET
04	169.200	INITIAL AIR ATTACK

Moving to the other side of the country, I discovered an interesting frequency for **South Carolina**. The freq of 164.925 MHz is used for coordination between the State of South Carolina and the U.S. Forest Service.

The **Department of Justice** operates many different types of radio systems for their different agencies. Here are three of the lesser known agencies and their radio plans.

Bureau of Prisons

Chan	Freq	Use
01	170.875	OPERATIONS
02	170.925	SECONDARY USE
03	170.650	TACTICAL USE
04	170.825	TACTICAL USE
05	170.900	TACTICAL USE
XX	413.6625	BELT ALARMS

Community Relations Service

Chan	Freq	Use
01	419.4625	RPTR OUT
	414.0375	RPTR IN
02	419.4625	SIMPLEX

Office of Justice Programs - Bur. of Just. Assistance

Chan	Freq	Use
01	165.900	OPERATIONS
02	411.025	SIMPLEX

The government shut-down certainly increased our awareness of how precious our wonderful national parks are to us and to visitors to our country. To wrap up this month's column, here is a dispatch I received from a reader in the area of **Yellowstone National Park** who says the following frequencies are in use there.

Yellowstone National Park

Chan	Freq	Use
01	166.375	NORTH/WEST SIMPLEX
02	166.375	N/W RPTR OUT
	166.975	RPTR IN
03	166.5875	EAST/SOUTH SIMPLEX
04	166.5875	E/S RPTR OUT
	164.8000	RPTR IN
05	167.150	SIMPLEX
06	167.150	RPTR OUT
	163.125	RPTR IN

Radio Control Links: 411.775 411.675 417.375 417.475

Ken Reitz, KS4ZR

New Satellites Brighten TVRO Horizon

The previous two years have seen a string of disasters and mishaps which have seriously hampered North America's satellite delivery capability. With satellites blowing up on the launch pad, misfiring into unusable orbits, or just going haywire after years of service, it has been a period to forget in the short history of satellite communications.

The last few months have finally given industry moguls something to smile about. With the successful launches of Telstar 402R (happily beaming away at 89 degrees west) and Galaxy 3R (now setting up shop at 95 degrees west), the transponder squeeze, which contributed to the ulcer count on Madison Avenue, is abating. In addition, Hughes Communication, Inc. (HCI) has borrowed Brazilsat A1 and set the wheezing old bird up in an inclined orbit at 63 degrees west.

Looming on the electronic horizon are even newer satellites: namely, Hughes' Galaxys 10 and 11, currently in the construction mode, which will provide an additional 48 channels of analog C band and 48 channels of analog Ku band capability. Hughes is also said to be developing a satellite in the Ka band for digital radio to be received by automobiles equipped with special digital radio receivers. Other satellite manufacturers will be building high powered satellites to operate in the S band as well.

The Future Is Calling

The Ka band future is an interesting one and is just now in the developmental stages. Using frequencies in the 28 GHz band (half the wavelength of the more commonly used Ku band) the Ka band activity will consist mostly of telephone traffic, though data and voice services will be available in some schemes. Services plan to use both geostationary and Low Earth Orbit (LEO) satellites.

According to one industry source there are some 14 companies which have filed proposals with the FCC to build and operate such systems. Players in this high-stakes game include the usual heavy weights: AT&T, Motorola, Hughes, Lockheed Martin, and more. If all of these companies were to launch successfully there would be an additional 900 satellites in orbit!

Most Americans have enjoyed reliable telephone service for the better part of 100 years. Yet, in developing countries, such service has never existed; at the current pace of progress it could be decades before such service could connect all those who need it. It is not unusual for people in third world countries to wait up to ten years for residential service. The placement of these new constellations of communications satellites into orbit can shave decades off the advent of telephone service to several billion people.

Now, if you've had your calculator out while reading that last sentence you realize why there are 14 companies scratching and clawing their way into this market. A billion new phone customers, a billion new phones, a billion bills a month! This could be the biggest payoff since the original golden goose!

The one to watch could be Teledesic Corp. whose plan is to launch 40 satellites in 21 orbital planes each making an 840 satellite constellation. This is an outrageous proposal which beats by over 800 any existing satellite fleet. Even if you doubled the $10 billion estimated start up cost (a reasonable proposition, given the complexities) Teledesic founders could well afford it. They are the original deep pockets of the hi-tech world: Bill Gates and Craig McCaw.

AMSAT-DL Vice President Werner Haas, DJ5KQ, pauses at the AMSAT-DL lab in Marburg, Germany, to pose with the fruits of his labor...the flight model 70 cm exciter for Phase 3-D.

HDTV Update

Throughout 1995 the Advanced Television Test Center in Alexandria, VA, and Cable Television Laboratories, Inc. of Boulder, CO, performed evaluation tests in the laboratory as well as subjective viewer tests in Charlotte, NC, on what's known as the Grand Alliance HDTV system. The Grand Alliance was a practical marriage of previously competing American systems of High Definition TV (HDTV) and will likely become the American standard for such HDTV delivery systems both terrestrial and satellite.

According to Paul Misener of Grand Alliance, the technical report, approved at the end of November 1995, " ...concluded, based on intensive laboratory and field testing, that the Digital HDTV Grand Alliance's digital television system is superior to any known alternative system in the world, better than any of the four original HDTV systems, and surpasses the performance objectives of the ACATS..."

The digital images are said to have shown little or no deterioration of quality while transmitting 3 megabits-per-second of ancillary data. The system also sports a 6 channel digital surround sound audio subsystem known as Dolby AC-3 which is said to have performed better than specifications in multichannel audio testing and met expectations in long-form entertainment listening tests.

AMSAT Update

The world of satellites involves a lot of scheduling and re-scheduling of launch schedules, vehicles, and nothing is certain until someone actually hits the fire button at the launch site. After that, it's all up to fate and computers. Those of you who are regular *MT* subscribers will know that we have been following the progress of AMSAT's Phase 3-D satellite which is by far the most ambitious satellite project ever undertaken by such an all-volunteer organization.

According to Keith Baker, KB1SF, of AMSAT, a launch contract for Phase 3-D has been finalized. In a recent Phase 3-D status report here's what AMSAT says "...First, it

Monitoring Euromir 95 launch as the crew prepares to launch from Baikanow. John Locker captured this scene from a transmission on Intelsat K at 21.5 degrees west.

was announced that the flight of Ariane 502, the one we are slated to be on, would be delayed from April 3 to May 29, 1996. Then recently, ESA (The European Space Agency) put out a press release saying that the flight would take place in September but that Phase 3-D may not be on Ariane 502 after all. That's the bad news. The good news is that it has now been learned from meetings with ESA officials in Paris, that ESA have committed to launch us, if not on 502, on an Ariane 4 vehicle prior to mid-1997. We believe that the most likely date is about December, 1996..."

Still, launching the spacecraft is an expensive proposition. AMSAT-NA needs to come up with at least $200,000 more to help meet launch costs. You can do your part even if you're not an AMSAT member or even if you're not a ham by joining AMSAT. For more information write AMSAT 850 Sligo Avenue, Silver Spring, MD 20910. Yearly membership is $30, of which half goes toward a subscription to *The AMSAT Journal*.

Mailbag

As usual, the December column about "SCPC Listening on a Budget" brought a number of responses. Typical of these questions are those from Joann Haines of Phoenix, AZ, and Walt Stawicki of Ellensburg, WA.

Joann wants to know if she can pick up these signals on an 18" dish or a three foot dish. She has an AR3000A receiver but no other components for satellite reception and she lives in an apartment with no back yard.

The short answer is no. Given transmission power and frequency of C band satellites, you'll need at least a four foot dish for decent reception. Now, how you'll manage this in an apartment with no yard is a real challenge. I have set up a four foot dish inside my house and aimed it out a sliding glass door. Aside from being in the way, it did an adequate job, but my reception window was narrowed to just a few satellites which were due south and high on the horizon. If you can work the dish into your interior decorating scheme you'll have really done something.

Walt would also like to be able to use his scanner in reception of SCPC signals and wants to know if a modification to narrow the bandwidth would help. He writes: "I wonder if the Uniden 2500 can respond to surgery and at a cost less than the Universal SC-1000. I guess the promise of a D.C. to daylight super-radio is a dangerous bite to be inflicted with..."

And it's a good question. I have no idea if there are such modifications available; other readers may have some info on that. As to the notion of a "super-radio," I agree. Having one device which does it all never did make sense. It's bound to be out of the price range of most hobbyists. In the case of SCPC listening there is so much reliable used equipment around at cheap enough prices, and it is so easy to put together, that it would very hard to justify such a questionable modification.

The Locker Report

Our man in England, John Locker, checks in with his regular batch of interesting snapshots of European satellite in action and a report on what's happening on the other side of the Atlantic. He reports that PAS 4 in operational at 68 degrees east which makes it just over 2 degrees above his horizon. Other new kids in their neighborhood include Telecom 2C replacing 1C, which has had a long and productive life; and PAS 3R which replaces PAS 3—one of the failures of '95 alluded to earlier. PAS 3R will end up at 43 degrees west.

Other Satellite News

The European Space Agency and NASA have teamed up to produce and launch a satellite which will allow Earth-bound scientists to study the Sun 24 hours a day all year long. This is done by positioning the satellite so that it is at a point between the Sun and the Earth where the gravitational pull from each is equal. It turns out that distance is 900 million miles away. Instruments on board the 1.6 ton solar observatory, dubbed "SOHO," will be able to "see" inside the Sun as well as observe conditions at its surface. First reports from SOHO should be received by the first week of April.

If you've been watching Ku satellite channels you have probably noticed Telstar 401 has quite a bit of activity. South Carolina Educational Television Network (SCETV) resides on channel 3, and additional PBS network schedules can be found on channels 6, 7, and 8. What's more, Georgia Public TV has two half-transponders on transponder 14 upper (GPTV) and 14 lower GPTV-Peachstar Satellite Services. GPTV is the Georgia state public broadcasting service which distributes its daily service to the many Public TV stations throughout the state. Peachstar is the state distance learning network transmitting educational programming directly to schools in the Georgia public education system.

Bill Cheek
Internet: bcheek@cts.com; BBS & FAX: 5:30-1:30 p.m. PDT: 619-578-9247
Compuserve: 74107,1176; World Wide Web: http://ourworld.compuserve.com/homepages/bcheek

PRO-26 S-Meters and NFM Discriminator Magic

The PRO-26 comes with two built-in S-meters, one for NFM/AM and another for WFM. Well, technically, you have to open it up, add a component and a wire or two, and supply your own S-meter, but the hard work has already been done. The S-meter circuits are an integral part of the PRO-26's IC-14 (NFM/AM) and IC-16 (WFM) discriminator chips. There is an output pin on each chip expressly for S-metering. (See Figures 1 and 2.)

IC-14's S-Meter output is at Pin 16, (RSSI OUT in the chip's technical literature, meaning Received Signal Strength Indicator). Newer scanners may soon have this capability because of the new wave of chips with the S-function built-in. Few, if any, scanners will actually take advantage of it, but *you can*!

The PRO-26 uses the NFM/AM signal strength function to generate an AGC signal for the RF Amplifier (see Figure 3) where Pin 16 of IC-14 feeds trimmer potentiometer RT2 and transistors Q13 and Q12. You should not alter this circuit, nor adjust RT2, but you can sample the signal from Pin 16 through an isolation resistor and feed it to the S-Meter of your choice, analog or LED. (See Figure 4 and back issues of *MT* and/or my books where various types of S-meters are discussed in detail.)

The PRO-26 has a lot of electronics packed into a small space, but there is room in and around the front case to install a bargraph S-Meter using micro LEDs. Otherwise, you should install a 3/32" phone jack or other means of connecting a cable to the scanner for an external S-Meter. This is probably the best overall approach, because LEDs draw valuable power at 5-ma to 20-ma per LED and you don't want premature battery failures in the field.

Figure 3 shows the PRO-26's NFM Discriminator circuit and the spot to tap the NFM/AM S-Metering signal. The WFM circuit at IC-16 is very similar, so Figure 2 will guide you just fine. Figure 4 shows the simple add-on circuits for both NFM/AM and WFM. If you use an external S-meter, then the circuits in Figure 4 can be installed with the meter housing, leaving nothing to do inside the scanner other than to bring two wires out to some sort of a jack or connector on the case. A stereo 1/8" phono jack might be ideal for the two signal leads and a ground. Figure 4 shows how.

Magic for Other Scanners

Despite a variety of different chips for NFM, AM, and WFM, this part of a scanner is very much like that in all other scanners made over the last 10-15 years. You've seen one, you've seen them all, so let's use Figures 1-3 to highlight some very interesting things you can do with your scanner, no matter what its make and model.

Esoteric Monitoring

There is a rapidly growing interest in specialized monitoring, from CTCSS and DTMF, to computer data, pager decoding, satellite telemetry, and weather fax (WEFAX). I'll leave the details up to you and your needs, but surprisingly, most scanners are capable of some enhanced reception. The trouble is that these signals are not voice; rather, they're fax or FSK (data), and so you have to crawl inside the scanner to unleash this power. The internal work mostly consists of tapping the signal at the proper spot and routing it to a jack mounted on the scanner so you can connect a patch cable between it and the external demodulator or interface that goes on to your computer.

The exciting thing is that no matter what your specific interest in esoteric monitoring may be, the signal source is the same for just about all scanners. You just have to understand a few simple concepts and then have a clue as to where to find the pick-off point for those exciting signals.

The Concepts

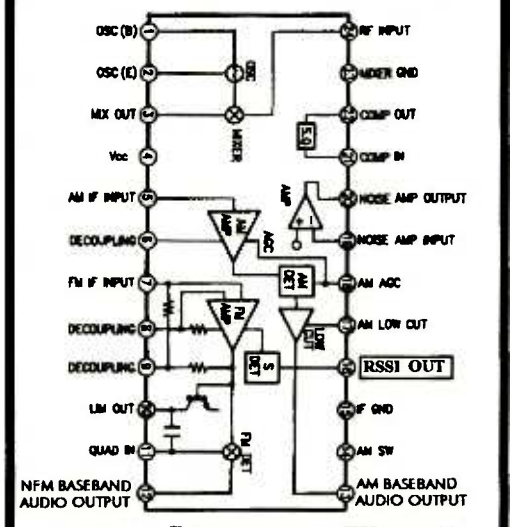
The first thing is to understand that scanners are made to receive voice signals roughly between 300-3000 Hz, and so the audio circuits of most receivers are "filtered" to pass the voice band and to reject frequencies above and below it. You cannot reasonably hope to connect a demodulator/detector to a headphone or external speaker jack and be able to decode CTCSS signals between 60 Hz and 300 Hz. They're filtered out!

Likewise, high speed data formats have an upper frequency shift to well above 3000 Hz. You won't be able to use the signals from a headphone or external speaker jack: you have to install your own jack, and wire it inside the scanner to the proper unfiltered pick-off point.

Baseband Signal Points

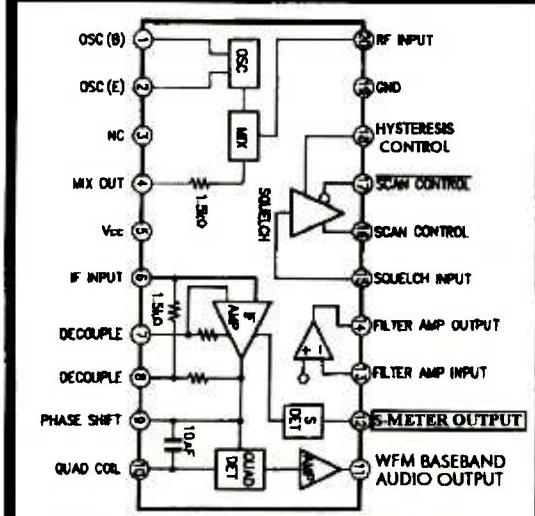
An RF signal is captured by your antenna, amplified, mixed and downconverted two or

FIG-1: TYPICAL NFM DISCRIMINATOR

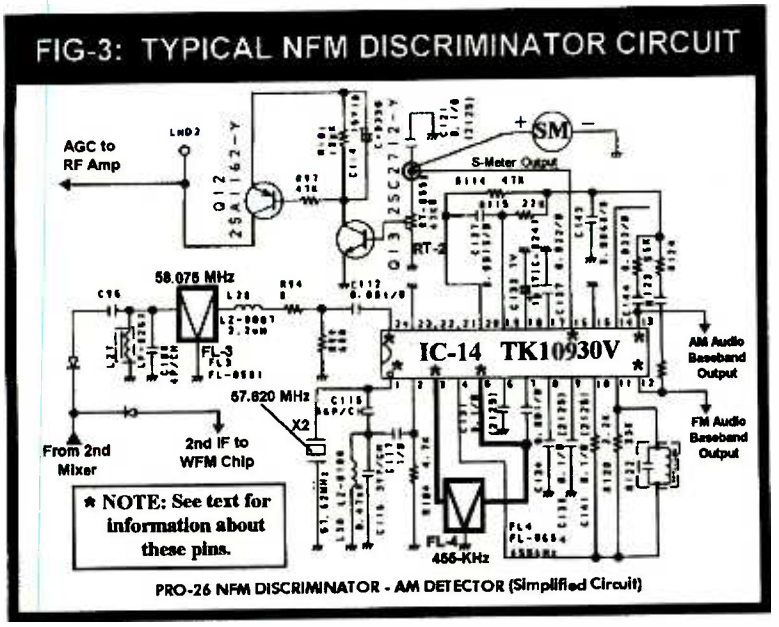


PRO-26 IC-14 NFM/AM TK10930V

FIG -2: TYPICAL WFM DISCRIMINATOR



PRO-26 IC-16 WFM TK10489MTL



three times before it becomes low or line-level audio. The signal at that point where it has just been converted from RF/IF to line-level is better called "baseband audio" or just "baseband." The baseband signal is then routed to the SQUELCH and audio preamplifier circuits and on to the power amplifier. But, it's this baseband signal that contains all the information from the distant transmitter and not just the voice band. Enhanced monitoring requires this baseband signal and here's how to get it.

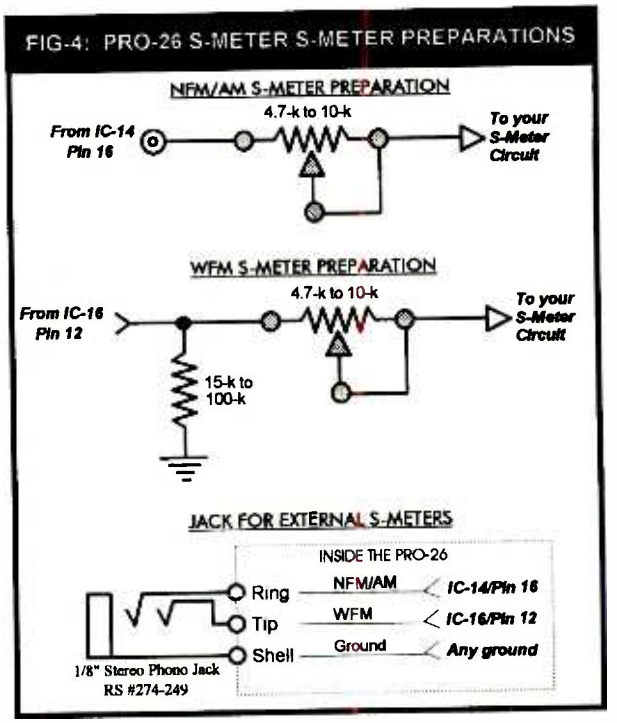
Refer to Figures 1-3. The NFM baseband signal of the TK10930V chip is at Pin 12. The WFM baseband signal of the TK10489MTL chip is at Pin 11. The AM baseband signal of the TK10930V chip is at Pin 13, but forget AM baseband for now because rarely, if ever, are any enhanced signals encoded with AM transmissions. Even if there are, you can still pick those signals off the NFM baseband point. By and large, CTCSS and most FSK/PSK signals are NFM, while SCA and some FSK/PSK can be found in WFM basebands.

All these points are then obvious for the PRO-26, but how to find it for other scanners? All scanners nowadays use an NFM chip almost exactly like that shown in Figure 1 for the PRO-26. A few pins may differ from one chip to the next, but the differences are not substantial. Study Figure 1 briefly, and then look up the chip in your scanner, which will be so similar that you should have no problem finding the "FM Audio Out" or "baseband audio" output pin. When you do, *that's* the pick-off point! At that point, and *only* at that point, are you assured of the signal being raw and unfiltered—just ripe for your external processing requirements.

Hook-up to the Baseband

Solder a (RS# 272-1435) 2.2-µF/35vdc tantalum capacitor, (+) leg to the baseband audio pin of the Discriminator chip. Solder the center conductor of a short length of shielded mic cable or mini coax to the (-) leg of the capacitor. Solder the shield of the mic cable at that end to a nearby ground spot in the scanner. Route the shielded cable to a jack mounted at some convenient place on the scanner's case. Solder the center conductor of the shielded cable to the center or hot lug of the jack. Solder the shield of the cable to the ground or shell lug of the jack. *Voilà*! Baseband audio for a variety of applications!

NOTE: do the same thing in the same way to the WFM chip, if your scanner has one (most don't), for easy output to an SCA decoder.



Satellite and Data Reception

The foregoing is required for all enhanced monitoring, but it may not be good enough for certain kinds of data, especially high speed (9600-bps and up) data and satellite signals. The limitation here is the ceramic IF filter located between pins 3 and 5 of IC-14 (See Figs 1 and 3). This filter sets the selectivity of your scanner for the NFM and AM modes.

In my opinion, it's pretty sloppy and wide at 15 kHz for most scanners, but for high speed data and satellite signals, it may be too narrow. You may want to replace this filter (FL-4) with a wider one in such cases, (20 kHz to 50 kHz). If so, contact the filter experts for something best suited to your needs:

KIWA ELECTRONICS
612 S. 14TH AVENUE
YAKIMA, WA 98902
(800) 398-1146 or (509) 453-KIWA
kiwa@wolfe.net
http://www.wolfe.net/~kiwa

Thanks to Joseph Jesson of JSoft Technology for an insight into these new chips with built-in S-Meters. JSoft is the developer and producer of Pager DataScope, a remarkable pager data decoder package that displays pager data on your screen! Pager decoding has become an extremely popular pastime for computer-based scannists. For more information on Pager DataScope, contact: JSoft Technology; 21414 W. Honey Lane; Lake Villa, IL 60046, or e-mail: jsoft@mcs.com

Computer Upgrade Feedback

Several people asked me if it would be better to upgrade a 386 computer to a Pentium and not bother with stopping at a 486. The answer is maybe. It depends on how serious you take your computing; and if you have any inside experience with computers. Even then, the price is much higher, so I'm not sure there is a universal answer. Unless there are extenuating circumstances, my advice is to cut your teeth on a couple of 486's before taking on the Pentium. However, if you buy a brand new computer, don't stop at anything less than a Pentium 100.

Contest Time

Remember my offer for the next four months: submit an idea or a project for this column and if selected, you'll receive an autographed copy of my latest book, *The Ultimate Scanner.*

Wayne Mishler, KG5BI

Sailing the Rising Waters of Wireless

Our soldiers in Bosnia learned in a hurry not to pitch their tents on a riverbank. As they slept, the waters rose and soaked them. In some ways our world is not so different. Whether we realize it or not, and whether we wish it or not, every day the rising waters of wireless technology creep ever closer to our complacency.

We keep hearing the questions: What is wireless? And what's it got to do with us? Even as we yawn and toy with the answers, the waters of wireless are lapping at our feet.

Not to worry. The corporate giants of telecommunications are riding the wavefront and charting a course and welcoming us aboard their sleek new vessels of adventure.

■ AT&T goes wireless

For a ticket aboard one of the biggest, you need only call 1-800-IMAGINE, like the TV ad says. AT&T will answer with a smorgasbord of options in cellular telephones, in-flight phone service, paging, and wireless data transmission.

Vicki Gaines, Marketing Manager for the AT&T Wireless Services district of Arkansas, Oklahoma, and southwest Missouri doesn't blink in reminding us that her company serves almost five million cellular customers. She's quick to add that the company will soon cover 80 percent of the nation. And their services, which include wireless data communications, will probably affect your home or business in the not so distant future.

The flood of wireless services and products in this nation is already seeping into the picturesque Ozark Mountains where less than a year ago many backcountry folks struggled with party-line telephones.

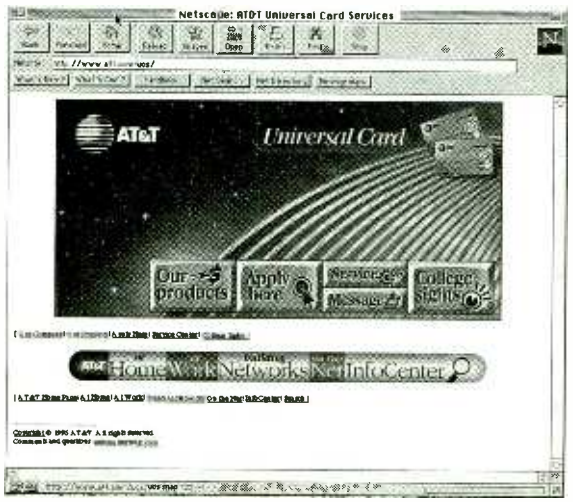
The floodgates of wireless in the Ozarks and in Oklahoma swung open with AT&T's 1994 acquisition of McCaw Cellular Communications for $11.6 billion. In the past year alone, AT&T Wireless Services has acquired ten cellular licensed areas in more than 50 counties to become the largest cellular provider in the state, says Gaines.

"Last October we announced we would convert to a digital cellular network in this area by the first week of 1996. We became digital-ready in Fayetteville (Arkansas) the second week in January, and will be launching digital service (in the area) in upcoming months," she says.

As a result, AT&T customers in this mid-America region will soon be enjoying improved voice mail with message-waiting indicator, alphanumeric paging, short messaging—and a digital control channel that promises to extend telephone battery life by a factor of ten.

All of this substantiates a recent report by Insight Research Corporation that over the next four years telephone companies around the world, including AT&T and others, will be spending billions of dollars to upgrade their capabilities. Much of that will go for adding new wireless network infrastructures.

The advance of computers, on-line services, data transmission, and other digital traffic is pushing existing network managing systems to the limit. Digital networks of course are not new to the phone industry. It is the increasing *density* of new digital devices being added to networks that are taxing the systems, says Insight.



■ Sprint catching up

Sprint Telecommunications Venture plans to have its wireless phone network operating in western Washington state by the end of this year. They will serve up a full plate of cellular phone service in competition with U.S. West and AT&T Wireless Services. And for dessert there will be an appealing line of communications products, including long distance and local phone service, wireless digital data, and paging services.

"We will offer new ways of putting together communications services that will be more economical and more powerful for our customers," says the director of Venture.

Later this year, Seattle customers may be able to choose from at least four carriers for wireless communications and cellular phones, according to the Seattle *Post-Intelligencer.*

■ Nexus in the family

And on top of all this comes still another report that a new two-way paging service priced for families will debut in the U.S. this fall.

This new system will cost a third less than its competitors. "We envision a low flat rate for unlimited messages," says the system's developer, Nexus, an Israeli defense contractor.

Nexus pagers are expected to sell for about $200. They will transmit in the unlicensed 902-928 MHz band in which carriers won't have to bid for space. Carriers can use existing paging infrastructure, and they will need fewer receivers in their network than their competitors. All of this adds up to increased savings for customers.

Powered by two AA batteries, which last four to six weeks in average use, Nexus pagers transmit in the band used by cordless phones and wireless speakers. The band is also shared by high-power ship radar, federal two-way radios, amateur radios, and automatic vehicle-location systems. "But they won't interfere with our service," says American's manager of business development, "because we use frequency-hopping spread spectrum technology that is unjammable." (Try saying *that* at happy hour!)

Nexus users can select from 256 messages pre-programmed into the pager. They can send responses *and* new messages to other pagers, public, and private e-mail networks, or to a telephone. Messages are transmitted as digital data, but converted to voice before they reach the phone. The units are to be manufactured by Samsung or possibly others, and distributed through normal retail channels.

So in this rising tide of wireless, maybe it's time for you to get your feet wet. You can start by calling 1-800-IMAGINE.

John Catalano, PhD

Market Watching and Star Gazing

With new computer companies trying to maintain their inflated share prices, new products are being introduced almost hourly. Buying computer hardware is now as volatile as buying commodities such as soybeans—well, almost. In any case, watching the price and availability of hardware is like riding a roller coaster. Your ticket to ride could cost you plenty if you don't know the market trends. So to start out this month we will give an overview of the computer market derived from industrial contacts, business and technology literature, and gazing into the crystal ball.

The price of hard drives skidded to an all time low in the fall of 1995 with 1.0G drives priced at $200! The holiday demand pushed prices back up by 15% by the 25th of December. This artificial shortage, which led to the increased prices, was mainly due to retailer's reluctance to hold large quantities of inventory with falling value. Many mail order suppliers fabricated a "new supplier" story to excuse their higher-than-advertised prices. Market sources indicate that these prices will hold into the first two months of 1996. After that they may return to 5% above their 1995 low.

Multi-speed, higher than 2X, CD ROM drives are now close to $100. 1.44M, 3.5 inch floppy drives have increased their price to $40 as a result of becoming the standard and kicking out the 1.2M, 5.25 inch drives. Combo 1.44M and 1.2M drives are now selling around $80. 720K, 3.5 drives are being dumped at, or below, $20.

WalMart has been selling a special bundled pack of Microsoft's new optical joystick and their Space Simulator software for $40! Microsoft's optical joystick comes in two versions; the normal one offered in the WalMart pack and a Pro version. The Pro version has extra control buttons and rotates to provide an added dimension of control. This can be used to select different views in simulators and games. The prices on these Microsoft joysticks vary wildly so check around before you buy. The $40 deal is one of the best I've found.

CD ROM jewel-cased software is around $10 in department stores and office supply stores. Although these are mostly CD versions of one, two, or three year old software releases, some excellent deals can be found. Also check Sam's, BJ's, and other club membership stores for CD-ROM packages. How does five oldie-but-goodie flight simulators for $15 sound?

Prices on newly released CD-ROM software are going up, *but* many are being heavily discounted within 60 days of introduction. Check your local software dealer or CD ROMs Plus of Salem, NH (603) 898-5047. Mention that you saw the info in this column for an extra *MT* discount on some products.

Due to all the internet interest (and hype) 14.4kbs modem prices are holding. Likewise for the prices of monitors and SVGA video cards.

With semiconductor manufacturers all over the world putting in new manufacturing capability in 1995 watch for the price of RAM memory to fall below the pre-Windows 95 introduction prices. The memory-hungry Win 95 created a burst of new demand for RAM. In '96 the bottom could really fall out of RAM prices, hitting all-time lows. Watch carefully before you buy.

Windows 95 continues its downward sales spiral. Most comments I've heard from private and professional users indicate that it's not worth the software and hardware costs, nor is it particularly user friendly. But wasn't that marketing introduction plan just beautiful?! TV coverage of people in New Zealand scrambling to donate their $89 to Microsoft to buy the first product. How exciting. How social. How manipulated.

The first "real" analysis of the early 1995 holiday computer sales was much lower than expected. Sales did pick up in the last week, but they may not have come close to predictions. We'll follow up on these product areas every three months, or when something wild happens.

■ UpDate: Scan Star Plus for Windows

In the September '95 issue we reviewed a Scan Star product received from one of their dealers. Well, as luck would have it, the good people at Scan Star informed me that this was not their current version. So this month we will take an abbreviated look at Scan Star Plus (SSP) for Windows, Version 5.56, sent to us directly from Scan Star.

Scan Star Plus (SSP) is a program which provides a total monitoring environment; receiver control, station logging, data logging and terminal screens for digital mode decoders. The advertisements claim "High performance, full featured..." Let's see it in operation.

Fig 1 - Tactical Screen of Scan Star Pro V.5.56 with sample police file loaded

■ Requirements & Start-up

System requirements are not basic, but neither are they high by today's standards: IBM PC 386/486/586, 4M RAM, 2M of hard disk space, VGA, mouse, serial ports, computer controlled radio (including level shifter and serial interface), and Windows 3.1 or 95. The program comes on one 3.5 inch, high density floppy disk. By following the instructions which come in the "Getting Started" document, typing "setup" does it all automatically until you get to the key which asks for your name, the activation key, and the serial number data which are enclosed.

Once the program loads it asks you a number of questions so you can match your equipment to the program. For this review we used the old but reliable FRG-9600. SSP supports the following radios: AR3000, AR3000A, AR8000, R7000, R7100, R9000, OS456, OS535, DC440 and FRG9600. Setup was easily completed in five minutes. Within ten minutes of first putting in the floppy, my FRG-9600 was zipping along scanning the demo list of police frequencies. The "Quick

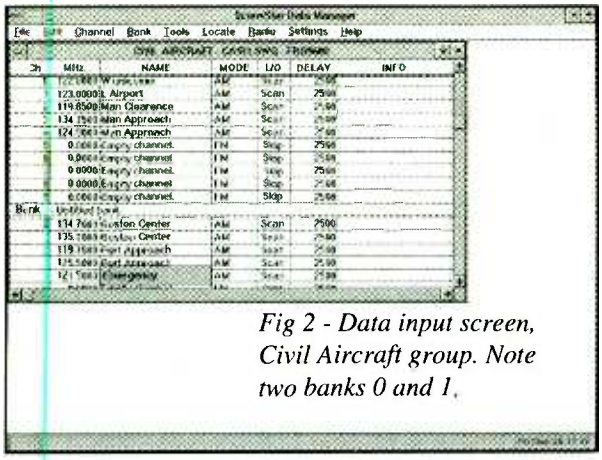


Fig 2 - Data input screen, Civil Aircraft group. Note two banks 0 and 1.

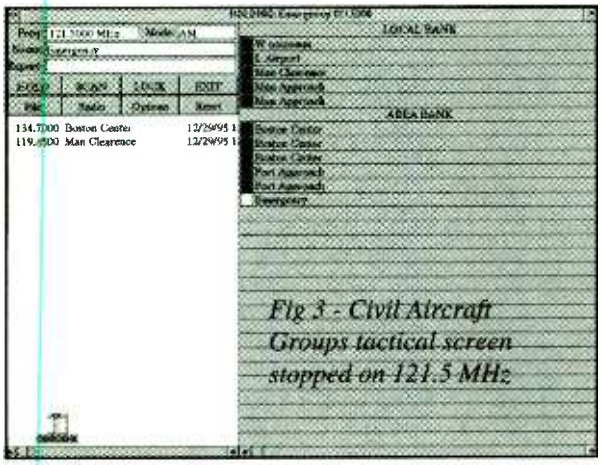


Fig 3 - Civil Aircraft Groups tactical screen stopped on 121.5 MHz

Tour" section of the "Quick Start" makes this possible; it simply requires clicking on the radio of your choice and then the file you wish to scan or modify.

Four major display layouts are possible. I found the Tactical display option the most useful. The main screen split vertically with the left side containing control buttons for all radio and database functions. See Figure 1. Below these buttons is a log of the frequency channels which had activity. The date and time of the logging is visible by moving the window. Above the row of control buttons is an area which identifies the current function of the radio. If it is stopped do to activity, all channel data is displayed in this region.

The right window gives the user an overview of the database, or bases, which are being scanned. By clicking on the boxes on the left of each entry it can be locked out of the scan. The lockout activation turns the box red in color. If a scanned channel becomes active a check appears in the box.

Adding Our Own Frequency Data

By exiting the Radio program of SSP and entering the Data Manager's File, New Group, the screen in Figure 2 appears. Within each Group the number of banks and the number of channels in each bank are user-definable. The maximum number of channels per Group is 2000, but the number of groups is only limited by the user's hard disk space. As you can see from all the possibilities on the Command line, we can control *many* more radio and database parameters.

We have defined a new group called Civil Aircraft, containing two banks of ten channels each. Filling in our frequencies and descriptions is just a matter of point/click/type. Individual channel scan delay time can be set from this screen. Figure 3 shows the result of partially filling our newly created Civil Air Group. Notice the two banks named Local and Area. With a mouse click the channel descriptions can be replaced by their frequencies.

Starry Eyed

I've never seen the FRG-9600 scan so fast! For newer radios SSP includes a very slick spectrum analysis function, a monitoring assistant function, and much more.

Since this is an update review we will keep it short and get to the bottom line. It was a pleasure to use and I like it. It's very well behaved in its Windows' 3.1 environment.

In my opinion, a smoother method of going from the Data Manager to the Radio Manager should be implemented in the next version. In the version we looked at, going between managers required going back into the Window's Program Manager—or in my case, Dashboard, which I use to launch Windows. Then re-running the other manager. It just requires a few extra seconds and mouse clicks, but it could be made smoother and quicker.

A bigger issue is the price. At $159.97 Scan Star Plus is right at the top of the price pyramid! The company offers a number of Scan Star models starting at under $100 for the casual user. But for the serious user who needs high performance, parameter customization, *and* who has a bunch of bucks to drop, Scan Star Plus should be considered a serious candidate.

Scan Star Plus Version 5.56 is now available from Signal Intelligence, PO Box 640891, San Jose, CA 95164, telephone (408) 926-5630, and also from Grove Enterprises (800-438-8155). Till next time, cram your RAM with monitoring software.

Bill Grove
bill@grove.net

Just Play That Old-Time Rock-N-Roll

Decades have passed since the warm glow of vacuum tubes brought life to the classic radio. But, the same imagination and passion for new forms of communication that drove the pioneers of radio also fuels the Internet. The Web wouldn't be nearly as diverse or structured if it hadn't been for those early innovators. Since the first signal was heard from a cordless voice, to all the great shows of the 30's, 40's and 50's, radio has been the proving ground on which the Internet was built. Now classic radio can itself be heard on the Internet.

"Who knows what evil lurks in the hearts of men... the Shadow knows!" intones the voice preceding the bone-chilling laughter. This is just one of many voices that live again at **www.old-time.com**. The Old-Time Radio folks have put together a beautiful tapestry of pages, all dedicated to the old-time radios and the shows that lived inside them. Net News will not often address commercial pages, but these folks have done so much to give you free software, free sounds, and to bring back to life the old radios that the radio community should reap a lot of benefit.

Point your net browsers to **http://www.old-time.com/sounds.html** and listen to audio from such great shows as *The Lone Ranger*, *The Whistler*, *The Inner Sanctum* and, of course, *The Shadow*. Or hop to **http://www.old-time.com/stars.html** and view pictures of radio greats like Fred Allen and Orson Welles. FAQs (Frequently Asked Questions) about radio, listings of equipment for sale, old-time radio clubs, and much more make this site well worth the visit.

One-man Shows

If you are interested in radio, then one page that will be a gold mine to you is **http://www.li.net/~j4dice/scanli.html**. This page, done by Jim Fordyce, is a treasure-trove of radio-related information (especially for the Long Island area) and links. Jim's links will take you to many radio clubs and companies alike (including Grove Enterprises). He also links to other sites with scanning information from Maine to South Florida to Albuquerque. You can find federal to fast food freqs across the nation..

Until now, all the sites I have visited are based on Netscape 1.1 or higher. These next

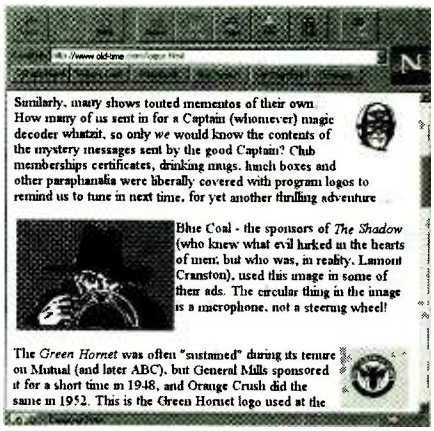
two sites—Jim Hawkins' home pages—are made to be viewed with Netscape 2.0 or higher (available for free download from **home.netscape.com**).

The first, at **http://www.exit109.com/~jimh/radio.shtml**, is dedicated to the Voice of America site near Greenville, N.C., sharing on-line some detailed photos from a tour of the now-defunct relay station.

Hawkins' second set of pages, at **http://www.exit109.com/~jimh/ham.shtml**, also offers some Netscape 2.0 animations, as well as a wonderful downloadable animation of a flight through an electron tube. He has even included a player for this animation on his page. It will take a while for these to download, but the time is worth it. Since java—a new language of the World Wide Web—is so recent, it's good to see hobbyists putting it to use so quickly.

Far East Site

Plugging into **http://www.nhk.or.jp/rjnet/** will bring you all the way around the world. Radio Japan's homepage brings you all of their broadcast schedules, air times from around the world, and details of their services. For some fun, check out their'staff page to



see their bright, smiling faces.

One of the fascinating things about these pages is the English/Japanese option. You can get the full text of the pages in either language. I wouldn't, however, recommend the Japanese without the appropriate browser!

Where to Go for Software

Finally, there's something that I haven't talked about much here in the column, and that's software. After all, if you are reading this column and checking out the sites, it's pretty darn obvious that you can use a computer! So one site that should stay in your bookmarks is **ftp://ftp.funet.fi/pub/dx/text/scanning/**.

If you aren't using Netscape and can't download files with your web browser, you're going to need an ftp program. Ftp, or File Transfer Protocol, is the way that files are usually transmitted across the Internet. You can anonymously log into a site and download files from it. Many sites have software related to radio. The funet site is in Finland and is one of the largest software repositories on the Internet.

This month we have taken a peek into the past; in the coming column we will continue into the future. Since the Internet is an ever-changing world, I'm always looking for new and neat sites on the 'Net. If you find a site that you find interesting and you think it would be a good site for the column, please send the URL to **bill@grove.net**. Also remember to check out **www.grove.net/netnews.html** for the latest links related to the column. Thanks for all the links that you have sent in so far, and as always, have fun!

WHAT'S NEW?

BOOK REVIEWS AND NEW PRODUCTS

by Larry Miller

Guest reviewers: Bob Grove, Doug DeMaw, Gayle VanHorn. Special thanks to Kannon Shanmugam, Bob Coburn

AR5000

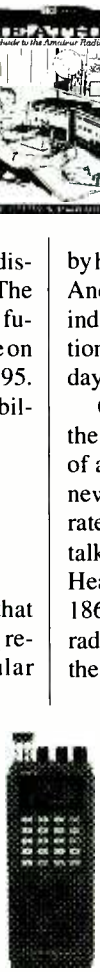
You may have seen the ads for the new AR5000 communications receiver. It's billed as the cutting edge of scanning technology and it boasts a line-up of features that are very, very, impressive. Here are the details, to date. The AR5000 will reportedly cover everything from 10 kHz to 2600 MHz, (presumably less cellular).

Independently selectable modes will include narrow band FM, wide band FM, AM, USB, LSB, and CW. The AR5000 will also feature an NCO or Numerical Controller Oscillator that will take tuning rates down to an amazing 1 Hz. A TCXO is included as standard and is used to reference WWV and to provide the receiver with a very high degree of stability.

The AR5000 will be a triple conversion receiver, have scan/search speeds of 50 channels per second, 1,000 memory channels, an alpha-numeric display and a DTMF decoder. The AR5000 — Scanner of the future? Grove Enterprises' price on the AR5000 will be $1,849.95. Call 704-837-7081 for availability.

Yupiteru Replaces the MVT-7100

We've also been told that Yupiteru has announced a replacement for their popular Yupiteru MVT-7100. Called the MVT-7200, it's another wide-band radio covering 530 kHz all the way up to 1650 MHz in narrow and wide band FM, wide and narrow band AM, USB and LSB. Tuning steps will reportedly be 50 and 100 Hz, 1, 5, 6.25, 9, 10, 12.5, 20, 25, 100 and 125 kHz. 1,000 memory channels round out the menu on this mid-range portable.



There are reportedly some changes over the '7100, including a rubber duckie antenna instead of the collapsible rod antenna. Bandwidth might be narrower and selectivity of USB and LSB is improved. Watch *MT* for more details. As of the moment, we're not aware of any US distributors of the Yupiteru.

Heathkit: A Guide

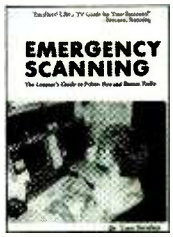
Heathkit radios were probably responsible for bringing more people into the monitoring hobby than any other business. Back before Grove, Heathkit led the way with shortwave radios, ham transceivers and—few people remember this—scanners. All were kits. All were lovingly assembled by hand. Virtually all worked well. And, without a doubt, all left an indelible impression on a generation of hobbyists that lasts to this day.

Chuck Penson has assembled the ultimate guide to Heath's line of amateur radio products. In his new 248-page book, Penson narrates the history of the company, talks about buying and collecting Heathkit products, and offers a 186-page guide to the amateur radio products from the AT-1 to the VX-1. Each model is presented with a photograph and includes a product narrative as well as such details as manufacturing date, price, and related products. Also covered are the many shortwave receivers and scanners that Heath produced.

If you ever had a Heathkit or if you ever wondered what all of the nostalgic waxing was about, *Heathkit: A Guide to Amateur Radio Products*, is must reading for you. You can get your copy from Electric Radio Press for $24.95 plus $3 shipping. Write or call Electric Radio, Box 57, Hesperus, CO 81326 (970) 247-4935.

Emergency Scanning

Often the books published on scanning police, fire, and emergency medical communications seem to concentrate on the hobby of scanning and somehowforget the reason for scanning



Tom Swisher's new book, *Emergency Scanning: A Guide to Police, Fire and Emergency Medical Radio*, is 64 pages of hands-on information that has only one goal: to help you do your monitoring job better. And Swisher knows the job. He's both a professional scannist and a public safety professional, working as both dispatcher and firefighter. A complete frequency allocation table is included in each book.

Emergency Scanning is the second in the "Scanning with the Experts" series, produced by *National Scanning* magazine. To get your copy of Emergency Scanning, send $9.95 (postpaid) to National Scanning, Box 360, Wagontown, PA 19376 or call 610-273-7823.

New Hampshire Guide

The new 8th edition of the *Official New Hampshire Frequency Guide* tips the scale at 224 pages and sets a record at 12,272 frequencies. Written by John Bolduc and Scott Rice, the new edition features a new, easy-to-read format complete with 72 pages of detailed information on state and national systems. There are maps, frequency allocation charts, the new emergency medical service, and information on 220 MHz licensees.

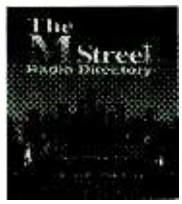
In addition to public safety, aeronautical, railroads, business, maritime, and New England notification networks, there is also coverage of New Hampshire's race track frequencies (including the new NH International Speedway UHF system).

Frequencies are arranged by community for easy look-up and there are cross-reference listings by frequency, call-sign, and licensee, and all include PL tone.

The *Official New Hampshire Frequency Guide* is available by sending $19.95 plus $3.05 shipping to Box 525, Londonderry, NH 03053. Their toll-free line is 1-800-351-7226.

M-Street

Years ago, if you were a DXer who wanted every possible clue to identify and verify a station, you bought *Broadcasting Yearbook*. Then, with the introduction of the *M-Street Radio Directory*, top-quality information became available at an affordable price.



Today, the *M-Street Radio Directory* remains the DXer's Mercedes but the price is also creeping up—nearly $50 with shipping added. In my opinion, *M-Street Radio Directory* has now left the realm of a hobby book and entered the rarified air

of a professional reference. Hobbyists with lower sights may want to get the NRC *Logbook* for '96 instead.

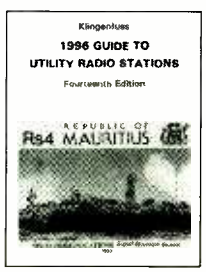
Nevertheless, this is one good piece of work. *M-Street*'s data is fresh and is arranged by call letter, frequency, state and city, markets, and even past call letters. Each main listing includes facility information, ownership, format, phone and fax numbers, addresses, ratings, personnel records, and more with over 25,000 changes packed into 880 pages.

The *M-Street Radio Directory* is published by the M-Street Corporation (800-248-4242). It is also available from Grove Enterprises (800-438-8155) for $43.95 plus $3 bookrate shipping.

1996 Utility Guide

Now integrating the formerly-separate *Guide to Radioteletype Stations*, Klingenfuss' latest directory of worldwide two-way communicators under 30 MHz is now an information-packed, 600-page missal! But the girth of the *Guide to Utility Radio Stations* is only outweighed by its comprehensiveness and accuracy. With voice and virtually every type of digital mode, the guide covers civilian and military aeronautical, military tactical, government and diplomatic communications, maritime, International Red Cross, United Nations forces, and many more.

Some 14,500 frequencies, along with callsigns, locations, and uses, are listed in this giant compendium which also includes special tables of Q and Z codes, abbreviations, fax schedules, and other aids to monitoring the active shortwave spectrum.



1996 Guide to Utility Radio Stations, 14th edition, by Joerg Kingenfuss is $39.50 plus $3 bookrate shipping from Grove Enterprises; also available from other *MT* advertisers.

— *BG*

WRTH 96 Golden Anniversary

The 50th anniversary edition of the *World Radio TV Handbook* is out...and it's a winner!

Known in the radio hobby as the authoritative directory of worldwide radio and TV stations, the new, redesigned edition is receiving raves from the world's broadcasters and radio enthusiasts.

Following the essential guide to *Using the WRTH*, this anniversary edition includes a behind-the-scenes look at the history of *WRTH* called *The Way It Was*. Editor-in-Chief Andy Sennitt and his talented staff follow up with *Things That Aren't* and, my favorite, *Pardon My Blooper* on real-life broadcasting blunders.

Several features provide listening tips and tools for the international listener. This includes program suggestions, the annual *International Broadcasts in English*, reception conditions forecast for '96, and a special focus on the broadcasters and radio-related material to be found on the Internet.

One of the most popular sections is the *Equipment Test Bench*, with receiver reports, reviews, and updates on accessories, including KIWA's new "magic tuning eye."

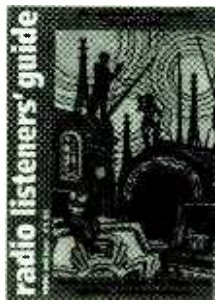
The bulk of the book is, of course, the detailed listings of stations on the long, medium and short wave bands (with addresses and e-mail) for which the *WRTH* is renowned. The *World Television* section lists the state of development of TV services in each country.

An additional by-frequency listing is *Shortwave Stations of the World* from 2310-22536 kHz, plus a by-country listing of *Worldwide Standard Frequency and Time Signal Stations*.

For an excellent source for schedules, station information, features, and reviews, this anniversary edition wins the gold. The *World Radio TV Handbook* is published by Billboard Books and is available for $24.95 plus $3 bookrate shipping from Grove Enterprises or your favorite radio book dealer.

— GVH

UK Radio Guide



Planning a trip to UKOGBANI? PDQ Publishing is now offering an all-new 1996 edition of their popular *Radio Listener's Guide*. A guide to all UK radio stations, the *Radio Listener's Guide* covers Radio 1, 2, 3, 4, and 5 plus independent and local stations.

There are easy-to-read maps and charts that show you the frequency and location for each radio station in the country. (And that's no small task. Radio 4 alone uses more than 200 separate transmitters.) A cross-reference by frequency allows you to quickly identify and station you're hearing and several articles lead you to great radio listening—whether it be dealing with the new BBC digital transmitters or just help on getting better results from your radio.

To get your copy of *Radio Listener's Guide*, send £4.50 (postpaid in the UK) to Freepost, P.O. Box 151, Abingdon, Oxon OX13 5BR. For every two copies you order, PDQ publishing will send you a third copy, free. For more information or overseas rates, call PDQ at 01865 820387. Mention *MT*, if you would be so kind.

Transmitter Documentation Project

LUDO MAES
P.O. BOX 1
2310 RIJKEVORSEL
BELGIUM

TELEPHONE
+32 3 314 78 00
TELEFAX
+32 3 314 12 12

This is one of those self-published products that's a real jewel. Known as the "Transmitter Documentation Project," it's a Belgian effort that attempts, with admirable success, to give you the source of the shortwave signal that's coming at you. It's not enough to know that you're listening to Vatican Radio; the Transmitter Documentation Project tells you the specific location of the transmitter, its power, model, and date of installation!

The "Transmitter Documentation Project" is in its second year of existence. The updated edition is sixty pages, arranged by country. Listed are the number of transmitters at the site, their power, manufacturer, type number, and year of installation. "TDP SW-95" is available for US$7 (no checks or credit cards—cold cash only) which includes airmail delivery. Write to Ludo Maes, P.O. Box 1, 2310 Rijkevorsel, Belgium. Tell him *MT* sent you.

Professional Monitoring

You pull up in your new Mercedes E320 Sedan. Sliding the sleek, aluminum attache case from the seat beside you, you hand the car keys to the valet and head to your room, ignoring the admiring glance of a beautiful young woman. There's work to be done here: a professional monitoring contract worth thousands, and everything you need to do the job is packed safely in that sleek, silver case.

Well the part about the aluminum attache case is true. If you're

the type of person who takes a number of radios with you when you head out on the road, Jensen Tools has a foam-filled case that is perfect. They aren't cheap, but these things do the job.

The cases are seamless aluminum and have a live rubber gasket that keeps out moisture and dirt, positive bail latches for secure closing, and a combination lock for keeping prying eyes away from your gear. What's more, the foam can be cut so that it custom fits your radios and accessories. When you arrive at the scene, you need only pop open the latches and you're ready to monitor.

Like I said, these cases are not cheap. The smallest, 12 x 9 x 5" is $155; the largest, 29 x 20 x 10" is $389. But if you're carrying around a couple of thousand dollars of radio gear, that's not much for such a reliable piece of insurance. For more information, call 602-438-1690. To order, call Jensen Tools at 800-426-1194. Be sure to mention *MT* to the beautiful girl who answers.

New Dressler ara 2000 Antenna

Dressler, the German antenna manufacturer, has announced a successor to its popular model ara 1500. The new ara 2000 looks like no antenna you've probably seen, coming across as something more like a stick of dynamite on a pole than your everyday ground plane.

The ara 2000 produces 11 to 13 dB gain by utilizing a GaAs-FET amplifier that's effective from 50 MHz all the way up to 2000 GHz. Noise figures are good, polarization is circular, and the connectors are "N." The unit requires 12 VDC power and rings in at $269.95.

You can get more information on the Dressler ara 2000 by contacting their U.S. distributor, Gilfer. Their phone number is 201-391-7887 or write to them at 52 Park Avenue, Park Ridge, NJ 07656. Mention *MT* when you visit.

Surplus Catalog

Looking for a DC-to-DC car converter? How about a pocket-sized portable "black light?" A thousand feet of magnet wire? Or a general-purpose, small-signal amplifier transistor like the 2N3906? These and hundreds of other odd, unusual, and sometimes hard-to-find items are available from Marlin P. Jones and Associates, a surplus dealer with a hot, new catalog. Like other surplus outfits, quality ranges from excellent to horrible so a little savvy goes a long way. Get your copy of the catalog by calling 1-800-652-6733. You can also write to P.O. Box 12685, Lake Park, FL 33403-0685. Mention the good folk at *MT* if you call or write.

Uniden America in 1996

Uniden America has opened a new research and development center in San Diego, California. Employing between 150 and 200 people, it is dedicated to working on advanced wireless and digital communications. Specifically targeted are products that feature wireless technology, such as personal communications systems (PCS), wireless packet data, and multi-media communications for "the next generation."

While scanners capable of following digital and trunked systems were not mentioned, Uniden has announced a major push into cordless phones, including 17 new models for this year. Some will have voice scrambling circuitry and eight will operate in the 900 MHz frequency range. Prices will range from $99.95 to $249.95.

Also scheduled for release this year is the company's Safety Warning System (SWS). The SWS consists of a transmitter—frequency unspecified—that is placed at a "warning site" by emergency personnel, and a receiver which is connected to a motorist's radar detector. As a driver comes within range of the SWS transmitter, he or she receives an "aural announcement and textual message." The severity of the hazards can range from notice of an animal crossing or less-than-optimal road surfaces to adverse weather conditions or accident sites. Prices have not been announced.

HamCall CD-ROM

Updated each October and April, Buckmaster's HamCall CD-ROM lists amateur radio callsigns worldwide, and contains more than a million call signs, including clubs, military, and RACES stations. More than 100,000 cross references are also provided, showing switches between old and new callsigns.

Listings may be searched by call, name, address, city, state, zip code, callsign suffix, or county. Additional data shown for U.S. hams include license class and issuance/expiration dates, as well as geographical coordinates.

The exhaustive listings are ideal for mass mailings and will print standard 15/16" labels.

This unique product also contains photos of hams and their QSLs which can be viewed in Windows, and hundreds of shareware files, as well as over 1000 text files on ham radio topics including antennas, modifications, and FCC exam test pools.

Hamcall CD-ROM is $49.95 plus $4 first class shipping from Grove Enterprises.

— *BG*

Books and equipment for announcement or review should be sent to "What's New?" c/o Monitoring Times, P.O. Box 98, 7540 Hwy 64 West, Brasstown, NC 28902

Press releases may be faxed to 704-837-2216 or e-mailed to mteditor@grove.net.

CAIG DeoxIT D5 Cleaner and Restorer

By Doug DeMaw, W1FB

Amateurs, SWLs and engineers have for many years sought a truly effective contact cleaner for switches, potentiometers, relays, and other electrical contacts. Most cleaners offered temporary relief for dirty, oxidized, or worn contacts. CAIG Laboratories, Inc. once sold a highly effective spray product called CRAMOLIN, which used a propellent that is no longer permitted by the U.S. government. Now, however, a new and similarly effective product has become available.

The New Deoxidizer Spray

CAIG produces a highly effective replacement product called DeoxIT D5. The propellant is Dymel 152a. Freon, which was used in CRAMOLIN, is no longer being used by CAIG.

DeoxIT D5 is designed to improve conductivity, clean, preserve, lubricate (reduce wear and abrasion), and deoxidize electrical connections. It is effective on similar and dissimilar metals, the latter of which greatly encourage oxidation and corrosion. There are no ozone-depleting CFC compounds in the new formula. This is good news for environmentalists and users alike.

DeoxIT is useful not only to amateurs, experimenters, and SWLs, but also for commercial personnel involved in the maintenance of automotive, marine, aircraft, medical, telephone, electrical, TV, computer, and a host of other equipment. For example, my computer keyboard developed an inoperative key while I was preparing a document. I squirted a shot of DeoxIT under the key tab of the defective letter, worked it up and down a few times, and then went on with the composition of my document. That key has functioned flawlessly ever since.

I have treated other inoperative computer keys in the same manner. I had several intermittent keys on my keyboard keyer after 15 years of use. I removed the plastic key tabs and sprayed the key mechanisms with DeoxIT. This cured the problem.

This spray compound is especially effective for restoring dirty and worn contacts on band switches in receivers. Noisy or scratchy volume controls and other potentiometers are restored to long-lasting operation after squirting DeoxIT into them, then rotating the shafts two or three times.

DeoxIT is beneficial also when applied to the bearings of variable capacitors, and on the movable contacts of rotary inductors in antenna tuners. I have had similar good results after spraying intermittent relay contacts with DeoxIT. This was especially helpful with an FT-102 transceiver I owned. That model had a case history of relay failure because the gold plating on the contacts was too thin to last. Ordinary contact cleaners offered relief for a few days, but the intermittent condition always returned. One application of DeoxIT lasted until I disposed of the equipment a year later.

Other CAIG Products

CAIG Laboratories produces a wide variety of cleaners, rejuvinators, and conductive coatings. The latter substance is designed especially for use as shielding against EMI and ESD. A catalog that describes the many CAIG products is available from the manufacturer.

One of the more recent products that should appeal to amateurs and engineers is CAIG ProGold. It cleans and deoxidizes surface contamination, while penetrating plated surfaces, where it bonds physically with the molecules of the base material. Although this product is designed especially for cleaning and protecting gold plated contact surfaces, such as PC board edge connectors and relay contacts, it provides long-lasting protection (1 to 10 years) on silver, rhodium, copper, nickel, and other precious metals. ProGold and DeoxIT are available in a variety of dispensers, including spray cans, wiping pads, pen applicators, syringe dispensers, needle dispensers, and brush applicators.

CAIG products are available from distributors throughout the the USA. Information concerning your nearest distributor may be obtained by phoning CAIG Laboratories.

DeoxIT D5 amd ProGold are manufactured by CAIG Laboratories, Inc., 16744 W. Bernardo Drive, San Diego, CA 92127-1904. Phone: (619) 451-1799. DeoxIT 5.5 ounce spray can price class: $11.95. ProGold G5 spray (5 oz) has a price class of $15.95.

Sometimes, The Sequel is Better!

GROVE'S NEW TUN-4A MINITUNER PLUS!

Back by popular demand—and improved!
Our indoor/outdoor shortwave antenna system!

Here's the shortwave listener's dream—a high performance, amplified, frequency-tunable antenna system for general coverage shortwave and medium wave monitoring. For indoor use, connect a short length of wire or the popular Grove ANT-6 Hidden Antenna. Connected to an outdoor antenna like the Grove ANT-2 Skywire or ANT-3 Mini Skywire, the TUN-4A MiniTuner Plus provides knockout signal strengths, razor-sharp selectivity and deeply-attenuated interference control.

Continuous 400 kHz-30 MHz coverage, -20 to +20 dB gain/attenuation control, dual antenna switch, dual receiver output, amplified/unamplified preselection, band switch, fine tuning, built-in lightning protection. Includes full instructions. Requires 120 VAC / 12 VDC power supply and PL-259 receiver interconnect cable, sold below.

Order TUN 4A
Only **$99.95** plus $6.50 UPS Shipping

ADPK15 3-foot PL259 Interconnect cable..... $2.50
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GROVE ENTERPRISES, INC.

1-800-438-8155; 704-837-9200;
FAX 704-837-2216
7540 Highway 64 West
Brasstown, NC 28902

Please visit our site on the World Wide Web
www.grove.net

Note on advertisement below: As of 4/26/95 it became unlawful to market cellular-capable receivers in the US. Atlantic Ham Radio assures us that it will give a full refund and hold customers harmless from shipping expenses if a purchased unit is returned to the vendor by US Customs.

800MHz coverage!

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Models Available Include:

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ICOM R9000, R7100, R1, R100
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MAGNE TESTS

SHORTWAVE EQUIPMENT REVIEW

Lawrence Magne
Editor-in-Chief, Passport to World Band Radio

Grundig's New Traveller II Pocket Portable

Since Lextronix took over Grundig's sales operations in North America, Grundig's higher-priced world band radios have improved enormously. But until relatively recently, their models selling much below $200 were nothing to write home about: analog, sometimes with pedestrian performance.

Last year, however, we got the first sign that Grundig's world band housecleaning would be working its way down to the value end. The $130 digital Yacht Boy 305 turned out to be a worthy performer by any yardstick, and reportedly has since gone on to set sales records.

This February, Grundig introduced another lower-cost model, the Traveller II—also known as the TR II. Indeed, its owner's manual refers to it in one place as the "Yacht Boy 320," so presumably the wise shopper will keep his or her eye open for this model under all three designations.

It lists in the United States for $109.95, but street price is expected to be $99.95. In Canada, the targeted price is $139.95, and in the United Kingdom look for something under £60.

Earmarks of Chinese Design

As has become the custom with Grundig's recent models, the TR II is made in China. For those of us who've laid hands on Chinese models sold by soup-to-nuts catalog houses, "Made in China" is a Day-Glo caution flag. But we've been watching and using these Grundig radios from China for some time, now, and find their track record to be pretty much the same as radios made elsewhere.

Yet, "Made in China" can mean "made weird." Nearly all low-cost Chinese world band portables have some oddities in common. To begin with, they usually display "even" shortwave frequencies as "XX.XX MHz," as in 15.42 MHz for 15420 kHz or 15.420 MHz. They also usually omit the leading "tens" hour zero from the 24-hour clock display, so 04:23 shows as 4:23.

Another earmark is that there is an old-fashioned and unhandy "SW1/SW2" switch, plus a "hole" in the shortwave frequency coverage between the "SW1" and "SW2" tuning ranges. For example, some non-Grundig Chinese models — and at least one Sangean model — don't tune anything between 7300-9495 kHz, where loads of interesting stations pitch their tents.

Sure enough, the TR II has all these anomalies, with the "Great Hole of China" being between 7400-9400 kHz.

Otherwise, though, the TR II is pure Grundig, with attention to detail and audio quality that, if not worthy of the Metropolitan Opera, is at least tops in its class. But, first, let's look at the basics.

Attention to detail

The TR II, at 0.41 kg with batteries, just squeaks into featherweight status at under one pound. It's small, too, although not tiny like Sony's innovative ICF-SW100S. But its relatively larger size allows it to have a decent speaker and thus produce sound that runs circles around Sony's lilliputian offering.

Our particular TR II came as bare-bones as can be imagined. Printed material aside, there was a cardboard box, a radio, and a soft carrying case. However, the owner's manual refers to earpieces, so these may yet appear as standard.

It covers the usual 87.5-108 MHz FM band in 50 kHz increments and in stereo through earphones; AM from 520-1710 kHz in 10 kHz increments (switchable outside the Americas to 522-1620 kHz in 9 kHz increments); and shortwave 2300-7400 and 9400-26100 kHz in 5 kHz increments. That's decent coverage, especially for DXers traveling in tropical-band countries.

Because the TR II is single conversion, you can "trick" it into receiving powerful world band stations between 7405-7600 kHz by tuning the image repeats" 900 kHz lower; that is, between 6505-6700 kHz (for example, 7425 kHz "repeats" at lower strength on 6525 kHz). Still, given the proliferation of American and other stations above 7400 kHz, and even between 9300-9395 kHz, it's hard to see why this "hole" wasn't placed between 7600-9300 kHz, even it meant deleting 120 meter band coverage.

What's surprising in a radio of this class is the list of handy features. No, it doesn't have a keypad or tuning knob, and it won't demodulate SSB. But it *does* have a travel power lock and a pushbutton light for the LCD. The light stays on as long as you hold down the button, which is fine except that this happens even when the lock is switched off. So while the lock prevents your radio from being turned on accidentally in transit, it doesn't prevent the batteries from being run down should the light button be inadvertently depressed by your deodorant stick.

The 24-hour clock displays whenever the radio is switch off, and can also be displayed when the radio is on simply by pressing a button. There's also an alarm/clock-radio feature, so if you're on duty in Bosnia you can be awakened by a polite, "This is London," instead of some latter-day Robin Williams bellowing, "Good Morning, Bosniaaaaa!"

There's a handy elevation panel, but no carrying strap. (Does anyone besides Madonna really *use* those little straps?) A sign that attention was paid to detail is that the telescopic antenna swivels *and* rotates. Virtually all low-cost radios have antennas that swivel, but most low-cost radios made in China don't have antennas that rotate. Not only is this unhandy, those antennas also tend to snap off at the swivel point if you forget and try to rotate them.

Meter Key Aids Tuning

With no keypad or tuning knob, you might think this radio was pretty awful to tune. Well,

you can't beat having a keypad, and that's that. Yet, the TR II has a meter-band button which carousels the radio up the shortwave spectrum band-by-band. This little button makes all the difference. Along with the slew/"signal-seek" scan keys, the meter button allows you to "get there from here" fairly quickly.

Aiding this are 20 presets. However, as with many low-cost digital Chinese radios, there are only five presets per "band"; that is, five for FM, five for AM, five for SW1 (2300-7400 kHz) and five for SW2 (9400-26100 kHz). That's not a whole heck of a lot if you're buying this radio to listen to shortwave at night, when you're pretty much limited to the five presets for SW1.

Reception: No surprises

The TR II's reception quality is quite reasonable, if unsurprising. Its sensitivity and dynamic range are more than okay for something in this price class. Selectivity is better than many other Chinese portables, too—even though adjacent-channel rejection is still not what it should be, with modulation splash "pfft-pfftting," like spiteful llamas, to bother the station you're trying to enjoy. Image rejection is dreadful, as it is on virtually every other model like this we've tested.

Overall: Pleasant for traveling

Yet, overall reception quality is more pleasant than virtually anything else in its class. The rub is that it would have been noticeably more pleasant were it to have had better selectivity, which these days is a low-cost no-brainer to achieve.

Personally, I like little electronic goodies I can stick in my shirt pocket. I recently replaced my *kaput* old Flip Phone with a nice little shirt-pocket thing which cost twice what the old one did. I just didn't want to go around looking like I had a beer can in my pocket, or to wear one of those "rescue squad" belt pouches.

But world band radios and miniaturization just haven't meshed well so far. Mainly, the speakers are so small and tinny that it takes a mother's depth of love to enjoy it. The good news is that the Grundig Traveler II has superior audio quality for such a little thing, and overall is a pretty decent little radio for the price. But it's not small or light enough for my pocket, at any rate, so it's really more for the air traveler than it is a world band version of a Walkman.

Flipped Out

In last month's review of the Sony ICF-SW1000T, we mentioned how the cassette needs to be flipped manually to be recorded on the other side. This was what we experienced with our sample, the instruction manual notwithstanding. But others tell us that their units actually do record automatically on both sides.

Drake R8A on Test Griddle

No, we haven't been electrocuted while testing the Drake R8A. In fact, we've already put no less than four samples through the *Passport* boot camp, and therein lies a little story you'll enjoy reading in these pages—hopefully, next month.

This equipment review is performed independently by Lawrence Magne and his colleagues in accordance with the policies and procedures of International Broadcasting Services, Ltd. It is completely independent of the policies and procedures of Grove Enterprises, Inc., its advertisers and affiliated organizations.

Bob Parnass, AJ9S

Tips for Fixing Bearcat Scanners

If you own an older Bearcat programmable scanner like a BC210XL, BC220, BC20/20, BC250, BC300, BC350, you are not alone. Thousands of them were sold in the span of a dozen years, starting in the late 1970s.

Many of these fine, older models are shelved or discarded when they fail. That's a shame, because they can often be fixed by replacing a single capacitor or transistor.

Weak or blank display in a Bearcat base scanner? Test/replace electrolytic capacitors in the switching power supply stage, especially C 98 in the BC 220, BC 300 and BC800XLT and C108 in the BC250.

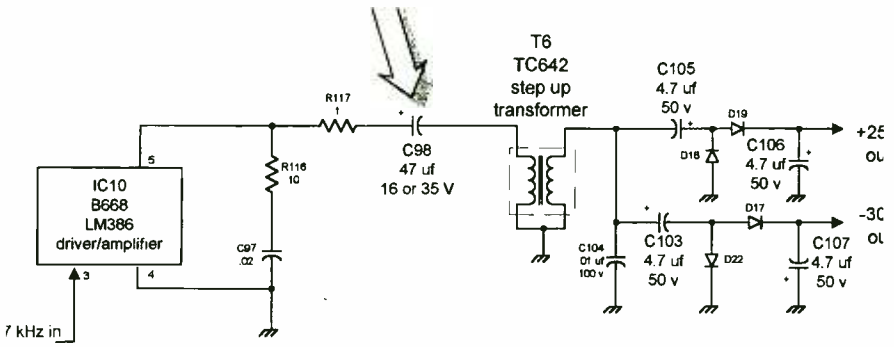


Figure 1—Electra/Bearcat BC-300, switching power supply stage.

Background

The original Bearcat scanner line was manufactured by Electra Company, a division of Masco Corporation of Indiana. Uniden Corporation bought out the Bearcat scanner line in 1985 and introduced the BC800XLT model.

Most of the models discussed here are base/mobile units made by Electra during the 1970s and 1980s. Though the Uniden BC800XLT was manufactured using different printed circuit techniques, its circuitry resembles the earlier Electra models, so much of the following advice applies to it as well.

Troubleshooting an unfamiliar problem is arduous without a schematic diagram. Schematics for some models may be purchased from Uniden's parts department, (800)297-1023 or (317)842-2483, or from Howard Sams Publishing division of Prentice-Hall at (800)428-7267.

There are different schematics for different vintages of the same model scanner. Electra's engineers made several changes within the same models, and it's not uncommon to place two or more BC300s side by side and find differences in component values, for example.

Most of the classic, metal-cased Bearcat base/mobile models are built using two printed circuit boards: a "radio" board and a "feature" or "control" board. The radio board contains the synthesizer, RF, IF, and audio stages. Although there are various radio boards, all share similar circuitry. The feature board contains the microprocessor controller and memory circuitry which gives each model its own personality.

Bad Solder Joints Common

The older Electra/Bearcat models were hand assembled, and many had a cold solder joint or unsoldered connection. The wideband hash noise in a BC250 was reduced noticeably by resoldering joints on the ribbon cable connecting the radio and feature circuit boards.

An unsoldered power transformer lead caused an intermittent power loss problem in a Bearcat 20/20.

Symptom: Blank Display

The BC300 scanner and most other Electra/Bearcat base models employ a switching type power supply stage to generate plus and minus voltages in excess of 25 volts DC (Figure 1). When this switcher fails to function, the display goes blank, but the squelch control appears to work, and white noise can be heard in the speaker.

Almost a dozen BC300 and BC800XLT scanners were fixed by replacing C98, a capacitor in series with the primary of the switching transformer. C98 failure caused the output of the supply to drop below the level needed to power the display and other stages. Switching transformer T6 (T5 in the BC210XL, T1 in the BC800XLT) is mounted on the radio circuit board, and is much, much smaller than the main power transformer, which is usually fastened to the metal chassis. The 22µF/16V capacitor used for C98 in early BC300s was marginal, and was upgraded to a 47µF/25V capacitor in later units. A 47µF/35V or 47µF/50V capacitor provides added margin.

A 22µF/10V capacitor in the switching power supply stage of a BC210XL caused the same symptoms. Other capacitors in the switcher stage fail. C114, a 4.7 µF/35V tantalum capacitor failed in at least one BC250, causing the display to blank.

Although capacitor failures account for the lion's share of problems, a more serious failure affects switcher operation in early models. The switching supply stage in the BC250 and original BC210 are driven by a clock signal derived from a custom Exar NC57902 divider integrated circuit (designated IC6 in the BC250 scanner). The divider IC failed in several BC250s, causing a blank display, except for a decimal point in the BC250's

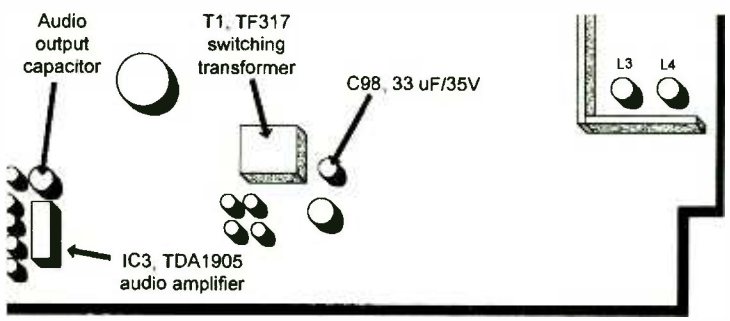


Figure 2—Simplified view of the Uniden/Bearcat BC 800XLT radio board (component side).

Two of the old Petersen radios from the author's collection. Photo by Pam Parnass N9HRZ.

rightmost digit. The divider is a custom IC, no longer available from Uniden.

Symptom: Invalid Frequency Displayed

A common Bearcat 250 complaint is an invalid frequency shown on the display. The condition can be temporarily "cured" by unplugging the AC line cord from the wall, then reconnecting it. This is symptomatic of a power supply problem in which pass transistor Q204, a Texas Instruments TIP-29 located on the feature circuit board, fails. Q204 supplies a regulated 8.4 volts to the keyboard and display logic, but overheats due to lack of a heatsink.

A Philips ECG291 will work as a substitute for the TIP-29. See Martin Toomajian's article, "Bearcat 250 Erratic Display Cure," in January 1987 *Monitoring Times*.

Symptom: Squelch Won't Eliminate White Noise

Older Bearcat base/mobile models employ an internal potentiometer, labeled "tight squelch adjust" or "CCW squelch adjust" on the schematic. The pot is designated R81 in the BC300 and BC220, mounted on the radio circuit board, and determines at which point the squelch knob must be positioned in order to silence the radio. It also affects the level of signal required to open the squelch when using the preset AUTO Squelch. Readjusting the internal pot fixed "no squelch" complaints in two BC300s. Another "no squelch" problem was caused by a failure of transistor Q16 (in the BC300) which serves as an electronic squelch switch. Q16 is labeled "mute" on the schematic.

Symptom: Scanner Completely Dead

In Bearcat scanners using an internal power supply (e.g., BC350, BC250, etc.), the main power transformer is connected directly to the AC line. The on/off switch is on the secondary side of the transformer, so current flows in the primary as long as the AC line cord is plugged into an active AC outlet. These transformers contain an internal circuit breaker, not visible without unwinding (destroying) the transformer. I've dissected and replaced the power transformer in a BC350 and am told the internal breakers are prone to fail prematurely in a particular batch of Bearcat power transformers.

If your scanner is completely dead, check the primary of the power transformer for an open circuit condition.

Other Repair Tips

The same defective electrolytic audio output capacitor was responsible for complaints of low audio output and occasional microphonics in three Uniden/Bearcat BC800XLTs. The capacitor is in series between the external speaker jack and audio amplifier (Figure 2).

Andy Domonkos reports he often uses the Auxiliary function of the Uniden/Bearcat BC890XLT to control a tape recorder. RL-1, the carrier activated relay inside the BC890XLT wears out, and Andy found the identical relay sold at Radio Shack (part #275-232). The deluxe BC9000XLT uses the same relay.

Professional Repair

Sorry, I cannot supply schematics nor personal repair advice. If you lack the equipment, expertise, or time to repair your scanner, contact a professional repair shop. Repair for some Bearcat models is available from these facilities:

1) Uniden Corp., (800)297-1023.
2) Grove Enterprises, Brasstown, NC (704)837-7081
3) G & G Communications, LeRoy, NY (716)768-8151
4) Electronic Repair Centers, Franklin Park, IL, (708)-455-5105.

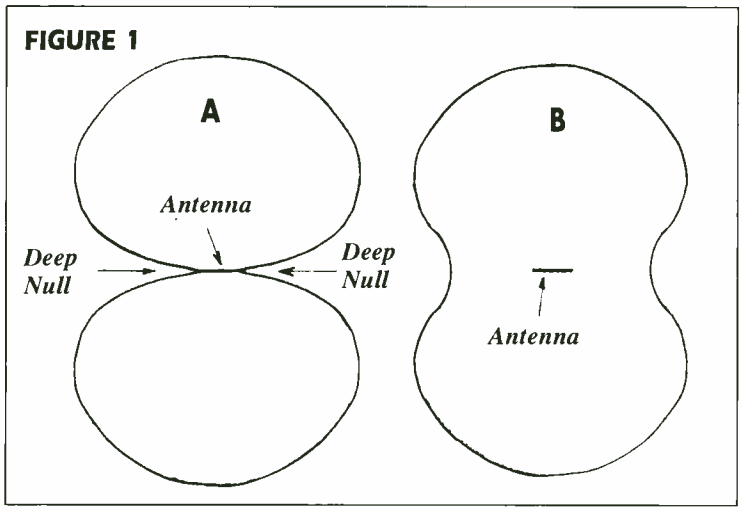
Save your Bearcat scanner from the scrap heap (photo from Pam Parnass, N9HRZ)

W. Clem Small, KR6A, CET

Same Antenna: Different Results

Most of us have seen figures showing the horizontal reception-pattern of a halfwave dipole as displayed in Fig. 1A. It tells us that the antenna has two very wide lobes broadside to the antenna wire, and two very sharp and deep nulls directly off the antenna's ends.

But for most practical antennas—the ones that you and I use—that diagram is not an accurate picture. Although the horizontal reception pattern in Fig 1A is what is usually depicted for a dipole, it is actually what we might find if our antenna were transported from our back yard and somehow mounted in outer space! When your antenna is in your back yard it is fairly close to the ground, and the interaction between the ground and the waves with which the antenna deals changes its reception pattern from what it would be in outer space with no earth or other reflector nearby.



Horizontal reception pattern of a halfwave dipole antenna in free space (A), and near the Earth (B).

As with the halfwave dipole, the same general sort of pattern distortion occurs for most other antennas as they come into proximity with the earth. So let's discuss what happens as we move an antenna in relation to the earth, and how that affects our reception.

Effects of the Earth on Reception Patterns

As mentioned, Fig. 1A is the pattern made by a dipole mounted in outer space with nothing near it. On the other hand, the pattern of Fig. 1B represents what we would likely find with many back-yard antennas: the nulls are not so deep, and the antenna has, for all practical purposes, become reasonably nondirectional rather than having two deep nulls.

The real-life antenna depicted in Fig. 1B functions as if it were a different antenna from what Fig. 1A suggests. And it is! It has an added reflector when near the earth, and that reflector is the earth itself. (By the way, earth here means "electrical earth," which can be somewhat below the Earth's surface in the case of dry or rocky soil. The ARRL *Antenna Book* treats this principle in detail.)

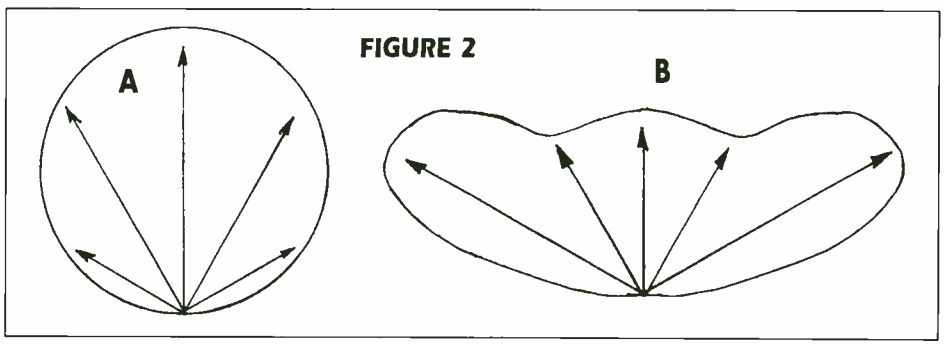
It is of considerable interest to discover the effect of changing the antenna's proximity to the Earth; as the antenna's distance above the ground varies there are very dramatic changes in its vertical radiation pattern. Some of these changes are shown in Fig. 2. Notice that when the antenna is mounted a half wavelength above ground (Fig. 2B) much of its reception patterning is directed at relatively low angles—and therefore at DX signals which tend to come in at these lower angles.

On the other hand, when the antenna is a quarter wavelength above ground (Fig. 2A) it directs most of its reception capability upwards. DX signals rarely come in at such steep angles, so what good is such an antenna? Well, let's hope that this sort of antenna is of some value, because it is just what most of us work with on the lower half of the HF band!

To explain what I mean, consider that a quarterwave at 3 MHz is around 80 feet, and at 7 MHz a quarterwave is about 35 feet. Few of us get our antennas higher than this (a quarterwave) and almost none of us get up to that desirable halfwave height (160 feet at 3 MHz or 70 feet at 7 MHz).

So most of our HF antennas on the lower half of the HF band are closer to a quarterwave above ground than a halfwave. But there is hope in using such an antenna, because we get lots of DX reception on such antennas—we do it almost every night, right? Notice that, though there isn't much, there is *some* reception occurring at low angles with the antenna at a quarterwave above ground. So we would expect to get *some* DX reception, even on these antennas. The point is that, if we could put the antenna higher, we could expect a great deal more response at the low DX angles as shown in Fig. 2B.

Placed a quarterwave above earth, your antenna should provide quite good results for local communications in situations where hills block direct communications with nearby stations. If the nearby station has significant upward radiation from its transmitting antenna, then some of that upward radiation is likely to refract back down in the area surrounding the station. This up-and-down propagation then allows communications over hills which otherwise block direct line-of-sight communications with the antennas of local receivers.



Vertical reception pattern of a halfwave dipole antenna one-fourth wavelength above the earth (A), and one-half wavelength above earth (B).

Some Solutions to the Problem

Of course, one solution to getting the desirable low-angle reception pattern for your antenna is to put it a halfwave above ground. From the few lucky operators that can afford to put their skywires up to near the halfwave height we get reports of greatly improved DX and reception of signals that were totally inaudible before.

A more realistic solution for most of us, however, is to utilize some of the available vertical antenna designs. Vertical antennas are famous for their low-angle vertical reception patterns, and are favorites of many DXers. There are also several commercial vertical dipoles on the market these days, and their reviews are generally quite good.

Of course, the easiest solution of all is to keep using the dipole we have at its "less than optimum" height. It does work and it supports a lot of enjoyable communications despite its shortcomings. We'll cover various of these solutions in future columns.

RADIO RIDDLES

Last Month:

I mentioned that "We use the unit dB, or decibel, frequently in radio work. Within this word what is the meaning of 'deci' and the meaning of 'bel?'"

Well, the measurement system which includes the decibel was established to be used as a measure of ratios of power in communications. The basic unit of this measurement is the "bel," named in honor of Alexander Graham Bell, the inventor of the telephone. Because the bel is generally too large a unit for practical work the "decibel" or 1/10 of a bel is generally used.

This Month:

In the above discussion of the effects of earth on an antenna's reception pattern I said that : "Although we are discussing the reception pattern of a halfwave dipole, the same pattern distortion occurs for most antennas as they come into proximity with the earth." Note that I said "most antennas"; for what kinds of antennas is this pattern distortion not so prominent, and why?

You'll find the answer to this month's riddle, and much more, in next month's issue of *Monitoring Times*. 'Til then, Peace, DX, and 73.

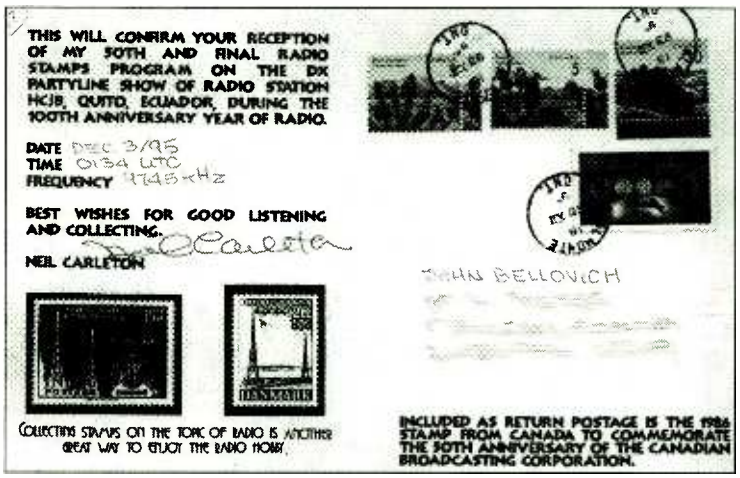
(Continued from Page 4)

I was pleased when Richard d'Angelo of ANARC reminded me of Rob's presence in aother publication: "If folks would like to continue to read interesting stuff from Rob, I would like to suggest they seriously consider joining the Canadian International DX Club (79 Kipps Street, Greenfield Park, PQ J4V 3B1, Canada). Gerardi edits the popular 'Ham Radio Report' column each month in the *Messenger* bulletin. Samples are just $2 and subscriptions are Cdn$28 in Canada, US$25 in the US, and US$30 elsewhere."

The Frugal Hobbyist

"I just read Poor Richard's article," says Walter Jones, KB3QW, via e-mail. "It was not until I read the end of the article that I realized it was written by Rich Arland, K7YHA. I think very highly of him as a writer and a technical person. I am very glad to see that Rich will be in print, even though only quarterly. I am sure that he will stimulate and enhance your readers' knowledge of scanning."

Michael Neff, N3KBJ, also says, "I especially enjoyed Rich Arland's recent article on 'Frugal Scanning.' I wrote to thank him for recognizing those of us who still prefer the crystal scanners that have served our shacks for over twenty years. To my ear, they just seem to sound better. And, his suggestion about color-coding the LEDs is a flash of brilliance."



John Bellovich of Macclenny, Florida, sent us this QSL which verified his reception of Neil Carleton's 50th and final Radio Stamps program on HCJB.

Closings, Etc.

John Bellovich of Macclenny, Florida, sent us this QSL which verified his reception of Neil Carleton's 50th and final *Radio Stamps* program on HCJB. Making this QSL even more special, it notes that "included as return postage is the 1986 stamp from Canada to commemorate the 50th anniversary of the Canadian Broadcasting Corporation."

Geo-Monitor Newsletter is a publication edited by Vince Migliore and dedicated to theories of earthquake prediction. After five years, he has decided to terminate the newsletter. However, a last-minute news flash indicates that friends have prevailed upon him to publish a reduced version. It will be called *Earthquake Prediction News.* For information and subscription rates, write Vince T. Migliore, 65 Washington Street, Santa Clara, CA 95050.

From the Editor

We are gratified to hear the prospect for Radio Canada International looks more promising than the setting sun on our front cover. Many eyes will be on Canada, I'm sure, to see what kind of budget solution the new Ministers are able to forge.

The feature tour of the Los Angeles Fire Dept Operations Center paints a rosy picture of the new dispatch center, but a recent article in *Dispatch* magazine puts a different light on matters. The article said a consultant's study concluded it might take another two years to complete (though the date of the study was not given). Arguments over civilianization, software rewriting, and money have held the project back. The consultant's report did AGREE that the current dispatchers "are among the best, if not the best, in the United States."

We enjoyed an item in the *Atlanta Journal-Constitution* Q&A column sent to us by Joe Wilkinson. A reader asked what the new frequency was for the Atlanta Police Department. Here is the columnist's reply: "You can't listen in any longer because of the police department's new radio system. You need to have police department permission to *get a scanner programmed.*" [Italics ours] He is, of course, referring to the two-way trunked radios, not scanners. See this month's "Scanning Report" for more on Atlanta's new system.

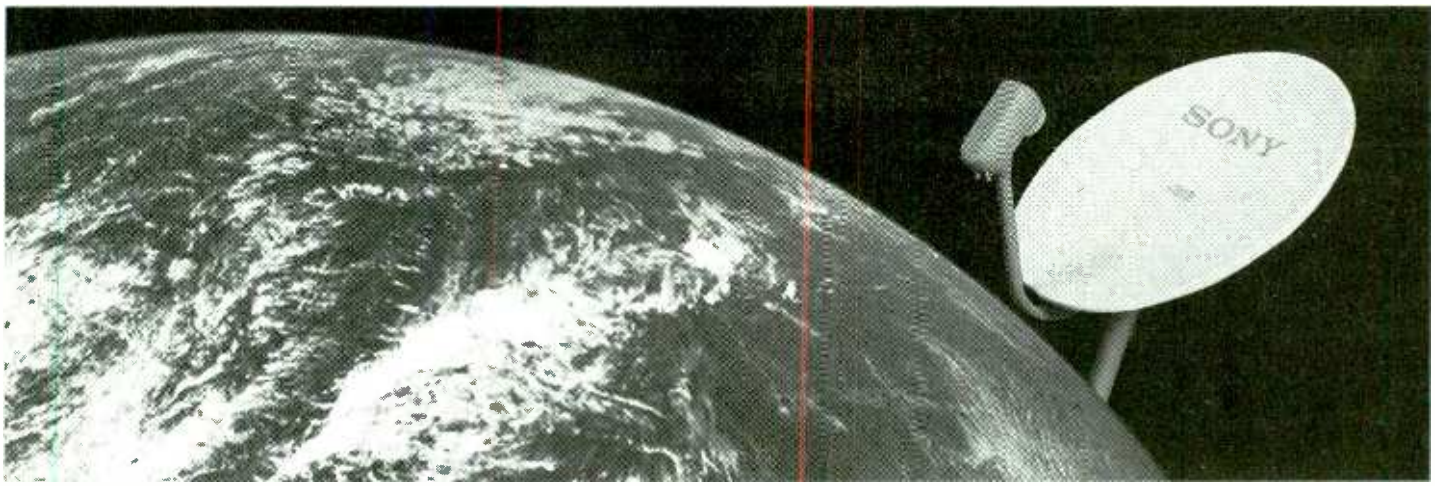
If you follow the directions for cutting an antenna to the correct frequency as explained in the January issue on page 34, S.M. McConnell of Plant City, Florida, says to be sure to correct the formula! The length in feet is equal to 234 divided *by* (not into) the frequency in MHz. Ouch, I should have caught that one!

In Steven Donnell's February feature on the Virtual Downconverter, the example on page 28, written 132÷744 LO=612 IF, should obviously have read 744 - 132 = 612. In the final sentence on p. 29, models supported by Cellular Security for the modification are actually BC-220, BC-3000, BC-9000, BC-860, etc. Steven Donnell's ham call is WA1YKL.

Until April—in which we'll look at some of your antenna solutions—here's wishing you the best of monitoring times.

—Rachel Baughn
mteditor@grove.net

There's a New Player on the DSS Horizon...



And It Has SONY Written All Over It.

The new Sony Digital Satellite System rises head and shoulders above competing systems, offering technological innovations that make it easier and faster to set up and use—at a price you can afford!

Now available directly from Grove, the package includes an 18" diameter dish that mounts almost anywhere. Inside your home, the Sony brand DSS receiver processes the incoming digital signals from service providers like USSB® and DirecTV®—and helps you select stations with on-screen navigation menus that are fast and easy to understand. You can even switch from satellite to your over-the-air broadcast antenna for access to local channels.

Best of all, you can hook up easily to your TV, home stereo, or home theater system using installation aids that no competitor offers. Some of the Sony's advantages over other DSS systems include:

- Sony's available UHF remote control allows hideaway placement of receiver.
- Dish can be locked onto the satellite by using Sony's exclusive Signal Seeker® LED indicator, allowing a single person to install system.
- Provides better and easier use of menu screens.
- Sony's Express Navigator® offers simplified point and click menu selection.
- Rust-proof aluminum dish, not plastic or steel like others.
- Sony's remote control also operates Sony and other major brands of TVs and cable boxes.
- Sony has exclusive multi-event programmable timer (with AD1 receiver only).
- Access card in the Sony receiver is hidden—not easily accessed by children as with other brands.
- Purchasers subscribing to USSB at time of order get first month of service free.

There's no other DSS package on the market that offers so much for so little. Order yours today!

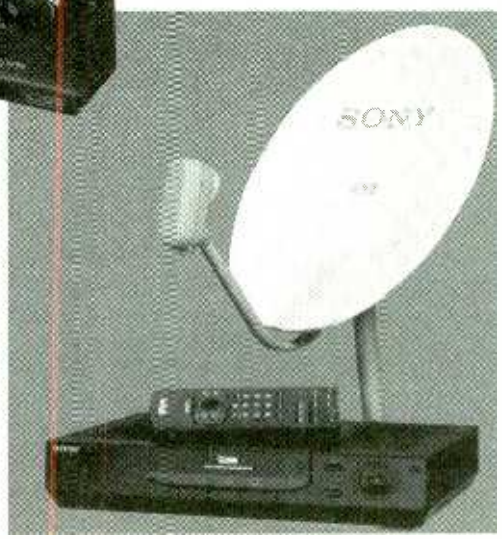
DSS01	Dual LNB* w/ UHF Remote (SAS-AD1) Pkg.	$Call
DSS03	Single LNB w/ Infrared Remote (SAS-BSI) Pkg.	$Call
DSS05	Add-on Rcvr. (SAT-B1) w/ Infrared Remote	$Call

ACCESSORIES

DSA02	Diplexer (EAC-DD1)	$Call
DSA01	Installation Kit (ANS-DS1)	$Call
DSA03	UHF Remote Control (RM-4130)	$Call

*Dish supports two receivers. Additional receiver not included.

GROVE ENTERPRISES, INC.
1-800-438-8155; 704-837-9200;
FAX 704-837-2216
7540 Highway 64 West
Brasstown, NC 28902



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K.I.S. RADIO

SIMPLE SOLUTIONS FOR THE FRUGAL MONITOR

Rich Arland, K7YHA
email address k7yha@epix.net

To Market, To Market

Welcome to a new addition to the *Monitoring Times* line-up: my name is Rich Arland and I'll be the column editor for what I hope will be a truly unique look at the radio hobby. **K**eep **I**t **S**imple **Radio** will be a quarterly column in which we will explore low-cost/low-tech ways to further our enjoyment of shortwave listening, scanning, CB radio, ham radio, antique radio, and antennas.

My background includes holding an Amateur Extra Class ham license and a General Radiotelephone Operators License. I teach vocational electronics and write about the radio hobby. My radio interests include low power (QRP) communications, SW DXing and general listening, antique radio restoration, scanning, antenna experimentation, and homebrewing low power radio gear.

Although you have probably already guessed that I can pontificate endlessly about the hobby, I would prefer that you, the reader, have an input to the column. Therefore, your mission is to inform me of solutions to unique radio problems [1]. Your input will be incorporated into the column to help ensure that the topics we address are the ones of most interest to you.

Buyer Beware

Let's kick off our inaugural column with a discussion that is sure to evoke some emotion from almost everyone: buying radio equipment. Our hobby is a technical one, to say the least. As the radio manufacturers add more features (quaintly called "bells and whistles") to their newest offerings, we are all tempted to sell off our current gear and buy these latest whiz-bang radios. After all, aren't more bells and whistles desirable?

Let's consider this idea for a minute. Why do manufacturers build radios? So we'll buy them, obviously. When we buy them we spend money—our money—which goes to the manufacturer so they can build newer, more complex radio gear. This starts to resemble a crazy techno-spiral that feeds upon itself. Soon, if you don't have the latest Chop-Sake Model 1010101 that does everything including sending out reception reports and filing for awards, you aren't really in the radio game.

To all this I say, "Balderdash"! The object of this hobby is to provide us, the radio operators, with fun and enjoyment without having to spend a fortune keeping up with "technological advances." Even though I make pretty good wages, I cannot justify spending huge amounts of cash on a hobby. Especially when there are other necessities of life that are competing for the same pot of cash. Most of you readers are in the same boat.

"Poor Richard's" monitoring post proves he practices what he preaches.

The **K.I.S.** philosophy requires us to rechannel our thinking about the radio hobby. Do we need all this technology that manufacturers offer? I seriously doubt it. We can pursue the hobby using older recycled equipment and still enjoy the process. As a matter of fact, being frugal and adapting older gear and accessories to our needs becomes a "hobby within a hobby" for many of us.

Remember our mandate with regard to **K.I.S. Radio**: use a cost-effective approach to the hobby. With that in mind, let's set down some ground rules regarding equipment.

1. The first rule is to assess what you want to do in the hobby. List some goals. Nothing fancy—just what you like and want to pursue when you turn on the rig. Once you set these goals, it is much easier to separate what you *want* from what you *need* for radio gear. I know radio operators who collect gear just to have it on the shelf. Seldom are these pieces used; they just sit there, mute testament to a neurotic tendency to collect things. I lump this behaviour into the "needful things" category. Nice to have, neat to look at, but not very practical.
2. The second rule of equipment purchasing is to become an informed buyer. If you do your homework and research the item(s) you want to add to your shack, the chances of you becoming a statistic of some unscrupulous seller are remote. In short, the second rule of buying gear is to get smart.

Just how do we "get smart"? Glad you asked. For over 20 years the *Ham Trader Yellow Sheets* [2] has published classified ads for buyers and sellers of radio gear on a bimonthly basis. This is the premier source of pricing on used gear. A subscription to the *HTYS* will yield sources and prices of gear all over the country. The publishers of *HTYS* also offer several volumes that describe radio gear from the 1940's to present day. Included are pictures, specs, and original cost.

Several books[3] on the market offer detailed information on communications receivers and their specs. Fred Osterman's book, *Buying a Used Shortwave Receiver* is must reading.

Back issues of old radio magazines like *MT, QST, CQ, 73*, and *Ham Radio*, offer a wealth of information about all kinds of gear, their specs, reviews, and modifications. The importance of using old radio magazines cannot be overstated. The reviews are, for the most part, unbiased and can provide great insight into the specific piece of radio gear you are interested in.

The American Radio Relay League [4] publishes two volumes of the *The Radio Buyers Source Book*. These two books are a compilation of product reviews in *QST* over the last 15 or so years. Having visited their lab on two occasions, I can state that the spec testing and write-ups done by the ARRL lab techs are first rate. If they take a piece of gear and it doesn't measure up, rest assured you will find out about it in the review. These two

books are must reading for anyone interested in used gear.

Probably the most readily available and most overlooked asset to the prospective radio recycler are members of the local radio club. Tap the collective knowledge of some of the 'Old Timers" in the hobby that show up at club meetings. Many of them spent their early days SW DXing as well as hamming it up, so there is a wealth of knowledge available by merely talking to some of these people.

3. The third rule is know the various classifications of equipment condition. While we all want to get top dollar for our used gear, you would be astonished at how many times the condition of used gear is misrepresented by the seller. I use the general guidelines established by several of the radio collectors groups around the country.

Mint Condition: means just that. Untouched by human hands. No finger oil, scratches, blemishes, nicks, chips, scrapes, or modifications (unless done at the factory). No show of wear on any surface. Mint condition is as if the gear had just come from the factory in the original plastic. The rig has the original manuals and warranty card. Very, very few pieces of gear are mint.

Excellent Condition: Shows some use, any wear is minimal. In all, the rig looks great: No scratches, blemishes, nicks, chips, or scrapes. Mods have been done by the factory or an experienced electronics technician *and have been documented*. Manuals are included.

Good Condition: The gear shows wear. There may be some small scratches in the paint and/or knobs. Any mods have been done by knowledgeable technicians and are fully documented in the manual. The equipment is fully functional and has been generally well cared for.

Fair Condition: Lots of wear evident. Paint chipped, scratched, discolored. Modifications are present and some or all are undocumented. The rig has seen better days and has fallen into disuse. This is the radio equivalent of a "handy-man's special" in the realty business. There may be a manual; most likely not.

Poor Condition: This is the equivalent of an electronics basket case. The rig does not work. Cosmetic condition may be extremely poor. Mods abound: extra holes in the case or chassis, added switches, meters and/or chopped up wiring all indicate that someone with little or no experience has been at work. Therefore, *caveat emptor*, is the byword.

Obviously, the gear described above must work and be electrically safe. If the gear is inoperative, then the overall condition drops to "poor" immediately, irrespective of the cosmetic and electrical condition.

Where do you find older gear to recycle into your shack? Start with the *HTYS*. Try local flea markets and hamfests. Also look into the "trader papers" for possible good buys on gear. When you find a treasure that you must have, hammer the seller hard to find out all about the rig and its condition. If possible, plug it in and try it out before plunking down your money. If the seller hesitates or doesn't want you to fire the rig up, back off quick! Something is amiss. Better to pass on this rig than take a chance and find out you just bought a non-functional boat anchor. Don't forget to haggle, haggle, haggle....that is part of the fun of buying used gear. Negotiate the best price before you open your wallet.

Do I practice what I preach? You bet! Take a look at the picture of my shack. There are only two pieces of new gear in the shack and they are the MFJ packet transceiver and TNC. Everything else has been recycled, in some cases four or five times! I am the forth owner of the Ten-Tec Argonaut 515 HF QRP rig. It plays just fine and provides me with hours of excitement on the HF bands.

The Hallicrafters SX-130 receiver I bought at a hamfest for $30. Outside of a thorough cleaning, all it needed was to have the dial cords restrung and a complete alignment. The Heathkit GR-84 SW receiver represents a nostalgic look back at my college days. It is currently undergoing restoration and will be added to my Heath collection upon completion. The GR-84 cost only $20 at a hamfest. The two Bearcat scanners cost a total of $30 plus some additional crystals (from Radio Shack) at about $5each. Both worked fine the first time I fired them up. Add a thorough cleaning and they are a welcome addition to the shack.

It's amazing what you can assemble for a station at relatively low cost if you only put your mind to it. Until next time, have fun, and **K**eep **I**t **S**imple.

FOOTNOTES

[1] Rich Arland, P.O. Box 1782, Shavertown, PA 18708, e-mail: k7yha@epix.net

[2] *Ham Trader Yellow Sheets*, P.O.Box 2057, Glen Ellyn, IL 60138-2057 or P.O.Box 15142, Seattle, WA 98115

[3] *Communications Receivers, the Vacuum Tube Era* by R.S. Moore; *The 1934 Official Shortwave Radio Manual* by Hugo Gernsback & H.W. Secor; *Buying a Used Shortwave Receiver* by Fred Osterman; *Radio Receivers - Chance or Choice* and *More Receivers - Chance or Choice* by R. Lichte. These books are available from various sources; try Universal Radio (800-431-3939) or Gilfer (800-GILFER-1).

[4] *Radio Buyer's Sourcebook*, Vols I & II by the American Radio Relay League, 225 Main St., Newington, CT 06111 Tel: (203) 666-1541

ASK BOB

ANSWERS TO YOUR RADIO QUESTIONS

Bob Grove, WA4PYQ
bob@grove.net

Reader Response

I read your recent answer to Robert E. Brock in Phoenix, AZ, in the January '96 *MT* about hearing Channel 61 TV around 503 MHz. May I add another possibility?

Many professional wireless microphones, especially those made by Sennheiser, use frequencies in this region. Although these microphones generally operate with only milliwatts of power, they are efficient transmitters that usually "get out" remarkably well. Robert may have been, unknowingly, near a TV remote site or studio facility at the time of his interception.

After about 20 years of ABC-TV, I recently started a new job as "Engineer-in-Charge" of WCBS-TV Channel 2 in New York City. We are in the same studio complex as the CBS Television Network, and several syndicated shows are produced there, as well.

Although this building, "The CBS Broadcast Center," is built of steel-reinforced concrete, the Sennheiser microphones in use throughout our facility must be carefully frequency coordinated to avoid adjacent and co-channel interference, along with potential intermod problems. Through this hostile RF environment, these devices can be heard several thousand feet away. If they were operated in the clear, from a high location, their range might be impressive.

— Karl J. Zuk

***Q.** The city of Akron, Ohio, recently switched over to digital communications. Is there a scanner on the horizon that will allow reception of digital signals? (Mark Koltnow, Akron, OH)*

A. There are three problems. First, if the purpose of digitizing is security, it would be illegal to decode them according to the Electronic Communications Privacy Act of 1986 (ECPA). Second, there are several different companies making digital radios, all of which are incompatible with one another. And third, the digitizing system may be so proprietary that designing a compatible receiver could violate patents or software copyrights.

A proposal by the Association of Police Communications Officers (APCO 25) would standardize digital communications within the next few years if adopted by cooperating agencies. This would allow scanners to be compatible with the digital systems while still allowing higher levels of privacy to be selected by the agencies.

***Q.** I have a descrambler on my scanner, but when my local agency scrambles, I can't understand them. Why not? (Ronnie Bass, Marble Hill, MO)*

A. The only consumer descrambler ever made was for speech inversion, the simplest voice scrambling technique. But there are many others, including rolling code, bandsplitting, spread spectrum, frequency hopping, and digital. Chances are your local agency has selected one of those.

***Q.** My Grundig shortwave radio has meter bands on its dial. Why doesn't Monitoring Times publish station listings in wavelengths so that people will know which band the signal is in? (Rob Sabato, Bloomfield, NJ)*

A. While it would be just as easy to refer to a frequency by its wavelength (30.46 meters instead of 9850 kHz or 9.850 MHz), scientists and engineers decades ago adopted frequency over wavelength (meters) reference for signal identification. Meter wave bands remain as convenient, although approximate, references to bands of frequencies that share a common service: Hams share their 40 meter band (7.0-7.3 MHz) with the broadcasters' 41 meter band (7.1-7.6 MHz).

Wavelength is also used by engineers for physical measurements like antenna elements and coaxial tuning stubs.

***Q.** I was tuning a portable AM/FM radio just above 1600 kHz at night and heard a sound like soldiers marching; what gives? (Robert E. Brock, Phoenix, AZ)*

Bob's Tips of the Month

Wide Frequency Coverage on the Regency 4020 Scanner—and maybe some Bearcats, too!

An anonymous phone tip from an *MT* reader provided a tantalizing technique to initiate a continuous 10-1000 MHz frequency search on the Uniden-manufactured Regency 4020 scanner, similar to the Bearcat BC200XLT. We tried it once and it seemed to work; then we couldn't repeat it! Even though the RF circuitry shouldn't support reception throughout that extensive range, would some out-of-band reception be possible?

Let's see if some of our sharpwitted and nimble-fingered readers come up with the magic keyboard sequence that tricks the scanner into searching the wide spectrum. Here's the tipster's technique:

(1) Switch the radio on, press MANUAL, 1, MANUAL to display channel 1.
(2) Re-enter the existing frequency on that channel, then press 8888888 to obliterate all digits.
(3) Press PRIORITY and rotate the squelch knob to hear background hiss; when priority clicks to the channel, rotate the squelch knob back off and the scanner should begin to search the full range.

It happened once for us; will it work for you? Let us know what you discover!

A. Since it was a portable AM/FM radio, it could have been most anything from the shortwave spectrum, but most likely a facsimile transmission. These maritime weather map broadcasts are sent by military and maritime stations to ships at sea and, without a BFO or product detector on your radio, they do sound in the AM mode like soldiers marching. This cadence is due to the rhythm of the line-by-line picture trace twice per second.

If you were hearing an actual transmission occurring between 1700-1800 kHz or so, there are plenty of coastal navigational beacons as well as illegal fishing buoys transmitting their navigational data and positions in this range.

***Q.** Have you ever heard of a combination receiver/recorder that captures all modes on all frequencies at a particular time so that it can be played back and monitored at a later time? (Hugh Waters, Singapore)*

A. I sure have, and so have super-secret monitoring agencies like the National Security Agency (NSA). At one time it was estimated that nearly half of all recording tape manufactured in the United States was going to those agencies for just such an application. It's called predetection recording and the principle is rather simple, although the actual equipment is quite sophisticated.

It works like this: If you connect the video input of your video tape recorder (VCR) to an antenna, and if your machine has a bandwidth of 4 megahertz or so, all signals from 0-4 MHz will be recorded on the tape. Hook the video output to the antenna of your receiver, and you should be able to play back that spectrum at your whim searching over and over for signals as they are actually transmitted at any particular time.

While this home-brew scheme really does work, it is limited in dynamic range and frequency response. Of course frequency converters and wide-dynamic-range design could be implemented—that's where the sophistication comes in.

***Q.** I have two old military radios, and RT-67 and an RT-68; where can I get technical manuals and parts for these? (Tom Treadwell, Menomonie, WI)*

A. After a half century parts procurement can be a problem, but locating manuals isn't. There are many specialists who offer reprints of old radio manuals. Look in amateur radio magazines like *CQ* for surplus specialists like Fair Radio Sales in Lima, Ohio, and equipment manual specialists like Sam Consalvo.

A sample copy of *Electric Radio* (an excellent source of articles, equipment, manuals, parts, and repairs for military and antique radios) can be requested from editor Barry Wiseman at Box 57, Hesperus, CO 81326. Finally, but certainly not last, request a sample of *Antique Radio Classified*, PO Box 2, Carlisle, MA 01741—the most exhaustive source of suppliers, buyers and dealers of antique radio equipment, parts, and publications.

Questions or tips sent to "Ask Bob," c/o *MT* are printed in this column as space permits. If you desire a prompt, personal reply, mail your questions along with a self-addressed stamped envelope (no telephone calls, please) in care of *MT*, or e-mail to **bob@grove.net**. (Please include your name and address.) The current "Ask Bob" is now online at our WWW site: www.grove.net.

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ANNOUNCING *Radios by Hallicrafters*, the definitive book on the Hallicrafters company and its products by Chuck Dachis "The Hallicrafter Collector". More than 200 pages, over 600 photographs and 10 years in the making. Available late March 1996 at $29.95 from Schiffer Publising Ltd., 77 Lower Valley Road, Atglen, PA 19310.

FOR SALE: ICOM R7100 Receiver, full coverage (800 MHz) & UT36 Voice Synthesizer, like new $1375. Call Bob (607) 785-3420 After 4 PM.

SCANNERS: PRO-2006, new in sealed box, $325; Uniden BC-3000, new with 2 spare bat. packs, leather case, $300; Bearcat BC300, mint $100; Japan Radio NRD-535D, new with NVA319 speaker $1100. You Ship. John (907) 337-9157, Alaska time.

Two NRD-525's $600 & $700, PRO-2004 cellular restored and service manual $250; JIL SX-400 $250; PRO-32 with extras $150; Optoelectronics CCA $50; Tripp 12V regulated power supply $25; Scan Record $20; ICOM discone $45. Rick (954) 832-9058.

McIntosh MR-78 considered "simply the best" FM tuner ever made (Monitoring Times July '93, P. 48) $1075. McIntosh MR-80, upgraded version of MR-78 with digital readout, $1195. Want Stoner-Dymek DA100E, Lowe HF-150 (412) 243-1569.

Xerox 320 microfiche reader with "TONS" (about 8-10lbs.) of frequency fiche (FCC, Govt., transmitter listings for entire U.S.). Very nice condition $190. Universal M-6000 V-2 including monitor, cables, manuals. Mint condition. $380. Prices include shipping. Larry (216) 793-8802

WANTED: CB SIDEBAND BASE-STATION. Realistic TRC-57, TRC-458, TRC-459 or TRC-490. Preferably mint and manual. Call Larry (409) 299-1897.

Bearcat BC-950XLT base/mobile scanner with attached AIE TCF-3 tone/code finder. Both mint $425. Radio-Tech Modification books volumes 7A and 7B, new $28. AOR AR-2800 base/mobile scanner, N.I.B. with cellular $500. AOR AR-2700 handheld, mint $280. Import PRO-2035, N.I.B. with TRUE cellular $580. Uniden BC-890XLT with CTCSS option + cellular, N.I.B. $350. Radio Shack DX-400 SW receiver, as new $170. All items warranted. Larry (216) 793-8802.

Universal M-8000 version 5 decoder with Copy Cat Pro and special serial cable $995. 13" VGA monitor $100; ICOM 71A receiver with all features and FL-33 filter $675; Yaesu Yr 901 Monitor Scope $75. No COD's or personal checks; shipping additional. Wanted: instruction sheet for Autek Research SWR meter; Shinwa 001 scanner; (914)234-6753.

Uniden Bearcat BC8500XLT, with VFO, excellent condition, $235. Icom IC-2SRA 2 meter HT with 25 MHz continuous through 990 MHz mode changeable scanner built in $385. CTE's NEW WIDEBAND DISCONE ANTENNA! 25 through 1300 MHz with gain. Outperforms "Those Others"! Adjustable radials and SWRS, 20 elements, appx 9 foot, receive and transmit 200 watts + throughout all bands like amateur, business, air, FM, CB, etc. I have 2 in my attic that I use for several purposes, 1 outside and 2 new in the box. Must sell my 2 new ones, $65 each. KE3FZ (717) 988-6200.

NEEDED: people to record radio stations in Detroit, Colorado Springs, Ann Arbor. Will Pay! Radio, P.O. Box 51554, Durham, NC 27717-1554.

Optoelectronics Frequency Counter model 2810 with backlight, like new $150. (908) 287-8561 or pager (908) 293-7949.

WANTED: First three issues of *Satellite Times* Magazine. Please contact Steven (612) 315-8805. Anytime.

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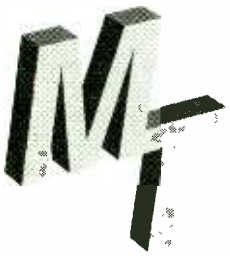
Yaesu FRT-7700 Antenna Tuner $50. Autek QF-1A Audio Filter $40. Palomar Noise Bridge $30. WB9YCJ/6, (714) 564-9010.

ICOM-R7100, continuous, no modifications, SDU-100, monitor, $1500 or best offer, Randy (402) 894-2572.

CLOSING COMMENTS

Bob Grove
Publisher

A Theory of Technological Evolution



With the threatened demise of Radio Canada International, and the impact of my previous commentary on the dissolution of clubs and the displacement of ham radio by the Internet, it might be appropriate to address the future of recreational radio.

I am not a doomsday cultist; far from it. I am a pragmatic optimist. I believe that things happen for the best, provided the environment is there for it to happen. Sort of a technological Darwinism. So let's take a look at the radio environment at present and see if we can predict its future.

While hi-tech societies of North America, Europe, and Asia enjoy the fast-paced productivity of electronics, the vast majority of the world's population do not. Residents of New York, Paris, London, and Tokyo may immerse themselves in the luxury of cell phones, digital satellite reception, and instant telecommunications, but outreach to third world countries—and even rural America—lags behind.

Shortwave radio will have a place in the foreseeable future, even in its present analog form, where more advanced technologies do not have a permeating presence. There are several who have good reason to remain on the shortwave bands: broadcasters wishing to proselytize with their philosophies, communicators who already have considerable high frequency (HF) assets, and low-budget utilities requiring long distance coverage at minimal expense.

Similarly, the VHF/UHF spectrum, although enduring a blitz of new technologies, will continue to support simple two-way radios which don't require spread spectrum, trunking, digital encryption, and other advanced platforms which require considerable financial outlay and continual maintenance expenses.

It is impossible to predict with certainty which services will continue to be within the reach of conventional monitoring equipment, but it is rather obvious which services will not. Law enforcement agencies—local, state and federal—will be the first to go, followed by other public safety agencies in larger population areas. We see this happening already, wherever official awareness of radio eavesdropping is perceived as a threat, and where funds are available to buy privacy.

My concern for this kind of closed-door rationale is that it breeds abuse; our tax supported agencies can conduct their business—or personal agendas—without fear of the public scrutiny or approval provided for under sunshine laws.

Satellite communications are on another plane—physically and philosophically. They developed without concern for interception since virtually no one who was not part of the system had equipment capable of monitoring.

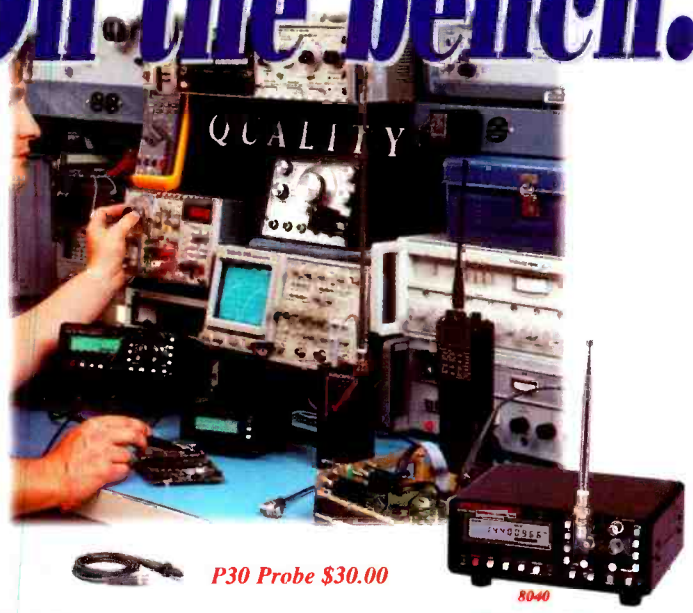
Digitization of satellite signals was designed for efficiency, not privacy, and considerable analog still remains. This is an emerging frontier for recreational monitoring of the spectrum, covered in extensive detail within the pages of our sister magazine, *Satellite Times*. The motto of new age monitors could be, "Things are looking up!"

In a nutshell, then, I foresee the following:

- Shortwave broadcasting will remain fairly steady, pending budget variations, for some time to come. Attention to the HF spectrum will increase with the sunspot cycle over the next 6-8 years.
- Scanner monitoring, in the conventional sense, will gradually decline over the next few years, although the emergence of a trunk-tracking scanner will be accompanied by brisk sales and renewed enthusiasm for a time.
- Satellite monitoring will draw more and more attention within the hobby as entrepreneurs make high performance, low cost equipment available.
- The emergence of PCS within the next three years will have enormous impact on radio communications.

So there it is; the future is certainly not bleak, and it will be here in time for you and me to enjoy it.

On the bench...



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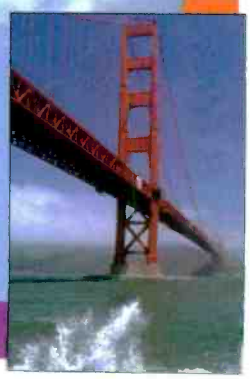

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