AUGUST 1988 VOLUME 7 NUMBER 8

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MONITORING TIMES

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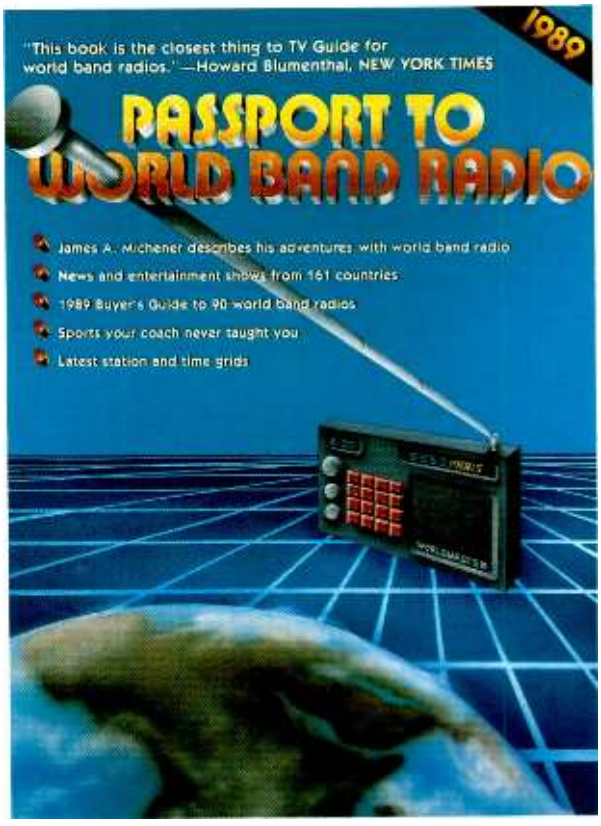

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Vol. 7, No. 8

August 1988

MONITORING TIMES

Got a passion for scanners? So does Bob Parnass! p.18

The Tactical Air Command at Myrtle Beach AFB - p.10

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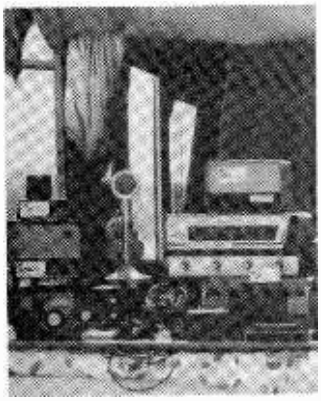
ON THE COVER: Although Myrtle Beach maintains the A-10 Thunderbolts, other aircraft are utilized from time to time. Here a T-38 jet trainer is silhouetted against the setting sun *(Photo by Steven Douglass)*.

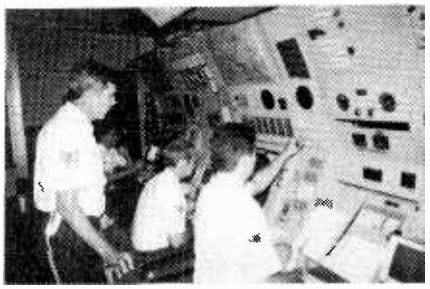
Inside this Issue:



• Summer. Garage sales. The terms are synonymous. And what better place to pick up a good, cheap scanner? But watch out! It's a jungle out there. You'd better have someone go with you to make sure you don't get ripped off. Take Bob Parnass along. • To say that Bob Parnass likes scanners is like saying the Rockefellers like money. The fact is, over the years, over 40 different models have occupied a place on Bob's shelf. Now there may be someone out there that's owned more radios but it's not likely anyone knows each one so well. That's why our eyes lit up when we saw his manuscript, *Confessions of a Scanner Collector.* Here was a perfect, no-holds barred buyer's guide to scanners that anyone could use. So don't be afraid. Clip it out. Take it with you. And get the radio bargain of the year. • From the all-American garage sale, this month's *Monitoring Times* wings you eastward to Asia. What happens when a group of dissatisfied American DJs find themselves in Taiwan? What else? They put on a radio station. Strange? You bet. Not only does Radio ICRT broadcast exclusively in English, but it also happens to be illegal. Meet Craig Quick and the staff of Radio ICRT, one of the region's most unusual, yet most successful radio stations. • Interested in projects? Then *MT* has some great reading for you. In this month's *Antenna Topics,* Clem Small (right) has step-by-step plans on a VHF/UHF antenna you can build. And you don't have to be rich or an electrical genius to do it.

New columns

• If that kind of thing gets your soldering iron hot, then you'll definitely want to check out Doug DeMaw's new column. DeMaw's easy-to-understand prose and geniunely useful projects are internationally known. Doug joins us from the staff of amateur radio's premier publication, *QST.* • Why would anyone venture down below the AM band, down into the dark recesses of the radio spectrum under 530 kHz? According to LF expert and new *Monitoring Times* columnist Joe Woodlock, the reasons range from the challenge of maritime beacons to powerful broadcasting stations in Europe and Asia. Join Joe as he explores this strange world in his new column, *The World Below 500 kHz.*



• Not satisfied? *MT* readers want more. More program details. So we started Kannon Shanmugam's new program review page. More DX news. So we hired on the internationally acclaimed DXpert Glenn Hauser. Put him shoulder to shoulder with Larry Van Horn on shortwave utilities and, my goodness, you just can't get any better coverage of the HF bands anywhere. • But wait. There's more. How about a trip to Myrtle Beach Air Force Base with publisher Bob Grove? A column to help you with your QSLs? A complete, hour-by-hour list of shortwave stations broadcasting in English *plus* propagation charts to help you hear them? We even help you when it's time to buy that all-important new receiver. Who else would you turn to for the most accurate, unbiased equipment reviews anywhere besides Larry Magne. And, of course, *Monitoring Times* has him. • In fact, *Monitoring Times* has it all. From the mystery of the low frequencies all the way to outer space with Ken Reitz's monthly look at satellite communications. Join us this month and every month as we explore the exciting and always fascinating world of communications.

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LETTERS

More Numbers Information

I read with interest your recent articles on numbers and letters stations.

I would like to suggest that someone from *Monitoring Times* contact the U.S. Army Special Forces School at Ft. Bragg. They have a radio operator's course there that you would find interesting and that would answer some of your questions about the numbers stations. Ft. Bragg is one place where these little devils who send and receive letter and number messages are trained.

In addition to Ft. Bragg, there are similar facilities at Ft. Devans, Mississippi, Ft. Lewis, Washington, Panama, West Germany, Okinawa, not to mention the new Special Operations Command at McDill Air Force Base in Florida.

During Vietnam, DXers must have gone crazy with all the numbers and letter stations on the air. The 5th Special Forces Group had between 50 and 100 of these stations on the air, all sending and receiving messages using numbers and letters.

Withheld
U.S. Army, Retired
Deltona, Florida

QSLing This 'n That

I have been monitoring Army MARS communications over the past few months but have been unable to get a QSL card from them. Any suggestions?

Kevin Hallerman
Ft. Wayne, Indiana

According to Robert L. Warren, Chief of Army MARS, official policy is that "We will not acknowledge requests for QSL cards from individuals listening to or copying our broadcasts." Army MARS operates almost in total on four frequencies, upper and lower sideband: 4020, 4025, 4030 and 4035 kHz. On the overseas nets, they use 14487 USB, 14510 USB and 14513 LSB in the Pacific and 14402 USB to Europe.

There is, incidentally, at least one time of the year when you can get verification from Army MARS -- Armed Forces Day -- when messages are transmitted specifically for a general audience. Watch your Monitoring Times for dates and times. -- Ed.

I sent a reception report to WCSN, the Christian Science Monitor station and received a letter in response saying that "...We appreciate the many reception reports we receive [and] would dearly like to verify reception on QSL cards, but due to the volume of requests, we are unable to do so." What's the story?

Terry Powers
La Mesa, California

WCSN is simply being (somewhat) honest. While they won't come right out and say it, like the vast majority of shortwave stations, they neither need nor want your reception report. The QSL card, it seems, is nothing more than a quaint little anachronism that is slowly going the way of the dinosaur. Stations, instead, are concentrating their efforts -- with mixed results -- on programming. That is, of course, their alleged purpose.

Incidentally, MT's own Glenn Hauser makes an interesting observation about WCSN. Isn't it curious, he says, that the station that volunteered to house the Committee to Preserve Radio Verifications collection (the hobby's aspiring QSL museum) itself doesn't QSL. --Ed.

Sweeping Up

I really enjoy your publication, especially the utility articles on numbers stations and other strange signals.

How about an article on "sweeper stations"? A sweeper station is a transmitter which emits a carrier that rapidly sweeps up the band. A synchronized receiver at some other location receives the emission as it shoots up the dial. This yields propagation versus frequency information between the two sites. You can play leap-frog with a sweeper by quickly tuning up about 200 kHz each time you hear one pass by. This game will usually take you up to the MUF [Maximum Useable Frequency].

Bill Cantrell
Fort Worth, Texas

MCMLXXXVIII Touchstone Pictures

Enjoyed the article on Mai Lan and Vietnam-era broadcasting in the April edition. I was with AFVN [U.S. Armed Forces Vietnam Network] and have been compiling research on broadcasting in the combat zone.

Billy F. Williams, Jr.
Professor, Marine Tech Program
Geis Marine Center
Fla Junior College at Jacksonville
Jacksonville, Florida

I suggest that you contact Robert Dieterich at Interlock Media Associates (P.O. Box 619, Harvard Square Station, Cambridge, Massachusetts 02238). Robert was the producer of the superb, "Vietnam: Radio First Termer" program broadcast over National Public Radio a few months back. Incidentally, a tape of the program is available from Interlock for $10.00 (tax deductible and postpaid) at the address above. -- Ed.

[More "Letters" on page 100]

COMMUNICATIONS

No more news from home via VOA. VOA is signing off in September.

AFRTS -- Gone in September

In its January 1988 edition, *Monitoring Times* reported that the ultra-popular Armed Forces Radio and Television Service (AFRTS) would be leaving shortwave "sometime this year." The *MT* report, however, which quoted anonymous "inside sources," was dismissed as inaccurate by VOA and AFRTS officials as well as on a number of DX programs. Now comes confirmation from *Passport to World Band Radio* editor and publisher Larry Magne that AFRTS' last broadcast on shortwave will be the end of September.

Says Magne, "This is a major blow to shortwave listeners everywhere. It's almost comparable to having the BBC World Service sign off shortwave." Other industry insiders lament the pending loss citing the boring nature of VOA -- the U.S.' official international voice -- and the popularity of AFRTS around the world.

"Hell," said one disgusted official who requested anonymity, "AFRTS is the best propaganda [the US] has -- because it's *not* 'propaganda'." "What about U.S. citizens living and traveling overseas?" asked another. "How are they going to stay in touch with home? They're sure not going to want to listen to the Voice of America."

According to Magne, it still might be possible to hear AFRTS by monitoring a 4 kw point-to-point transmission from Barford, England, on 9239.25 USB, 9242.1 LSB, 9244.1 LSB and 9334.1 LSB. These, caution Magne, are irregular and harder to hear than AFRTS broadcasts over standard VOA transmitters like 6030 kHz.

Radio Truth: CIA Operation?

Zimbabwe News -- the official publication of the country's sole legal political party -- the Zimbabwe African National Union - Patriotic Front -- says that shortwave clandestine station Radio Truth is a "CIA operation." Radio Truth broadcast a denial of the story and most regional diplomats say that, on this point at least: its direction comes from Pretoria, not Washington.

Radio Truth has been heard in North America around 5015 kHz between 0400 and 0500 (English at 0430 and from 1700 to 1800 (English at 1830).

MT Readers: Help Wanted

Interlock Media Associates, producers of the excellent radio documentary, *Vietnam: Radio First Termer*, is looking for help from *Monitoring Times* readers.

Their new series, to be intitled, *Radio of Rebellion*, will soon begin production. Says producer Robert Dieterich, "we'd like to ask DXers for actual broadcast footage from clandestine radio operations, general information about clandestine stations -- their history, affiliation, style, audience and such -- and contacts with the clandestines operations themselves.

Dieterich, while acknowledging the difficulty of the latter, points out that it is also the most important and promises that they will "handle [such leads] with the utmost care and confidentiality."

Those interested in being part of what promises to be a truly great radio documentary, should contact Interlock Media Associates at P.O. Box 619, Harvard Square Station, Cambridge, MA 02238.

ICOM is <u>not</u> replacing the R7000 (soon) ...

One of the most persistent rumors in the industry is the imminent replacement of ICOM's popular R7000 general coverage VHF/UHF receiver. The latest mistatement appears in a club newsletter, pointing to a new unit which "will soon be appearing at ICOM dealers."

The fact is that all manufacturers anticipate follow-on receivers, but according to an ICOM spokesman, their replacement is at least a year away and details have not even passed the paperwork stage. Don't hold your breath for this one!

.. and Radio Shack is <u>not</u> closing out the PRO2004!

Our offices were recently bombarded with calls from customers who had heard that Radio Shack was discontinuing the most popular scanner on the market, the feature-packed PRO-2004.

According to a marketing spokesman, there are no sales, clearances or discontinuations planned for the 2004 which will reappear in the new 1989 Radio Shack catalog.

Lights, Camera, Action! TV Marti on Its Way

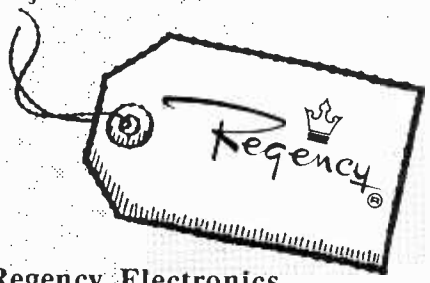
Legislation containing a $7.5 million appropriation to set up a U.S. government-run television station that would broadcast to Cuba has been approved by the Senate Appropriations Committee. It was, at press time, ready for final

Senate action.

A recently completed technical feasibility study -- not expected until this fall -- recommended a high altitude balloon, tethered over South Florida, as the cheapest way to get the TV signal into Cuba.

Not everyone is happy about the progress of TV Marti. On June 9, the day that the committee approved funding for the station, Cuban AM stations once again showed their displeasure by powered up huge transmitters and interfering with domestic broadcasting in the U.S. According to National Association of Broadcasters spokesman Susan Kraus, "We see it as a clear response and a show of force. These transmitters...are 10 times the power of anything we've got over here.

Republican Presidential candidate George Bush, during a campaign stop in Florida, has expressed strong support for the project.



Regency Electronics Up For Sale

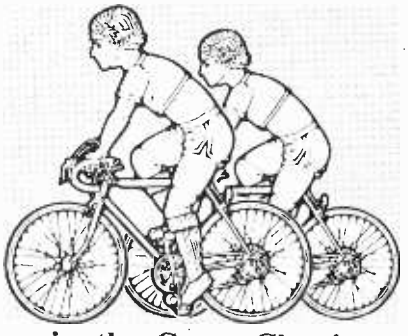
Some months ago, Regency Electronics, manufacturer of scanners, CB radios, radar detectors, cellular telephones and many other electronic devices, sold their Consumer Electronics Division, showing a book value of $8 million, to Uniden Corporation of America for $12 million, retaining their Land Mobile (utility load management systems and two-way radio), IFR (test equipment) and Mobile Telephone (Citicom) divisions.

In a news release dated June 27, 1988, Regency announced that all of their remaining assets were for sale. According to Jack Fox, the new chairman of the board who took over that position from Joe Boone who resigned in February, a decision was to be made on July 26 to sell off the remaining divisions or to distribute Regency's company-held 84% of IFR stock among the shareholders.

Regarding the future of Regency, Fox stated that the prospective investors are interested in retaining their acquisitions as working units, creating a minimum impact on the work force.

Working Together: Tass and Associated Press

The Soviet Union's official news agency, Tass, and the U.S.-based Associated Press (AP), have signed an agreement "for further development of professional cooperation between two news agencies." The Soviet agency's reports are already available on the Lexis/Nexis computer data bank, as are those of Xinhua, the official news service of the People's Republic of China.



Tune in the Coors Classic

Each summer the Coors International Bicycle Classic commences in California and ends in Colorado. This year the race begins near San Francisco on August 8 and will be coordinated by radio communications.

While you're not likely to hear the callsign (KB54222), spectators should be able to monitor their hand-held communications on the itinerant frequency 464.500 MHz.

25 MHz Freeband Radio

The Citizens Radio Service (CB) is not the only hotspot for unlawful two-way communications. Take a listen to the variety of do-it-yourselfers in the 25 megahertz band. With the sunspot cycle rapidly gearing up, unlicensed abusers of this part of the spectrum abound.

Over a recent weekend, a convoy of motor freight trucks out of an Indianapolis-based transport company was heard passing near our Brasstown offices on 25.835 MHz (an unassigned frequency) using narrowband FM. Raunchy language and erotic tales punctuated the airwaves.

Later that evening, things livened up on 25.870, where skip brought in an interesting group of privateers who had their own tone-encoded squelch system and Touch Tone dialing as well. They could be heard making various adjustments to the system.

Due to the ready availability of commercial mobile radio equipment designed to operate from 25-50 MHz, truckers and other services have apparently hand picked this little-used portion of the spectrum for their private communications.

Cellular Privacy does not need to be expensive

That's in spite of assertions to the contrary from the cellular industry. GRE America (425 Harbor Blvd, Belmont, CA 94002; ph. 415-591-1400) has released their ST2020 "SecureTalk" scrambler.

Consisting of two low-cost modules ($400 for the pair), the customer simply presses one of four buttons to choose his scrambling code from the bandsplitting voice inversion circuitry.

Interface cables for the unit allow it to be used with GE, NEC, Audiovox, Mitsubishi, Oki, Uniden and Novatel cellular telephones. (Thanks to Rene Borde, Sunnyvale, CA).

Banned in the Land of the Free

by Steve Knoll

The Voice of America is speaking louder these days, or at least its message is finally getting through where it counts most. Following the Soviet decision last year to stop jamming Russian-language broadcasts, the "static curtain" was recently lifted on VOA transmissions in Polish.

All well and good. But one question remains: Will the spirit of *glasnost* extend to the one country where dissemination of the VOA's contents is barred by law -- namely, the United States of America?

It is a strange law that most Americans -- and even many members of the Fourth Estate -- are not aware of: the U.S. Information and Educational Exchange Act of 1948, known as the Smith-Mundt Act. It stipulates that any news and information produced by the Voice of America, or its parent U.S. Information Agency, shall be for overseas ears only (although transcripts are to be kept on file in Washington).

The original intent was paternalistic: to protect the American people from propaganda by their own government. But four decades later, now that the VOA has expanded to include the controversial Radio Marti and the USIA has given birth to Worldnet, the international satellite television network, a reassessment may be overdue. The fact is, under Smith-Mundt, the wide-ranging information and propaganda apparatus of the U.S. Government functions without a mechanism for direct accountability to the taxpayer.

As long ago as 1967, the U.S. Advisory Commission on Information suggested that "after almost two decades, the walls can come down." The panel, chaired by then-CBS president Frank Stanton, concluded that, among other benefits, repeal "would improve credibility overseas in demonstrating there is no curtain between what is released abroad and what is made available at home."

Congress was not persuaded. Five years later, the Smith-Mundt Act's implicit proscription was made explicit as Congress passed an amendment flatly banning "dissemination within the United States" of the *verboten* material.

"Do you mean I can't print it in my newspaper?" Michael Gartner, then-editor of the *Des Moines Register*, asked a USIA official. "That's right," he was told. "That's the law of the land."

To some, the ban does not rank high on the agenda of threats to press freedom. "Most editors don't care [about] this incredible, outrageous law," laments Gartner. "They think the VOA would never sue you."

Indeed, the act does not provide any penalty for violations; the government would have to seek an injunction to stop publication or broadcast of VOA material. Yet no news organization has ever challenged the statute in court, even though, in Gartner's words, "it amounts to the only legislated prior restraint on news in newspapers of America that I know of."

Although VOA transmissions are beamed abroad, many shortwave listeners in this country can pick them up in English. Yet that rationalization for leaving the law alone gains less force with the introduction of Worldnet and the Spanish-language Radio Marti, which cannot be heard at all in most of the United States.

According to the *Washington Post*, "some USIA officials privately call Worldnet the jewel in the crown of the [Reagan] administration's fascination with aggressive propaganda techniques."

At the same time, former ABC News president Bill Sheehan, who has participated in Worldnet broadcasts, thinks "they do some good, honest work," with journalists in Europe and Asia joining panelists in Washington to question newsmakers. "It's too bad," says Sheehan, "that Americans are not able to see it."

Stanton warns that even without repeal, the government will not be able to black out Worldnet indefinitely. Viewers with backyard satellite dishes, he suggests, will eventually be able to pull Worldnet down from the sky. Stanton has urged Congress to "catch up with technology and change the rules so that what will otherwise be done surreptitiously can be done openly and legitimately."

After Radio Marti's first broadcast in 1985, Suzanne Garment's *Wall Street Journal* column recounted the confusion: "The VOA publicity lady in charge was by turns accommodating, exasperated, apologetic and steely-firm.... Yes, a journalist could listen to a tape of the station's first broadcast. No, the law absolutely forbade someone copying the tape to have a translation

The fact is, under Smith-Mundt, the wide-ranging information and propaganda apparatus of the U.S. Government functions without a mechanism for direct accountability to the taxpayer.

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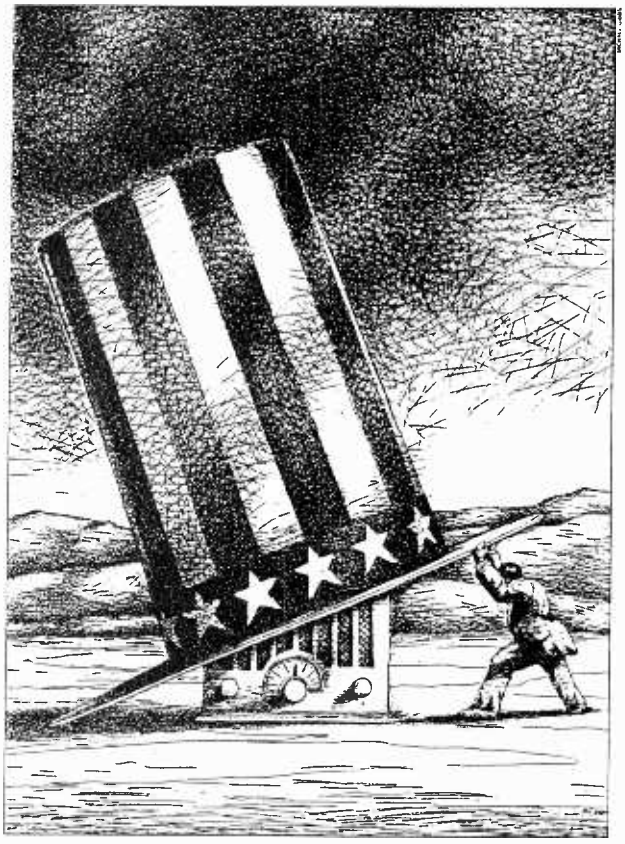
made on the outside."

It seems unlikely that the press, accustomed to the bizarre workings of the bureaucracy, fully grasped that it was not dealing merely with red tape but rather with something more serious.

Indeed, some of the harshest criticisms of the statute come from a surprising source: former VOA directors who had to live under its strictures.

Kenneth Y. Tomlinson, VOA director from 1982 to 1984, calls Smith-Mundt an arcane law he considered "an embarrassment. When a journalist would call me and ask how the VOA is covering a story, I'd have to say, 'I can't send you that transcript.'"

Tomlinson says the law, designed at a time when the government was relatively new to the public-information business, "has long outlived its usefulness. I think we need to be able to see and hear what the Voice of America is broadcasting on its news and current-affairs programs to assess its quality."



R. Peter Strauss, VOA director under President Carter, says he found the best way to demonstrate the "nuttiness" of the rule to members of Congress and their staffs was to cite examples of its absurd workings.

On one occasion, he recalls, a major VOA documentary portrait of an American city was prepared over many months with the close cooperation of the mayor. According to Strauss, "He set us up with city officials, and worked like hell to help us."

After the finished product was beamed abroad in some 43 languages, the mayor called to request a tape. "We had to tell him 'no,'" Strauss relates.

"I'll pay for it," he protested.

"Mr. Mayor, that's not the issue," Strauss demurred.

Strauss's contention that the statute "is on the edge of ridiculous in its implementation" applies with particular force to the press. According to Tomlinson, when a reporter called to ask for a copy of a VOA broadcast, he'd be obliged to tell him, "you'll have to physically come to Independence Avenue. If you sit down at a government-issued table in a government building, we'll let you [look] at the manuscript, and you can take notes."

Perhaps because of that cumbersome procedure, journalistic assessment of how the Voice is representing America to the world has been largely unavailable. But there have been exceptions. On one occasion, the *Christian Science Monitor* relied on the impressions of its overseas correspondents for what it admitted was "by no means a systematic study."

And in January 1987, in an article by contributing editor Lawrence Mosher, the *National Journal* examined how the VOA was covering the Iran-Contra scandal, the sort of issue that would serve as a litmus test of its journalistic integrity.

The Voice passed Mosher's test with ease. "I went in there looking for that [ultra-conservative bias]," he says. "I was rather astonished to conclude it was ultra-straight."

To arrive at that verdict, Mosher spent a week at VOA offices combing through transcripts of 453 news stories, 275 correspondents' reports, and 20 special programs -- all on the Iran-Contra affair. Asked how the Smith-Mundt Act restricted him, Mosher says, "It made it more difficult because I couldn't Xerox. I had to do all my fact-gathering by long-hand."

Mosher was fortunate. As a Washington-based journalist, he was able to visit the agency in person. That is the only way a reporter can gain access to VOA transcripts; they cannot be sent through the mail.

The single known exception proves the rule. In 1983, Representative Cooper Evans (Republican-Iowa), apparently unaware he was violating the law, sent a batch of VOA editorials to a constituent. Subsequently, a USIA officer demanded return of the material.

Because the Voice's 1976 charter requires that its news output meet a standard of objectivity, Mosher's conclusion that it does so should not be too surprising. It is perhaps the editorials -- to which no such injunction applies -- that warrant closer scrutiny.

In fact, a study of the editorials sent by former congressman Evans detected a conservative slant to the editorials. According to Gilbert Cranberg, George Gallup Professor at the University of Iowa's Journalism School, there were stronger criticisms of the human-rights policies of left-wing dictatorships than of right-wing governments. Moreover, the study revealed a proclivity "to picture the peace movement in this country in unflattering terms."

When the Reagan administration came to power, it redefined the USIA's "statement of mission," dropping the ban against covert, manipulative, or propagandistic activities. Added to the agency's goal was this objective: to "unmask and counter hostile attempts to distort or to frustrate the objectives and policies of the United States."

VOA editorials were among the vehicles employed to achieve that goal. Indeed, there were no editorials labeled as such until the Reagan years.

But it was under President Carter that the concept of commentaries reflecting the view of the State Department -- actually written at the State Department -- was introduced. Peter Strauss devised them as a way to preserve the integrity of the news.

In the face of complaints from State and other departments that VOA news reports did not adequately reflect the governments's position, Strauss saw the commentary -- a clearly labeled vehicle of opinion separated from the news -- as a way out.

The result, he says, is that "second guessing" of news content by the State Department came to an end.

It was under Reagan that the commentaries became more assertive -- and their label changed to "editorial." In 1982, the position of "chief editorial writer" was established. Seth Cropsey, a former reporter for *Fortune*, was named to the post. The current occupant, Steve Munson, fits the conservative mold: he once worked with former ambassador Jeane Kirkpatrick at the United Nations.

Tomlinson, now executive editor of *Reader's Digest*, once told the *New York Times*, "Someone complained that our editorials sound just like Ronald Reagan, and I said, 'You're darn right and I'm proud of it.' The editorials should reflect the viewpoint of the party in power."

However, some Voice journalists feel that broadcasts of the governments's opinion harm the VOA's overall credibility. Yet Bill Sheehan, whose selection as VOA director in 1986 was derailed by ultra-right opposition, disagrees. "I see nothing wrong with editorials that express the view of the publisher -- the State Department -- as long as the body of the news output is as pure as the BBC."

Strauss likes to refer to the editorials as "the sponsor's commercial." The sponsor is the taxpayer. But, in this case, the sponsor is barred by law from reviewing the contents of the commercial that is prepared in his behalf.

USIA director Charles Z. Wick has conceded in a letter to Michael Gartner "that it would be useful if your readers could read VOA editorials and decide for themselves about the quality of our message and its delivery. Unfortunately, that is not possible...."

Mosher's *National Journal* piece did include part of an editorial justifying the Administration's "diplomatic initiative" toward Iran along with other excerpts from VOA transmissions. Despite that, Mosher says, "it didn't occur to me I was breaking the law by reporting what I reported. How much do you have to publish to break the law?"

That question was put to Patricia Seaman, a VOA public-affairs official with whom Mosher dealt. "You could quote small parts but not the entire paragraph...not great amounts," says Seaman. "The law says Voice of America materials are not to made available within the United States."

Seaman, who has since left her post for a job with the Radio-Television News Directors Association, adds: "I couldn't even read it to you if you were on deadline. I'd have to paraphrase."

There appears to be a lawyer's distinction between publication of excerpts and "dissemination" of verbatim texts. While the former may be permitted, anyone carrying a VOA news report in its entirety is clearly engaging in an illegal activity: "domestic distribution."

If there is sentiment within the USIA for relaxation of the Smith-Mundt ban, it's not just because the agency wants to make it easier for the press to act as an effective watchdog. There are other, more pragmatic considerations.

Stephen B. Labunski, chairman of the Voice of America Advisory Committee, says that although he is "basically in accord with the view that the government ought not to be in the news business domestically, I regret that the law makes it so much more difficult to build a constituency for the Voice of America and Worldnet in this country."

One of the reasons for the proliferation of private-sector committees like Labunski's (there are 11) is to build public support for the VOA's various broadcasting activities, which, because of the law are largely unfamiliar to Americans.

Labunski, executive director of the International Radio and Television Society and a former NBC Radio president, explains that to build a constituency, "you need to have people who care about what you do and who know what it's like." Because of Smith-Mundt, "you have to depend on Americans who travel," he says. "There ought to be more effort through hotels, airlines, and travel bureaus to encourage Americans to listen to VOA while abroad. But among priorities in a tight situation you know that won't be high."

Although repealing the proscription would remove a major barrier to press and public auditing of the VOA, it could also create some new problems.

In 1967, when the Stanton Commission concluded that "the walls can come down," syndicated columnist Carl Rowan, who served as USIA director under President Johnson, registered a dissent. In a *Washington Star* column, Rowan suggested that "within hours after the first batch of USIA materials is distributed at home, the agency will be besieged by an army of truck drivers, retired cowpokes and newspaper columnists, all offering free advice on how better to 'sell democracy abroad.'"

Rowan has not changed his mind: "What I said 21 years ago stands today," he affirms.

Peter Strauss also sees repeal leading to some headaches for USIA. "I guarantee," he predicts, "that Afghan-Americans will find something wrong with the Urdu broadcasts." In his view, easy access to VOA means the USIA "will have a tough time defending the integrity of the Voice against special interests."

Carl Rowan goes further. "No president," he declares, "ought to be able to use the VOA or USIA as a propaganda vehicle in this country. That would take us a step closer to the banana republics."

Kenneth Tomlinson suggests a "common sense" solution that would lift the prior restraint on the press while still restricting the USIA from widesperad distribution in the United States. They are, he says, two separate issues.

While there may be a price to pay for public accountability, arguably the cost of secrecy is even higher. After all, what's at issue here is not exactly classified material.

Should not the broadcasts of VOA, Radio Marti and Worldnet be grist for the sort of "content analysis" routinely applied to CBS, NBC and ABC? Should not what America broadcasts to the rest of the world about America be made available to Americans? And what ever happened to the First Amendment? Did the Smith-Mundt Act repeal it?

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Bearcat 100XLT-SA7 ...$184.95
Bearcat 800XLT-SA7 ...$249.95
Bearcat 210XLT-SA7 ...$177.95
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The *Bearcat* 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 20 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the **BC 100XLT-SA4** for only $194.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

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Bearcat® 145XL-SA

List price $189.95/**CE price $98.95/SPECIAL**
10-Band, 16 Channel • No-crystal scanner Priority control • Weather search • AC/DC
Bands: 29-54, 136-174, 406-512 MHz.
The *Bearcat* 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the **BC560XLT-SA** featuring priority, weather search, channel lockout and more is available for $98.95. CEI's package price includes mobile mounting bracket and mobile power cord.

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MA257-SA Cigarette lighter cord for HX12/1500 ...$19.95
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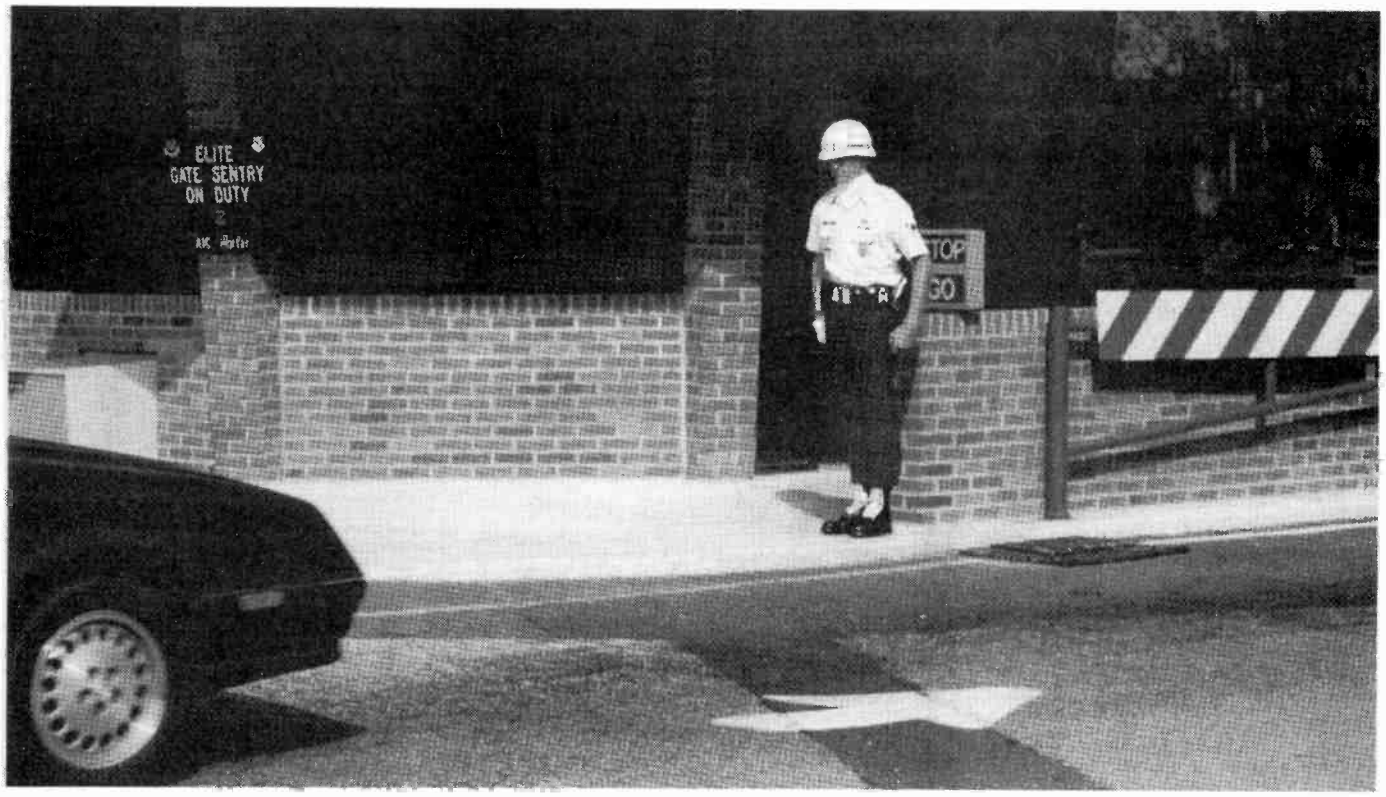


The Wings of the Falcon

Flying with the Tactical Air Command

by Bob Grove, WA4PYQ

"Charlie Company to Blue Leader ... we're losing ground. We need air support now"! "Roger, Charlie, air support on its way; Blue Leader out."

Moments later, a flight of A-10 Thunderbolts swooped into the embattlement, rocking the hillsides with a fusilade of artillery. Nose-mounted Gatling guns relentlessly pounded the enemy entrenchments to protect their comrades below.

The scenario underscores the vital task of the Tactical Air Command (TAC), to provide low altitude, low speed support to Army combat units. Training for these missions is conducted daily at TAC wings across the nation. Two of these, Shaw Air Force Base and Myrtle Beach Air Force Base are in coastal North Carolina.

While Shaw maintains the F-16s, the A-10s are the trademark of Myrtle Beach AFB, a sprawling complex of nearly 6000 acres and housing 3800 active duty personnel. This is home to the 354th Tactical Fighter Wing, recognized for the highest air-to-air combat record in World War II, and reactivated in 1956 to expand the North Carolina base which first took shape in 1940 as an addition to the Myrtle Beach Municipal Airport.

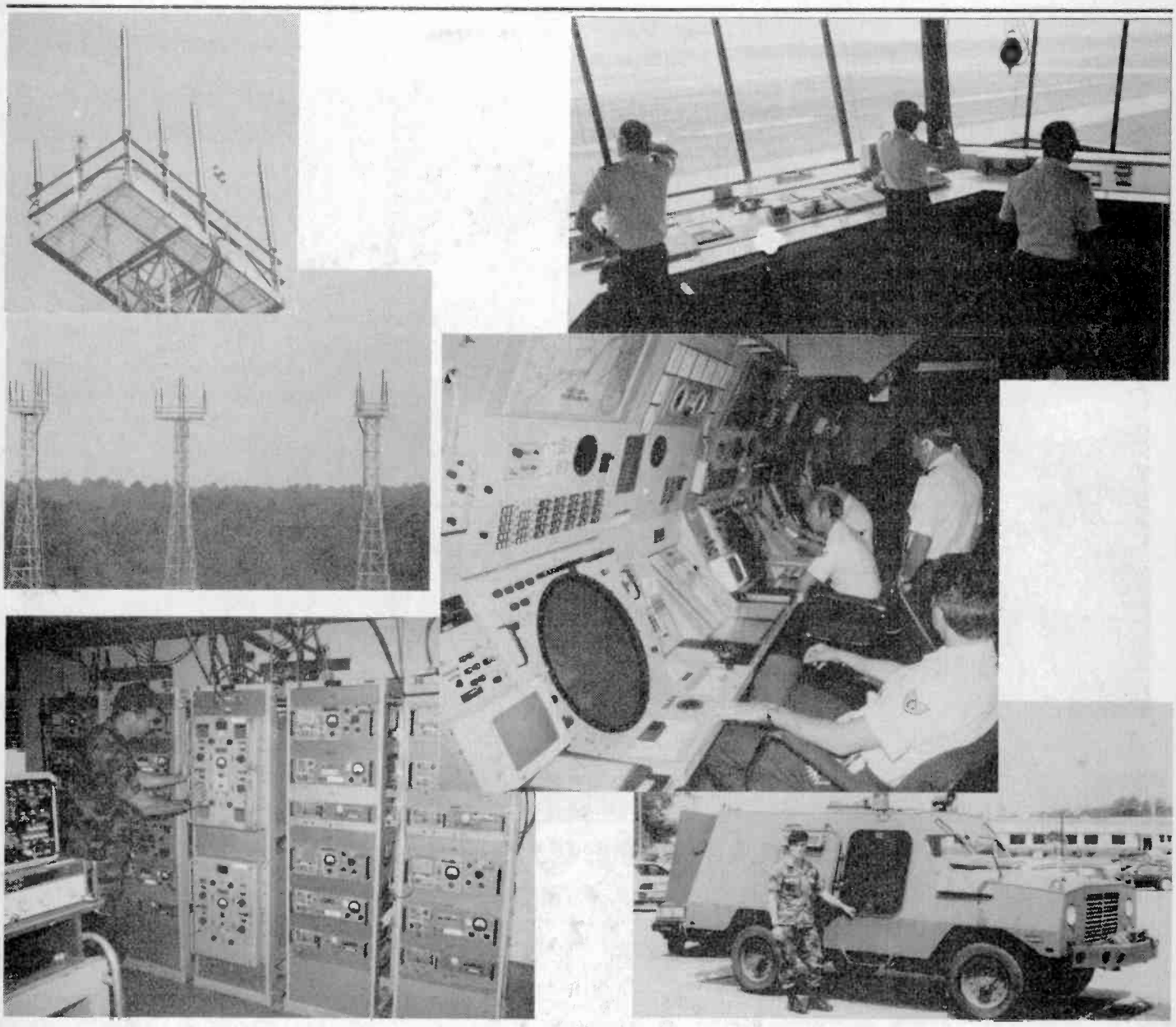
COMMUNICATIONS

Reliable communications for any defense mission is mandatory. At the 354th, the 2066th Communication Squadron manages, maintains and operates all radio and computer systems for the 353rd ("Black Panthers"), 355th ("Fightin' Falcons") and 356th ("Green Demons") tactical fighter squadrons.

Separate UHF-AM air-to-ground transmitters and receivers are installed in a block building close by the tower. A Collins KWM2A sits on standby for emergency HF-SSB voice communications and will replaced soon by a Harris synthesized transceiver.

The familiar cluster of discrete UHF discone and VHF ground plane and coaxial antennas will soon be replaced by integrated dual-band antennas. No HF or low band transmissions are conducted by the tower; these tactical communications are maintained by the avionics group at the base.

The control tower is protected from



unauthorized entry by an electronic combination lock which is recoded every time there is a change in personnel.

An armored personnel carrier patrols flight lines and is prepared to repel terrorist attacks as well as train S.W.A.T. teams. Made by Chrysler on a standard truck chassis, the carrier is covered by 3/4" armor plate, angled to deflect bullets, and all windows are bullet proof, as are the foam-filled tires.

The fire team leader is the driver; seated next to him in the passenger seat is the grenade launcher; an M-16 machine gunner stands at the topside hatch and an assistant machine gunner aims out either side port.

No radio is installed in the vehicle, but provision is made for a hand-held transceiver to be secured in place.

RAPCON

Radar Approach Control is headquartered in a darkened building, illuminated during our visit only by the brief flash of our photographic strobe. Highly skilled watch personnel stare intently at the huge radar screens, identifying aircraft as they penetrate their air zone.

RAPCON at Myrtle Beach handles some 100,000 flights per year, military and civilian. Men and women are allowed to take positions in front of the radar consoles only after months of intensive training on realistic simulators in an adjoining room. To avoid fatigue during the eight hour shifts, frequent breaks are taken.

FREQUENCIES

Military personnel are understandably reluctant to discuss discrete frequencies used for their exercises, even though these are unclassified. The tables presented within this article are from sources other than those involved in the preparation of this special article.

We would like to thank Captain B.J. Vereen and her associates in the Public Affairs office at Myrtle Beach AFB, and Lieutenant Donald Black at TAC headquarters, Langley AFB, Virginia, for their cooperation in arranging our tour and supplying background information for this special *MT* report.

TAC Frequencies

HF SSB Voice Net Frequencies

(kHz)

4711	Jacksonville control
4725	Air to air refueling
4742	Scott airways
5703	TAC bases common
6723	Jacksonville control
6727	Scott airways
8964	TAC bases common
11182	Scott airways
13204	TAC bases common
15015	Scott airways
15048	TAC bases common

TAC Low Band FM Frequencies

(MHz)

40.50	Emergency
32.85	Myrtle Beach tactical
40.20	Myrtle Beach tactical
46.90	Myrtle Beach tactical
47.65	Myrtle Beach tactical
51.50	Myrtle Beach tactical
60.10	Myrtle Beach tactical

TAC VHF-AM Frequencies

(MHz)

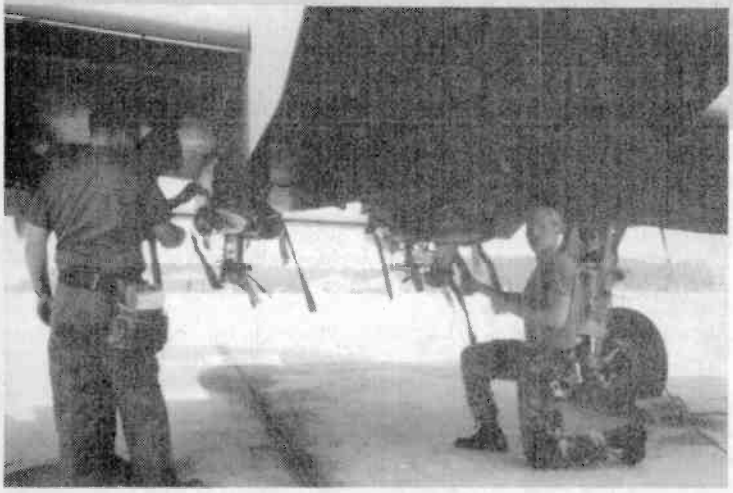
118.85	Shaw depart/arrive (S)
121.05	Shaw arrive/final
121.5	Universal emergency
121.8	Shaw clearance delivery
125.4	Shaw depart/arrive (N)
126.1	Shaw ground
126.2	Tower common
126.65	Shaw tower
134.1	Shaw arrive/final
138.025	19th TAC fighter squadron
138.25	19th TAC fighter squadron
138.3	Myrtle Beach tactical
138.425	Myrtle Beach tactical
138.475	19th TAC fighter squadron
138.65	Tactical operations
138.9	17th TAC fighter squadron
139.8	Myrtle Beach tactical
139.825	19th TAC fighter squadron
139.9	19th TAC fighter squadron
139.925	17th TAC fighter squadron
140.375	17th TAC fighter squadron
141.675	17th TAC fighter squadron
141.75	17th TAC fighter squadron

TAC UHF-AM Frequencies

(MHz)

239.8	Myrtle Beach
243.0	Universal emergency
255.4	Flight service
260.2	Air refueling common
270.1	TAC air to ground
275.8	Shaw ground control
276.9	16th TAC recon. squadron
282.8	Universal search/rescue
283.8	Shaw maintenance
287.0	Shaw approach
289.4	Shaw clearance delivery
290.6	Air to air mission
294.7	Shaw approach
295.9	Tactical operations
318.1	Shaw approach
321.1	Air to air mission
327.3	Shaw depart/arrive (N)
340.9	Shaw approach
342.5	Shaw METRO (weather)
342.5	Shaw
344.9	19th TAC fighter squadron
348.4	Shaw tower
358.3	Shaw depart/arrive (S)
363.8	TAC emergency
369.2	Shaw approach
372.2	Shaw base operations
372.8	Shaw approach
378.8	Shaw approach
381.3	TAC command post
398.1	17th TAC fighter squadron


VALOR IN COMBAT



"I can't think of anywhere in the world where it would be more exciting to be a journalist." -- *ICRT News Director Brian Curtis*

Taiwan Tunes in Radio ICRT

by Charmain Martin

Nestled in a complex of modern buildings on a hill high above the bustling city of Taipei, Taiwan, is a phenomenon unique in all of Asia: a 24-hour a day English language radio station. It's called Radio ICRT. ICRT stands for "International Community Radio Taipei."

In a land where many of the most beloved aspects of life are illegal but allowed -- such as firecrackers -- it is against the law to have a foreign radio station. ICRT is a special concession. A very special concession.

According to station manager Craig Quick, about 25 percent of the people living on the island tune in the station's FM 100.1 frequency at least once a day. The Broadcasting Corporation of China [parent organization of shortwave's Voice of Free China] has more listeners if all of its bands are taken into consideration but ICRT has the most on any single band.

Radio ICRT started out in January of 1979 as a charitable project funded primarily by U.S. multinational corporations. The shortfall was made up by the Taiwanese Government Information Office.

Friends in High Places

According to Quick, ICRT was actually the successor to AFNT -- a U.S. government-sponsored station which went off the air when the United States officially recognized mainland China. But AFNT had friends in high places. It was a pet project of the late president, Chiang Ching-kuo. Says Quick, "President Chiang said he did not want even a minute's darkness between them going off the air and us coming on."

"At first, we tried to follow the pattern of AFNT, to provide the 'boys overseas' with a bit of home." But since those early days, changes have come in quick succession.

"When I first took over, the FM outlet was 90 percent taped elevator music. There was no local news. In fact, there was no capacity to do much of anything from the Mandarin language because we had no expatriates on staff who could speak and read the language. Also, there was a high turnover of personnel."

One of the first jobs that Quick and his news director, Brian Curtis, undertook was to strengthen the news department and the quality of the announcers. Now, the two boast, "our staff would be considered good in any market in the States."

Island Beehive

"Take Lan Roberts, for example," says Quick. "Lan is famous in Washington [state]. Any radio history of the last twenty years would have to mention his name several times. He is a great morning man. The quality of his shows is very high and he does some very innovative promotions."

For sheer radio enthusiasm and versatility, it would indeed be hard to beat Roberts, formerly of KJR, Seattle. A self-confessed radio freak, he began his career as a radio ham at the age of 14 and by 16 had gone professional, hosting an afternoon program in Bonham, Texas. He has been at Radio ICRT for three years and loves it. "I did," says Roberts sheepishly, "have to lose my Texas accent along the way."

"This place is a beehive," he continues on a more serious note. "Business here, compared with Hawaii [where Roberts spent some time on the air], is like a cheetah compared to a snail. And the people here are so friendly."

News director Curtis is, like Roberts, fascinated with the nitty-gritty of life in Taiwan. He majored in broadcasting at the University of Southern California and worked on a couple of newspapers on Long Island before taking a ten-country tour of Asia. Along the way, he became fascinated by the idea of an English-language radio station in a foreign country.

"I came here four years ago, intending to stay only for two. But I've stayed on because I can't think of anywhere in the world where it would be more exciting to be a journalist. So much is happening in every area -- social, economic and political. Doing news here is very exciting."

Other staffers share Curtis' enthusiasm. There is Tony Taylor, who programmed the number one rated radio station in Hawaii for many years. And Bobby Kong, who had the number one rated show in his time slot in the Tokyo metropolitan area, FM Yokohama.

"We have a helluva good news department, too," adds Curtis. "We have six people who speak Mandarin, four of whom can read and write it as well. They were hired because of that ability. We taught them to be broadcasters later."

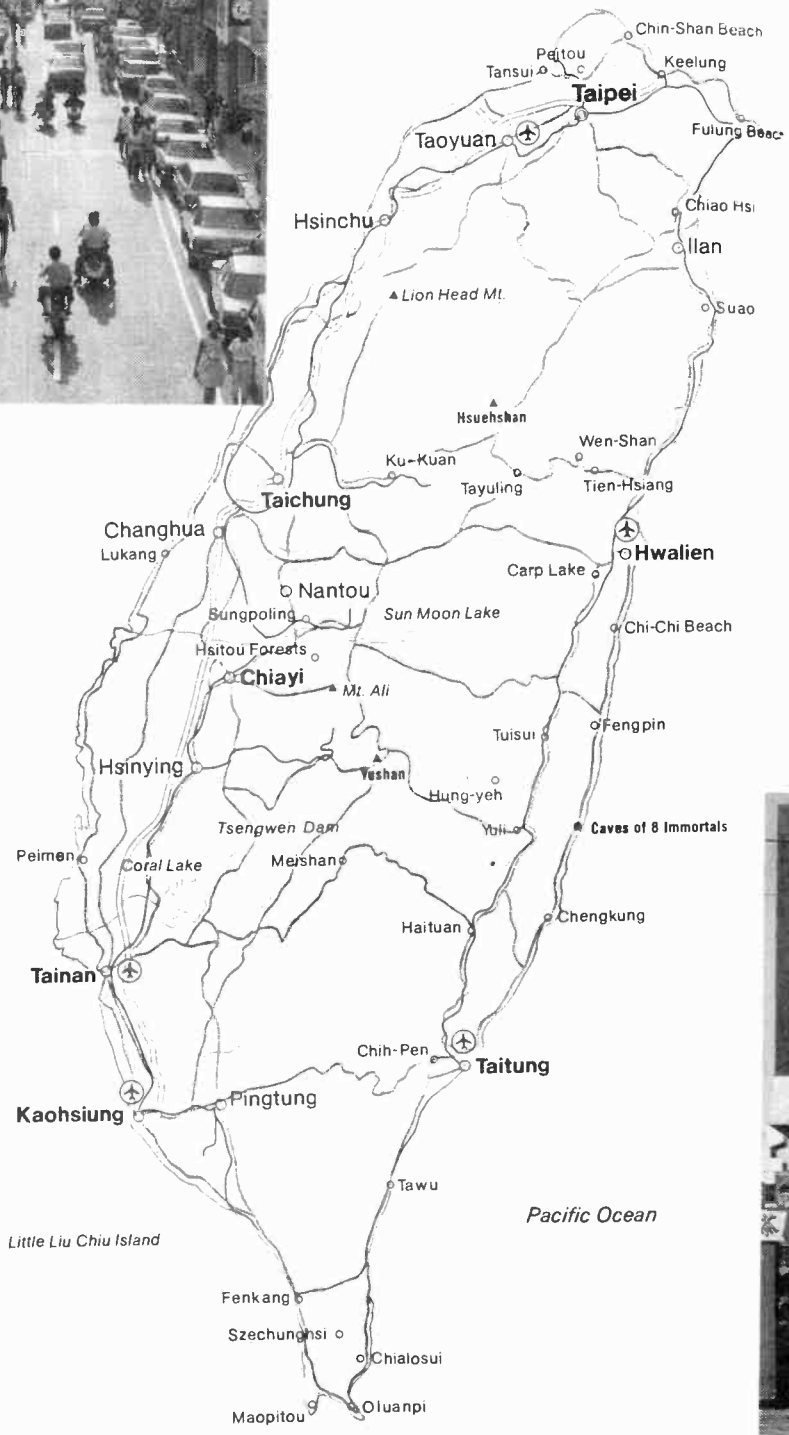
"All told, we have 12 foreigners and two Chinese. Three years ago we had only international news and it all came over the [syndicated wire services]. No radio station can do all the news by themselves. But we probably generate more of our own stuff than the average U.S. station."

Five Million Listeners

ICRT Radio isn't wasting their talent on empty airwaves, either. According to SRAP, a Taiwan rating service, as many as five million people listen to the station. It is a large, diverse, audience.

"For most foreigners," says Quick, "ICRT was, and is, their only access to typhoon warnings and other emergency information. Our potential foreign audience alone is some 20,000 or so foreigners who live in Taiwan plus the 10,000 transients living in hotels on the island. Their only contact with the English language is ICRT." For this reason, most tourist hotels supply their rooms with radios tuned to the station.

Language teaching is another of Radio ICRT's most important roles. "That's one of the main reasons why Chinese listeners tune in," says Quick. "It is one of their rare opportunities to hear natural, spoken English delivered at a normal speed in normal context, with normal vocabulary, by native speakers."



Although ICRT can be heard clearly on almost any part of the island, the rugged interior mountains isolate the cities on the eastern strip. "But we're working on that."

Like firecrackers -- ICRT is illegal but allowed

Now, thanks to the Board of Directors, Radio ICRT has been able to expand this side of its broadcasting and give it a new dimension. Because there is no English-language TV on the island, a big burden falls on Quick's staff.

In other parts of Asia, there is strong English-language TV and there are strong English-language newspapers. The situation is different in Taiwan, so in terms of the scope of audience, International Community Radio Taipei's responsibility is very big.

Trouble from Competitors

Radio ICRT has also won fans because of its high level of community involvement. Each year, for example, the station works to support a different charity. One, called "Young Stars," provided an opportunity to showcase college musicians. Contestants had to compose, play and sing their own songs and the result was a best-selling record album. "The money we got -- some NT $4 million -- was divided equally among a scholarship fund and the contest's participants. We even had a competition for the design of the record jacket."

Radio ICRT is not without its critics, though. "Success," says Quick, "has caused problems with our competitors. You see, although we are officially non-profit, we are allowed to sell commercials." Others charge that the station is KMT and still others accuse the station of slanting its coverage toward the independents.

"Our opposition tries to cause trouble and create a bad image for us by criticizing our handling of the news. In any case, because we are a foreign entity, we have to be careful. We don't want to be seen as an arm of U.S. imperialism."

Nonetheless, Radio ICRT has apparently struck a major chord on the island. The station now has 51 full-time staffers of whom about 20 are administrative, and nine part-timers. It's an exercise in international understanding. "We have Americans, Britons, mainland Chinese and Taiwanese Chinese all working together here." Between them, they keep the station's five studios pretty busy.

In order to ensure that more people can hear the station, the transmitter power has been stepped up and the configuration of the antenna changed. "Radio ICRT can now be heard clearly on any part of the island except the eastern coast strip, which lies in the shadow of the mountains. But we're working on that."

International Community Radio Taipei can be heard on FM 100.1 as well as on 1548 and 1570 kHz AM.

Announcer Dana Morgan uses her hands to make a point to millions of Radio ICRT listeners.

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Comes with simple instructions to restore cellular coverage disabled by the factory, or we will restore it for $10.

You can walk into your chain retail store and pay over $400 for this new luxury scanner, or you can order it from Grove for only $389.

The PRO-2004 provides continuous frequency coverage between 25-520 and 760-1300 MHz in your choice of mode—AM, narrowband FM or wideband FM. With no crystals needed, this exceptional unit delivers a wide range of frequencies not found on most scanners—including public service, broadcast FM, military bands and CB!

Search mode finds new channels, with an incredible 300 channels available for storing the ones you like. Rapid 16-channel-per-second scan and search complements this scanner's high sensitivity and excellent selectivity, providing for maximum distance reception, even in crowded band conditions. Built-in speaker and telescoping antenna are included. Jacks provided for external antenna (BNC female), headphone, external speaker, tape recorder and DC adaptor.

Order SCN 5

Retail ~~$419.95~~

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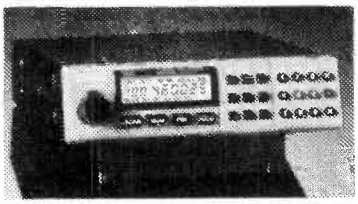
$389.00

plus $5 UPS Shipping
$10 U.S. Parcel Post
$15 Canada Air P.P.

Bearcat BC760/950XLT



Measuring a tiny 2" high by 7" wide and deep, this upgraded version of the BC600XLT is ideal for compact mobile or base installations. Features include user-programmable search ranges, five priority channels, individual channel lockout and delay, direct channel access, external antenna jack (MOT female), and optional CTCSS tone-squelch decoder. Mobile mounting kit, DC cord, AC wall adaptor, plug-in whip, and operating manual are all included at no extra charge!

In addition to normal 29-54, 118-174 and 406-512 MHz coverage, the new 760/950 also has 806-960 MHz (less cellular band; we can restore full coverage for $10 at time of order). And with its pre-programmed service search capability, just push a button to find active police, fire, aircraft, maritime, emergency, and weather channels!

One hundred memory channels may be scanned sequentially or in five 20-channel banks.

Recommended Retail ~~$389.95~~

New Low Price

$279.00

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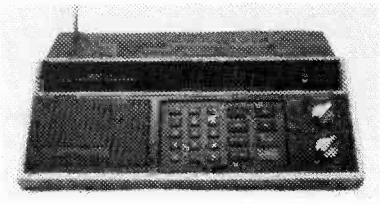
$15 Canada Air P.P.

Bearcat BC800XLT

Top of the Line—With 800 MHz!



SCN 11

Yes, the BC800XLT features wide frequency coverage: 29-54, 118-136 (AM), 136-174, 406-512, and 806-912 MHz with 40 channels of memory in two banks.

Other features include rapid scan (15 channels per second), powerful 1.5 watt audio amplifier, two telescoping antennas (one for 800 MHz range), better than 1 microvolt sensitivity, 55 dB selectivity @ ± 25 kHz, instant weather reception, brilliant fluorescent display, AC/DC operation, direct channel access, individual channel delay, priority channel one, fully synthesized keyboard entry.

Dimensions: 10½"W x 3⅝"H x 8"D; *Weight: 7 lbs., 2 oz.*

List Price ~~$499~~

Grove Price Only

$259.00

plus $5 UPS Shipping
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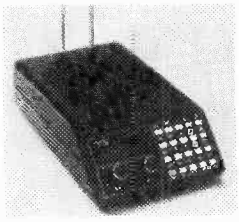
$15 Canada Air P.P.

Turboscan 800!



From Regency

TS 2

The Regency TS-2 boasts the fastest scan and search rates in the industry—50 channels per second—more than three times faster that the next closest competitor. Six memory banks store up to 75 separate frequencies, selectable by groups or in a continuous sequence.

Frequency coverage is wide: 29-54 MHz FM (ten meter amateur, low band and six meter amateur), 118-174 MHz (Am aircraft and FM high band), 406-512 MHz FM (UHF federal government and land mobile), and 806-950 MHz (microwave mobile).

Other features include instant weather channel, priority, direct channel access, and scan delay. Accessories included are telescopic antennas, AC power supply, DC mobile cord, and mobile mounting bracket.

List Price ~~$499~~

New Low Price

$285

plus $5 UPS Shipping
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CONFESSIONS OF A SCANNER COLLECTOR

by Bob Parnass

One of the nice things about the summer weather is that it brings "junk" out of people's closets and onto the streets. We're talking, of course, about the national obsession with "Yard" or "Garage" Sales.

If you play your cards right, you can pick up a scanner at bargain prices. Bob Parnass, a self-admitted scanner collector, offers his insight into some of the models you might be able to get for a song and compares them to some of the newer ones.

I've seen lots of scanners over the years. At one time or another, there've been about 40 around here, all of different makes and models. I've serviced radios with familiar names like Regency, Bearcat, Motorola and Radio Shack. Still others may be less familiar to those not afflicted with the disease of scanner collecting: Plectron, Sonar, Craig, SBE and Heathkit to name a few. In fact, I still have two Tennelecs, waiting for attention which they will probably never receive.

What differentiates one of these scanners from another? The fact is, features often differ not only by model but by manufacturer. For instance, most Radio Shack and Bearcat programmables allow enable / disable of the delay function on a per-channel basis. Regency units permit the delay to be enabled / disabled only globally, that is, for all the channels at one time.

Regency, Radio Shack and Bearcat have all offered some good models. On the other hand, I make it a point to avoid any scanner made by JIL, Fox, McDonald, Tennelec, and Robyn (along with the old original Bearcat 100).

Some Random Thoughts

Radio Shack scanners contain a reasonable number of features, but except for the recent PRO-2004, they scan a bit slowly and have a higher level of synthesizer noise. Most have too much hysteresis in the operation of the squelch control, but this can be fixed completely by replacing one resistor. Fortunately, good, detailed shop manuals are available for Radio Shack units for $5 to $10.

In the name of cost cutting, some newer

models have done away with the concept of a "channel bank," the ability to select/deselect a group of channels at a time. The bank concept was a good one. It is inconvenient to operate a 30 channel scanner without banks (e.g. Regency MX3000, HX1000) if you operate the way many scanner hobbyists do. (These two scanners were replaced by the HX1200, then HX1500.)

Bearcat was purchased by Uniden, maker of radios and cellular and cordless telephones. Heath's last scanner was really a Bearcat 20/20 in semi-kit form, and should appeal to those who want to monitor the commercial aircraft band.

My two favorite VHF/UHF receivers are the 300 channel Radio Shack PRO-2004 and the ICOM R7000 although the ICOM is more of a "communications receiver" than a conventional scanner.

Other favorites include the Bearcat 300, the Regency M400 (now discontinued), and the Regency K500 (predates the M400), all of which include a "service search" feature.

For portable use, I prefer the Bearcat 100XLT and Regency HX1000 series over the six Radio Shack PRO30s I've been through, although it's the Yaesu FT23R scanning 140-163 MHz walkie-talkie that goes wherever I do.

ICOM

R-7000: At about $1,000, this is the Cadillac of VHF/UHF receivers. It has ninety-nine channel, multi-mode coverage from 25-2000 MHz with a small gap at 1000-1025 MHz. Memory can be expanded to 198 channels by adding simple switch to pin 19 of memory chip IC8. The tuning knob lets you through the spectrum much easier than using the SEARCH mode on conventional scanners. Selectable USB/LSB permits reception of new amplitude compandored sideband (ACSB) stations.

The S-meter on the R-7000 doubles as discriminator meter to aid tuning. A useful search and store feature, reminiscent of the Bearcat 250, searches between two limits and automatically stores new frequencies into channels 80-99.

The R-7000 does search and scan slowly but can be sped up to about 12 channels per second by adding a resistor. Priority channel sampling is only available in the manual mode. The ICOM R-7000 is too big for permanent mobile use and it's too nice to leave alone in the car anyway. If you don't want to spend $1,000 on an R-7000, get a Radio Shack PRO-2004 instead for about $400.

Uniden/Bearcat

800XLT: The 800 XLT covers forty channels in two banks including 806 to 912 MHz, VHF, UHF, and aircraft bands. Also included is 10 meter FM and all of 6 meters plus the federal portions of VHF and UHF bands. There are fewer birdies on VHF-lo band than other scanners. The 800 XLT scans and searches very fast and the audio output is clean and robust.

Extremely sensitive, this scanner is prone to overload by strong signals when connected

to an outdoor antenna. There's also too much play (hysteresis) in the squelch adjustment but it can be improved by changing one resistor.

In some of the earlier units, the positive terminal in memory backup battery holder was installed backwards. The result was memory loss when the scanner was unplugged from the AC outlet. Another drawback is that the 800 XLT tunes in increments of 12.5 kHz on 800 MHz whereas cellular telephones are on 30 kHz channels.

BC350: The BC350 has fifty channels in five banks, including aircraft. This used to be Bearcat's top of the line, an overpriced but nonetheless very popular (and now discontinued) scanner. The dual use keyboard and display allowed eight text characters to be associated with each channel, a feature that was clumsily implemented and awkward to use. Some units were also plagued with various hardware problems including bad memory ICs and short-lived power transformers. In short, the BC300 is a much better scanner than the BC350, and you can get it at a lower price.

BC300: This fifty channel scanner was Bearcat's top of the line radio. The Service Search feature contains eleven ROM banks of preprogrammed channels. A switching power supply failure was noted in some early units due to insufficient capacitance but it was changed in newer units. In fact, a look at the schematic from one of the newer units shows at least 100 components changed between earliest and later units!

Not that the newer units were perfect: a preset squelch pot, mounted internally on circuit board, was misadjusted in some of these and an adjustment was usually required after burn-in period. The radio did have good sensitivity as well as a built-in clock. I leave mine on 24 hours a day. This is a favorite.

BC20/20: Successor to the BC200, the 20/20 had forty channels instead of twenty and a reasonable number of features. There was for example, a Service Search feature for Marine and Aircraft and an LED readout. The BC 20/20 was a good scanner, but the audio was somewhat tinny. It was also sold by Heath as semi-kit.

BC250: The BC250 is a discontinued model. rich in features but lacking aircraft band and 144-146 MHz coverage. The Search and Store feature is extremely useful for finding federal frequencies. And it has a clock. It also has a high frequency of repairs. Power transistors are not heat sinked adequately, causing heat damage to surrounding components and the circuit board. Too, the failure of Q204 on the feature board is known to cause odd display readings.

The digital circuitry on the BC250 is very sensitive to glitches caused by static and AC line spikes. Avoid 1978 or earlier vintage units! Keep in mind, too, that all BC250s use custom ICs (e.g., IC6, a divider chip, mfd. by Exar) which are now discontinued, so factory service is no longer available from Uniden.

BC260: Its super heavy-duty metal cabinetry and lighted controls is aimed at mobile use for firemen, police, etc. There are few frills, only sixteen channels, no aircraft, but generous coverage of federal bands omitted in the older Bearcat scanners.

The BC260 also has good sensitivity, lots of audio and good internal construction. A backlit keyboard allows operation in the dark but the keyboards on some units require high pressure to operate. There is a brightness control for display and keyboard, but multiplexor circuitry for vacuum fluorescent display produces audible whine which may be annoying in a quiet room. Backlighting may fail in some units due to poor contact on the connector used to fasten the light panel to front circuit board. The method of connecting an external speaker is awkward.

BC100: This was the first programmable portable. Be prepared for at least one repair in the first year. Early units, with threaded antenna connector, may need to have work done on the LCD readout, keyboard, and battery holder.

There is no battery backup in the BC100 and poor case design in early units caused the battery to disconnect from the radio which automatically reset the microprocessor and cleared the memories. There is no priority channel or aircraft band on this model. Oddly, some people swear by the BC100, others swear at them.

BC100XLT: An excellent 100 channel portable with ten priority channels. Offers a unique feature which tells the operator whether a given frequency has already been memorized. There's generous coverage of conventional bands, including commercial aircraft, but no 800 MHz. Includes a decent leather-like case and slide-on 550 mAH NiCd battery pack.

BC101: First Bearcat synthesized unit. This stone age model offers sixteen channels and no priority. The frequency is programmed in binary by setting toggle switches on the front panel -- after looking up the code in the code book. There is no frequency readout and, like the BC250, it uses a custom IC for CPU (now discontinued), so factory authorized service is no longer available.

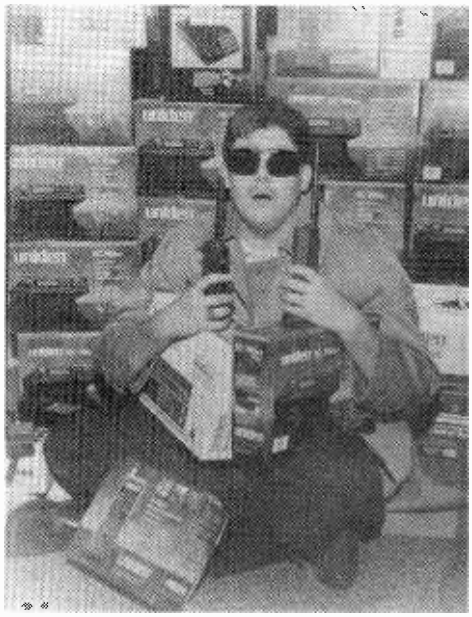
Bearcat 12: One of the last decent crystal controlled scanners. Ten channels. Variable scan speed up to 20 ch/sec. Single delay on/off switch. A good sounding, front mount speaker but selectivity poorer than programmable models, like the 300, that allows adjacent channel interference. There is no aircraft band coverage and crystal positions must be arranged by band.

REGENCY

The TMR series was Regency's first generation of crystal scanners and they come in all varieties of band coverage. And crystals are easy to find -- Radio Shack crystals work well in the TMRs.

Models with both UHF and VHF bands do require separate antennas for each band (a disadvantage in mobile installations, but can be overcome by connecting two front ends via a capacitor). Front ends must be tuned for selected portions within the bands for best sensitivity and the unit's wide IF selectivity can be troublesome in urban/-suburban areas. Also, the primitive digital scanning circuitry may become confused at times, but power off/on restores sanity.

TMRs can usually be found for $2.00 and



up at hamfests, often in poor condition. Don't pay more than $50.00, even in mint. Not all that bad a deal if cheap. Replaced by Regency ACT units.

WHAMO-10 was Regency's first synthesized scanner. Discontinued long ago, its appearance was more like a crystal scanner with a single LED per channel. The user has to break off teeth on a metal "comb" for each channel according to a code book. External frequency control unit DFS-5K was optional and the UHF VCO reference oscillator drifts on some units. Soldered sheet metal shields around some circuity also make access to some components difficult for servicing. The comb sockets are prone to bad connections after moderate use.

K500: Nice wood-like cabinet. Another discontinued forty channel model with every feature Regency could dream of in one scanner, except aircraft band. Unfortunately, the idle tone bypass feature for mobile phone stations works only about fifty percent of the time. There's a weather alert feature and Service Search in several banks. The Search and Store facility, however, was not implemented in the K500 as well as it was in the BC250 but it's better than none.

The K500 can be programmed out of band. Performance is reasonable but sensitivity could be better. Spring contacts on the membrane keyboard may need soldering after prolonged use.

K100: A bare bones version of the K500. Ten channels, no priority feature. Same wood-like cabinet and reasonable performance as K500. Like the K500, the spring contacts on the membrane keyboard may need soldering after prolonged use.

M400: The M400 was the thirty channel replacement for K500 but is now discontinued. There is a Service Search feature but no aircraft. Like the K500, it's easily programmable out of band. There's a built-in clock that works when the radio is off or in manual mode. The backlighted keyboard is good for night viewing and mobile use but generates RFI into nearby shortwave receivers. A favorite!

MX3000: The thirty channel replacement for M400 but with basic features only. The MX3000 has a nice, lighted keyboard, but may cause RFI into nearby shortwave receivers. It's easily programmable out of band but has no aircraft coverage. All thirty channels are in a single bank and lack of direct channel access make this model more difficult to operate. It is, nonetheless, a good first scanner.

M100: Discontinued ten channel unit. Same as MX3000 except different color and fewer channels. Nice lighted keyboard, but may cause RFI into nearby SW receivers.

HX1000: Built by Azden, a good, fairly rugged, thirty channel handheld synthesized unit with generous out of band coverage but no AM aircraft. The HX1000 is very sensitive on UHF, but annoying audio hiss leaks through the speaker when squelched. The belt clip is chintzy but can be directly replaced with better clip from Kenwood TR2600A. Like the MX3000, all thirty channels are in a single bank and the lack of direct channel access makes this model more difficult to operate. Low discount price makes this a very good choice for programmable portable.

HX650/H604: A six channel, crystal portable that was likely made by Sanyo. The same as Fannon and Bearcat Thin Scan units (except that Bearcat has 10.8 MHz IF frequency, and is harder to get crystals for), but scans faster. This unit's small size and common crystals (available at Radio Shack) make this a first choice for a bare bones portable scanner.

Radio Shack

(manufactured by General Research Electronics of Tokyo)

PRO2004: Last year's top of the line, wide band scanner. After a diode is cut, owners of the PRO2004 can enjoy continuous coverage from 25-520 and 760-1300 MHz, AM, narrow band FM, and wide band FM. The unit has 300 channels in ten banks of thirty (which can be modified to 400), backed up by conventional 9 volt alkaline battery. Any channel can be designated the priority channel. It scans and searches fast and there are lots of well designed features like ten pairs of search limits, Lockout Review, default search increment and emission mode. Sound Squelch allows skipping dead carriers during search or scan. The entire unit is housed in a metal cabinet, with good internal construction and shielding, but there is no mobile mounting bracket or DC power cord. Soft touch membrane keyboard. Good sensitivity and selectivity. Very good radio.

PRO2001: An early, discontinued, single bank sixteen channel programmable. It has reasonable coverage of the three traditional bands, minus aircraft. There's an LED digital display as well as an LED per channel. A mechanical lockout switch can be used for each channel. Delay is either on or off for all channels at a time.

The PRO2001 has a high synthesizer noise level. Troublesome plated through holes on the digital board in some units renders the radio virtually unfixable. I could never get mine to work more than a few days in a row -- always another bad connection. Some owners, however, report no trouble whatsoever.

PRO52: The PRO52 is a discontinued, eight channel VHF-Lo/Hi base unit. There's no UHF band or provision for mobile operation but it's a good little scanner despite its limited frequency coverage and spartan lack of frills. The front mounted, vertical speaker is always a winner.

PRO2003: Radio Shack's 1986 top of line. Fifty channels plus ten FM commercial broadcast band channels plus aircraft. There's good frequency coverage and functionality, but at a high price. Poor human engineering plagues this unit. The keyboard is difficult to read and thus hard to operate unless in a well lit room. Keyboard label coloring improved on newer units.

The scan rate for the PRO2003 is rather slow -- only eight channels a second compared to Regency and Bearcat's fifteen a second -- for such a high price. Although there are provisions for 12VDC operation, the cabinet shape and lack of mounting bracket makes mobile operation impractical. The PRO2003 also causes interference, its plastic case permitting the scanner to radiate signals into nearby receivers.

PRO30: A sixteen channel programmable portable with aircraft band. Good frequency coverage. Extra controls on top allow control of SCAN, MANUAL, and PRIORITY functions while worn on belt. Good belt clip. Low audio output. Plastic case prone to break at BNC antenna connector under severe use, vs. metal frame in Regency HX1000. High price, no discounts or sales. I had six or seven PRO30s, having to return them several times during the one year warranty, although other owners have had little or no trouble. Troubles included oscillation in IF stage, no UHF band reception, case broken around base of antenna connector, etc.

PRO24: Only four channels in this crystal controlled portable. Covers the three basic bands, but no aircraft. Easy to obtain batteries and crystals. Characteristic Radio Shack squelch problem, fixable by changing one resistor. All-plastic case larger than Bearcat Thin Scan and clones.

CRAIG

(division of Pioneer)

4530: A discontinued Japanese ten channel crystal controlled three band unit, it's also available under the Plectron name but in a different cabinet. The '4530 offers no aircraft band coverage however, deluxe features like priority, trimmer capacitors for netting each channel, front panel speaker, and rugged metal cabinet make this unit a winner. Channel lockout slide switches have finite life. Replacing burned out incandescent channel lamps is not fun. Grab a 4530 if you find one in good condition.

TENNELEC

This company, which went out of business several years ago, manufactured the first synthesized scanners. Schematics and parts are difficult to obtain -- a point made relevant by the fact that the units are reputed to be poor performers. I got my MS-2 and MCP-1 basket cases for free and sometimes regret taking them. Not worth fixing unless you have access to DTL/RTL chips and circuit diagrams.

"DXER'S WIFE"

by Betty Demaree

I'm sure that my story is no different than a lot of others. Every wife comes in second to something her husband does. For some, it's football, golf, hockey or baseball.

These sports most generally involve the glorious leader of the household glued to the television for hours on end. There he sits, planted in front of the tube with his beer, popcorn or whatever.

Then, there I am -- a ham wife.

Phase I ...

This is a different breed altogether. Most hams start as my spouse did many years ago, conservative, with a small rig. With mine it was a little green HW-16 (a little novice set about the size of a shoe box).

At first you are glad they have something to absorb their time; you know, get their mind off work and everyday stresses. Oh, but hold on. It gets crazy. These mild mannered men turn into Masters of Communications. (If the leaders of all countries could only communicate so well.)

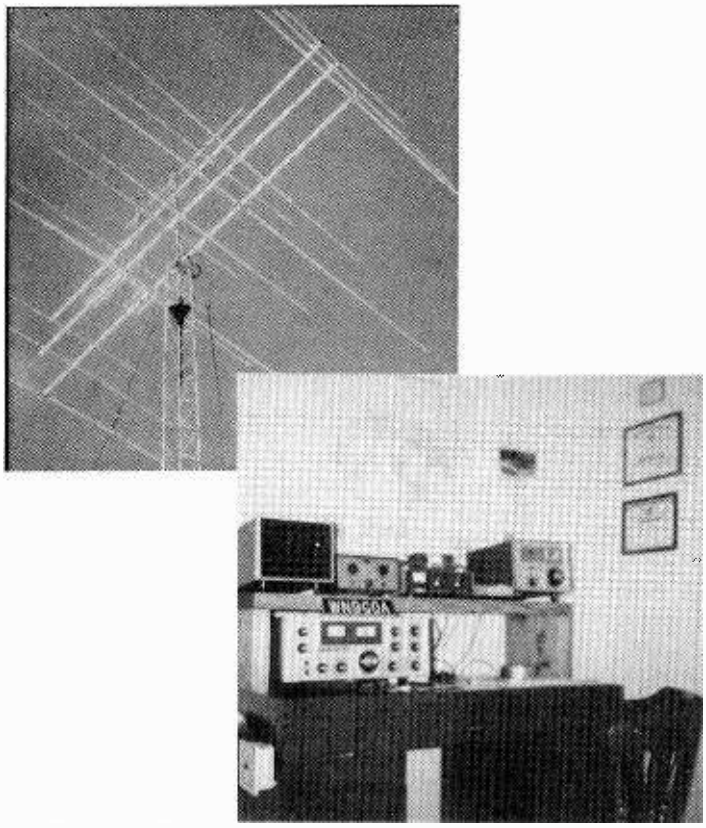
All communications break down within the household but they know everything that's doing on two meters, six meters, and ten meters. They know all about Joe, Sam, and Frank, how much rain they each got yesterday and how many feet Joe added to his tower over the weekend.

Phase II ...

As time goes by, they get more involved. The tower goes higher and the expenses get larger. It's time to get into "DXing." I have to admit, talking to Tokyo, Japan, can be very intriguing, but in case Frank didn't hear us, we have to have a card from Japan to prove it.

I think QSL cards make nice wallpaper, myself. As you walk into the "Ham Shack," you walk into a different world. If you have something important to say or everyday business affairs such as, "Did you pay the electric bill this month?" forget it. He may grunt when you speak, but he doesn't hear you. You best wait until he gets through talking or listening on the air waves because you're not getting through to him.

Of course, it could be worth a try to ask him if you can have the checkbook and go shopping, because he will probably say yes. He knows that a nod to whatever you say will get you out of his hair.



Betty's DXer, WB9OTX, has it bad. His 45 ft. tiltover tower sports a stacked array with 11 elements on 2 meters, five on 10 meters, five on 15 meters, four on 20 meters, 1/2 slopers for 160, 75, and 40 meters, and a homebrew vertical for 40 meters!

Phase III ...

Now we come to meals. My Marconi comes home for lunch. After acknowledging my presence, he heads for the ham shack. You see, after years of dedication to ham radio, he is into a new phase now: packet.

He plants himself in front of the computer. The hunt and peck process of typing his messages works sufficiently. But the process leaves him little time to eat lunch. My husband has eaten far more meals cold than hot.

Thank God for the microwave. He's got the system down pat. In the evening after work, he heads for the radio headquarters. After allotted time spent finding out what took place on the airwaves, he ventures out to watch the news. We must keep up on the day's events. Someone might ask.

Then, about ten minutes before the meal is ready, off he goes. Well, it's done too late. You should have worked a little faster. Just stick the plate in the microwave and when he gets hungry enough, he will come out.

Phase IV ... ?

All in all, I guess, it isn't so bad. At least they're at home, ladies. Mine doesn't take his hand-held to bed yet -- and I don't plan on letting him.

If you have a story of how radio has played a part in your life or the life of your community, send it to Monitoring Times. If accepted for publication, we'll send you $50.00. All stories should be true, real life events. Manuscripts should be approximately 1,000 words and must include at least one clear photograph.

Shortwave Broadcasting

Glenn Hauser
Box 1684 - MT
Enid, OK 73702

Australia: Keep an ear on 4500, 7500 and 12000 kHz. Time signal station VNG is expected to return to the airwaves this month. VNG was closed almost a year ago when the government agency running it became convinced that expenses outweighed the amount of official use it was getting. Ever since, a VNG Users Consortium has been lobbying to bring it back. In June, the old transmitters were shipped from Lyndhurst, Victoria to a site in New South Wales belonging to the Department of Telecommunications Aviation Group. (Radio Australia *Communicator*) The interim navy timesignal station on 6448 and 12982 will presumably close once VNG is back.

Belgium: *Brussels Calling* has made some frequency changes: the 2330 UTC Monday through Saturday broadcast is on 9925 and 9925 kHz (two transmitters, one to North America, one to South America); 1000 UTC, Monday through Friday, is on 17595 and 21810 to Africa; and 1630, Monday through Saturday, is on 17585 and 21810 kHz to Africa. (Kraig Krist, *DX Listening Digest*)

Bolivia: There's a new station in Bolivia called Radio Melodia broadcasting from Bermejo, Tarija, on 3420.4. It gives its schedule as 1100 to 1800 and 2100 to 0100 UTC but has been monitored closing at 2203. (Julian Anderson and Gabriel Ivan Barrera, Argentina, *DXLD*)

Electricity supply problems and economics have curtailed and irregularized much shortwave activity in Bolivia. Radio Camargo, 3390.3, seems to be Monday through Friday only, around 2245 to 0100 UTC. Radio Padilla, 3470 (variable to 3478), operates around 2245 to 0130. But Radio Nacional Huanuni, 4964.8, in compensation, has added about two and a half hours to its broadcast schedule, delaying sign-off from 0030 to 0300 UTC. (Tony Jones, Paraguay, *Radio Nuevo Mundo*)

Brazil: BBC plans to buy relay time on Radio Bras in order to better reach southern South America from 0900 to 1130 UTC. Transmissions will be in English and Spanish. (Radio Nederland *Radio Enlace*) Which is what VOA formerly did. Now VOA expects to increase its audience in Brazil by a special weekly program, *Um Sabado Alegre*, that it produces for the popular Radio Bandeirantes, Sao Paulo. Bandeirantes can be heard Saturdays from 1300 to 1500 UTC on 840, 6090, 9645 and 11925 kHz. (VOA *Voice*)

Canada/China: More and more relay swaps are in the works. Radio Canada International has begun discussions with Radio Beijing which may lead next April to RCI broadcasting via Beijing to Japan and India and the reciprocal Beijing via RCI to the U.S. and Latin America. (*SWL Digest*)

Canary Islands: Radio Exterior de Espana in Madrid is trying to distance itself in print, if not on the air, from the Tenerife program it broadcasts between 2206 and 2300 on 15365 kHz. A reissued schedule, still dated May 1 like the previous one, pretends that 15365 kHz opens at 2300 UTC. (via Christopher Rigas)

China: The much-ballyhooed *American Music Hour* (Chinese: *Meiguo Yinyue Jiemu)* is actually broadcast Thursdays at 1045 to 1140 UTC on CPBS-2 channels. The shortwave ones active at that time are 15030, 12200, 11740, 10260 (after 1100 UTC), 9400, 7770, 6890, 5163, 5075 and 4250 kHz. (Isami Hyuga, Tetsuya Kondo, Mitsuo Yamada, *Asian Broadcasting Institute*) See Canada.

Colombia: A harmonic on 2320 kHz, likely HJAZ, La Voz del Sinu, has made it all the way to Australia between 1030 and 1110 UTC. The signal is quite good on peaks. (Mike Willis, *Oz DX*) This harmonic has, in the past, reached North America as well.

Costa Rica: Radio for Peace International's revised announced schedule: Monday through Friday, 2100 to 0000 UTC, on 13660 kHz and UTC Tuesday through Saturday, 0100 to 0400, on 7375; 0415 to 0715 on 13660. Each program is finally repeated Monday through Friday from 1800 to 2100 on 21555. (*World of Radio*)

Radio Impacto has reactivated 5030 kHz, but seriously mistuned the transmitter so that most of the power went out on 10060 during June. The signal was often strong day and night. (Bill Peek, NC, and Phillip Marshall, GA, *DXLD*)

France: If everything goes as planned, within five years, Radio France International will be double the station it is today -- double the transmitters, double the personnel, double the hours of transmission. Twelve transmitters in France, currently running 100 kilowatts, will become 500 kw, and others will be added. (Margo Rick, Radio France International, at International Radio Days, Belgium, via Jeff White) See Guiana, French.

Germany, West: The Voice of Germany's superb commentator, Larry Wayne, continues to be missing from the airwaves this month following the cancellation of the program, *Germany Today*. But he should be back in September when programming is reorganized to include *Germany This Week*, on Fridays. (Bill Dvorak, *Review of International Broadcasting*)

Voice of Germany's English broadcasts to Africa, Asia and America, will be merged for greater efficiency. (via Wayne Metts, TX, *RIB*) It's interesting to note that Radio Australia is reorganizing in the opposite direction: two main target area departments, Asia and the Pacific, each will include English and other languages.

Deutsche Welle can't count? The every-eight-week *Stadtbummel* program forecast in last month's *Monitoring Times* to appear on July 17, was actually broadcast on July 24. Sorry about that.

Guatemala: TGMUA, Union Radio, was back on 5982 kHz after two years of inactivity. A very strong signal was heard in Australia at 1212 UTC. (Peter Bunn, *Oz DX*)

Guiana, French/Japan: Radio France Internationale and Radio Japan start a mutual relay August 1. Radio Japan will broadcast to South and Central America at 0200-0300 on 15350 and 11730, 0800-0900 on 5965, 2200 to 2300 on 9665 in Japanese; 0330-0400 15350 in Spanish.

RFI will transmit via Yamata in French to Asia at 0930-1130 on 15410; to southeast Asia at 1000-1100 on 15325, 2300 to 0030 on 15300. (Radio *DX Corner*)

Iceland: Rikisutvarpid keeps changing weird frequencies, outdating last month's schedule before it appeared. Let's try again. We know this one was correct when compiled by monitoring: 1215-1248 and 1300-1335 on 15659, 13790; 1845-1930 on 15659, 13770; 1935-2010 and 2300-2335 on 17558, 15659; Saturday and Sunday 1600-1640 on 17558, 15659. All

Shortwave Broadcasting

transmissions are in Icelandic and upper sideband. The highest frequencies are heard best and all sign off times vary. (Ernie Behr, Kenora, Ont. *DXLD)*

Japan: Is the Far East Network (FEN) a thing of the past on shortwave? It's missing from 6155 and others. (Takeshi Sejimo, *Radio Nuevo Mundo*) Gone also from 6155 and 3910 kHz. (Bill Sparks, *Fine Tuning*) So, is anyone hearing it on the remaining channels, 11750, 15260 (or 15257)? See Guiana, French.

Jordan: This month, Radio Amman expects to start testing three 500 kw transmitters from a new site. (Allen Dean, WDX *Contact*)

Kiribati: Radio Kiribati, 14802 kHz, has been making it to eastern North America again between 0554 and 1107 UTC. The first hour is in English and includes a BBC news relay at 0600, then Pacific and local news. At 0630 there's transcriptions from stations such as Australia, New Zealand, Deutche Welle and VOA. All announcements after 0700 are in Gilbertese, but music includes Australian country and western tunes such as the Johnny Williams hit, *Nobody Makes Vegetable Soup Like my Grandmaw Does*. (Bill Peek, NC *DXLD*) Sounds like they say "Kiribee" instead of "Kiribas." (Ken Kuzenski, LA *DXLD*) Reception a sure bet with solar flux as high as 165, A index as low as 06. (Chuck Rippel, VA *FT*)

New Zealand: The *Goon Show* lives on Radio New Zealand, UTC Saturday 0300 on 15150 kHz! (Deborah L. Stark, NM *WOR*) *The Sound of the Goons* was heard at 0700 on a Monday on 12045 and 15150 kHz. (William E. Westenhaver, PQ, *DXLD)*

Niger: Those seeking QSL cards from here must be advised that the Radio Niger verification signer unabashedly requests various pornographic and sexual aid items in exchange for verification. (Marzio Vizzoni, *Play-DX*)

Philippines: Radio Veritas Asia, the Catholic station, schedules some interestingly-titled programs. It's a shame that the station is so hard to hear clearly in North America. Frequencies often change but Ed LaCrosse's latest monitoring from California shows 15325 and 15350 from 0130 to 0200 UTC; 11760 and 15220 from 1500 to 1530. A program schedule via Gerry Bishop shows: for the 0130 broadcast (UTC days) -- Sunday, *RVA Perspectives;* Wednesday, *Philippine Experience*; Friday, *Art Beat*; Saturday, *RV Listeners International*. After 1500 -- Sunday, *Peace Talks*; Monday, *Our Asian Memorandum*; Wednesday, *Friendship Unlimited* (pen pals); Saturday, *Women*; among other programs, church related. *(RIB)*

Poland: Deletion of the North American service makes 0630 to 0700 on 15120 kHz the best chance to hear English from Radio Polonia. Programs include: Sunday: Review of Commentary; Monday, Musical Requests; Tuesday and Friday, *Postbag*; Wednesday, DX Program of listener letters; Thursday, *Panorama* of science, politics, arts; Saturday, pop and jazz. (Bill Peek, NC, *DXLD*)

Seychelles: FEBA Radio has started a new English service to South Asia, Saturday and Monday only at 0430-0530 on 15325 kHz; Monday also on 17820. (Alok Das Gupta, India, *Australian DX News*)

Somalia: One of the hottest DX targets, Hargeisa on 7120 (and maybe 11639) was put off the air in June due to the war there. (anon. U.S. government source, *DXLD)*

South Africa: A surprise from Radio RSA -- a brief commentary in Russian at the end of an English broadcast, 1550-1553 on 17755 and 21535 kHz. (Richard Wood, Hawaii, *DXLD*) Perhaps only for a special occasion?

Sweden: From September 25 there will be major schedule changes so that only one language will be used on the air at a time and all (both) transmitters can be used for it. (George Wood, Radio Sweden at International Radio Days, Belgium, via Jeff White) That already happens in some cases, but when they're both on a band that isn't propagating, such as 15390 and 15345 at 1400 this summer, what's the point? The station also has a new science, technology and environmental program on the last Thursday of the month.

Switzerland: Swiss Radio International has been using new 17730 kHz for the 0200 broadcast, often with excellent results.

UKOGBANI [non]: Some advice on tuning BBC relays carrying the World Service: Hong Kong on 15435 from 2245 sign-on; Cyprus on 15420 at 0430, African Alternative; Oman on 15310 at 0600 (*MT's* Kannon Shanmugam, Lawrence, KS)

USA: What's this shortwave station in Boston, WSHB, mentioned in the *M Street Journal*? (John M. Adams, *DXLD*) Mailing address Boston, but location Cyprus Creek, South Carolina -- the next outlet due on the air early next year of the Christian Science Monitor. (George Jacobs, *IEEE Transactions on Broadcasting)* I divine the calls stand for World Service Herald Broadcasting.

The South Bend, Indiana, offices and studios of WHRI were destroyed by fire back in June. The local papers, however, didn't even give the station's call letters, treating it merely as a minor appendage of a local TV and FM station. (via James Streitmatter and Tom Laskowski, WOR) Fortunately, the transmitters are located in faraway Nobelsville but one of them was off the air for a few days due to lack of studios.

Ed Conley of VOA news suggests in the internal publication *VOA Yankee* that the station's musical signature, Yankee Doodle, be replaced by the Star and Stripes march by Sousa. *Yankee* also reports that a new curtain array antenna - thought to be the world's largest for high-frequency broadcasting -- has been undergoing final tests at Delano, California. Over 400 feet high and 1400 feet wide with 72 radiating elements, the giant antenna can beam VOA programs throughout Central and South America, and as far away as South America. Its innovative design will be the model for shortwave antennas planned for new and existing relay stations being modernized.

Venezuela: YVRQ, Radio RQ on 910 kHz, plans to go on shortwave by yearend, probably with 10 kilowatts on 60 meters. (Manuel Correa, station director on *Radio-Enlace*)

Editor's note: Due to the amount of news in this month's column, Glenn Hauser's comments on IRCs has been postponed.

☆ ☆ ☆

You can hear Glenn Hauser's DX news every week over RCI's SWL Digest: Sat 2021 on 17875, 17820, 15325, 11945, 9555, 6030; 2151 on 17820, 15150, 11880; UTC Sun 0021 on 9755, 5960; Sun 2321 on 11730, 9755; Tues 1247 on 9625, 11855, 17820. A broader range of information appears on World of Radio, via WRNO, New Orleans; Thurs 1500 on 11965, UTC Fri 0030 on 7355, Sat 0300 on 6185, 2330, on 13760, Sun 2030 on 15420; and via Radio for Peace International, Costa Rica, Mon 1800 on 21555, Tues 2300 on 13660, Wed 0300 on 7375, 0615 on 13660, 2000 on 21555, Fri 2100 on 13660, and Sat 0100 on 7375, 0415 on 13660.

Review of International Broadcasting, also with Satellite Watch and Radio Equipment Forum columns, can be sampled for $2; 10 issues for $21. Same rates apply to DX Listening Digest, plus Enjoying Radio section; or both for $40, from Glenn Hauser. (Rates apply to USA, Canada, Mexico; US funds only on a US bank or postal money order.) For further information send a self-addressed stamped envelope to the address in the masthead.

Shortwave Broadcasting

Broadcast Loggings

Let other readers know what you're enjoying.
Send your loggings to ***Gayle Van Horn***
160 Lester Drive, Orange Park, FL 32073

English broadcast unless otherwise indicated.

0040 UTC on 11925
Brazil: Radio Bandeirantes. Portuguese. Evening show chat with "canned" station ID. Co-channel interference disrupts signal. (Don Tumlinson, Dallas, TX)

0105 UTC on 4945
Colombia: Caracol Neiva. Spanish. Sports commentary with Coca Cola ads and station promotionals. (Terry Schwartzenberger, Belle Chasse, LA)

0110 UTC on 9730
Germany-GDR: Radio Berlin International. Newscast to North America including an editorial on the Warsaw Pact peace efforts. (Jim Tedford, Seattle, WA)

0113 UTC on 4845
Brazil: Radio Nacional-Manaus. Portuguese. Bouncy Portuguese pops with "Nacional Manaus" promotional. (Don Tumlinson, Dallas, TX)

0115 UTC on 17765
Mexico: Radio Mexico International. Spanish. Mariachi music with "Radio Mexico Internacional" ID at 0133 UTC. (Fred Carlisle, Tumwater, WA)

0115 UTC on 4830
Venezuela: Radio Valera. Spanish. Latin pop vocals with "Good evening" greetings, time check, and ID. (Rod Pearson, St. Augustine, FL)

0140 UTC on 6090
Luxembourgh: Radio Luxembourgh. DJ with local Lux ads and music promos for rock group Journey. Time check, and ZZ top music. (Don Tumlinson, Dallas, TX)

0146 UTC on 11990
Czechoslovakia: Radio Prague. British listener's music request and world news. Spanish transmission beginning at 0200 UTC. (Russ Oder, Orange Park, FL)

0200 UTC on 3290
Southwest Africa-Namibia: Radio SW Africa. Musical variety mix for 90 minutes. Station ID at 0401 as "Radio Southwest Africa, Namibia." (David Kammler, Ridgecrest, CA)

0230 UTC on 3360
Guatemala: La Voz de Nahuala. Spanish. Station IDs with good Central American Spanish music. (Frank Mierzwinski, Mt. Penn, PA)

0233 UTC on 15115
Pakistan: Radio Pakisten. News covering Iran/Iraq war. "Radio Pakistan" ID at 0245 sign-off. Parallel frequencies 15580 and 11570 poor. (Fred Carlisle, Tumwater, WA)

0244 UTC on 9570
Romania: Radio Bucharest. Program on Romanian contemporary composers and musical styles. Letterbox show. (Jim Tedford, Seattle, WA)

0245 UTC on 7520
Mexico: Radio Consentida. Spanish. Mariachi and Spanish selections. Numerous IDs, a few ballads, and ranchero music. Audible only in USB and monitored for several nights up to 0450 UTC. Not heard on previous reported 11480 or 4899.8 kHz. (ed)

0300 UTC on 11870
Seychelles: FEBA. Presumed Farsi. Interval signal at 0300 and 0330 sign-off. ID noted as "Injar Radio FEBA." Good signal. (Doug Waller, Bay Village, OH)

0300 UTC on 4832
Costa Rica: Radio Reloj. Usual abundance of "Radio Reloj" IDs mixed amid Spanish pops. (Frank Mierzwinski, Mt. Penn, PA)

0304 UTC on 4980
Venezuela: Ecos Del Torbes. Spanish. Station ID with announcer talk over Latin vocals. (George Neff, Tampa, FL)

0305 UTC on 11815
Poland: Radio Poland. Polish press review and Focus on Culture. Signal fading. (Jim Tedford, Seattle, WA)

0307 UTC on 3250
Honduras: Radio Luz y Vida. All English programming of children's religious program and station ID. (Harold Frodge, Midland, MI)

0308 UTC on 9475
Egypt: Radio Cairo. Program feature on Egyptian archaeology. Station ID followed by Egyptian music. (George Neff, Tampa, FL)

0309 UTC on 11715
Mali: Radio Beijing. Report on agricultural power sources, and feature, News About China. (Harold Frodge, Midland, MI)

0315 UTC on 4780
Djibouti: R. Djibouti. Arabic. Koran recitations and "Huna Djibouti" ID with continued Arabic programming. Minimal interference.

0329 UTC on 6015
Austria: Radio Austria International. German. Time and frequency schedule with French programming at 0330 UTC. (Jim Tedford, Seattle, WA)

0340 UTC on 11550
Tunisia: RTV Tunisienne. Arabic. Koran recitations and group Arabic music. 0400 international newscast. (Larry Van Horn, Orange Park, FL)

0350 UTC on 7065
Albania: Radio Tirana. Feature on the handicapped of Albania. Music vocals to 0358 sign-off. (Harold Frodge, Midland, MI)

0353 UTC on 11695
Venezuela: Radio Nacional. Spanish. Venezuelan music spaced with several "Nacional" IDs. Station schedule, national anthem, and 0357 sign-off (ed)

0400 UTC on 4952.7
Angola: Radio Nacional. Portuguese. Indigenous African music and "Nacional" ID. Fair signal copy. (Larry Van Horn, Orange Park, FL)

0417 UTC on 15150
New Zealand: Radio New Zealand. Sports commentary of Figi and United Kingdom soccer game. (David Kammler, Ridgecrest, CA)

0425 UTC on 4850
Venezuela: Radio Capital. Spanish. "DJ" announcer with music mix of Spanish pops and Billy Ocean. Occasional breaks for ID. (John Healy, Syracuse, NY)

0431 UTC on 17795
Australia: Radio Australia. Program feature on the Aussie government's aid to allies. (Russ Oder, Orange Park, FL)

0435 UTC on 7265
Germany-GDR: Sudwestfunk. German. Rock music from David Lee Roth and German pops. Presumed commercials (my German is rusty) and music from Rick Astley. (Don Tumlinson, Dallas, TX)

0500 UTC on 15170
Tahiti: Radio Tahiti RFO. French. Newscast and Polynesian music with severe interference beginning at 0530 UTC. (Ronald Van Campen, Curacao, Netherlands Antilles)

0530 UTC on 5030
Costa Rica: Radio Impacto. Spanish. Pop music tunes with station ID. Sign-off with national anthem at 0600 UTC. (Ronald Van Campen, Curacao, Netherlands Antilles)

0536 UTC on 4915
Ghana: Ghana Broadcasting Corp. Koran recitations and local African music. 0559 ID with 0600 time check and newscast. (Stanley Mayo, Westbrook, ME)

0540 UTC on 9680
Mexico: La "Q" Mexicana. Spanish. Pop music program, Musica Mexicana. ID as, "La Q Mexicana" with mention of Distrito Federal. National anthem at 0558 with 0559 sign-off. Severe signal fading, details heard during signal peak. (Fred Carlisle, Tumwater, WA)

0550 UTC on 4680
Ecuador: Radio Nacional Espejo. Spanish. Station IDs and Spanish pop vocals. (David Kammler, Ridgecrest, CA)

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0600 UTC on 6005
West Germany-GDR: RIAS. German. Pop/rock music in German and English. ID monitored as "Hier ist RIAS." (Larry Van Horn, Orange Park, FL)

0830 UTC on 7105
Monaco: Trans World Radio. Religious format and evangelical discussion. (Rod Pearson, St. Augustine, FL)

0930 UTC on 4985
Brazil: Radio Brazil Central. Portuguese. ID break with local Goiania time check and popular Brazilian music. (Rod Pearson, St. Augustine, FL)

0945 UTC on 5955
Colombia: La Voz de los Centauros. Spanish. Latin American pop vocals. Time check and ID break followed by ballads. (Terry Schwartzenberger, Belle Chasse, LA)

0955 UTC on 4945
Brazil: Radio Nacional-Porto Velho. Portuguese. "Canned" Nacional promotionals. Easy-listening Brazilian music. (Rod Pearson, St. Augustine, FL)

1002 UTC on 9695
Brazil: Radio Rio Mar. Portuguese. Brazilian pop and easy-listening music. Station ID with public service announcement. (Rod Pearson, St. Augustine, FL)

1028 UTC on 4935
Peru: Radio Tropical. Spanish. Peruvian "Campesino" music. Local ads and jingles with station ID. Monitored to 1040 UTC. (Fred Carlisle, Tumwater, WA)

1100 UTC on 3315
Papua New Guinea: Admiralty Islands-Radio Manus. Pidgin. Morning PNG format with bird tweet sound effects and island drums. (Doug Waller, Bay Village, OH)

1100 UTC on 11900
Saipan: KYOI. Station ID as "Super Rock," with pop music format. (Doug Waller, Bay Village, OH)

1120 UTC on 15455
People's Rep. of China: Radio Beijing. News items on Uganda Industrial Fair, Pakistan Rotary Clubs, and coastal China economic zones. (George Neff, Tampa, FL)

1130 UTC on 6120
Canada: Radio Japan relay. Japan Journal on student life and expenses. (Bob Fraser, Cohasset, MA)

1200 UTC on 5980
USA: WCSN. Religious format, conversations on family and community issues. Letterbox segment and pleasant music. (Leslie Edwards, Doylestown, PA)

1215 UTC on 13775
Iceland: Iceland State Broadcasting Service. Icelandic. Audible most mornings in USB. "Reykjavik" ID. Heard to 1245 UTC. (Stanley Mayo, Westbrook, ME)

1240 UTC on 15630
Greece: Voice of Greece. International newscast and closing English ID for the Voice of Greece. (Stanley Mayo, Westbrook, ME)

1336 UTC on 15055
Taiwan: WYFR relay. Religious programming at tune-in. Station address for U.S. and India. (Stanley Mayo, Westbrook, ME)

1350 UTC on 15009.6
Vietnam: Voice of Vietnam. Discussion on China and ideas on Asian expansion. ID and talk on the U.N. (Stanley Mayo, Westbrook, ME)

1415 UTC on 15310
Norway: Radio Norway. Interviews and discussion on Norway's popular weeekend fleamarkets. News on Norway's summer sports season. (ed)

1441 UTC on 9550
Cuba: Radio Havana. Spanish. Cuban music and time pips with ID at 1500 UTC. (John Healy, Syracuse, NY)

1445 UTC on 11850
Philippines: FEBC. Religious message on The Way and the Truth (Terry Coker, Cucamonga, CA)

1452 UTC on 15425
Philippines: V.O.A. Station ID and jazz hour music show. Editorials included to the east Asia service. (Stanley Mayo, Westbrook, ME)

1530 UTC on 13685
Switzerland: Swiss Radio International. News on Secretary of State Schultz arms talks. (Terry Coker, Cucamonga, CA)

1545 UTC on 6115
Mexico: Radio Universidad. Spanish. Music feature program on Musica de Mexico. (Terry Coker, Cucamonga, CA)

1603 UTC on 15320
United Arab Emirates: Radio Dubai. Program feature on the history of Palestine. Station ID and Arabic music. Heard on parallel 17865 kHz. (Logged while on the east coast) (James Kline, Santa Monica, CA)

1925 UTC on 12077
Israel: KOL. DX Corner feature on QSL collecting. Also heard on parallel 11605 kHz. (Bob Fraser, Cohasset, MA)

1930 UTC on 9022
Iran: VOIRI. News and ID followed by editorial on the Iran/Iraq war. (James Kline, Santa Monica, CA)

2108 UTC on 11900
Syria: Radio Damascus. Program announcements with "Radio Damascus" ID at 2110 UTC. News of Israel and Lebanon interspersed with Arabic music and news. Program not heard on parallel frequency 11765 kHz. (Fred Carlisle, Tumwater, WA)

2145 UTC on 15230
Iraq: Radio Baghdad. Newscast and station broadcast schedule. Sign-off at 2200 UTC. Parallel frequency 9770 poor. (Stephen Price, Conemaugh, PA)

2204 UTC on 9790
Gabon: Radio France International relay. French. International news, editorial on New Caledonia, and national news of France. (ed)

2210 UTC on 15473.7
Antartica: Arcangel San Gabriel. Spanish. Signal fading with lady announcer. Weak signal but "Arcangel San Gabriel" ID audible. (Stanley Mayo, Westbrook, ME)

2240 UTC on 4850
Cameroon: Radio Cameroon. French. Native African music and French pops. 2256 UTC ID and U.S. country and western tunes. (Rod Pearson, ST. Augustine, FL)

2250 UTC on 7215
Cote D' Ivoire: RDTV Ivoirenne. French. African highlife music and station announcements with ID. (Rod Pearson, St. Augustine, FL)

2305 UTC on 15435
United Kingdom: BBC. World news and commentary on kthe occupied Gaza Strip. (Alan Hesse, Mather AFB, CA)

2317 UTC on 11705
Sweden: Radio Sweden International. Feature on the history of Radio Sweden, and in-dpth show on philately. (David Kammler, Ridgecrest, CA)

2318 UTC on 4835
Mali: RDTV Mallenne. French. Lively French Afro pops with music titles. Closing ID with 0002 UTC sign-off. Parallel frequency 4783 weaker. (ed)

2326 UTC on 15575
South Korea: Radio Korea. Sign-on announcements with news and report on Korea's trade industry. (Jim Tedford, Seattle, WA)

2345 UTC on 7205
USSR: Radio Kiev. Youth Forum on Radio Bridge from Kiev to Chicago, featuring arms limitations discussion. (Bob Fraser, Cohasset, MA)

2350 UTC on 4890
Senegal: ORTV du Senegal. French. U.S. rhythm and blues, Afro highlife, and announcer chat. News headlines and station ID. Extended broadcast tonight with a 0059 UTC sign-off.

Utility World

Larry Van Horn
160 Lester Drive
Orange Park, FL 32073

Most people will agree that weather plays an important part of our daily lives. Nowhere is this more evident than within the aviation community. Pilots must have accurate and up-to-date weather reports and forecasts to safely fly their aircraft. The problem is further compounded if the route the pilot takes is over the major oceans of the world. Over the oceans, the aircraft is out of the range of normal VHF communication and other means of obtaining weather information must be used.

The answer to the problem was solved by the creation of shortwave weather stations that transmit weather reports and forecasts. These stations are called VOLMET stations. VOLMET, loosely translated, is a French word meaning "aviation weather."

Broad continental areas have been sectioned off to share common families of frequencies for VOLMET purposes. These broad geographic areas are listed as follows: Africa - Caribbean - Europe - Middle East - North America - Pacific - Southeast Asia - North Central Asia - South America

Listeners will usually find several different VOLMET stations sharing not only frequencies but transmission time on those frequencies based on the geographical assignments mentioned above.

VOLMET broadcasts are in English and use the upper sideband mode of transmission. You will find a few stations that transmit weather information in Russian and also French (French-speaking Africa primarily). There are also a few holdouts that still have not converted over to sideband. These stations still use the old aviation standard mode of AM.

Table 1 lists the most current information available on the frequencies and broadcast times of VOLMET stations known worldwide.

Hurricane Monitoring

Right now as you read your *Monitoring Times*, we are at the peak of the hurricane season. Weather buffs and those of us who are exposed to the potential danger of these giant storms can use the list of frequencies that follows to keep track of the progress of the storm.

Amateur radio operators afford the best and most current information about the storm's position, current conditions and damage in the affected areas. Check out the following frequencies for action as it happens courtesy of amateur radio operators.

Keep in mind that these frequencies are approximate. Interference can move the net plus or minus 5 to 10 kHz from the frequencies listed below.

Amateur Radio Networks

3862	LSB	Mississippi Emergency Net
3935	LSB	Central Gulf Coast Hurricane Net (Meets daily at 0100 UTC)
3940	LSB	Florida Hurricane Net
3943	LSB	West Gulf Emergency Net
3955	LSB	South Texas Emergency Net
3965	LSB	Alabama Emergency Net
7268	LSB	Central Gulf Coast Hurricane Net (Daytime frequency)
7290	LSB	7290 Net
14313	USB	Maritime Mobile Service Net (Good frequency to monitor maritime activities-meets daily)
14325	USB	Hurricane Information Net (This should be your #1 choice for information. They have operators in the Miami Hurricane Center through the life of the storm)

The government agencies have networks you can check for up-to-date information about these giant storms. The following list of frequencies should also be checked for storm bulletins and information.

Government Networks, etc.

3407.0	USB	National Hurricane Center, Air-to-ground from recon aircraft
4428.7	USB	Coast Guard tropical storm bulletins
5562.0	USB	National Hurricane Center, Air-to-ground from recon aircraft
6506.4	USB	Coast Guard tropical storm bulletins
6673.0	USB	National Hurricane Center, Air-to-ground from recon aircraft
7507.0	USB	Coast Guard and U.S. Navy hurricane warning (PAPA)
8768.5	USB	Coast Guard tropical storm bulletins
8876.0	USB	National Hurricane Center, Air-to-ground from recon aircraft
9380.0	USB	Coast Guard and U.S. Navy hurricane warning
10015.0	USB	National Hurricane Center, Air-to-ground from recon aircraft
11398.0	USB	National Hurricane Center, Air-to-ground from recon aircraft
13113.2	USB	Coast Guard tropical storm bulletins
13260.0	USB	Coast Guard and U.S. Navy hurricane warning
13267.0	USB	National Hurricane Center, Air-to-ground from recon aircraft
21937.0	USB	National Hurricane Center, Air-to-ground from recon aircraft

Look also in Bob Kay's scanner column for more information on monitoring huricanes on your scanner!

New Generation Soviet Ship Begun

Soviet space buffs and marine band monitors will have a new target to shoot for very soon. According to John Biro, a new-generation space research vessel, the "Akademik Nikolai Pilyugin," had its keel laid a few months ago.

These vessels are used to support the Soviet manned space program. Soviet officials also said that the vessel would be used for international unmanned research satellites. As of this writing the ship's callsign has not been determined.

Thanks to John Biro for the heads up on this new maritime target.

USA-SCHELF

Sam Ricks reports monitoring the German Democratic Republic's "USA-SCHELF" fishing fleet on HF. Sam says the fleet is based in Rostock and operates off of the New Jersey and Nova Scotia coastlines.

These East German fishing fleets operate in groups of three to four factory ships and they are designated by home port and number, such as "ROS 331." The GDR trawlers have operated as close as 110 to 120 miles offshore from Cape May, New Jersey. Crews on these vessels are changed in Halifax, Nova Scotia, apparently every four to six months.

Sam reports that these ships operate with a "fangleiter" or group "catch" leader coordinating activities. The factory ships transmit coded and plain text message traffic via RTTY (170 Hz shift/50 baud speed/reverse sense) to Rugen Radio, callsign Y5M. The East Germans also transmit and receive messages in English from the U.S. Coast Guaard regarding their positions. These ships get messages of maritime notices from our Coast Guard.

Utility World

The following GDR trawlers have been monitored recently:

LUDWIG TUREK (Y4CA)	Stern trawling ship of the "Super Atlantik" type.
RUDOLF LEONHARD (Y4BN)	Stern trawling factory ship.
BODO UHSE (Y4IO)	Stern trawling factory ship.
WILLI BREDEL (Y4IP)	Stern trawling factory ship.
LUDWIG RENN (Y4CG)	Stern trawling factory ship of the "Super Atlantik" type.
PETER KAST (Y4BM)	Stern trawling factory ship.
ARNOLD ZWEIG (Y4CE)	Stern trawling factory ship of the "Super Atlantik" type.
BRUNO APITZ (Y4CH)	Stern trawling factory ship of the "Super Atlantil" type.
JUNQE GARDE (Y4DM)	Large stern trawling factory ship.

RTTY traffic from these ships can be seen around 1300-1500 UTC and 2000-2400 UTC on 4178.4, 6268.4, and 12525.9 kHz. The 4178.4 frequency seems to have the largest amount of traffic from the GDR "USA-SCHELF" fishing fleet.

Utility World sends a hearty thanks to Sam Ricks in Philadelphia, Pa. for this exclusive information.

From the Ute World Mailbag

Kevin Jensen in Clearwater, Florida, a new subscriber to *MT*, was wondering if the Coast Guard in Florida used frequencies in the HF range for their rescue and routine operations? He is particularly interested in frequencies used by the Coast Guard in Clearwater.

U.S. Coast Guard air station Clearwater uses the following air-to-surface frequencies that are common to all Coast Guard air operations: 2261, 3123, 5696, 8984, 11195, 11201, 15081, and 15087 kHz.

You might also find activity on the following Coast Guard helicopter only frequencies of: 2261, 5692, 8980, 11198, and 15084 kHz.

Clearwater and the state of Florida lie within the Seventh Coast Guard District Headquarters in Miami. Operations are also conducted on district operations working simplex frequencies. Seventh district working frequencies in 2678 (primary), 2691 (secondary), and 5320 (secondary) kHz.

C. Robert West of St. Simons Island, Georgia, says he thinks that my 5737 kHz logging in the April issue of Ute

Table One
VOLMET STATION LIST

Station Location	Frequencies (kHz)	Minutes after each hr /Operating Hours
Anchorage, Alaska	2863, 6679, 8828, 13282	25-30, 55-00/H24
Antananarivo, Madagascar	5499	25 & 55/0225-1930
	6617	01 & 30/0225-1930
	10037	01 & 30/0225-1930
	10057	25 & 55/0225-1930
Antofagasta, Chile	3167.5, 5280, 7465.5	20/H24
Asuncion, Paraguay	5601	05/0905-2315
	10067	15/0905-2315
Auckland, New Zealand	2863, 6679, 8828, 13282	20 & 55/H24
Baghdad, Iraq	3001, 5561, 8819	00/H24
Bahrein	3001, 5561, 8819	10 & 40/H24
Bangkok, Thailand	2965	10-15, 40-45/1210-2245
	6676	40-45/1210-2245 & 2310-1145
Basrah, Saudi Arabia	3001, 5561, 8819	30/H24
Beirut, Lebanon	3001, 5561, 8819	15 & 45/H24
Belem, Brazil	6603, 10057, 13352	Continuous/H24
Bombay, India	6676, 11387	25-30, 55-00/H24
Brasilia, Brazil	6603, 10057, 13352	Continuous/1100-2100
Brazzaville, Congo (P.R.)	10057	00 & 25/0700-2200 (Eng)
Buenos Aires, Argentina	2881, 5601, 10087, 13279	15 & 45/H24
		30 & 55/2000-0700(Fr)
Cairo, Egypt	3001, 5561, 8819	20 & 50/H24
Calcutta, India	2965	05-10, 35-40/1300-0300
	6676	05-10, 35-40/0300-1300
Comodoro Rivadavia, Arg.	4675, 8938	30/0900-2400
Cordoba, Spain	5475, 8952	25 & 45/H24
Edmonton Military, Alta.	6753	20/2300-1200
	15035	20/1200-2300
Ezeiza, Argentina	2881, 5601, 11369	01 & 15/H24
Galeao(Rio de Jan),Brz.	6603, 13352	Continuous/H24
Gander, Newfoundland	3485, 6604, 10051, 13270	20-30, 50-60/H24
Istanbul, Turkey	3001, 5561, 8819	25 & 55/H24
Halifax Military, NS	3046	50/H24
Hong Kong, Hong Kong	6679. 8828, 13282	15 & 45/H24
Honolulu, Hawaii	2863, 6679, 8828, 13282	00-05, 30-35/H24
Jeddah, Saudi Arabia	6570	09/0001-0330
	10215	09/0001-0330
Johannesburg, S.Africa	2860, 5499, 10057, 13261	00 & 30/H24
Karachi, Pakistan	3432	15 & 45/1500-0130
	6680	15 & 45/0130-1500
	10017	15 & 45/H24
Khabarovsk, USSR	3461, 4663, 5676, 10090, 13279	00 & 30/H24
Kiev, USSR	3461, 4663, 5676, 10090, 13279	20 & 50/H24
Kuwait	3404, 5603, 6624, 8847 10009, 13336	Continuous/H24
Lahr Military, W.Germany	5690	16/2000-0800
	13231	16/0800-2000
Lima, Peru	2881, 5601, 10087, 13279	10 & 40/H24
Manaus, Brazil	6603, 13352	Continuous/H24
Merida, Mexico	2950, 5580, 11315	10 & 40/H24
Miami, Florida	2950, 5580, 11315	25 & 55/H24
Montevideo, Uruguay	5803	15/H24
Moscow, USSR	3461, 4663, 5676, 10090, 13279	15 & 45/H24
Nairobi, Kenya	2860, 5499, 10057, 13261	05-15, 35-45/H24
New York City, U.S.	3485	00-20, 30-50/SS-SR
	6604, 10051	00-20, 30-50/H24
	13270	00-20, 30-50/SR-SS
Novosibirsk, USSR	3461, 4663, 5676, 10090 13279	10 & 40/H24
Oakland, California	2863, 6679, 8828, 13282	05-10, 35-40/H24
Palegre, Brazil	6603, 10057, 13352	Continuous/H24
Port of Spain, Trinidad	2950, 5580, 11315	05 & 35/H24
Prague, Czechoslovakia	2998, 6580, 11387	15 & 45/H24
Puerto Montt, Chile	3787.5, 6745.5	20/winter 1220-2320
		20/summer 1120-2320
Recife, Brazil	6603, 10057, 13352	Continuous/H24
Resistencia, Argentina	4675	20 & 50/H24
Salta, Argentina	5475	15 & 45/H24
Sao Paula, Brazil	13352	Continuous/H24
St. John's Military, NFLD	6753	40/H24
	15035	40/1200-2300
Shannon, Ireland	3413, 5505, 5640, 8957, 13264	Continuous/H24 (AM)
Singapore, Singapore	6676	20 & 50/1230-2230
	11387	20 & 50 2230-1230
Sofia, Bulgaria	11384	25 & 55/H24
Sydney, Australia	2965, 6676, 11387	00 & 30/H24
Tashkent, USSR	3461, 4663, 5676, 10090, 13279	05 & 35/H24
Tegucigalpa, Honduras	4710	50/1200-2400
Tehran, Iran	3001, 5561, 8819	05 & 35/H24
Tel Aviv, Israel	2998, 6580, 11387	05 & 35/H24
Trenton Military, Ontario	6753	30/2300-1200
	15035	30/1000-0100
Tokyo, Japan	2863, 6679, 8828, 13282	10-15, 40-45/H24
West Drayton(RAF), Eng	11200	Continuous/24

Utility World

World is a frequency used by Chalk Airlines. The airline regularly flies between Florida and the Bahamas.

Al Quaglleri, editor of the SPEEDX *Africa* column, says about two years ago he was leafing through a NTIA manual for frequency coordinators and came across the following interesting tidbit:

Director
U.S. Army Signal Warfare Laboratory
Vint Hills Farms Station
Warrenton, Virginia 22186
703-347-6368

Al said it was the first and last time he ever heard of this outfit. "Perhaps one of your readers might want to try to QSL a numbers station via this address...one of your readers who wouldn't mind spending the next few decades behind bars." No doubt, Al, but thanks for another piece of the puzzle.

And now on with this month's loggings from the Utility World.

Utility Loggings

Abbreviations used in this column

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

AM	Amplitude Modulation	ISB	Independent Sideband
ARQ	Sitor	LSB	Lower Sideband
CW	Morse Code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward Error Correction	USB	Upper Sideband
ID	Identification		

2670.0 NMP-USCG Boston heard at 2240 with a marine coastal weather report and marine information broadcast in USB. (Lance Micklus, Essex Junction, VT)

4018.6 AAR2IV/AM3RX + others- U.S. Army MARS RTTY network monitored at 0025. Stations transmitting personal chit-chat. 170 HZ shift/45 baud speed/normal sense. (Lance Micklus, Essex Junction, VT) Welcome back Lance-ed.

4255.1 UFH-Petropavaviovsk, USSR heard with a RTTY RY test tpae at 0735. 170 HZ shift/50 baud speed/normal sense. (Patrick Sullivan, La Crescenta, CA) Welcome back to the column Pat-ed.

4285.0 VCS-Canadian Coast Guard Halifax, Nova Scotia, with CW CQ marker, then sign-off message that stated they would return to the air at 1000. (Lance Micklus, Essex Junction, VT)

4373.0 Navy FACSFAC Virginia Capes Operating Area. "W97" transmitting information on damage to aircraft "Redhawk 732." The aircraft was on deck "W97." "E4M" told to relay information to "Giant Killer." (FACSFAC Virginia Capes-ed.). Transmissions at 0200 in USB. (Marshall Ervine, Richmond, VA) Welcome to the column Ervine, check in often-ed.

4428.7 Unknown station in Louisiana giving marine weather for the Gulf of Mexico. Station asked for signal reports. Traffic heard at 1610 in USB. (Mike Pugh, Emporium, PA) This is NMG-U.S. Coast Guard in New Orleans, LA. Welcome to the column Mike, please report often-ed.

4538.0 Amsterdam high seas operator with phone patch traffic in USB at 0248. Ship side of frequency unknown. (Lance Micklus, Essex Junction, VT) Interesting Lance, I have nothing in my references on this one. I do know that WOM is on this channel and the ship channel is on 5088.0. Can anybody provide some additional details on this station-ed.

4637.6 KU332-Houston, Texas net control for oil drilling rig network. Heard oil rigs checking in with net control in USB at 0833. (Lance Micklus, Essex Junction, VT) Lance, I showed KFC699 as Houston on this channel. Maybe there are more than one company on this channel transmitting from Houston. Nice catch and keep me posted on this one-ed.

4764.7 CCS-Chilean Naval Radio-Santiago, Chile, sending RTTY 5-letter groups at 0420. 850 HZ shift/50 baud speed/reverse sense. (Patrick Sullivan, La Crescenta, CA)

5045.0 English female 3/2-digit number station heard at 1130 (Sunday), and 1100 (Tuesday and Sunday). (Mike Pugh, Emporium, PA)

5320.0 Coast Guard (COMSTA) communication station New Orleans (NMG) heard working the CGC Hornbeam in USB at 0552. The Hornbeam advised NMG of a disabled vessel (S/V Pegase) and passed their ETA for Cape May, NJ. (Garie Halmstead, Saint Albans, WV) Welcome back to the column Garie-ed.

5550.0 DTA700-Aircraft of Democratic Korea registry working Boyeros (Havana) at 0622 in USB. Aircraft reported over "conch" (This is an aircraft enroute reporting point, normally called an intersection, that can be found on aeronautical charts-ed.) about two hours out of Havana. Crew gave time estimate for the Havana FIR (Flight Information Region-ed.) and ETA (Estimated Time of Arrival-ed.) for Havana of 0810. (Garie Halstead, Saint Albans, WV)

5526.0 Clipper (PANAM) 440 working Manaus Radio in Brazil using USB at 0600. Aircraft reported over Boa Vista. Flight was going from Rio de Janeiro to Miami. (Garie Halstead, Saint Albans, WV)

5616.0 Cubana 470 working Santa Maria Aero in USB at 0610. Reported position as 38N/40W. Gave next position as Flores (Azores) and continuing to head east towards Europe. (Garie Halmstead, Saint Albans, WV)

6506.4 NMN-USCG Portsmouth, Virginia, in USB at 0537 with marine weather for the south Atlantic and Caribbean. (Jim Tedford, Seattle, WA) Welcome to Utility World Ted, hope to see your reports often-ed.

6577.0 ARCA 112 working San Juan at 0501 in USB advising he was off Bogota with an ETA for Miami. (Garie Halstead, Saint Albans, WV) Could that have been pronounced ARPA Garie? I am not familiar with the airline or callsign ARCA-ed.

6730.0 Air Force Two working Andrews AFB at 0103 in LSB. They transmitted a request for radio maintenance and logistical requirements to Andrews upon their arrival. (Marshall Ervine, Richmond, VA)

6753.0 CHR-Trenton Military Radio-Ontario, Canada, at0232 in USB with aviation weather reports for various Canadian airports. (Jim Tedford, Seattle, WA)

6802.0 Spanish female 4-digit number station heard at 0537. (Friday evening UTC) (Jim Tedford, Seattle, WA)

7600.0 HD210A-Institudo Oceanografico de la Armada, Guayaquil, Ecuador, heard at 0255 with time pips on the second and Spanish time announcements on the minute. For a verification of these broadcasts send your reception reports to : Instituto Oceanografico de la Armada, Casilla 5940, Guayaquil, Ecuador. (Gayle Van Horn, Orange Park, FL)

7651.0 VOA-USIA feeder Greenville, North Carolina, monitored at 0542. The USB was not being used; LSB carried English lessons. (Lance Micklus, Essex Junction, VT)

7705.0 AOK-Spanish Naval Radio-Rota, Spain, with a CW weather broadcast for the Red Sea, Arctic and Greenland at 0610. (Lance Micklus, Essex Junction, VT)

7723.6 SOW-Warsaw Radio, Poland at 0320 with a CW "De SPW" marker followed by an ARQ idler. (Lance Micklus, Essex Junction, VT) These guys like to move around a lot down here on 7 MHz-ed.

7837.0 Unknown station sending a tone then CW groups of five characters, mostly numbers. Transmissions stopped at 0558. CW sent at about 25 words per minute. (Lance Micklus, Essex Junction, VT) This one is probably FDY-French Air Force, Orleans, France, Lance. They were probably sending aviation weather reports-ed.

7980.0 Y3I-Potsdam Metro, East Germany, heard at 0335 with a 850 HZ shift/100 baud speed/normal sense RTTY signal. They were sending coded weather data. (Lance Micklus, Essex Junction, VT)

8023.7 FTI2/H3-AFP Paris, France with French RTTY news at 0340. Station used European RTTY codes(?-ed.). 850 HZ shift/50 baud speed/normal sense. (Lance Micklus, Essex Junction, VT)

8054.0 Spanish Female number station transmitting 5-digit groups at 0538. concluded broadcast at 0541. (Mike Pugh, Emporium, PA)

8060.0 RAW71-Tass Moscow, USSR with English RTTY news bulletins at 0535. 425 HZ shift/50 baud speed/normal sense. (Lance Micklus, Essex Junction, VT)

8140.0 CLN219-Prensa Latina, Havana, Cuba, heard with an absolutely solid RTTY signal. Very strong with English Latina America news at 0810. (Lance Micklus, Essex Junction, VT)

8368.0 TCGR-Turkish vessel (M/V Kahramanmaras) asking for a signal report from TAH in Istanbul on CW at 0411 and giving the ship's location as Bermuda. (Garie Halmstead, Saint Albans, WV)

8382.0 4XIS-Israeli vessel (Zim California) heard working KPH on CW at 0549 with a noon position report for oceanroute-San Francisco. (Garie Halmstead, Saint Albans, WV)

8387.0 PPXH-Brazilian vessel (M/V Semiramis) heard working NMN in CW at 0536 with an AMVER message. Semiramis is a legendary queen of Assyria. (Garie Halmstead, Saint Albans, WV)

8396.0 SZJU-The Greek registered vessel (M/V Elli) working MNM on kCW at 0641 with an AMVER message. (Garie Halmstead, Saint Albans, WV)

8397.5 UBCX-Soviet vessel T/H Movajsk working USB on CW at 0423 with a message for Odessa. Vessel gave position of 2309 Sew (north) and 06148 Zap (west) on his calling frequency prior to moving to 8397.5, their working frequency. (Garie Halmstead, Saint Albans, WV)

8399.0 YCQW-Indonesian vessel (M/V Palembang) working SUH in Alexandria, Egypt, on CW at 0415 with a message for Port Said. Message contained cargo info and an ETA for the pilot station Suez Canal. (Garie Halmstead, Saint Albans, WV)

8402.0 SYDS-Vessel "World Protector" heard working WCC on CW at 0504. Ship sent a message of arrival at Port Everglades, Florida.

8428.0 C4BM-Cypriot vessel Andromeda working the Peruvian shore station OBC3 on CW at 0451. (Garie Halmstead, Saint Albans, WV)

8522.0 CBV-DGTMMM Valparaiso, Chile, with a CW CQ marker at 0854. (Bill Dickerman-Williamsport, PA) Welcome to the loggings section Bill, please report often-ed.

8602.0 CWA-Cerrito Puntas Radio, Uruguay, heard with a CQ CW marker at 0926. (Bill Dickerman, Williamsport, PA)

8698.0 4LS (AKA UQA4)-Murmansk Radio, USSR, sending frequencies in CW at 0630. Started sending traffic list at 0635. (Jim Boehm, San Antonio, TX) Nice to see you back Jim-ed.

8702.0 OSN-Belgium Naval Radio, Ooestende, Belgium, with a "V" CW marker at 0200. (Jim Boehm, San Antonio, TX)

8718.0 NMO-U.S. Coast Guard Honolulu, Hawaii, with a FEC weather broadcast at 0340. 170 HZ shift/100 baud speed. (Patrick Sullivan, La Crescenta, CA)

8762.3 WOO-Ocean Gate Radio, New Jersey, working the vessel Baroness in USB at 1430. (Mike Pugh, Emporium, PA) This is marine channel 815. The ship side is on 8238.4-ed.

8842.0 Aeroflot 340 (Russian Airlines) heard working COL (Havana) in CW at 0536. Aircraft gave position as 52N/20W over the North Atlantic with an ETA to Shannon (Ireland) of 0626. Crew also send an aircraft registration number of 86477. (Garie Halmstead, Saint Albans, WV)

8843.0 American 72 working Honolulu Aero at 0551 in USB with position report. Gave the wind speed at his flight level of 133 knots. When asked by Honolulu to confirm his wind speed, he replied, "Yah, it's really blowin." (Garie Halmstead, Saint Albans, WV)

8846.0 American 679 working New York Aeroradio at 1447 in USB and repeating his oceanic clearance to the Aruba Airport. Clearance to take "679" from Tallo to Tooms via Red 69, then direct Grand Turk. Usual route of flight is normally straight down Amber 554 via Lears and Bours. No reason given for this deviation. (Garie Halmstead, Saint Albans, WV) I think the Navy/Air Force was conducting some missile exercises in the area. Probably good enough reason to reroute-ed.

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8855.0 Eastern 010 heard working Manaus Radio at 0616 in USB reporting over Rio Branco. Gave estimates for Mupir and Gutak on his northward trek through Brazil enroute Miami. (Garie Halmstead, Saint albans, WV)

8861.0 MAC 40613 (USAF Military Airlift Command-ed.) heard working Recife at 0431 in USB. Reported crossing the equator at 30 degrees west. Aircraft departed Tapa (Antigua) enroute to Ascension Island in the South Atlantic. (Garie Halmstead, Saint Albans, WV)

8993.0 SAM 60200 working MacDill in USB asking for the weather at KHST (Homestead AFB) for their arrival time at 0445. Gave position report at 0300 putting them in the Caribbean off Central America. Then a major onboard talked with his wife in the housing area of Andrews AFB via phone patch. Aircraft may have departed Howard AFB as Panama was mentioned in the conversation. (Garie Halmstead, Saint Albans, WV)

9018.0 Navy 511 working Andrews AFB at 0026 in LSB. Flight was a navy VIP mission to Roosevelt Roads, Puerto Rico, carrying the commander, Atlantic Fleet. (John Henault, Abington, MA) Welcome to Utility World John-ed.

9020.0 Sagebrush working GCCS MacDill AFB, Florida. Aircraft requested a secure autodin patch with "format." Heard at 0123 in USB. (John Henault, Abington, MA)

9396.0 NPM-U.S. Navy Pearl Harbor, Hawaii, with FAX weather charts at 0640. 120LPM/576 IOC. (Patrick Sullivan, La Crescenta, CA)

9438.6 LOR-Argentine Naval Radio Puerto Belgrano, Argentina, transmitting RTTY 5-letter groups at 2115. (Patrick Sullivan, La Crescenta, CA)

9855.0 VOA-USIA Tangiers, Morocco, with "European File" at 0033 in RTTY. Sent English news summaries, primary results, and financial news. 170 HZ shift/75 baud speed/normal sense. (Lance Micklus, Essex Junction, VT)

10158.8 Monitored a CW transmission sending at approximately 25 WPM at 0655. The broadcast did not make sense and there was no pattern to the characters. (Lance Micklus, Essex Junction, VT)

10345.0 Spanish female 5-digit number station kheard at 0528. Powerful signal but signal was under-modulated. Spotted this as a dead carrier 15 minutes earlier. Figured it would turn up something if I went back and checked it. Transmission on Tuesday UTC. (Lance Micklus, Essex Junction, VT)

10400.0 RFE-Holzkirchen, West Germany feeder double sideband transmission at 0724. LSB ID sounded like Radio Maboda and on USB a male announcer was talking about Africa and China. Both transmissions in German. (Lance Micklus, Essex Junction, VT) Looks like a new frequency Lance. I do not show a listing previous on this frequency-ed.

10551.5 Unknown station sending RTTY coded traffic, 5-digit number groups then 5-letter groups, then "NNNN" at the end of the message. Monitored at 0736 with 170 HZ shift/50 baud speed/reverse sense.(Lance Micklus, Essex Junction, VT) This is probably CME343-Romanian Embassy in Havana, Cuba-ed.

10655.6 KWW042? Unknown station sent Foxes then CQ de KWW042, then signal faded out. Call uncertain. This was a RTTY transmission at 0745. 170 HZ shift/50 baud speed/reverse sense. (Lance Micklus, Essex Junction, VT) A FCC channel is within 600 HZ Lance. This is probably a mobile FCC unit. I was surprised that there was no bit inversion however-ed.

10972.0 VOA-USIA Tangiers, Morocco, in RTTY with "European File" at 0013. Better signal than 9855.0. 170 HZ shift/75 baud speed/normal sense. Station signs off at 0215. (Lance Micklus, Essex Junction, VT)

11055.0 SAM 86201 working Andrews AFB at 2053 in USB. Requested phone patch with military protocol office at Andrews. (John Henault, Abington, MA)

11246.0 Franco-25 working Andrews AFB in USB at 0030 with a request for a "DF Orientation" test. (John Henault, Abington, MA)

11476.0 HMF52-KCNA Pyongyang, North Korea, monitored sending a RTTY RY test tape at 0300. 245 HZ shift/50 baud speed/normal sense. (Patrick Sullivan, La Crescenta, CA)

12175.2 FDY-French Air Force, Orleans, France, sending a RTTY message, "Pres du Grand Wyare, then 1234566789990. . . . RYRYRYRYRYRYRYRYRY" test tape at 2244. 170 HZ shift/50 baud speed/reverse sense. (Lance Micklus, Essex Junction, VT)

12478.1 72CBG-Unknown station transmitting RTTY RY test tape at 0545. 850 HZ shift/75 baud speed/reverse sense. (Patrick Sullivan, La Crescenta, CA) Looks like another Spanish Naval Station Pat. The NATO calls are constantly changing-ed.

12849.0 ZSJ5-South African Naval Radio, NAVCOMCEN (Silvermine) with a CW CQ marker at 0714. (Bill Dickerman, Williamsport, PA)

12984.0 VHP-Royal Australia Naval Radio, Canberra, with time tone at the minute and time ticks each second, no voice IDs at 1301. The Royal Navy picked up the National Standards Commission time transmissions after VNG closed down. For a verification of these broadcasts send your reception reports to: National Standards Commission, P.O. Box 282, North Ryde, Sydney, N.S.W. 2113, Australia. (Gayle Van Horn, Orange Park, FL) Thanks for the update Gayle-ed.

13073.5 WLO-Mobile Radio, AL heard with a CW marker at 1620. (Mike Pugh, Emporium, PA)

13077.0 NRV-U.S. Coast Guard Apra Harbor, Guam, with a FEC weather transmission at 0410. 170 HZ/100 baud speed. (Patrick Sullivan, La Crescenta, CA)
PCH-Scheveningen Radio, Holland, with a callsign only CW marker and ARQ idler signal at 1057.

13079.0 OST-Oostende Radio, Belgium, monitored with a callsign only CW marker and ARQ idler at 1059.

13081.5 WCC-Chatham Radio, Massachusetts, heard with a DE CW marker at 1052.

13085.0 GKP5-Portishead Radio, England, with a callsign only CW marker and ARQ idler at 1050.

13085.5 WLO-Mobile Radio, AL with ARQ ship traffic list at 1845. 170 HZ/100 baud speed. (Patrick Sullivan, La Crescenta, CA)

13088.5 PCH-Scheveningen Radio, Holland, with a callsign only CW marker and ARQ idler at 1047.

13097.5 FFT64-St. Lys Radio, France, with a callsign only CW marker and ARQ idler at 1045.

13285.0 Rainbow Radio heard working Eastern 940 at 2335 in USB. Is this a new aeroradio station? The Eastern flight gave position report with intersection names. (Bob Doyle, Shelton, CT) Welcome to the column Bob. This is probably a Canadian regional route station. I show this to be a Canadian route channel in area 10 as defined by the ITU. I know there is an aero station on this freq in Edmonton that sends traffic to Quebec. I do not have a listing, however, for a Radinbow Airlines. I noticed only Eastern flights the afternoon I listened. Is this something new for them? Any help here gang?-ed.

13420.0 Rainbow Radio working HC259 for phone patch traffic at 2355 in USB. (Bob Doyle, Shelton, CT) See my comments on 13285.0. I have nothing on this channel. It is outside the normal aero channels-ed.

13826.0 NNNOGKF running phone patches for NNNOICE (McMurdo Station, Antarctica) in USB at 0313. McMurdo using MARS call NNNOICE instead of NNNONBG as published in MT October, 1987. (Jim Boehm, San Antonio, TX) I have noticed this a couple of times Jim. Really interesting. Maybe no one has told them they have a new call yet-ed.

13850.0 HMK25-KCNA Pyongyang, North Korea with RTTY news bulletins at 0430. 240 HZ shift/50 baud speed/reverse sense. (Patrick Sullivan, La Crescenta, CA)

13974.0 NNNONGB-Guantanamo Bay, Cuba, working NNNOICE-McMurdo Station, Antarctica in USB at 0400. Both sides of the conversation were loud and clear. (Jim Boehm, San Antonio, TX)

14547.9 JAL44-KYODO, Tokyo, Japan, with a RTTY news file at 0720. 850 HZ shift/50 baud/reverse sense. (Patrick Sullivan, La Crescenta, CA)

14817.6 JPA51-Interpol Komaki, Japan, with an ARQ transmission at 0720. They sent the Interpol list. This was about two or more pages (I only stuck around for two pages) of lists of stolen items with serial number, description and cost. There were a lot of zeros after some of the numbers. 170 HZ shift/100 baud speed. (Patrick Sullivan, La Crescenta, CA)

14826.1 NPM-U.S. Navy Pearl Harbor, Hawaii, transmitting FAX weather charts at 0615. 120 LPM/576 IOC. (Patrick Sullivan, La Crescenta, CA)

14880.0 JMG4-Kyoto-Tokyo metro, Japan, sending RTTY 5-letter groups (weather) at 0055. 850 HZ shift/50 baud speed/reverse sense. (Patrick Sullivan, La Crescenta, CA)

15633.0 HMF26-KCNA Pyongyang, North Korea, with RTTY news bulletins at 0440. 250 HZ shift/50 baud speed/normal sense. (Patrick Sullivan, La Crescenta. CA)

16861.7 WNU35-Slidell Radio, Louisiana, heard with a CW CQ marker at 1539.

16876.0 FUG-French Naval Radio La Regine, France, heard at 1545 with a "V" CW marker.

16895.5 IAR7-Rome Radio, Italy, at 1548 with a CW "V" marker.

16902.0 PCH60-Scheveningen Radio, Holland, with a DE marker at 1549.

16904.8 Noted two men speaking in Spanish in USB at 1549. Drug smugglers?

16916.5 WSC-Tuckerton Radio, New Jersey, heard at 1556 with a DE CW marker.

16932.0 7TF-El Djaja'ir Radio, Algeria, heard at 1055 with a CQ CW marker . (Bill Dickerman, Williamsport, PA)

16948.5 VCS-Canadian Coast Guard Halifax, Nova Scotia, with a "V" CW marker at 1607.

16952.4 LFT-Rogaland Radio, Norway, heard with a CQ CW marker at 1621.

17007.2 PCH61-Scheveningen Radio, Netherlands, heard at 2122 with a CQ CW marker. (Lance Micklus, Essex Junction, VT)

17020.2 UDK2-Murmansk Radio, USSR, calling 4LS-Murmansk Radio, USSR, in CW at 0031. Said was listening on 12588.0. At 0038, UDK2 acknowledged 4LS and worked traffic on 12588 until 0058. What's going on? No telephones in Murmansk? (Jim Boehm, San Antonio, TX)

17038.0 WNU-Slidell Radio, Louisiana, monitored at 2112 with a CQ CW marker.

17045.6 LPD46-General Pacheco Radio, Argentina, heard at 2355 with a CW "V" marker. (Jim Boehm, San Antonio, TX)

17103.2 XSG-Shangahi Radio, PRC heard with a CQ CW marker at 2345. (Jim Boehm, San Antonio, TX)

17170.4 PJC5-Curacao (Williamstad) Radio, Netherland Antilles in CW at 1130 with a CQ marker. (Bill Dickerman, Williamsport, PA)

17205.1 HEC17-Berne Radio, Switzerland, heard at 1158 with a HEC QRV CW marker. (Bill Dickerman, Williamsport, PA)

17207.6 WCC-Chatham RAdio, Massachusetts, transmitting in the FEC mode at 1945. 170 HZ shift/100 baud speed. (Patrick Sullivan, La Crescenta, CA)

17213.5 HPP-Panama Radio, Panama, heard at 1230 with HPP/Maritex ID in CW and ARQ idler. (Bill Dickerman, Williamsport, PA)

18193.6 CLN603-Prensa Latina Havana, Cuba, with RTTY news bulletins at 2145. 425 HZ shift/50 baud speed/reverse sense. (Patrick Sullivan, La Crescenta, CA)

18215.3 VOA-USIA Monrovia, Liberia, sending an RTTY RY test tape at 2142. 425 HZ shift/75 baud speed/normal shift. (Patrick Sullivan, La Crescenta, CA)

18542.7 VOA-USIA Monrovia, Liberia, with parallel broadcast of the 18215.3 logging listed above. (Patrick Sullivan, La Crescenta, CA)

18602.7 LOL-Argentine Naval Radio Buenos Aires, Argentina, monitored at 1927 with a RTTY RY test tape. 380 HZ shift/75 baud speed/normal sense. (Patrick Sullivan, La Crescenta, CA)

20736.0 LSA600-Associated Press Buenos Aires, Argentina, monitored sending news pics at 2016. 60 LPM/444 IOC. (Patrick Sullivan, La Crescenta, CA)

21837.1 NPM-U.S. Navy Pearl Harbor, Hawaii, with FAX weather charts at 1955. 120 LPM/576 IOC. (Patrick Sullivan, La Crescenta, CA)

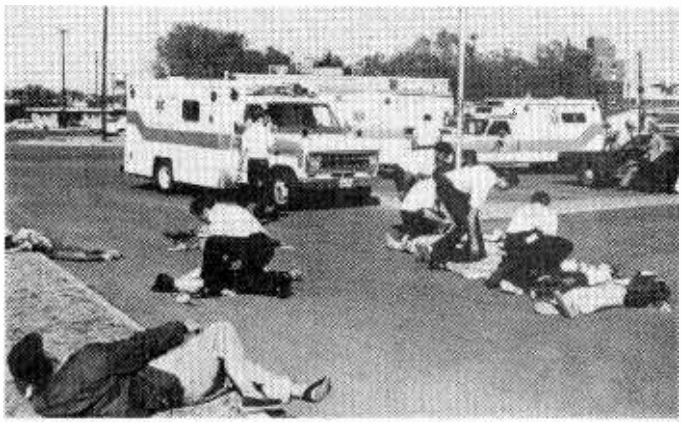
22565.5 CBV-DGTMMM Valparaiso Radio, Chile, sending ARQ ship traffic at 1841. 170 HZ shift/100 baud speed. (Patrick Sullivan, La Crescenta, CA)

22567.0 NRV-U.S. Coast Guard Apra Harbor, Guam, sending 5-letter groups in the FEC mode at 2338. 170 HZ shift/100 baud speed. (Patrick Sullivan, La Crescenta, CA)

22569.3 WCC-Chatham Radio, Massachusetts, sending a SELCAL list in the FEC mode at 0055. 170 HZ shift/100 baud speed. (Sullivan, CA)

The Scanning Report

Bob Kay
104 Bonsall Avenue
Glenolden, PA 19036



Preparing for disaster in Amarillo, TX
(Photo by Steve Douglass)

Disaster Communications

It was toward the end of one of those numbingly boring non-stops between the east and west coast. The date was May 14, 1988, a Saturday. On board the aging 747 was veteran pilot, Captain James K. Kilpatrick, two other crewmen and five flight attendants. Further back in the cabin were 100 passengers, mostly businessmen returning from appointments on the west coast who hoped to salvage at least a portion of their weekend.

As the plane began its final descent, the stewardesses went about their normal job of rousing their slumbering passengers for landing. *Please fasten your seatbelts; extinguish all smoking material and prepare for arrival at Philadelphia International Airport.* Flight 104B was routine, to say the least.

At 11:00 am, however, all that changed. As the aircraft met the runway, one of the landing gears collapsed, jolting all 108 people into sudden panic. Instantly, the corresponding wingtip hit the ground, producing a spectacular rain of sparks outside and flying luggage inside. The plane veered out of control. Several minutes later, flight 104B came to rest on runway 9 Left, near what airport officials call "taxiway 'U'".

A fire, quickly escalating to two alarms, began to spread through the ill-fated craft. Firefighters from Engines 77 and 78 were quickly dispatched on 154.235 (South Band) and arrived within minutes.

At about the same time, on 170.150, Philadelphia Fire Rescue (PFR) was dispatched, immediately setting up a triage procedure, evaluating injuries and affixing colored tags to the victims. As the extent of injuries were being ascertained, PFR officials were busy contacting area hospitals, compiling a list of available facilities at each.

As the extent of the injuries became known, ambulances from adjoining Delaware County, Pennsylvania, were also pressed into service, transporting victims to hospitals, such as nearby Crozer Chester. Those needing immediate attention, however, were ferried away from the crash scene on Hahneman's MedEvac chopper, dispatched over 155.220.

Throughout the operation, Philadelphia's Fire Emergency Band (153.950) was very active. "F-100," the fire communications van, was on the scene from the start. 453.450, the airport police frequency, was filled with urgent-sounding traffic, and 118.500, the airport control tower frequency, was kept busy with the inquiries of incoming pilots seeking advice on how to avoid the dangerous-looking assortment of red lights flashing below their speeding planes.

Curiously, however, not one of the normally very competitive local news media was in evidence. None of the TV news crew frequencies offered more than white noise, the sound of an unused channel. The media, it seems, knew about the disaster in advance. After all, this was only a drill.

To all but those who were let in on this little secret, the Philadelphia International Airport Simulated Disaster Drill looked like the real thing. This is the "biggie" -- according to local fire officials -- of more than a dozen such operations each year. It comes complete with "bloodied" victims, hundreds of firefighters and emergency medical personnel and more than ample opportunities for the scanner enthusiast to hear emergency communications in action.

Contacted at one time or another during the drill were the City Managing Director's Office, the Public Property Department (453.725), U.S. Coast Guard, the Medical Examiner's Office and the Department of Environmental Protection. Had the emergency been real, the news media, together with the Red Cross, National Transportation Safety Board, Federal Emergency Management Agency (FEMA), Environmental Protection Agency (EPA), Civil Air Patrol (CAP), the Federal Aviation Administration (FAA), possibly search and rescue, plus dozens of others, all would have become active on the airwaves.

Les Matson, editor of the *North East Scanning News*, monitored the hour and fifteen minute event in Philly. "Perhaps the single most important frequency for *all* Philadelphia International Airport activities," says Matson, "is 453.450. Winter or summer, in good weather or bad, airport police is the one frequency to keep programmed into at least one of your scanners." That's a worthwhile tip for scanner buffs in the area as well as for travelers expecting to stop in Philadelphia on the way to other destinations.

A drill for the fire department can also be a drill for you. It's a rare opportunity to check your frequencies for accuracy and to find other, less used ones that become active only during such emergencies. Monitor your local emergency preparedness drill and you, too, can be ready for the real thing!

Another Philadelphia Tradition

Hundreds of thousands of people from New York, Pennsylvania, News Jersey, Delaware and even Maryland are flocking to the Jersey beaches right now. And anytime you get that many people together, you get action: medical emergencies, complaints of loud parties, fights, car crashes,

and more. Those who are over-sensitive to craziness should leave their receivers at home. Anything the imagination can come up with can be heard on a scanner at the beach. Take yours along and punch up:

155.130	Atlantic City Police
460.150	Atlantic City Police
156.210	Atlantic County Police
155.175	Atlantic County Rescue
155.070	Atlantic County Sheriff
159.300	Atlantic and Cape May County Marine Police
155.685	Cape May County Sheriff
155.655	Egg Harbor Township Police
44.940	New Jersey State Police
154.725	New Jersey State Police
154.910	New Jersey State Police
460.250	Ocean City Police
154.445	Ocean City Fire
155.295	Ocean City Rescue
155.595	Pleasantville Police
155.625	Somers Point Police
155.535	Ventnor, Margate, and Longport Police

Thanks to Pat Piriano Jr. in NESN for those. West coast and midwest scanners, check in please.

World's Largest Land Mobile System

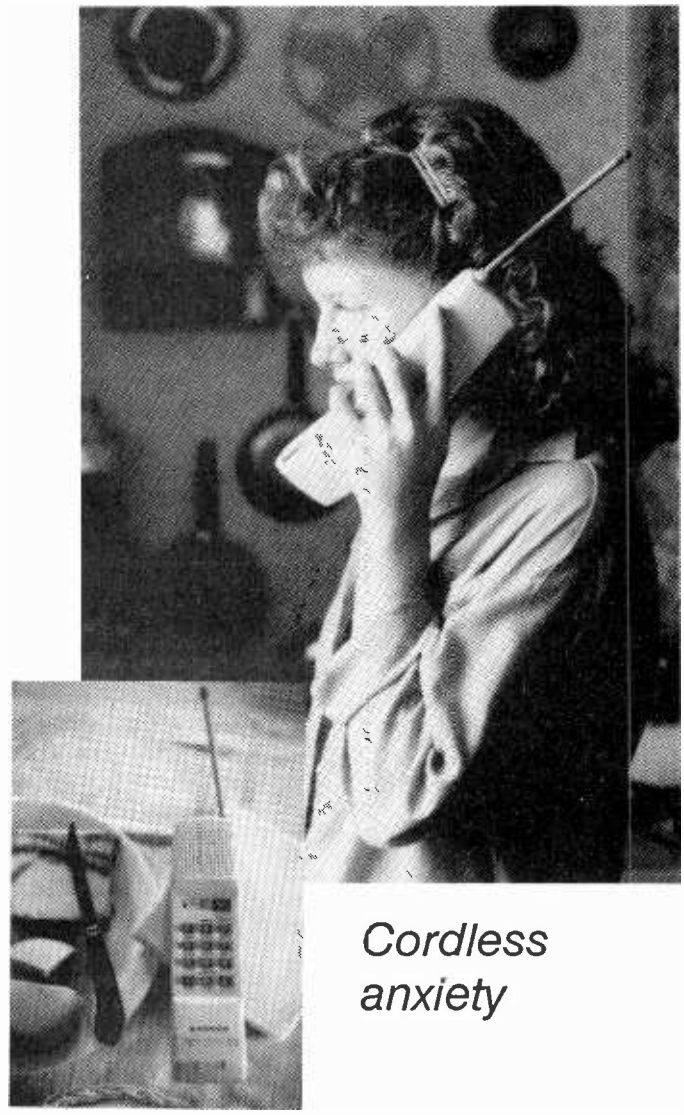
The Association of American Railroads (AAR) has proposed the largest and most complex land mobile radio system in the world. Expected to take ten years to complete, licenses for over 33,000 base and mobile units have been sent to the FCC. The AAR also requested several FCC waivers. One in particular was required for the six nationwide paired (but untrunked) frequencies on 900 MHz.

The system is expected to improve radio location services, switching operations, safety warnings and operator control.

Warning: Hurricanes!

Last month marked the beginning of the hurricane season on the Atlantic coast. Having a scanner to track the development of these storms can be great listening -- and even save your life and the lives of your friends and neighbors. In Virginia, John McColman, writing in the *American Scannergram,* suggests monitoring the following frequencies. Says John, "Believe it or not, this is where I get some of the best information!"

277.800	Navy/Coast Guard Fleet Common
385.000	Navy Harbor Control
163.4625	Langley Air Force Base Ramp Operations
163.5125	Langley Air Force Base Security
151.280	Virginia Marine Resources Commission
157.175	U.S. Coast Guard, Group Hampton Roads, Operations
45.680	Chesapeake Bay Bridge Tunnel
453.850	Hampton Roads Bridge Tunnel
47.340	Virginia Department of Transportation



Cordless anxiety

Cordless Anxiety Continues

Last month's column included several paragraphs concerning two Florida city commissioners who were tape recorded while discussing public business on a cordless phone.

Since that time, a St. John's County judge has ruled that a caller using a cordless phone is not guaranteed the same rights of privacy as a caller using a wire connected phone. Judge Robert Andreu ruled that the taped cordless conversation can only be used against one of the commissioners -- the one who used the cordless phone. Naturally, one attorney is smiling and one is appealing.

One other cordless telephone snicker: Telocator, a trade association representing the cellular industry, is complaining that those automatic, computer assisted dialing machines are now placing calls to car phones. Who cares? If you own a cellular phone, *you* do. You see, unlike normal phone users, people with cellular phones also have to pay for *incoming* calls -- whether they want them or not. (Submitted by "Frequency Freq," FL)

The Scanning Report

Fast Food Radio

It is, arguably, the dullest radio monitoring to be found anywhere on the spectrum. "Hello, and welcome to Burger World. Can I take your order?" Still, monitoring enthusiasts the world over are at a fever pitch over the announcement that, not wanting to be outdone by McDonald's, Kentucky Fried Chicken, Burger King, Arby's Roast Beef, Taco Bell and Wendy's Hamburgers have received radio operating frequencies from the FCC. Specifically, they are:

Kiosk	Order Taker	
31.0	170.305	Primary
171.105	154.600	Alternate A
170.245	154.570	Alternate B

McDonald's frequency assignments are as follows:

Kiosk	Order Taker	
35.02	154.600	Primary
30.84	154.570	Alternate A
33.140	151.895	Alternate B

Only one frequency pair is used at any fast food store. Alternates are assigned to prevent interference from other nearby licensees. And if your friends and family don't share your enthusiasm for this information, try to understand. (Submitted by Bob Kelty, Mobile Radio Resources, San Jose, CA)

Frequency List

Bob Murphy of Providence, Rhode Island, checks in with a fairly extensive list of frequencies for his home state.

State Police

154.905	South zone
154.935	North zone
155.445	Statewide repeater Tac #1
155.475	Tac #2
155.505	Administrative/Detective
155.610	Information

Department of Transportation

47.22	Channel #1
47.340	Channel #2

Department of Environmental Management

31.620	Fire tower channel #1
31.740	Fire tower channel #2
31.570	Enforcement division channel #1
31.580	Enforcement channel #2
151.175	Park rangers
151.385	Park rangers

Coast Guard

143.280	Auxiliary
156.600	Operations
157.050	Operations
164.550	Helicopters

National Guard

49.40	Statewide repeater input
49.90	Repeater out
148.150	Civil Air Patrol

Traffic Reporters

450.1875	C.V.S. Samaritan Vans
455.350	Spy in the Sky
450.250	Traffic net
455.250	Traffic net
450.750	Traffic net
455.750	Traffic net

TV and Media

173.275	Providence Journal
450.2125	WJAR TV 10
450.3125	WLNE TV 6
450.4875	WPRI TV 12

San Antonia Police: Where are You?

In the May issue of *Monitoring Times,* the San Antonia Police were listed as having moved to 856-860 and 898-902 MHz. Reader John Carr from San Antonia sent the information. Reader John Dorsey from Quinton, Virginia, wrote that 896-901 MHz belonged to the mobile cellular folks, and further stated that John Carr probably was monitoring a fourth harmonic image that can be traced back to the 856-860 frequencies.

Anyone care to add any additional comments?

Fire Season

As the dry summer continues, the infamous forest fire season reaches kindling temperatures in California. A recent issue of the RCMA newsletter included a list of frequencies which West Coast scanner enthusiasts may wish to monitor due to their widespread use for fire dispatch.

The San Bernardino County dispatcher may be heard calling responding departments over a wide area on 154.190 MHz. Many desert firefighting companies may be heard on 154.070 MHz. Additional active frequencies include 154.025, 154.385 (San Bernardino city), 154.205, 33.80, 33.40, 33.64, 151.445 and 151.325 MHz.

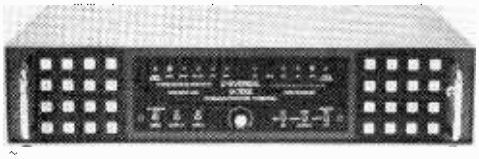
Naturally, the U.S. conservation agencies will be involved in many fires; listen for U.S. Forestry networks on 171.475 and the Bureau of Land Management on 166.375 MHz.

Join the MT Monitoring Team!

As most monitors are aware, scanning is a regional affair. It's not like shortwave where signals can be heard thousands or even hundreds of miles away. So it takes the cooperation of everyone -- people like you -- to make this column work.

Make it your business to check into *Scanner Report* each month. And get on the *MT* Monitoring Team! Send your letters to Bob Kay, 104 Bonsall Avenue, Glenolden, PA 19036.

what's new?



New Multimode Demodulator from INFOTECH

Now that the popular M6000 multimode demodulator has been cancelled, shortwave utilities listeners are anxiously awaiting news of its replacement. The news is here.

The INFOTECH M7000 will offer video and printer outputs for all of the modes of its predecessor (Morse code, Moore code, RTTY, bit inversion, TOR, packet, ASCII, TDM), plus FDM and FAX as well! Now there's a busy box!

Featuring high resolution printer graphics output, an option is also available for low resolution video and a real time clock message. A gain control has been added to allow the unit to be custom-set for the audio level of your receiver.

The M7000 is expected to sell in the $999 price range and should be available shortly from *MT* advertisers.

Sneak Preview from Radio Shack

-- A New Handheld Scanner

The good news:

Now that the PRO-32 has been discontinued, Radio Shack will introduce an updated version of the popular handheld programmable in their fall catalog. It is expected to be in the same price range, but will include additional features.

The bad news:

The rumor mill was working overtime recently when word hit the streets that Radio Shack was going to introduce a handheld version of the popular PRO-2004 in their new catalog. Unfortunately, the rumor is false. While a Radio Shack spokesman admits that they would love to have such a product and that it is under study, none is expected in the foreseeable future.

The Beginner's Handbook of Amateur Radio

By Clay Laster, W5ZPV

The Beginner's Handbook of Amateur Radio is:

1. Big (424 pages),
2. Up-to-date,
3. Comprehensive,
4. Designed to help you pass your novice test,
5. Available from Tab Books, Box 40, Blue Ridge Summit, PA 17214 for $16.95 plus $1.95 UPS and,
6. Boring.

Radio Listener's Guide

by Arthur Cushen

Putting a label on Arthur Cushen's new book is kind of hard. "It is not a book," as the author points out very early on, but rather a collection of very interesting articles reprinted from *Electronics Today International*, a Sydney, Australia-based publication.

What makes the book appealing is its scope. Virtually every non-technical aspect of shortwave broadcasting is covered in one form or another. Some articles "overlap" in terms of content. Others are rather obscure little discussions. But taken together, they form -- almost miraculously -- into a rather stunning overview of the industry.

It's true that the book tends to be overweighted in terms of information pertinent to and about New Zealand and the Pacific, but that's understandable given the original target audience for the articles. On the plus side, there is an abundance of pictures.

Arthur Cushen's *Radio Listener's Guide* is a rather interesting book that is perfect for both the beginner looking for background and the expert seeking a broader knowledge of what shortwave broadcasting is all about. There are better books on the subject overall, but none is so appealingly quirky as Cushen's.

Radio Listening Guide is available in the United States for $17.95 plus $2.00 shipping and handling from Gilfer Associates, 52 Park Avenue, Park Ridge, NJ 07656.

Dallas/Ft. Worth Frequency List

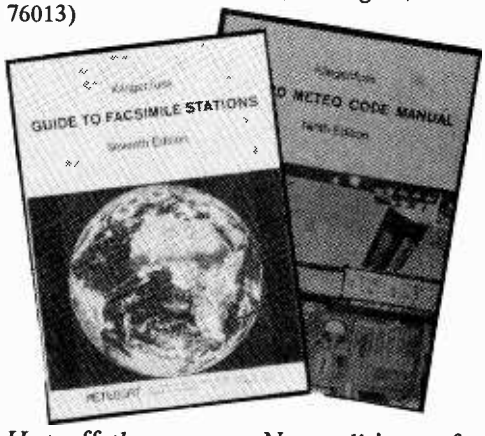
by Ken Winters

This new fifth edition of Winters' directory has been enlarged to over 5500 frequency entries. While concentrating on the Dallas/Ft. Worth listening area, the book is a collection of interesting frequencies used across North America.

Gleaned from a number of sources, including personal monitoring, contributions from listeners and other publications, contents cover the spectrum 45 Hz (US Navy ELF) through 10525 MHz (police radar speed guns).

Sorted by frequency and cross-referenced by alphabetized services, the list is very easy to use and has high accuracy. An excellent source of nuggets for the monitoring enthusiast.

(Over 150 pages, 8-1/2" x 11", paper bound; $19.95 from Basic Computer Services, PO Box 14193, Arlington, TX 76013)



Hot off the press -- New editions of these two Klingenfuss standbys

Guide to Facsimile Stations

Eighth Edition

Nowhere is published a more comprehensive guide to FAX reception than this guide. Hundreds of frequency listings and schedules as well as hundreds of illustrations make this the consummate

reference.

An introductory chapter on equipment and accessories is particularly informative and well illustrated. Successive chapters cover techniques, regulations and characteristics of FAX transmissions, interpretation of weather charts and station addresses.

(262 pages, 6-1/2" x 9-1/2", perfect bound; $16.95 plus $1 shipping from Universal Shortwave, 1280 Aida Drive, Reynoldsburg, OH 43068)

Air and Meteo Code Manual

Tenth Edition

One of the first hurdles encountered by new FAX, RTTY and CW utilities monitors is the extensive use of weather abbreviations and codes. Rather than an attempt to encrypt the transmissions, this symbolism is a means of passing large quantities of information in a short time.

Sample message formats are shown along with decoding information. The girth of the book is a concentration of alphabetized codes and their interpretations followed by station identifiers, allowing listeners to pinpoint the sources of transmissions.

(293 pages, 6-1/2" x 9-1/2", perfect bound; $19.95 plus $1 shipping from Universal Shortwave, 1280 Aida Drive, Reynoldsburg, OH 43068)

Ohio Federal Frequency Directory

1988 Edition
by Dave Jones

It has been four years since Dave Jones, Federal File columnist for *MT*, published his first directory. Now updated, the list contains frequency information on a wide range of agencies over a wide range of spectrum. Both routine and federal undercover operations are included.

Cross referenced by frequency and agency, listings cover the 27 to 468 MHz spectrum with representative data from Justice, Treasury, Air Force, Coast Guard, Energy, Army, Secret Service, Postal Service, FAA, National Guard and many more.

Callsigns, locations, repeater plans, channelization and use are shown where known and, because the agencies are federal, most of these listings are applicable nationwide. This is a handy reference for the serious scanner listener.

(95 pages, 8-1/2" x 11" staple bound offset; $12 postpaid from Scan America, 430 Garner Drive, Suffield, OH 44260)

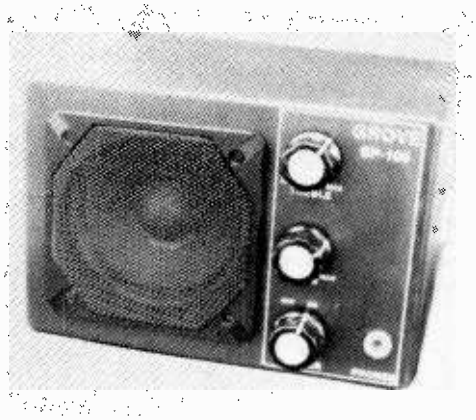
Radio Programming: Consultancy and Formatics

By Michael Keith

Like TV, commercial radio programming in the United States is so competitive and dynamic that almost every aspect of what goes on the air must be carefully planned. In fact, you'll be surprised to find just how much *is* planned. Gone are the days of radio past where DJ's had their own "show." The best "jocks" today are talented, to be sure, but they are also the willing and obedient servants of program directors, who in turn, get their marching orders from "consultants."

Radio Programming is a unique book that gives readers a look at how today's commercial radio happens. Also an "insider" book, you'll leave it either amazed or appalled. But you won't leave it untouched.

Radio Programming is available from Butterworth Publishers, 80 Montvale Avenue, Stoneham, MA 02180 for $21.95 plus $2.37 UPS.



Sound Enhancer from Grove

When was the last time you paid good money for a radio, then were disappointed that the audio quality was not what you expected? Take a look at the speakers used in today's receivers, scanners, ham and CB rigs, and other consumer devices and the reason becomes apparent. But Grove Enterprises may have the answer.

The new SP-100 Sound Enhancer complements a high quality 4-1/2" speaker with a massive 10 ounce magnet mounted in a rugged 8"W x 5-1/2"H x 6"D steel enclosure. Its black satin finish and brushed aluminum accented knobs match today's high-tech electronic equipment.

The secret of its effectiveness is in the careful selection of the cabinet configuration and the inclusion of separate bass and treble controls to allow custom adjustment of sound to suit the listener's tastes.

Unlike amplified speaker systems, the SP-100 requires no power supply. The bass and treble controls adjust capacitive and inductive high and low pass filters. The high efficiency speaker will handle much more power than is available from communications receivers and scanners, and produces full output at low volume control settings to reduce distortion.

An interconnect cord is provided with a standard 1/8" (3.5 mm) phone plug which mates with the majority of receivers and scanners. Inexpensive adaptor plugs are readily available for other audio jacks.

Our test

The SP-100 was used in turn with a Realistic PRO-2004 scanner, a Kenwood TS440S transceiver and an ICOM R7000 receiver. The speaker was custom adjusted to suit the variety of programming found across the spectrum.

On shortwave, shrill heterodynes and static crashes could be reduced by lowering the treble slightly (at a sacrifice, of course, in high frequency audio response). On notoriously "boomy" stations like Radio Havana Cuba, quality was improved considerably by reducing the bass and increasing the treble.

Similar improvements were noted on VHF/UHF scanning, making harsh audio mellower and distorted audio clearer. Using the SP-100 on the FM broadcast band, its high fidelity capability really came through. Bass could be felt for the first time on receivers whose internal speakers couldn't begin to compete, and treble was clean and transparent.

The SP-100 dramatically demonstrates what most of us have known for a long time: manufacturers put miserable speakers in their radios. A decent speaker system like the Grove SP-100 can make a real difference in listening enjoyment.

(Grove SP-100 Sound Enhancer, $99.50 plus $5.00 shipping from Grove Enterprises, P.O. Box 140, Brasstown, NC 28902; credit card orders 1-800-438-8155)

T.J. "Skip" Arey WB2GHA
P.O. Box 644
Waterford Works, NJ 08089

A Time to Adjust

August is a time for summer fun. Still, hard as it may seem to believe right now, it'll only be another six or eight weeks before you'll notice that the static crashes of summer have begun to die down. Shortly after that, you'll be looking forward to long winter nights huddled up close to the magic box that brings the rest of the world into one's home.

Yes, it's once again that time: time to give our equipment the once over so that we can be prepared for the winter listening season. Adjustment, preparation, change, all functions of having the most fun we can playing radio.

Perhaps the best place to start is with a serious visual check of all hardware.

This is a good time to open up your receiver and examine it for dust pollution. Disconnect your radio from power and antenna and take a look inside. Any "dust bunnies" can be carefully blown out. We don't often give it much thought but dust presents the opportunity for unneeded heat and even for static paths that can lead to component failure.

While you are inside, take a quick look around to make sure there is no sign of problems. Burn marks, melted insulation, and corrosion all mark the need for a trip to the test bench. If you do not have experience with working with electronic components, *do not touch anything!* A fully charged electrolytic capacitor can knock you across the room even if the set is unplugged. Simply note what you see so you can explain it to a repair person.

If your equipment needs to go to the bench, remember that this is also a good time to have your receiver aligned and "peaked" for optimum performance. Getting a handle on potential equipment failures now will save you the heartache of your radio "going dark" right in the middle of a listening session.

A note to users of tube gear. This is a good time to test all the tubes in your set and replace any stale ones. As it is getting harder to track down tube sources, an ounce of prevention now might save you waiting "four to six weeks for shipping" on that tube you kept meaning to replace. Many vacuum tube radio lovers make a point of collecting at least one complete set of replacement tubes as a hedge against break downs. Tube scrounging is an excellent early late summer project.

Another silly little receiver task just made for this time of year is tightening the knobs and dials on their shafts. I keep meaning to tighten down the antenna switch knob on my antenna tuner. If I don't do it now, chances are it'll never get done. I'll continue to put it off until, right in the middle of some contest, I'll spin the dial to the wrong position and miss a contact or maybe even blow the final amplifier. An ounce of prevention can save a ton of heartache, not to mention money.

This is a good time to check the connections of headphones and microphones before they develop intermittent problems. The cords and cables on these devices are subject to wear during operation so they're always a source of potential problems.

Another item that goes when you least expect it is the panel light. If you are the kind of person who thinks it is romantic to sit in your shack listening by the light of your radio dial, you should pick up spares now.

This is the time to (carefully) boot out any dust bunnies lurking in your equipment. Dust increases the heat and can create harmful static paths.

Now let us turn to the antenna.

If you are using any form of outdoor antenna you should begin this process by going out to where you can best see your antenna installation. Having done this, find a nice soft spot and sit down. Take a long look at your skyhook. Can you see anything wrong with the way you have the antenna set up? Is there any evidence of damage from either people or the weather? Are there any obstructions or foreign objects touching your antenna? Is there anything unsafe about your antenna?

Having made this initial inspection you can also do a little dreaming. Can you get the antenna up any higher? Would changing its orientation be of any help? Is there a better place I can bring the feeds into the house?

(Photo courtesy of Bert Huneault, MT, April, 1985)

Does the shack need some renovation? Updating? Safety checks? Now may be the time to do all those little things you never get around to when DX season is hot and heavy.

Once you have made these observations, you can begin antenna maintenance in earnest.

Examine your antenna system for rusted or corroded hardware. Replace anything that is showing signs of damage. Take a good look at any soldered connections such as the lead in. If this is showing signs of corrosion, clean and resolder. Coat any new connections with some form of weather protection such as silicon sealant or coax seal.

If you are using any kind of dipole or longwire you might want to give consideration to installing a strain spring at one end to give your antenna a better chance against the winds and ice of winter. A good source for weatherproofed springs would be those springs sold for use with storm doors (the ones that install at the top of the door to keep it from blowing too far open). Such springs can be found at any hardware store.

If you are using any antennas made of aluminum tubing such as a VHF or CB vertical you must visually inspect all tubing joints and connections. Cracked and unsealed joints allow moisture and critters to enter your antenna. Moisture stored in an antenna will freeze and expand possibly causing damage. Insects and spiders that find their way into resonant traps can alter the resonant value of the trap if they build their little nests on the windings. Once again, break out the silicon sealant and make things nice and tight.

On all antennas, you will want to examine all nonconductive parts such as insulators. Most insulating materials are subject to some breakdown due to exposure to the ultraviolet radiation from the sun. Plastics become brittle and develop cracks. The outer jacket of many cables can fail due to this same process. Now is the time to repair and replace any of these items. If an insulator breaks on a cold February morning, are you gong to climb up and fix it? Don't forget to check the integrity of all cable connectors.

Do not forget to check your ground system! Is your ground stake properly installed? Are all connections solid and free from corrosion? It is rare but I have personally observed lightning during snowstorms. Beyond the level of protection that a solid ground provides it must be remembered that a good ground is also essential to good reception and transmission.

Now that we have the hardware squared away, let's go back and look at the shack. This is the best time to make any changes to your listening post. The first thing I look for when I enter someone's shack is to see if they have enough space to operate. Is there a large enough surface for the radios, accessories and the logging materials? Is there adequate light? How far is it from the refrigerator and the bathroom? Points to ponder before the DX season begins. Sometimes a little change in setting can re-energize your listening habits.

Now is the time to acquire materials for logging and QSLing so you will not need to waste precious listening time tracking down the essentials. Did you ever get halfway into a contact and realize you didn't have a pencil?

Speaking of logging, why not go through your logs of the past year and take a good look at your listening habits. Notice anything that might be improved upon? Listening smart is half the battle of the radio hobby. Take time to revel in your accomplishments, but also make a "hit list" for listening targets for the coming season. Such a list, when compared to the information provided in the pages of *MT* will point you in the direction of that rare contact.

Okay, so now everything is fixed up, spruced up, and ready to roll. Now what? Why not relax and read a good book. This would be a good time to sharpen your listening skills by reading any one of the many books published on the various aspects of the listening hobby. You might want to consider a book on some area of the listening hobby you have ignored in the past, perhaps utilities or numbers stations. Your reading might open up a whole new field of listening for you.

And don't forget, this is a good time of year to read all the catalogs that are out there touting the latest and greatest equipment. It's not too early to start making your Christmas list!

Dave Jones

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Scrambling and Codes

The Justice Department profile is continued in this issue with the completion of the highlight on FBI communications -- complete with a list of the most common words you'll hear and the ten codes -- and a technical examination of digital scrambling.

Table one lists common code words and terms utilized by the FBI in field operations. The data in table one has been confirmed. Also note that the same or similar code words and terms may and often are used by other federal agencies.

The code words and terms often directly reflect upon the topic of discussion, twisted with a bit of wit. A favorite of mine is "Rabbit" and "Rabbit Tracks." "Rabbit" refers to a subject under surveillance who is constantly on the move. "Rabbit Tracks" is utilized when the Rabbit starts moving and traversing the streets.

Ten Codes

The FBI field operations also utilize several ten codes which are listed in table two. This isn't a complete listing but rather confirmed ten codes that have been monitored. The ten codes utilized by the FBI appear to parallel those of A.P.C.O. (Associated Public Safety Communications Officers), with perhaps a few exceptions.

Going DES and DVP

The agencies of the Justice Department are in the process of converting over to digital communication systems in order to enhance the privacy of their communications. The digital systems are often referred to as D.E.S. (Digital Encryption Standard) and

Table One
Common Code Words and Terms

Big K, The	K-Mart
Bird Dog	Surveillance Aircraft
Break Off	End Surveillance; Apply distance between suspect and surveillance units.
Cave, The	Surveillance Listening Post
C.I.	Case Informant
Diaper Change	Replacing batteries in mobile trailing transmitter
Digital	Reference to digital scrambling transmission
Eden	Hired Subject
Eyeball	Surveillance subject under agent's direct view
Eyes	Starlight Nightvision Optics
F.F.	Field File
Flicks	Surveillance Films
Flyer	Surveillance Aircraft Pilot
H.T.	Handie-Talkie (Hand-held unit)
Half-Signal	Agent's Spouse
Home Front	Agent's Home Office
I, The	Interstate Highway
In the Clear	Transmit Without Scrambling
In the Pocket	Subject in surveillance net; Subject whereabouts known by agents.
L.L.	Land Line (telephone)
Main Man	Primary surveillance subject of interest
Mickey Ds	MacDonalds
Nest	Surveillance Subject's Home
Noisemaker	Mobile Trailing Transmitter
Number One Man	Primary Subject under Surveillance
O, The	Agent's Office
Out of Pocket	Suject no longer under surveillance; Subject whereabouts unknown to agents
Our Boy	Subject under Surveillance
Our Friend	Subject under Surveillance
Our Main Interest	Primary Subject under Surveillance
Our Man	Subject under Surveillance
Outside Agency	News Media
Package	Subject or object under Surveillance
Pigeon	Subject under Surveillance
Plank	A Bridge
Port	Agent's Hotel/Motel
Private	Switch to Digital Scrambling
Private Side	Switch to Digital Scrambling
R, The	Agent's Residence
Rabbit	Subject under Surveillance
Rabbit Tracks	Subject under Surveillance on the move
Redballed	Stopped at traffic light with subject
Redboarded	Stopped at traffic light, subject not stopped
R.D.O.	Regular Day Off
S.W.	Search Warrant
Signal	Field Agent
Solo	Agent alone on field assignment
Standard	Operate in the Clear
Staging Area	Area where agents group prior to surveillance or apprehension of subject(s)
Subject	Person under Surveillance
Target	Subject under Surveillance
Truck	Surveillance Aircraft
Truck Garage	Airport
U.C.	Undercover
Wagon	Surveillance Van
War Wagon	Surveillance Van
Wire	Body Transmitter
Walking the Dog	Agent following subject on foot

D.V.P. (Digital Voice Protection). A previous Federal File column presented some of the general operating characteristics of D.E.S. based systems and digital scrambling without delving into the technical realm. The following paragraphs will attempt to rectify that.

Digital Voice Protection employs two main levels to provide voice transmission security. The first level is the conversion of the analog voice into the digital domain by using Continuously Variable Slope Delta Modulation (CVSDM), an analog to digital conversion technique. The second level is achieved by the scrambling of digital conversion output from the CVSDM via a nonlinear algorithm which involves an Nth order polynominal and polynominal arithmetic.

The latter is accomplished digitally by feeding the digital conversion output into a serial register. A specific output is selected to be used as the denominator by which the input is divided. The selection of the register output determines which level (Nth implying a general order defined by a number in place of N) or order of polynominal is utilized. The resultant quotient is then transmitted as the signal content contained with the RF carrier.

At the receiving end a similar process is utilized to reconstruct the digital signal to an intelligible analog audio signal based on the knowledge of the polynominal factor utilized. The result heard by units not equipped for the digital secure transmission is the sound of random noise, much like receiver noise.

Mailbag

Monitoring Times reader James Webb provided additional information on the net he monitored on 469.600. James configured his scanner to receive the net on the stated frequency as well as on 453.800 and 458.800. Utilizing a PRO-32 indoors, he listened for traffic on 453.800 and then manually switched to the channels where 458.800 and 469.600 were programmed into his scanner. No traffic was noted on the latter two frequencies while radio traffic was present on 453.800. The PRO-32, James states, has a 10.7 MHz IF and hence the 469.600 cannot be an image within his receiver.

Bernard Himmers, Jr. of Vienna, Virginia, also provided some data on the same net. Bernard states that the net is called P-MARS and not T-MARS, as T-MARS is the net used in the Norfolk area. P-MARS is the Police Mutual Aid Radio System which operates on 453.550 in the Metro DC area. The P-MARS net tests three times a day with a different station acting as net control. The monitored frequency of 469.600, however, is still not explained -- any ideas?

mt

Table Two
Common Ten Codes

10-0	Negative
10-4	OK
10-7	Out of Service
10-8	In Service
10-9	Repeat Previous Transmission
10-16	Message Check
10-20	Location
10-21	Telephone Call
10-23	Stand By
10-28	License Plate Check
10-29	Operator's License Check
10-66	Alarm (?)
10-85	Meet with Agent . . .
10-90	Bank Robbery
10-95	Subjects apprehended, area cleared and secure

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The Multifaceted FSS

Flight Service Stations are probably the least publicized facilities within the modern FAA system, but they are just as important as the Air Traffic Control Tower and Air Traffic Control Centers.

This writer toured the Automated Flight Service Station (FSS) at Terre Haute, Indiana, and interviewed the Assistant Air Traffic Manager, William Houck. Mr. Houck graciously provided an explanation of a Flight Service Station's functions and also detailed the duties of the various Flight Service Station specialists.

MT: What exactly is the basic function, or rather functions, of an FSS?

Houck: We don't "control" traffic as do other facilities of the FAA. Our main thrust is that we deal with services. These services include preflight briefing -- and that's not just concerned with weather conditions -- but also actual flight planning. We get into NOTAMs (Notice to Airmen), which in itself is a vast job, and keep track of the functional status of all navigational aids in our area.

We also have to be knowledgeable about conditions at airports which may affect a pilot. We have to be able to answer questions and fill whatever needs a pilot may have regarding charting, flight planning, weather briefing, or any other item which a pilot may request along these lines.

Search and rescue (SAR) is another area in which we are involved. Even if a pilot hasn't filed a flight plan but is reported overdue at his destination or actually missing, we check to see if there have been any accidents reported. If airport searches fail, then a full-fledged search and rescue effort is initiated and we coordinate with SAR Headquarters at Scott AFB (Belleville, Illinois) and they work with the Civil Air Patrol and various other civilian and military agencies.

MT: Most Flight Service Stations use the 122.000-122.975 band, don't they?

Houck: Yes, except in certain cases, 123.6 has been used when in connection with an airport advisory service where provided. Also, when VORs with voice capabilities are utilized, they go by odd tenths of frequencies. Remember, too, that VORs are navaids and are found in that portion of the aeroband allocated to navaids which is from 108.000 to 117.975. Duplex frequencies are most often used, but in some instances, pilots transmit on one frequency and receive on another. We also use UHF frequencies for the military pilots.

MT: That's interesting, because I always thought that Flight Service Stations dealt only in services for General Aviation. However, just recently, I heard the pilot of a commercial airliner talking with a FSS specialist one night while listening to my scanner. He was asking for weather conditions at the airport of his destination.

Houck: Any pilot who has a radio can call a Flight Service Station and receive weather briefings -- whether he or she is military, general aviation or commercial. Most airlines have all of their flight plans stored into the ARTCC computers. However, if they make a change in a flight plan, they call us.

For instance, Delta Airlines Operations in Evansville may decide to put an extra flight on or make a change in an existing flight plan. If this happens, they call and file the change or extra flight with us, the Terre Haute Flight Service Station.

The military, such as the Air National Guard which has active units with F-4s flying out of Terre Haute and Ft. Wayne, will call us with their flight plans. We store them in the computer. When they notify us which flight plan they will be using on any particular day, we pull that plan, process and forward it for them to the appropriate ARTCC. For that matter, any military airfield which has traffic coming and going will coordinate with us because we have military flight advisory messages which we have to route to various locations for them.

MT: I didn't realize that FSS scope of operations was this extensive!

Houck: We've barely scratched the surface yet as far as explaining our various services and functions! For instance, any pilot anywhere in the United States can call an FSS and get a briefing -- no matter where they want to go, because weather and other details regarding conditions can be obtained for anywhere in the country, and for overseas locations also. The pilot doesn't even have to be in their (the particular FSS's location) area at the time they call if they know the phone number of the station in question. They can ascertain that from any directory assistance operator. It's also interesting to note that a flight plan can be filed to any ARTCC (Air Route Traffic Control Center) in the U.S. from any Flight Service Station's location, thanks to the computer system's capabilities.

MT: How many Flight Service Stations are there in the United States?

Houck: We are consolidating from just under 400 into 61 automated facilities -- such as this one -- there are presently 37 Automated Flight Service Stations that are operational. Of course, with consolidation, we have larger areas to cover; however, automation makes this consolidation of services possible. The usage of RCOs (remote communications outlets) helps also in terms of broadening our frequencies' coverage -- in regard to both the VORs which are capable of voice communications and our regular frequencies.

MT: As far as figures go, approximately how many pilots use your services -- or are briefed in one day?

Houck: On the average, anywhere from 550 to 1,000; our average is generally in the 650 to 700 range.

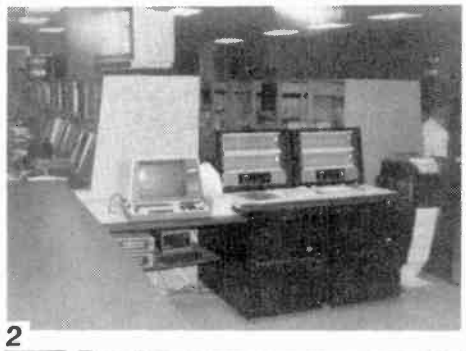
MT: Can you tell us something about the Pilot Automated Telephone Weather Advisory Service -- I think it's called something like that isn't it?

Houck: Yes, pilots can call the Flight Service Station's 800 number and press the appropriate buttons on a touch-tone phone to get recorded weather service for various parts of the state. Then by pressing another code on these buttons, they can have their call transferred to a Weather Briefer who can elaborate on the information which they've just heard. The recorded information is updated as frequently as necessary. Also, there is a complete "menu" which a pilot may access by tapping in another code, and select the service he needs at that particular moment.

MT: How many different weather radars do you use?

Houck: Two different systems. There's the FAA's RRWDS system and a commercial color weather radar type also. Incidentally, we can access many of the National Weather Service Radar sites in the U.S. and bring it up on a terminal VDS. You can see why this would be necessary if we're going to provide

1



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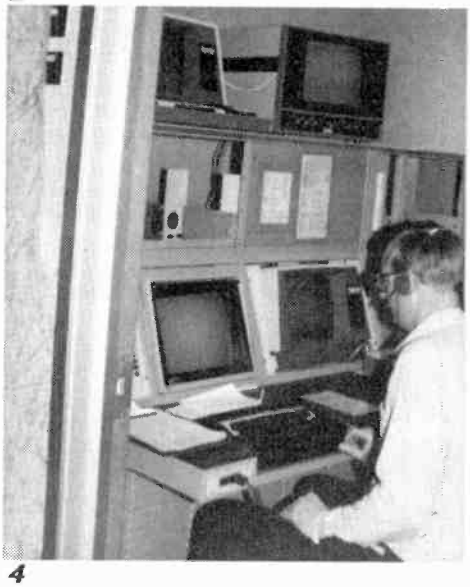

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5

1) Flight Service specialist Nancy Dene working inflight position (2) Backup weather/message computer (3) Buzz Woodcock at supervisor's position (4) PATWAS/HIWAS broadcast room, Harry Steffy (5) Enroute flight advisory service (EFAS) position. (Photos by A. Dale Spurgeon)

data for pilots' destinations, for instance.

MT: What are the actual duties of the Flight Service specialists who communicate with pilots?

Houck: This depends on which positions they are working. There are two separate types of positions for air work: the specialist working an in-flight position takes flight plans, handles all of the ensuing paper work, gives complicated briefings on weather and related information, helps orient pilots who find themselves off their route of flight or who are in unfamiliar territory; monitor VORTACs and Direction Finders (DFs), and other related duties. Each handles air/ground communications for a particular area. Preflight specialists work with pilots usually before they are in the air, including those who stop in personally.

Then there are the specialists who work the Flight Watch or EFAS position. EFAS stands for Enroute Flight Advisory Service. He -- or she as the case may be -- has to have more advanced training for this work. They handle a larger area. By that, I am referring to the same territory that the Indianapolis Air Route Traffic Control Center covers, which includes Indiana, Ohio, West Virginia, Kentucky and parts of adjacent states rather than just certain areas of Indiana.

The Flight Watch specialist's functions deal in real-time weather, PIREPS (pilot reports) from others who have flown through a particular area and have observed certain conditions that they thought should be shared with other pilots, and related duties. If a pilot wants just a briefing, rather than actual position conditions, he is turned over to a Weather Briefer.

What it boils down to is that the EFAS specialist works more often with pilots who are more concerned with the weather as it is rather than as it will be when he arrives at his destination. His counterpart at a Flight Service Station in another part of the country may cover an area which is larger or smaller depending on how large the corresponding ARTCC coverage may be.

Although we have other positions at a Flight Service Station, those two that I just described are mainly the ones the specialists work when you hear them talking with pilots on your receiver.

MT: What does the training of a Flight Service specialist consist of?

Houck: They attend the FAA Academy in Oklahoma City, just as candidates for air traffic controllers do. Training there lasts 17 weeks or more, and then they are assigned to a FSS facility where they go through more formalized classroom training. One of the subjects that they are taught is called "Area Knowledge." This covers technical subjects and geographical items such as navaid locations, radio frequencies, airport landmarks, runways, aviation weather for that location, etc. Then, a developmental (trainee) is assigned for a length of time to an on-the-job training instructor.

Regularly scheduled training continues for the developmental until they are able to be checked out on every position that's utilized in an FSS. I would expect that a very sharp student could get through training in about one year's time from when they start at the Academy until they are checked out on each position.

MT: Mr. Houck, thank you for a very in-depth look at Flight Service Stations. I hope that every reader of *Monitoring Times* can see and fully appreciate the very important services rendered by these facilities in today's world of aviation.

mt

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Knocking Down Sacred Cows

Antennas seem to fill the mind of most amateurs 24 hours a day. Indeed, they are the single most important portion of our station so it's natural to want the best we can get.

Over the years much folk-lore concerning antennas has crept into the amateur hobby. Unfortunately, much of it is dis-information -- outlandish claims -- from various antenna designers and manufacturers. Other stories just seem to spring forth. This month I'm going to knock down some of these Sacred Cows!

Amazing Gain

The gain of an antenna is a parameter that defines how well a particular antenna operates in reference to some standard unit. Now then, in every text on antennas, the standard used is the *half wave dipole antenna.* Remember that. It is very important! When a designer states that this antenna has a gain of 10 dB, he is saying that it performs ten times better than a half wave dipole antenna cut for the same frequency and located at the same height above ground.

All too often, though, the advertisement reads, "Amazing Antenna Gives 20 dB of Gain!" If the specification does not call out a half wave dipole as the reference, watch out! Chances are that the manufacturer is using some other standard so he can make inflated claims. Be very wary of ads that do not specify what the standard is!

Frequently, manufacturers of mobile whip antennas state gain in dB over a quarter wave vertical. This is okay if you remember that a quarter wave antenna exhibits *negative* gain. (By the way, negative gain is not necesarily bad).

Working Wonders with Simple Dipoles

There are of course many hams who do wonders with simple dipole and vertical antennas. In fact, about half of the DX stations you work will be using quarter wave vertical antennas and producing very good signals. The reason behind this is due to the low angle vertical radiation from such an antenna -- this is an entire topic of discussion and we will address it in a future column.

Expect gains from 3 to 8 dB over a dipole from most HF beam type antennas. VHF beams will often feature gains of over 10 dB, quite average and satisfactory for most amateurs. Higher gain can be had on both HF and VHF and all you need is money, a large sturdy tower and a lot large enough to accommodate the monster.

A difference of 1 or 2 dB is not noticeable enough to worry about, if you are concerned about size or cost. If the ideal size/priced antenna claims 5 dB over a half wave dipole and another specifies 6, go for the 5 -- you won't notice any difference.

The Dipole

The easy-to-erect dipole has graced the air space above more ham stations than all others combined. It's a good antenna, especially on the lower frequencies.

A dipole always consists of two halves fed in the center (dipole means two halves). The most common dipole is called the half wave dipole, but any antenna -- be it longer or shorter than a half wave -- is a dipole as long as it is fed in the center and there are two equal lengths on each side.

The attractive feature about the half wave dipole is that it can be fed with coax cable and presents a reasonable match to our gear most of the time. The problem with this is that if it is fed with coax, it becomes a one band antenna (it will work on odd harmonics though). You do not need to feed your dipole with coax; a much better idea is to use tuned feeders (300 or 450 ohm line) and run it to the station via an antenna matcher; now we have an all band antenna! In fact we have an all band antenna that will give us gain and directivity on the higher frequencies!

Yep, it becomes directive and gives us gain. In fact, assume an 80 meter dipole (130 ft) is used on 20 meters. The antenna will show as much gain as some small beams and show two preferred directions off the ends of the wire. It is true that most of the time there is little front to back ratio or side rejection (fact is that there are enough lobes to cover all directions without much trouble). But it is possible to use this antenna to do a very creditable job of working DX.

What's that? You say you don't have an antenna matcher? Well in that case, I suggest using parallel dipoles. This is accomplished by simply connecting several dipoles cut for specific bands to one feedline. The antennas are joined only at the feed point; the individual wires must be insulated from each other.

Ham Shack

Adam Lamb KB7DDJ at the desk of his station (nice rig, Adam), Adam's dad is Mike Lamb of AEA.

Trap Dipoles

The trap dipole became popular back in the 50's when everyone was using pi-net tuning in their transmitters and did not want to mess with an antenna matcher. These antennas do work, but for the most part they have too many shortcomings. The traps or resonators are great water and dirt catchers, often causing these antennas to fail. The traps produce large lumps on the antenna and collect ice, causing many woes among hams who use them in northern (or southern) climes.

Another feature about trap antennas that I do not like is that the antenna acts as a simple half or quarter wave antenna on each band. As a result, it is impossible to take advantage of the length of

the antenna to provide enhanced gain and directivity. This is a waste of space and wire. Far better to use the tuned feeders and antenna matcher for the average ham.

Using nothing more than wire and a handful of insulators it is possible to build a beam antenna that will outperform many commercial units.

Height Above Ground

Your antenna has to be at least a half wavelength above ground or it wont work, right? Wrong! If that were the case there would be darn few QSO's. A half wave at 80 meters is 130 feet and most of us just can't erect an antenna that high. I like a height of at least 40 feet for my low band antennas, but even that is high for some folks. Go with what you have, and enjoy hamming.

My good friend (the late W2EQZ) Charles O'Brien had a 160 meter dipole that was at most 25 feet high, he was one of the top 160 DXers in the U.S.A. and had over 100 countries confirmed on this band. In fact he often heard and worked stations that were too weak to be copied reliably at my station just 65 miles away (my antenna was a double extended Zepp at an average height of 80 feet). So don't be afraid to stretch a wire 10 or 15 feet above ground, it will work, and just might be super.

Well, gang, I hope the information presented here will help you make wise decisions about your antenna system. I am pleased to answer any questions on the subject if you include an SASE.

Volunteer Examiner Program

Johnny Johnson, W3BE, Chief of the FCC's Personal Radio Branch, has expressed concern that amateur radio examination cheating by applicants -- and in some cases by volunteer examiners -- is a growing and very expensive problem to the government. Example: John R. Volta, WB1FDY, of Centerdale, Rhode Island, received a written reprimand from the FCC for signing as a volunteer examiner at a test session at which he was not present. Volta, who was scheduled to conduct the examination but was unable to because of illness, reportedly signed the Form 610's from his hospital room to expedite their handling.

Still, Johnson, quoted in Fred Maia's *W5YI Report*, said that that the system is successful and working but that VEC's (Volunteer Examiner Coordinators) must be alert and watchful. FCC rules governing the administration of license testing provide for license revocation, fines and imprisonment against those involved in fraudulent examinations. A total of 49,728 applicants were administered 81,042 examination elements at 4,378 sessions in the VEC system last year.

Speaking of the test, *W5YI Report* also says that the Extra Class examination will change to a new updated version on November 1 of this year. The QPC is currently considering newly submitted questions to Element 2 (Novice) and 3A (Technician) examinations which will be revised and implemented on November 1, 1989.

Neat QRP Stuff

Recently I ran across a company called Oak Hills Research. They sell a very nice QRP transmitter kits and parts. Send a self-addressed, stamped envelope to P.O. Box 250, Luther, Michigan 49656 and ask for their product and price list.

During the 1987 10 meter contest AA2U while running 43 microwatts worked KJ0H. This works out to 19,965,425 miles per watt! How's that for DX?

Hello, Tokyo!

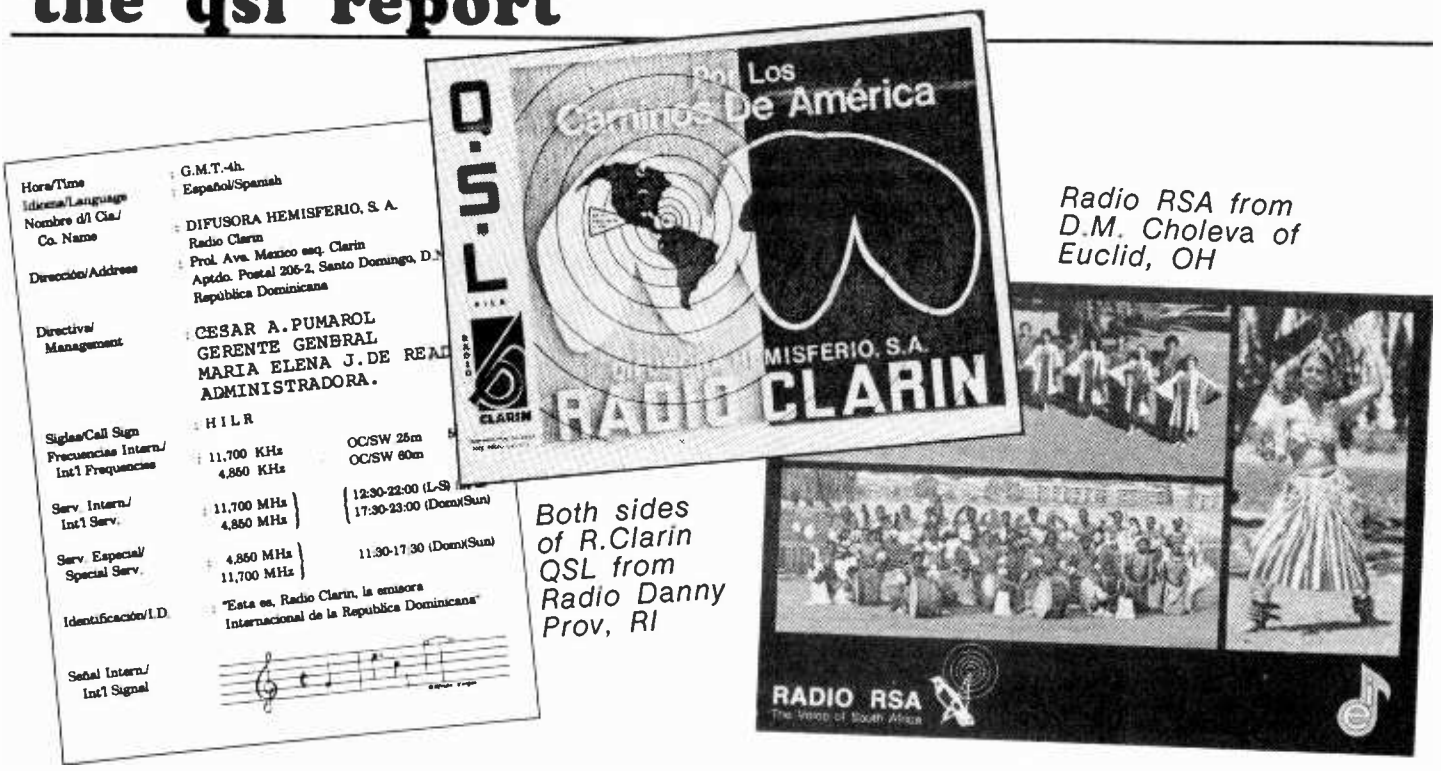
There's still time -- time to catch a plane bound for Tokyo and the Japan Amateur Radio League, Inc.'s "Ham Fair 88." The event, to be held at the Tokyo International Trade Fair in Harumi, Tokyo, will be run from August 26 to August 28. Topics planned for discussion include "The Fascination of Ionosphere Communication," "A Challenge Toward High Technology" and "First Encounter with GHz." Last year, the fair attracted some 54,000 visitors from 18 different countries.

Tuning In

Interested in hearing hams from all over the world? Medical emergencies? Situation reports from obscure countries? The IMRA -- IMRA stands for International Mission Radio Association -- net is on the air Monday through Saturday from 1830 to 2000 UTC. The frequency is 14.280 kHz. The IMRA Net handles worldwide traffic for missionaries of all denominations and does other volunteer service. Non missionaries are welcome to join in or just listen.

Finally, the Canadian Amateur Radio Federation reports that Soviet amateurs may now communicate with any country and even give out their addresses and telephone numbers on-air and on their QSL cards. That bit of *glasnost* from Fred Maia.

the qsl report



Both sides of R.Clarin QSL from Radio Danny Prov, RI

Radio RSA from D.M. Choleva of Euclid, OH

Getting the ball rolling

Australian DX News, one of the leading DX clubs in the world, recently analyzed its members' contributions on the topic of QSLs. The result was a stupendous list -- reportedly covering some 1,926 verification of stations in 159 radio countries. A representative sample of that list is reproduced below.

The purpose of such a list is to provide monitors who seek QSL cards or verifications with helpful data. For example, if you are trying to get a QSL from the Voice of the UAE in Abu Dhabi, instead of addressing your letter to simply, "The Voice of the UAE," you can look at the list, below, and find that Fawzi Salah is the person currently signing the verifications and send your request directly to him.

In other cases, you'll notice that the person receiving the QSL included mint stamps, dollar bills, IRCs or whatever along with their reception report as an incentive.

If you are a QSL collector, we'd like you to become a part of this column. It's designed to be a sort of information "swap shop." What we ned to know from you is the following: 1. Station name, 2. the name of the person who signed your QSL, 3. the station's address, 4. what kind of report you sent (English, Spanish, etc.), 5. what kind of QSL you received (letter or, if card, a brief description and/or a xerox copy), how long it took to get it (in days), and what kind of "incentive" you used.

Please send this information to Gayle Van Horn, 160 Lester Drive, Orange Park, Florida 32073. Please note: continue to send copies (or originals) of your QSL cards to Rachel Baughn, 140 Dog Branch Road, Brasstown, NC 28902. She'll have them photographed and returned to you.

Abu Dhabi: Voice of the UAE. Verification by card and letter in about 35 days by Fawzi Saleh.

Albania: Radio Tirana. Reports received anywhere between 14 and 180 days.

Angola: Radio Nacional, Luanda. English or Portuguese reception reports bring replies in 60 to 200 days from either Carlos Ferreira or Emanuel Louro.

Bangladesh: Radio Bangladesh. Verified by card between 24 and 163 days. One or two IRCs included with reception report. Card signed by Abdur Rashid.

Brazil: Radio Aparecida. Answered by card to English report between 49 and 70 days.

Burundi: Bujumbura. QSL card to a French report including 2 IRCs -- but only after a follow-up letter. Total time elapsed: 62 days. Signed by Laurent Dinkumwami.

Cameroon: Yaounde. Cards or letters signed by James Achanyi Fontem. English reports accepted but some do require follow up letters. Reports received between 28 and 730 days.

China: CPBS. Cards in 21 to 49 days.

Egypt: Radio Cairo. Olfat Shawwkat or Absarul Islam signed QSL cards in 42 to 140 days for 1 or 2 IRCs or mint stamps.

Germany: Deutsche Welle. No data QSL cards in 18 to 35 days.

Iran: Voice of the Islamic Republic of Iran. Cards in 10 to 294 days for 2 IRCs.

Irish Republic: Radio Dublin International. Card signed by Kevin O'Sullivan, Brian Edgar or Barnard Evans in 365 to 730 days after follow-up request.

Kenya: Nairobi. Letter signed by K. Takyasati for 2 IRCs in 21 to 63 days.

Marshall Island: WSZO. QSL letters signed by Peter Boon received in 21 to 28 days. Price: mint stamps or 1 or 2 IRCs.

New Zealand: Radio New Zealand. QSL cards in 11 to 35 days for 1 to 3 IRCs or mint stamps.

Oman: Radio Oman. Verification by card or letter signed by Rashid Haroon. Time: 150 to 365 days.

Romania: Radio Bucharest. Cards in 49 to 91 days.

Switzerland: Swiss Radio International. QSL card in 14 to 49 days.

Tahiti: Radio Tahiti. QSL card in 21 to 28 days for English or French receptioon report and 1 IRC.

Uganda: Radio Uganda. QSL letters in 56 to 840 days in exchange for 1 IRC. Verification signer was L.B. Lubigo.

Zambia: ZBA. Cards and letter verifying home service in 100 to 141 days. Verification signers were William Lukozu or Mwansa Kapeya.

Jack Albert

203 York Place
New Lenox, IL 60451

Boning Up

Today, it's far more difficult than it was twenty years ago to tune in RTTY signals. In spite of the growing number of RTTY stations that are found on the shortwave bands, more and more of them produce nothing but garble. The main cause of this problem is due to growing popularity of data encryption equipment. This type of gear has always been used by the military. Now-a-days, though, because it's cheap to build, embassies and other government agencies are scrambling their RTTY signals to increase security.

Even if you owned an encryption unit, you would copy nothing but gobbledygook because a special code number is needed to program it. The code number, in some cases, is hand delivered to the embassy (often on a daily basis) and entered into the encryption box. It's illegal (except for a spy) to unscramble coded signals anyway!

Another thing which makes matters worse is that there are other types of RTTY signals such as SITOR, FEC and TDM. With all of this confusion the novice RTTY listener probably wonders, how do the pros manage?

It takes many years of listening to RTTY and knowing how to tune in the various signals. Anyone, for example, can listen to an AM radio even on the SW bands. Just tune the radio until you hear a clear voice or undistorted music.

But when you tune in a RTTY signal, the only thing you hear is a strange beeping sound. Other things have to be adjusted like the speed (which is selected by the software if you are using a computer) and the shift until readable characters are displayed. Then if that doesn't work, you have to determine the proper mode (FEC TDM SITOR or ARQ) or, if the signal is reversed or scrambled. It's easy to see why some newcomers give up.

Help is available

If you are in the same boat, don't cry! There are several books available which will help you with this exciting hobby. These books are written by the pros and are very useful, even if you are a veteran listener.

The first one I recommend is the *Shortwave Directory* by Bob Grove. This book, at first glance, looks like a telephone directory, complete with yellow pages. The 260+ yellow pages contain RTTY listings which include the mode, call letters and location. The white pages contains other listings, a glossary of terms plus acronyms and other information. At $17.95, it is really a great buy and it's available from Grove Enterprises.

There is an entire collection of books on RTTY, all written and published by West German RTTY enthusiast Jeorg Klingenfuss. Jeorg, a devoted RTTY enthusiast, has a huge data base in which he collects loggings from all over the world. The *Guide to Utility Stations* has listings by frequency, call sign (including RTTY) and other important information. This book sells for $25.00 in the U.S. and is available directly from Jeorg at Hagenloher Str. 14, D-7400 Tuebingen, West Germany.

The other Klingerfuss book, *The Radioteletype Code Book*, is even useful to the pro. It has technical information on the various types of RTTY signals which are found on the SW bands.

If you are really into RTTY and if you are lucky to get your hands on one, *The Radio Teleprinter Handbook* is a good choice. This book was written in the early seventies but the current edition has information on digital teletype systems. It's great if you are into experimenting or even maintaining teletype printers, and covers, in great detail, the workings of British and American made teletype equipment. Also, technical information on RTTY Terminal equipment and my favorite subject, "discriminators and filters" are covered in great detail.

The *Teleprinter Handbook* by A.G. Hobbs G8GOJ, E.W. Yeomanson G3IIR and A.C. Gee G2UK is published by the Radio Society of Great Britain, Cranborne Rd., Potters Bar, Hertfordshire ENG 3JW.

Lastly, there is another book, also published in England, called *The Radio Hacker's Handbook*. This unusual book has information similar to that found in the *Radioteletype Code Book*, but it covers in great detail how some encryption scemes work and how to write programs to receive RTTY signals and analyze scrambled data. The *Radio Hacker's Handbook* is published by Gerald Duckworth & Co. Ltd., The Old Piano Factory, 43 Gloucester Crescent, London NW1.

RTTY News Services

Freq	Speed/Shift	Call Sign	Location and Service Time (UTC)
5097	67/425	JAB35	Tokyo, Japan: JIJI Press [English] 1200
5460	100/425	CNA7	Tangier, Morocco: VOA [English/French/Arabic] 0055
6858	67/325	—	Safat, Kuwait: KUNA [English] 1345
7456	67/850	LRO42	Buenos Aires, Argentina: NA Saporiti News [Spanish] 0130
7695	67/900	3MA26	Taipei, Taiwan: CNA [English] 1350
7950	67/425	Y2V6	Berlin, German Democratic Republic: ADN [English] 1405
8030	67/425	RRQ27	Moscow, USSR: Tass [English] 1250
8060	67/425	RAW71	Moscow, USSR: Tass [English] 1240
8140	67/425	CLN219	Havana, Cuba: Prensa Latina [English] 0700
8175	67/850	JAE58	Tokyo, Japan: KYODO [English] 1230
9133	67/425	ZAA6	Tirana, Albania: ATA [English] 0900
9227	67/425	9JT27	Safat, Kuwait: KUNA [English] 1455
9230	67/425	9KT27	Safat, Kuwait: KUNA [Arabia] 1455
9403	67/425	ISY94	Rome, Italy: ANSA [English] 1757
9950	67/425	YZF	Belgrade, Yugoslavia: TANJUG [English] 0407
10258	67/425	RDZ71	Moscow, USSR: Tass [English] 1314
10270	67/425	RKA25	Moscow, USSR: Tass [English] 1348
10518	67/425	—	Tripoli, Libya: JANA [Arabic] 1500
10650	67/425	67/425	9RL73 Kinshasa, Zaire: AZAP [French] 1835, 2222
11476	67/250	HMS79	Pyongyang, North Korea: KCNA [English] 0800
11494	67/425	SOL349	Warsaw, Poland: PAP [English] 1400
11502	67/425	LZH4	Sofia, Bulgaria: BTA [English] 1430
13524	67/425	YIO71	Baghdad, Iraq: INA [English] 1250, 1630
13728	67/325	FPN72	Paris, France: AFP [English] 1420

Ken Reitz

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Louisa, VA 23093

The Debut of Spacenet IIIR

Home dish owners recently saw Spacenet IIIR (S3) come to life at 80 W with evening programs from the Pro-Am Sports System (PASS), a regional sports programmer from Detroit.

The original S3, which was to have been in orbit in 1985, was destroyed shortly after launch due to a malfunction of the Ariane rocket on which it was riding.

This episode is an example of how critical it is to have reliable launch vehicles. With the loss of America's Space Shuttle and difficulties with Ariane, the timetable of the world's satellite telecommunications industry has been in chaos.

Luckily, Ariane's performance has improved and the Space Shuttle is almost ready for launch (look for a feature on the shuttle in one of the next issues of *Monitoring Times*) and there should be a reduction in the backlog of communications satellites awaiting lift-off.

According to Mark Long's *World Satellite Almanac*, Spacenet IIIR is designed for ten years of service. The bird features six wideband (72MHz) channels for data transmissions and twelve 36 MHz wide channels for video. All 18 channels are in the 3.7 to 4.2 GHz range. In addition S3 features six 72 MHz wide channels in the Ku Band. All six are spot beams to the eastern and western regions of the continental U.S. (Conus).

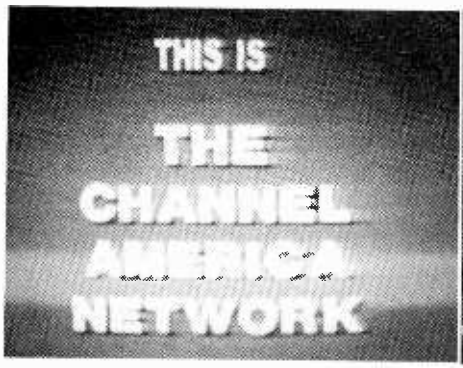
As with its sister satellites Spacenet I (120 W) launched in June, 1984 and Spacenet II (69 W) launched in November, 1984, S3 is an RCA three axis stabilized satellite with an initial weight of 1,526 pounds.

In addition to the PASS programming, FM Single Channel Per Carrier (FM/SCPC) signals can be found on transponder three. Programming here includes the Wall Street Journal News, AP Radio News, the Country Channel, and UPI Radio Network.

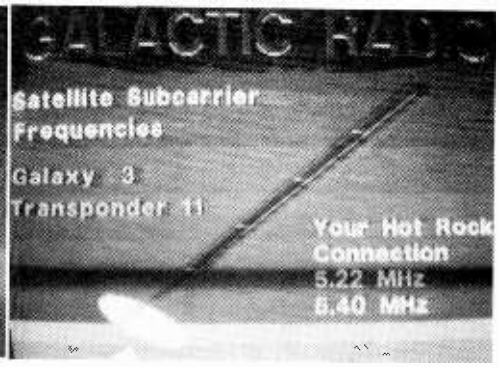
It's certain that this powerful (16 watts Ku and C wideband and 8.5 watts narrowband 4 GHz) new addition to the Clarke Belt will see a lot of activity in the next few months. Spacenet IIIR is situated between Telstar 302 and Galaxy III using the Westar polarization format.

The Channel America

We have also seen the debut of a new video channel called the Channel America. This network is said to be offering programming to a network of Low Power UHF terrestrial TV stations. During the periods when I've watched, the Channel America was issuing re-runs of old black and white TV shows. It could be a gold mine for nostalgia buffs or a crashing bore for those who aren't.



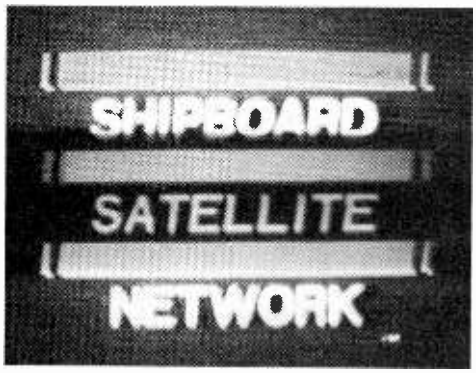
The Channel American Network billboard -- Flagship for network of low power UHF TV stations



Galactic Radio billboard -- One of several stereo audio subcarriers operated by Jones Intercable.

Shipboard Satellite Network

A service which popped up at the beginning of the year and serves what must be the most transient audience in the world is the Shipboard Satellite Network (SSN). Airing for only one hour each night on Spacenet II transponder 10, SSN usually runs the Cable News Network's *Showbiz Today* and the NBC *Evening News*. The programs are pre-recorded and air at 11:00 p.m. (ET). Interestingly, SSN substitutes the original commercials with their own. Going for the high ticket seafaring set, you can watch ads for Chivas Regal, AT&T shipboard telephone services as well as tastefully done and somewhat revealing perfume ads.



Shipboard Satellite Network billboard -- Viewing for First Class seafarers

Galactic Radio

Galactic Radio is the umbrella name given to a collection of seven audio services offered to cable companies by Jones Intercable, itself a Multiple System Operator (MSO).

The chart below will assist in tuning these services which quite handily are located on the same transponder (11) of Galaxy III. The services, except for In-Touch which is monaural, utilize the Discreet Stereo tuning mode on your receiver. Separate frequencies for each service indicate Left and Right channels.

Service	Freqs (MHz)	
Country Favorites	5.04	7.75
Adult Contemporary (album rock)	5.22	5.40
Easy Listening	5.58	5.76
Variety	5.96	6.12
Classical	6.30	6.48
New Age of Jazz	7.38	6.56
In-Touch	7.875	

All channels are narrowband and In-Touch is even narrower and perhaps harder to tune on some receivers.

These advertiser-supported services are designed for use by cable systems which, using an A-B switch in the customer's home can put these subcarriers throughout the FM band on the consumer's FM radio. Jones Intercable welcomes dish-owner's listening and suggestions for improving the services.

Back to Basics

When last we left our dish owner-to-be, he was busy hurdling obstacles placed in his path by local zoning rules and deed restrictions. Having satisfied all the local busybodies, cable snoopers and petty bureaucrats, he must now do a "site survey."

The site survey will determine where the best location will be on your property for satellite reception. This is a critical determination. A site survey may reveal that trees or buildings may interfere with reception; that your dish may be looking squarely into the jaws of a point-to-point terrestrial microwave tower; that the best site on your property is the center of your front lawn (local restrictions may take a dim view of such a placement); or that the look angle at your latitude requires that you hoist your dish atop a 20 foot steel pole. The object of a site survey is to eliminate nasty surprises. Digging a hole and planting a ten foot steel post in 300 pounds of concrete is not something you'll want to do often.

Here are some generalizations about site surveys. If you are east of the Mississippi River, you'll need an unobstructed view to the west at least 10 degrees above the horizon and to the south at least 30 degrees above the horizon. West of the big river you'll need the same degree reading only this time to the south and east.

To find out if the view is unobstructed at those angles it would be helpful to use an inclinometer (Sears sells them for about $11.00). You may improvise an inclinometer by attaching a weighted string to a protractor and sighting along the straight edge at the proper angle. Remember that deciduous trees which you may see through clearly in winter may totally block signals in summer.

Do your sighting from different parts of your property but don't stray too far. Most prepared cable packages sold with satellite TV systems are 100 feet long. Be careful to include in your measurement any runs up and down walls, around corners, underground and up to the dish. You don't want to come up short and you don't want to have excessive cable lengths which will degrade signal strength to the receiver.

The Terror of T.I.

Finally, in the site survey, it is necessary before buying a system to determine if your site is affected by terrestrial interference (T.I.). If you are within five miles of a microwave relay tower (phone companies are the usual culprits) you may expect to have many transponders seriously degraded by the interference. A dealer can determine your T.I. problems on the site by use of a feed horn attached to a spectrum analyzer which will reveal from which direction the T.I. is strongest and what frequencies are likely to be affected.

It is possible to combat T.I. but it will likely require buying special filters or modifying your installation with large screens to prevent the T.I. getting into your dish. If you have any home remedies on this subject, let me know. T.I. is probably the number one scourge of the home dish owner.

Next month in Back to Basics we'll take a close look at the components which make up a TVRO system.

Transponder Notes

Last Memorial Day I noted a channel calling itself "The Backyard Network" on S1 transponder 7. Uplinking live from someone's backyard in California, it offered a steady parade of entertainers whose talents ranged from respectable to awful. While apparently done on short notice it did feature an amusing satire on the FCC which was prerecorded.

Also noted on June 13 on NASA Select (F2, 13) there was a press briefing honoring the fifth anniversary of Pioneer 10 leaving the solar system. The briefing consisted of presentations by several NASA scientists about the Pioneer project, its journey and its future.

For SCPC experimenters: Jim Cothran of *OnSat* magazine has an updated list of SCPC services on both C and Ku Band. The list is compiled according to satellite and contains 81 services ranging from the Sun Radio Network and the Physicians Radio Network to the U.S. Naval Observatory Clock. He also has included a reprint of an article by Richard Maddox entitled "Listening Into Frequency Modulated Single Channel Per Carrier (FM/SCPC) Signals." The article, reprinted from the Satellite Retailer, February 1988 issue, and the list may be obtained by sending a SASE (business size) to: SCPC Request A, P.O. Box 2347, Shelby, NC 28151-2347. Mark the envelope to the attention of Jim Cothran.

In the gone but not forgotten department: The Cable Jazz Network, a 24 hour/day commercial free stereo service, which was found on G1, 11, has ceased operations. And the Caribbean Super Station (W5, 23), after last being seen uplinking the Superbowl in January, has unceremoniously closed their operations.

Eyes to the Sky

What have you seen and heard on your TVRO system? With 21 C Band and 10 Ku Band satellites offering literally hundreds of channels, it's hard to keep up with it all. If you've monitored unusual video or audio programming on your dish, let me know it.

Paul Swearingen

3132 SE Irvingham
Topeka, KS 66605

DXing Fun from TV to Below 540

It's probably worth mentioning that about half the households in the U.S. are hooked to cable television. Although some rural systems provide only a half dozen broadcast channels, most take programming from "the bird" or one or more satellite transmissions.

In Topeka, Kansas, I have my choice of 33 cable/broadcast channels, including two local community channels. When I lived in Los Angeles the number was over 40. More than 95 percent of U.S. households receive five or more television stations, not counting the increasing number of low-power translators and broadcast stations.

The hobbyist may find the multiple attractions of the media keeping him away from DXing. I know I tape and watch a lot of movies on cable, and when I'm DXing I tend to settle on full stereo KOMA-1520 for an in-depth treatment of nostalgia music. But *Monitoring Times* reader Harold W. Bower of Sunbury, Pennsylvania, turns a distraction into what may be the ultimate TV DX system. Let him tell the story:

> *Our [community cable] system feeds Channel 8, Lancaster, PA, to us. Lancaster signs off about 1:30 a.m. on Monday mornings. So, one morning I tune in to find that WXEX is fading in and has...a very readable picture...*

Harold did a little investigation and found that WXEX is located in Petersburg, Virginia, about 300 miles due south of Sunbury and 30 degrees west of a line to Lancaster, 60 miles away. The freak reception repeated itself again some time later.

> *...Nothing could be seen at first...After a bit, I would get lightning dots on the screen, and the picture would snap on, last for a couple of seconds, up to possibly as long as ten seconds, then fade out.*
>
> *I have discussed this with a former radio engineer for Westinghouse, an active ham, and we both have concluded that the lightning caused some ionization that reflected the signal this way.*

Harold will be monitoring other cable channels after their stations sign off, he says. Let me know what you see, Harold, and thanks for sharing your experience with us.

Not Common but Not Impossible

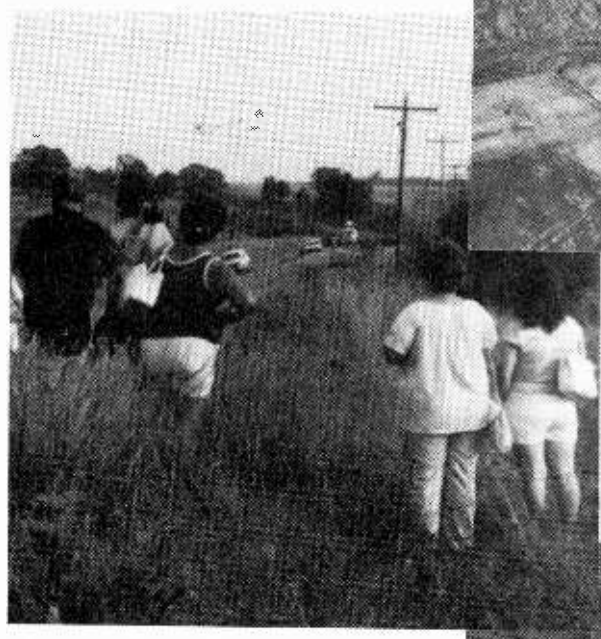
Monitoring Times' own Glenn Hauser was kind enough to point out that 1,500-mile E-skip receptions were certainly not common as I had stated. Glenn, himself a TV DXer of some renown, mentions that he hardly ever received any E-skip over 1,400 miles. He states that his studies reveal that the most common distance for E-skip on channel 2 seems to be 950 miles, with the distance increasing slightly as the channels go up. He also offers the startling discovery that highband E-skip is "probably more common than once thought."

> *During intense openings when low-band channels are nothing but QRM, the MUF (Maximum Useable Frequency) may "spike" for a few seconds or minutes, not only into channel 7 but all the way up. It's important to be looking for it on 'empty' channels with as much gain as you can muster.*

Good practice -- I know I almost never scan channels 7-13 during E-skip openings, but from now on I'll certainly do so. Glenn also would like to see recommendations from readers as to VCRs which are above average in handling low signal levels without breaking up, and in AGC, allowing them to record signals in spite of fading or interference. Some VCRs may send a perfectly readable signal to the monitor which is not picked up during recording and does not show during playback.

I've had good luck with my Sanyo 4670 Beta VCR (which has been recording programs faithfully nearly every day for the past three years). It, of course, is no longer

KTVO's crumpled tower lies adjacent to the transmitter building



Above: Residents watch network news helicopter move in.

Right: Townspeople walk trail of strewn guywire near anchor.

being made, as Sanyo switched to VHS-only manufacturing a couple of years ago. Any other recommendations from *MT* readers?

Below 540 kHz

Let's take a look at a "slice" of the domestic DX hobby which seldom receives any press, favorable or otherwise, but which may offer the last chance for DXers to hear low-powered stations over thousands of miles. The use of this spectrum has existed since Marconi's time, yet little organized DXing on this band had been done until about the last twenty years or so. I'm talking about low-band AM DX, that which you'll find below 540 kHz.

I know, I know. You've tuned your portable receiver from 150 to 290 kHz, or whatever your radio will allow you to tune. And you've heard nothing but static, a few repetitious beeping airport beacons in Morse code, and images from your local AM stations. But with a proper antenna and a receiver which tunes all of the longwave spectrum, you may start hearing quite a few things -- like some of the 6,000-plus beacons in the world.

If you live on the east coast, you could be listening to some of the European broadcast stations. And you may even be able to tune in some of the 1750 meter band experimental beacons maintained by hobbyists, some of which run 24 hours a day, seven days a week.

I've also heard what sounded similar to slow-scan television on 172 kHz, and continuous weather forecasts from several of the 100 or so Transcribed Weather Broadcast stations on the air, such as DO-359, Kansas City, MO. Longwave stations or beacons tend to be a little difficult to pinpoint on even a digital-readout receiver, and a handy reference like Ken Stryker and Joe Woodlock's *Aero/Marine Beacon Guide* (2856-G West Touhy Ave, Chicago, IL 60645) becomes a necessity.

On the other hand, anyone can learn to decode the slow Morse code IDs transmitted continuously by the beacons, and even under the worst of conditions you should be able to ID almost any beacon that you can hear. Contrast that with the likelihood of your being able to ID more than one or two stations on a graveyard AM frequency!

Most U.S. NDBs (Nondirectional Beacons) operate on all frequencies from 200-435 and 480-530 kHz, with a scattering above and below those frequencies, the majority with powers of 20-100 watts. A handful operate above the broadcast band, from 1606-1717 kHz, although these are gradually being phased out to make way for the projected mid-90s AM band expansion up to 1705 kHz.

Foreign beacons may be found in approximately the same bands, with powers somewhat higher, on the average. One of the best-known foreign beacons is RAB, located at the airport in Rabinal, Guatemala, on 1613 kHz with 1,000 watts. RAB has served as an indicator of increased southern DX possibilities for many a DXer. I can remember as far back as the late fifties cranking my 5-tube Radiola dial all the way to the right and wondering where the Morse code was coming from, not knowing at the time that I was hearing my first Central American DX!

East coast DXers might want to check the longwave frequencies for broadcast stations, such as these reported recently by Steve Bohac in Branchville, New Jersey: Algeria and West Germany on 153; Allouis, France on 162; USSR-171; Oranienburg, East Germany-177; Saarlouis, West Germany-183; BBC England-198; Algeria-200 (parallel to 153 kHz); Morocco-209; Monaco and Norway-216 (which were scheduled to shift to 218 kHz); Konstantynow, Poland-225; Luxembourg-234; Algeria-254; and Topolna, Czechoslovakia-272. Most of these were heard between 9-11 p.m. EST, and on good nights some European signals could probably be heard into the midwest.

Mike Mideke of San Simeon, California, reporting in the bulletin, *The Lowdown*, lists reception of beacons from French Polynesia, such as DHA-367, AA-332.5, and BB-384, as well as ZAM-304, Manila; KRY-175.388, Chardon, OH; and other distant longwave NDBs and experimentals. So reception of low-powered longwave signals over tremendous distances is indeed possible, and I've found longwave enthusiasts probably more deeply devoted to their hobby than any other group of DXers.

Sound interesting? Then be sure to read Joe Woodlock's new column, starting in this issue of *Monitoring Times*. Look for it and join in the fun below 540 kHz!

3 Workers Killed on Falling TV Tower

KTVO's 2000-foot TV broadcasting tower, one of the world's tallest structures, collapsed just before 10 a.m. June 2, 1988, sending three maintenance workers to their death. Residents of the small town of Kirksville, Missouri, rallied to support the emergency efforts, donating labor and earthmoving equipment to recover the bodies.

The tower, less than a year old, was undergoing a replacement of braces when the accident occurred. A local storeowner reported being told the previous day by one of the workers, employed by Structural Systems Technology of McLean, Virginia, that it was a dangerous job, but the pay was good. If he could survive for ten years, he would have enough money to retire.

(Thanks to Zel Eaton of Kirksville, MO, for the information and photos.)

Dr. John Santosuosso

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Highland City, FL 33846

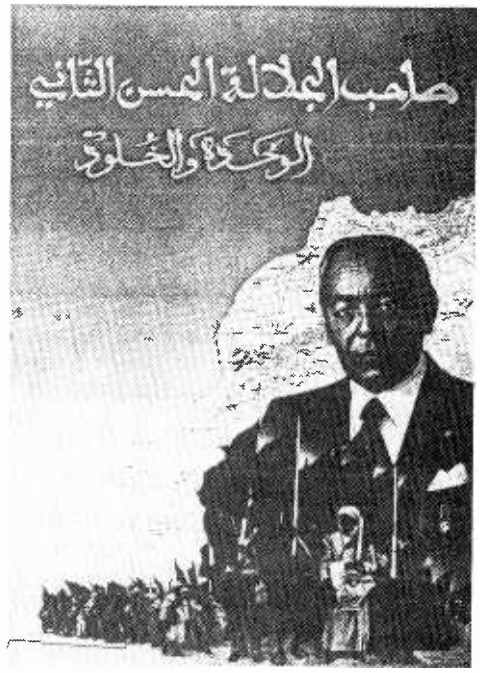
Upon the Sands of the Sahara

The Voice of the Free Sahara makes for interesting listening if you find, as I do, that clandestine monitoring provides real insight into international politics and conflicts. These Arabic broadcasts are produced by the Algerian-sponsored Polisario Front and are relayed by Algerian government transmitters. Sign-on and sign-off times may vary slightly from day to day, but you should find the Polisario Front transmissions on 15215 kHz from 2200 to 2300. A parallel transmission on 9640 is reported from time to time but has not been well heard. Although replies are rare, reception reports can be sent to Sahara Libre, B.P. 10, El-Mouradia, Alger, Algeria.

The Polisario Front was born in 1976 when Spain gave up the former African colony known as Western Sahara. Under an agreement with the Spanish, Morocco was to get the northern two-thirds of the territory, which included valuable phosphate deposits. Mauritania was granted the remaining third with its considerable iron deposits. Algeria, which also claimed the area, received nothing. In retaliation, it helped to organize the Polisario Front, which seeks independence for the sparsely populated territory.

In 1979 impoverished Mauritania gave up all efforts to subdue the rebels. It withdrew from its portion of the Western Sahara, but the Moroccans promptly marched in. While Morocco has not been able to defeat the Polisario Front either, it has been content to construct a fortified barrier to defend the areas containing mineral deposits. The rebels are allowed to control the sand dunes to the east of this defense perimeter. No permanent solution to the conflict is in sight.

Spain never had much colonial territory in Africa but most of what she did possess ultimately went to the Moroccans. The independent kingdom was born in 1956 by the merger of the former protectorates of Spanish and French Morocco. In addition to the Western Sahara, Morocco also obtained the small Spanish enclave of Ifni. She claims Ceuta and Melilla, two Spanish-controlled cities on the Moroccan Mediterranean coast.



Portrait of Moroccan King Hassan II with background map of Morocco and its Western Sahara land claims.

Abandoned customs buildings on the former border between Spanish and French Morocco.

Checking Out Sudan

Florida's Terry Krueger reports in with a log of clandestine Radio SPLA (Sudan People's Liberation Army). Signal strength was good from 1300 to 1400 on 11710 kHz and he notes that in addition to Arabic, there was some English. This writer has also had a tentative log of Radio SPLA recently.

Ethiopia is now the home of this clandestine although it originally broadcast from Libya. When the former Sudanese government was ousted in a coup, Libya's Qaddafi and the new regime made peace. The Libyan broadcasts seemed to concentrate on the efforts of the black, Christian minority in the south to break away from the dominant Arab Muslims of the north. However, since relocating in Ethiopia the emphasis has been on toppling the entire Sudanese government. Ethiopia is unhappy with its tolerance and sometimes outright support of rebels in Eritrea and Tigre provinces.

We seem to be hitting a lot of Africans this month, so we pass along some news

received from Chuck Boehnke out in Hawaii. He informs us that Pierce Communications is purchasing a new transmitter for Equatorial Guinea's government shortwave station at Malabo. This currently broadcasts on 6250 kHz with a power of 10 KW. While not impossible, it is not the easiest thing to hear either. If with the new transmitter comes an increase in power and improvement in signal quality, the situation may improve considerably.

On to Central America

An anonymous friend in Maryland writes to tell us he is hearing the anti-Sandinista station on 5889 at 0200 sign-on identifying as Radio Liberacion. He states when he heard it on 6215 at 2300 UTC, it was still occasionally using the old Radio Quince de Septiembre identification. As he notes, Contra name changes are not unusual, although Quince was around for some time.

It appears that all Contra stations are now using Radio Liberacion in some form as their ID. The medium wave outlet on 1520 identifies simply as Radio Liberacion. As our Maryland reader reports, Radio Liberacion Onda Corta (shortwave) is the usual ID on 5889 kHz. Radio Liberacion SSRN (Sistema Radial de la Resistencia Nicaraguense) appears to be the new complete ID for the service on 6215. Radio Liberacion Onda Corta announces it transmits at 0200, 1100, 1300, and 2000 UTC daily.

Protesting Pirates

John Demmitt of Pennsylvania monitored an unusual pirate broadcasting on 1600 kHz. It was coming from the Telecommunications Building of Penn State University. The broadcasters said they were going to stay there until the university president would agree to meet with them to discuss black and gay rights. The broadcast lasted for about twenty minutes, and the protestors used the theme or name of the United Minority. They claimed that 130 people were present. Demmitt says the next day the Pennsylvania State Police ended the sit-down by arresting 91. You never know what you are going to hear on the radio!

Things You Might Want to Ponder

Why is State Department CW station KKN39 on 4956 kilohertz with a marker or traffic 24 hours a day? And judging by the signal strength in the daytime here, I'll bet you the family farm this isn't located anywhere near Washington. Have you noticed the dramatic increase in numbers transmissions lately?

You might also want to take a look at the book, *Out of Control,* by Leslie Cockburn -- if you can get a copy. And if you read that book, I think you will know a lot about numbers transmissions even though the author does not mention them.

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3ème Congrès du PAIGC sous le signe de l'indépendance pour l'unité et le développement

Lire en page 10

LES TROIS PRISONNIERS ESPAGNOLS DU POLISARIO LIBERES

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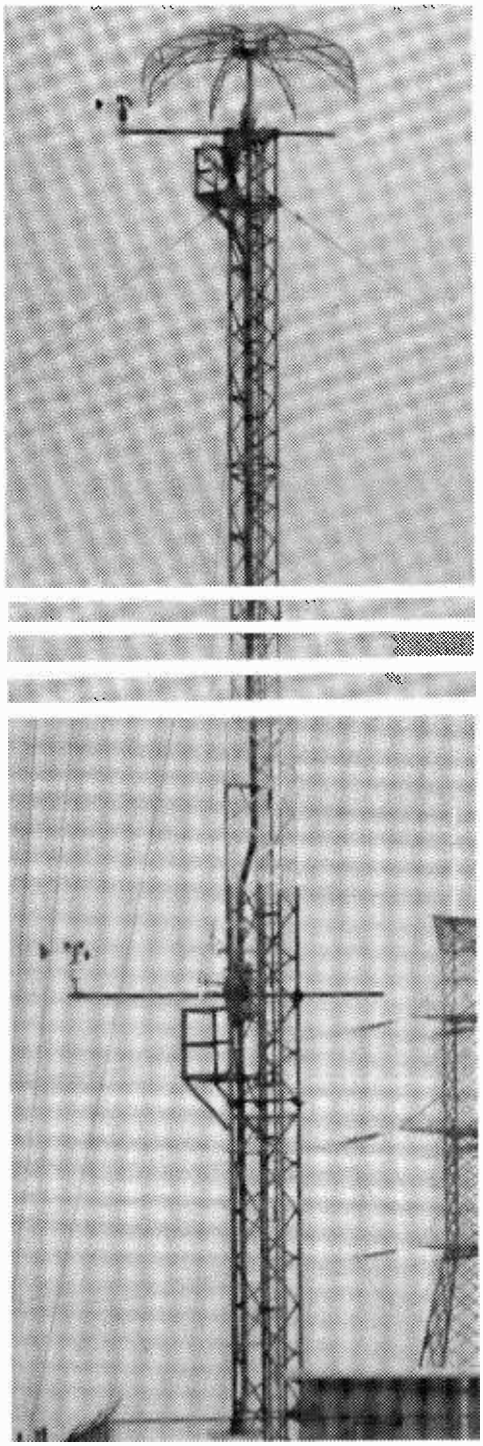
The World Below Broadcasting



If you see a ta-a-a-ll tower with a capacitance hat at the top, it may be a part of the GWEN system, back after what has been a rather quiet period. (Photo taken near Byron Hill, Illinois, by Bruce Gustafson)

Welcome to the world of low frequency or LF. This is the part of the radio spectrum *below* the broadcast band; the part that many people don't know very much about. If you are a newcomer to low frequencies, the column will try to give you some guidance about what you can or are already hearing. If you are an experienced LF DXer, the column will try to provide information that will help you in your listening.

The LF span covers from about 530 kHz down to about 10 kHz. The types of broadcasters include coastal stations sending Morse Code, aviation and marine beacons sending their IDs in code, international broadcasters from Europe, Africa, Middle East and Soviet Asia, amateurs operating their own beacons, Ground Wave Emergency Network or GWEN stations and very low frequency (VLF) military communications. As you can see, the fare is varied. Some aviation beacons also transmit weather reports in voice as well as the CW sound of their IDs.

Managing Morse

Don't let CW keep you away from low frequencies. Actually, the aviation and marine beacons may be one of the easiest ways to get your feet wet, without any danger of drowning in the sound of the Morse Code. Each beacon sends its ID over and over again. This consists of one, two or three letters (or letters and numbers), sent slowly enough to be easily heard. Just take a chart of Morse Code letters/numbers and take time to look each letter up, one at a time.

Code is easier if you sound the letters out verbally. Use "dit" for the dot and "dah" for the dash. If the dot is followed by another dot or dash, say "di" instead of "dit". For example, dot dash becomes "di-dah" when you say it aloud. That's the letter "A". Dash dot becomes "dah-dit" or the letter "N" in Morse Code. "R" is dot dash dot. This becomes "di-dah-dit". With a little practice, you will be surprised how quickly you are able to match the sounds made by the beacon and learn the ID of the beacon. And you have started learning Morse Code without hardly realizing it.

The international broadcast stations are best heard on the east coast although those on the Pacific Coast may catch some of the Asian Russians. Your chances of hearing them further inland are pretty remote. They transmit in the 150-280 kHz range.

The GWEN stations have been heard recently, after what was a fairly lengthy, rather quiet period. These send "packet radio" which requires special equipment to decipher or make sense of. With ordinary receivers, the sound can almost be described as hearing a couple of guys coughing. If you hear some unusual sounds in the 150-175 kHz area, it may well be some of the GWEN stations in operation. Information about them seems to be limited, as these are classified data.

Don't be upset if listening conditions are less than ideal. Like the broadcast band, LF peaks in the winter months. During the off-season, one polishes techniques in order to be ready when things start getting better in the early fall.

A Shift in Beacons

If you are an experienced beacon DXer, now is a good time to keep an ear on the marine beacons. In the northern part of the continent many marine beacons do not operate during the winter. And recent changes in marine beacons in the Great Lakes area and in the Pacific Northwest seem to indicate that the era of the sequenced marine beacon may be coming to an end.

Canada has indicated that they may keep the Georgian Bay beacons on 298 kHz operating in sequence for the entire 1988 boating season, delaying the switch to continuous operation and different frequencies until 1989.

The Pacific Northwest beacons have begun to shift frequencies and to be continuous rather than sequenced operation. Add in an indication that some of the sequenced Atlantic Coast beacons may shift frequency as continuous or be shut down in the future.

The purpose of these beacons is shifting from the commercial shipping to pleasure boaters. Apparently the feeling is that pleasure boaters will fare better with continuous beacons on various frequencies than with sequenced beacons on a single frequency. To the DXer this means get the sequenced beacons while you can. Tomorrow they may be gone.

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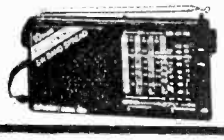

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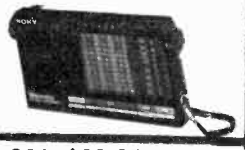

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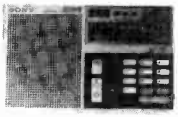

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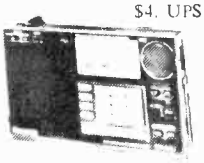

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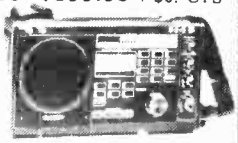

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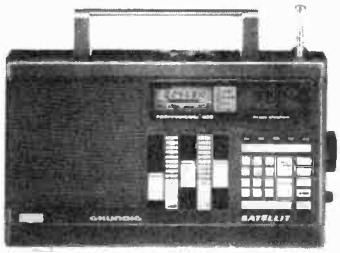

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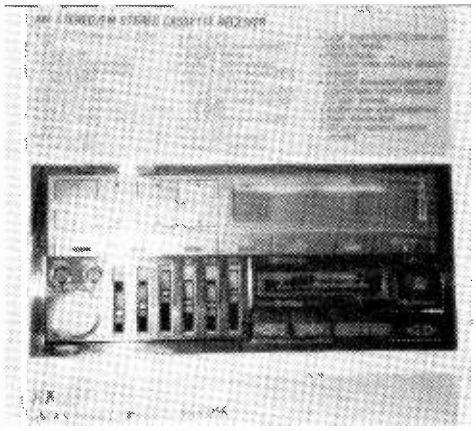
Tape Recorders and Unusual Projects



Mitsubishi's Diamond Audio car system actually features AM stereo. Motorola also displayed its C-Quam AM streo system. Technics was one of several compnies to show DAT machines (Photos by Judith Gross).

It is, they say, heaven, for people who like electronics. And this summer, almost 100,000 people turned out to see an array of gadgets, from vision phones and high-definition TV, to computer games and even stun guns at the Consumer Electronic Show in Chicago.

Not everything was limited to ultra-chic-tech and self-defense. Radio was in evidence but, as Judith Gross reports in *Radio World,* "you had to go looking for it." Gross was looking, in particular, for an all-too-rare specie of radio -- AM *stereo.*

"I found six companies actively marketing AM stereo radios at the show," says Gross. [There was] Blaupunkt, Mitsubishi, Philips, Sherwood, Bevada (Soundtech)...-and Sunkyong. Now that's out of a total of 33 companies, including car dealers, which market AM stereo radios. So who says there aren't any radios out there?"

Gross also points out that the so-called "standards war" supposedly going on between manufacturers uncertain of which AM stereo system to use, was not in evidence. "They don't even mention it. They sell AM stereo radios, period. It's obvious what system."

Miniature CB Transceiver

Midland International, the well-known manufacturer of CB radios, has announced its new model 77-099. Measuring just 4 14" wide by 1 1/4" high, it checks in at dimensions believed to be the smallest in the world for a 40 chanel mobile CB transceiver. While the unit can be used anywhere, it appears to be targeted at the "unusual uses" market -- motorcycles, snowmobiles and other recreational vehicles.

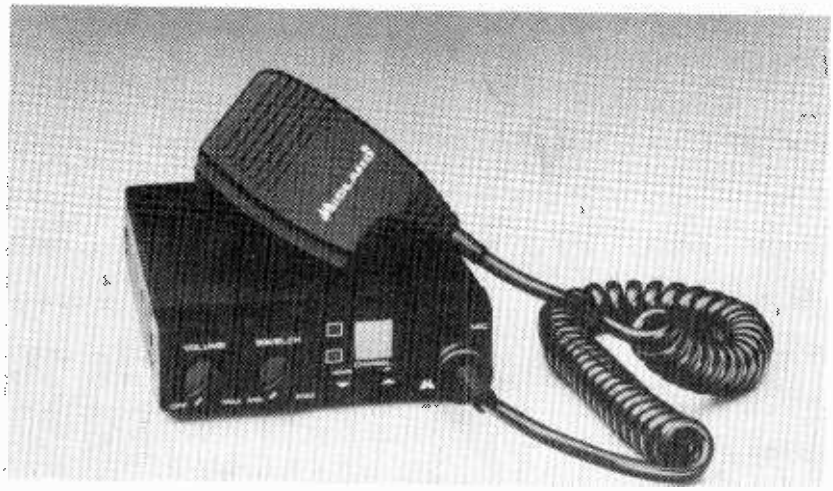
The 77-099 features ETR frequency control for pinpoint channel tuning and has separate scan up and down controls. Other features include full-time ANL to eliminate background noise, a ceramic filter for improved selectivity, enhanced modulation for outstanding "talk power." Suggested price for this new addition to Midland's line is an affordable $89.95. For more information, write to Midland International, Consumer Communications Division, 1690 North Topping, Kansas City, MO 64120 or visit your favorite radio store.

Panasonic Tape Recorders

Perfect for the Radio Hobbyist

Next to a copy of *Monitoring Times* and a good receiver and antenna, one of the most helpful tools in radio listening can be a tape recorder.

Keep a tape recorder running when



Midland's Model 77-099 Miniature CB transceiver

you're DXing. Couldn't quite catch that ID? Play it back and listen again.

Tapes also provide irrefutable proof of reception. Sure, anyone can write a reception report saying they heard "a man and woman talking followed by nice music" and probably get a QSL card. A tape, however, not only gives you a permanent record of your "catch" but can, with proper filing, be built into a personal archive of radio history.

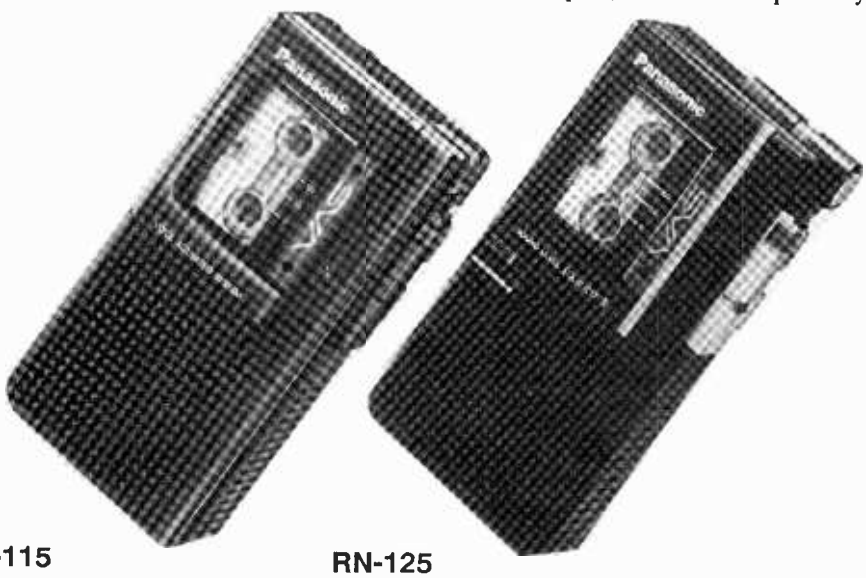
Scanner enthusiasts interested in maintaining 24 hour watch on their favorite frequencies but forced to go to work or take time off for sleep can also benefit from a tape recorder.

Panasonic's inexpensive RN-115 fits both bills perfectly with a wide range of interesting features. The '115 has a two-speed tape selector which allows longer running time without replacing the tape. Other features include one-touch recording, auto-stop, pause control, cue and review, quick review and edit functions.

There is also an LED record/battery indicator and a built-in condensor mic. Jacks are provided for DC-in, external speaker and external mic, which can, with the proper cord, be used to patch audio directly into the recorder from your radio. The unit operates on 2 "AA" batteries and retails for $59.95.

Both the '115 and the RN-125 also have a Voice Activation System, which allows the recorder to turn itself on at the first sign of audio from your radio. So, if you'd like to hear Radio Republik Indonesia's 0500 UTC broadcast but can't stay up all night for it, you can turn the radio on to the proper frequency, set the recorder nearby and go to sleep. When it signs on (and if it's audible), the sound will turn on the recorder. The next morning, get up, take a shower, and hear RRI Jakarta with breakfast. The same thing goes for scanner enthusiasts who want to catch all-night action on their scanners.

In this respect, the RN-125 is probably a bit more helpful, providing the listener with a voice activation level control. This function lets the listener determine what level of audio will activate the recorder. The RN-125 retails for $89.95. Both are available from your favorite retailer.



RN-115 **RN-125**

All kitting aside...
Information Unlimited

Roughly similar in technology to Panasonic's voice activated tape recorder but completely different in application is Information Unlimited's Automatic Telephone Recording Device. This little gizmo is placed on your (or someone else's if you want to risk jail) telephone line and is hooked to a tape recorder. Pick up the phone and it automatically turns on the tape recorder, creating a permanent record of the conversation.

About twice the size of a quarter, the manufacturers say that it's undetectable on the phone line, is easy to connect and requires no power of its own. The Automatic Telephone Recording Device is available in kit form (TAT3K) for $14.50; assembled and tested (TAT30) for $24.50.

Also available from IU is a range-adjustable (∓ three miles!) FM transmitter (plans are $8.00; the kit is $59.50.), a High Gain Antenna that the company advises "not to use on a transmitting device" because it may extend the broadcast range of an FM transmitter beyond legal limits (Assembled only for $9.50), and a truly odd-sounding "Pulsed TV Joker," a little handheld piece of equipment that utilizes "pulse techniques" to completely disrupt TV reception. Says that catalogue, "Great as a gag or barroom joke!". Yeah. A Million laughs.

The price is $39.50 assembled; $6.00 for plans. There are also 100,000 watt stun-guns, laser guns, magnetic launchers (providing ballistic values approaching that of firearms), electronic pain fields generators and more. Information Unlimited can be reached at 1-800-221-1705 or in writing at P.O. Box 716, Amherst, NH 03031. Warning: *Monitoring Times* makes no recommendations as to the legality or safety of these devices.

Special thanks to Judith Gross for her impressions of the Chicago Consumer Electronics Show. Ms. Gross is editor of Radio World, a twice monthly publication available to professional broadcasting and audiovisual equipment users. For more information, write Radio World, 5827 Columbia Pike, Suite 310, Falls Church, VA 22041.

Program Review

Key to program ratings

*****	-	outstanding
****	-	excellent
***	-	good
**	-	fair
*	-	don't waste your time

CITIZENS - ****

Last October, the BBC premiered an innovative new "radio serial." The series, *Citizens*, thereby became the first regular serial of its type to be broadcast during the same week both on the BBC World Service and on UK domestic radio. Nearly a year later, *Citizens* has become one of the World Service's most popular programs.

The series features the trials and travails of five fictional people, all just out of college and living in a big house on Limerick Road. Alex Parker (played by Kate Duchene) is a young mother, with one-year-old son William. Hugh Hamilton (James McPherson) is an intelligent, witty citizen from Scotland. Julia Brennan (Beverly Hills) is the twin sister of Mike Brennan (Russell Boulter), who in turn is very close friends with Anita Sharma (Seeta Indrani), an aspiring doctor.

This month, it's the summer holidays, and Anita and Mike plan a seaside holiday. Alex is planning a trip to Rome with her boyfriend, Jeremy Meredith -- but whatever will she do with William? And, why has Julia made no holiday plans? Finally, there is the question: whatever is Hugh doing in Barcelona?

Lest this series sound like a soap opera, it certainly isn't one. The series itself is addictive, though new listeners will have a hard time catching on to the plot, as it is much harder to match voices with people (in radio), then faces with characters (in television). Nevertheless, this show is highly recommended.

(BBC World Service, twice weekly; Tue 1130 rep 1715, Wed 0230; Thu 1130 rep 1715, Fri 0230.)

TOP PRIORITY - **

Much has been made of the reforms in the Soviet Union; perestroika and glasnost have become even more familiar than plausible deniability. And these reforms have shown up in Radio Moscow programs. An obvious example is *Perestroika* (World Service). *Moscow Mailbag*, too, with Joe Adamov (North American Service) has at times been shockingly frank, something which was unheard of even three or four years ago.

Unfortunately, *Top Priority* toes the party line a bit more. The panel discussions on "major and key events" (Radio Moscow's words) supposedly provide "unique insight." Many of the comments made are so utterly predictable that you may believe you have psychic powers by the end of the program. And with twelve repetitions of each edition of the program, there is plenty opportunity to test your foresight.

However, this is not to say that the program is worthless. Occasionally, an interesting tidbit or two of true insight do slip in. All of the editions of the program monitored for this column were hosted by Pavel Kuznetsov but the other regular host, Vladimir Posner, is more interesting. If you want to hear insights into the collective Soviet psyche, you might rather try *This Week with David Brinkley*.

(Radio Moscow North American Service, weekly; Fri 2310 rep Sat 0110, 0410, 0610, 2325, sun 0125, 0425, 0625, Tue 2310, Wed 0110, 0410, 0610.)

THE STUARTS - ****

Back in November 1985, the BBC broadcast a delightful series entitled *The Tudors*. Well, as in 1603, the rule of the Tudors gave way to the Stuart dynasty. And that is the point at which a new BBC historical series, *The Stuarts*, begins. Episodes four through six can be heard this month.

The Stuart period was perhaps the most tumultuous under the British Crown. The Civil War led to the Puritan rule of Oliver Cromwell, and then the Restoration and the return of royal rule under Charles II. The Stuarts, having regained the throne, promptly lost it again in 1688 when William and Mary took power.

This program is more than just a dry recitation of the history books, though. The presenter, Blair Worder, takes a serious look at the cultural and intellectual background which in many ways shaped the historical side of things. The writings of Milton and Bunyan and the insights of Pepys form only part of the background *which makes The Stuarts* a recommended listen.

(BBC World Service, weekly from August 14 to September 19; Sun 2330 rep Mon 0630, 1001, 1515.)

If you have comments on a particular program which you've heard on shortwave, we invite you to send them to the program reviewer at the address on page 59.

Kannon Shanmugam

The BBC's Citizens are Alex (holding William), Anita, Julia, Mike and Hugh.

Your Guide to Shortwave Listening in August

How to Use This Section

Day to Day Shortwave is your daily guide to the programs being broadcast on the international bands. Wherever possible, actual advance program details for the listed stations are included. To use this section, simply look up the day on which you are listening, check the time, and decide which program interests you. Then go to the frequency section in order to locate the frequency of the station/program on the dial.

All days are in UTC. Keep in mind that the new UTC day begins at 0000 UTC. Therefore, if you are listening to the shortwave at 8:01 PM [EDT] on your local Thursday night, that's equal to 0001 UTC and therefore *Friday* UTC.

We invite readers to submit information and reviews about their favorite programs. These must be in UTC day and time and can be sent to program manager Kannon Shanmugam.

We also invite broadcast stations to submit advance program details for publication in *Monitoring Times.* Copy deadline is the 1st of the month preceding publication [i.e. details for programs to be broadcast in September must be received at *Monitoring Times* by August 1st.] Information can be FAXed via 1-704-837-2216 and must include the following information at the top of the first page: To: Monitoring Times, Brasstown, North Carolina, USA. Phone: 1-704-837-9200.

Program Manager:
Kannon Shanmugam
4412 Turnberry Drive
Lawrence, KS 66046

Key to program ratings:

*****	-outstanding
****	-excellent
***	-good
**	-fair
*	-don't waste your time

All of this month's Radio Moscow listings are in the North American service.

Sunday

0000 British Broadcasting Corporation: World News
0000 Radio Moscow: News
0009 BBC: News About Britain
0010 Radio Moscow: Outlook
0015 BBC: Radio Newsreel
0025 Radio Moscow: People
0045 Radio Moscow: Feature
0100 BBC: News Summary
0100 Radio Moscow: News
0101 BBC: Play of the Week
0110 Radio Moscow: Moscow Mailbag
0125 Radio Moscow: Daily Talk
0130 Radio Moscow: Radio Bridge
0150 Radio Moscow: Sidelights On Soviet Life
0200 BBC: World News
0200 Radio Moscow: News
0209 BBC: British Press Review
0210 Radio Moscow: Outlook
0225 Radio Moscow: People
0230 BBC: The Ken Bruce Show (music mix and entertainment news)
0230 Radio Netherlands: World News
0235 Radio Netherlands: Newsline
0245 Radio Moscow: Feature
0250 Radio Netherlands: Over To You! (letters)
0300 BBC: World News
0300 Radio Moscow: News
0309 BBC: News About Britain
0310 Radio Moscow: Outlook
0315 BBC: From Our Own Correspondent - **** - Good in-depth news stories.
0325 Radio Moscow: People
0330 BBC: A Word In Edgeways (discussion)
0345 Radio Moscow: Feature
0400 BBC: Newsdesk
0400 Radio Moscow: News
0410 Radio Moscow: Moscow Mailbag
0425 Radio Moscow: Daily Talk
0430 Radio Moscow: Radio Bridge
0445 BBC: Reflections (religion)
0450 BBC: Financial Review
0450 Radio Moscow: Sidelights On Soviet Life
0500 BBC: World News
0500 Radio Moscow: News
0509 BBC: Twenty-Four Hours (news magazine)
0510 Radio Moscow: Outlook
0525 Radio Moscow: People
0530 BBC: The A-Z of Hollywood
0530 Radio Netherlands: World News
0535 Radio Netherlands: Newsline
0545 Radio Moscow: Feature
0550 Radio Netherlands: Over To You! (letters)
0600.BBC: Newsdesk
0600 Radio Moscow: News
0610 Radio Moscow: Moscow Mailbag
0625 Radio Moscow: Daily Talk
0630 Radio Moscow: Radio Bridge
0650 Radio Moscow: Sidelights On Soviet Life
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: From Our Own Correspondent - **** (see Sun 0315)
0745 BBC: Words
0750 BBC: Waveguide - ** - DX program geared toward neophyte listeners.
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: The Pleasure's Yours (classical music requests)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: Science In Action
1000 BBC: News Summary
1001 BBC: Short Story
1015 BBC: Classical Record Review
1030 BBC: Religious Service
1100 BBC: World News
1109 BBC: News About Britain
1115 BBC: From Our Own Correspondent - **** (see Sun 0315)
1200 BBC: News Summary
1201 BBC: Play of the Week
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Sports Roundup
1345 BBC: The Tony Myatt Request Show
1400 BBC: News Summary
1401 BBC: The Tony Myatt Request Show, continued
1430 BBC: A Word In Edgeways (discussion)
1500 BBC: Radio Newsreel
1515 BBC: Concert Hall
1600 BBC: World News
1609 BBC: News About Britain
1645 BBC: Letter From America
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Five Faces of Jazz
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Brain Of Britain 1988 - ***** - Immensely entertaining quiz show.
1830 Radio Netherlands: Happy Station (music and letters)
1900 BBC: News Summary
1901 BBC: Classical Record Review
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Sunday Half-Hour (religious feature)
2030 Radio Netherlands: Happy Station (music and letters)
2100 BBC: News Summary
2101 BBC: Short Story
2115 BBC: The Pleasure's Yours (classical music requests)
2200 BBC: World News
2200 Radio Moscow: News
2210 Radio Moscow: Outlook
2225 BBC: Book Choice
2225 Radio Moscow: Radio Bridge
2230 BBC: Financial Review
2240 BBC: Reflections (religion)

Your Guide to Shortwave Listening in August

2245 BBC: Sports Roundup
2245 Radio Moscow: Science And Engineering
2300 BBC: World News
2300 Radio Moscow: News
2309 BBC: Commentary
2310 Radio Moscow: Moscow Mailbag
2315 BBC: Letter From America
2325 Radio Moscow: Top Priority
2340 Radio Moscow: Sidelights On Soviet Life
2345 Radio Moscow: Feature

Monday

0000 BBC: World News
0000 Radio Moscow: News
0009 BBC: News About Britain
0010 Radio Moscow: Outlook
0015 BBC: Radio Newsreel
0025 Radio Moscow: Radio Bridge
0030 BBC: Religious Service
0045 Radio Moscow: Science And Engineering
0100 BBC: News Summary
0100 Radio Moscow: News
0110 Radio Moscow: Moscow Mailbag
0125 Radio Moscow: Top Priority
0140 Radio Moscow: Sidelights On Soviet Life
0200 BBC: World News
0200 Radio Moscow: News
0209 BBC: British Press Review
0210 Radio Moscow: Outlook
0215 BBC: Peebles' Choice (music)
0225 Radio Moscow: Radio Bridge
0230 BBC: Science in Action
0230 Radio Netherlands: Happy Station (music and letters)
0245 Radio Moscow: Science And Engineering
0300 BBC: World News
0300 Radio Moscow: News
0309 BBC: News About Britain
0310 Radio Moscow: Outlook
0315 BBC: Good Books - **** - Detailed opinions on specific books.
0325 Radio Moscow: Radio Bridge
0330 BBC: Anything Goes
0345 Radio Moscow: Science And Engineering
0400 BBC: Newsdesk
0400 Radio Moscow: News
0410 Radio Moscow: Moscow Mailbag
0425 Radio Moscow: Top Priority
0440 Radio Moscow: Sidelights On Soviet Life
0445 BBC: Reflections (religion)
0450 BBC: Waveguide - ** (see Sun 0750)
0500 BBC: World News
0500 Radio Moscow: News
0509 BBC: Twenty-Four Hours (news magazine)
0510 Radio Moscow: Outlook
0525 Radio Moscow: Radio Bridge
0530 BBC: Nature Notebook
0530 Radio Netherlands: Happy Station (music and letters)
0545 BBC: Recording Of The Week
0545 Radio Moscow: Science And Engineering
0600 BBC: Newsdesk
0600 Radio Moscow: News
0610 Radio Moscow: Moscow Mailbag
0625 Radio Moscow: Top Priority
0640 Radio Moscow: Sidelights On Soviet Life
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0800 BBC: World News
0809 BBC: Reflections (religion)
0830 BBC: Anything Goes (odd recordings)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: Good Books - **** (see Mon 0315)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Peebles' Choice
1000 BBC: News Summary
1030 BBC: The Vintage Chart Show
1100 BBC: World News
1109 BBC: News About Britain
1115 BBC: Health Matters
1130 BBC: The Ken Bruce Show (music mix with entertainment news)
1200 BBC: Radio Newsreel
1215 BBC: Brain Of Britain 1988 - ***** (see Sun 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Anything Goes (odd recordings)
1400 BBC: World News
1405 BBC: Outlook
1500 BBC: Radio Newsreel
1545 BBC: Classical Music Feature
1600 BBC: World News
1609 BBC: Commentary
1630 BBC: The A-Z of Hollywood
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Book Choice
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Multitrack 1: Top 20 - **** - Interesting British pop trends here.
1830 Radio Netherlands: World News
1835 Radio Netherlands: Newsline
1850 Radio Netherlands: The Research File (science)
1900 BBC: News Summary
1901 BBC: Outlook
1939 BBC: Stock Market Report
1945 BBC: Peebles' Choice
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Sports International (feature)
2030 Radio Netherlands: World News
2035 Radio Netherlands: Newsline
2050 Radio Netherlands: The Research File (science)
2100 BBC: News Summary
2101 BBC: Network UK (feature)
2130 BBC: The Vintage Chart Show
2200 BBC: World News
2200 Radio Moscow: News
2209 BBC: The World Today (news feature)
2210 Radio Moscow: Outlook
2225 BBC: Book Choice
2225 Radio Moscow: Feature
2230 BBC: Financial News
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2255 Radio Moscow: DX Program
2300 BBC: World News
2300 Radio Moscow: News
2309 BBC: Commentary
2310 Radio Moscow: Actuality
2320 Radio Moscow: Daily Talk
2325 Radio Moscow: Sidelights On Soviet Life
2330 BBC: Multitrack 1: Top 20 - **** (see Mon 1830)
2330 Radio Moscow: People

Tuesday

0000 BBC: World News
0000 Radio Moscow: News
0009 BBC: News About Britain
0010 Radio Moscow: Outlook
0015 BBC: Radio Newsreel
0030 BBC: Classical Music Feature
0055 Radio Moscow: DX Program
0100 BBC: News Summary
0100 Radio Moscow: News
0101 BBC: Outlook
0110 Radio Moscow: Actuality
0120 Radio Moscow: Daily Talk
0125 Radio Moscow: Sidelights On Soviet Life
0130 BBC: Short Story
0130 Radio Moscow: People
0145 Radio Moscow: Feature
0200 BBC: World News
0200 Radio Moscow: News
0209 BBC: British Press Review
0210 Radio Moscow: Outlook
0215 BBC: Network UK (feature)
0230 BBC: Sports International (feature)
0230 Radio Netherlands: World News
0235 Radio Netherlands: Newsline
0250 Radio Netherlands: The Research File (science)
0255 Radio Moscow: DX Program
0300 BBC: World News
0300 Radio Moscow: News
0309 BBC: News About Britain
0310 Radio Moscow: Outlook
0315 BBC: The World Today (news feature)
0325 Radio Moscow: Feature
0330 BBC: John Peel (progressive rock music)
0355 Radio Moscow: DX Program
0400 BBC: Newsdesk
0400 Radio Moscow: News

Your Guide to Shortwave Listening in August

0410 Radio Moscow: Actuality
0420 Radio Moscow: Daily Talk
0425 Radio Moscow: Sidelights On Soviet Life
0430 Radio Moscow: People
0445 BBC: Reflections (religion)
0445 Radio Moscow: Feature
0450 BBC: Financial News
0500 BBC: World News
0500 Radio Moscow: News
0509 BBC: Twenty-Four Hours (news magazine)
0510 Radio Moscow: Outlook
0530 BBC: New Ideas
0530 Radio Netherlands: World News
0535 Radio Netherlands: Newsline
0540 BBC: Turning Over New Leaves (religious books)
0545 BBC: The World Today (news feature)
0550 Radio Netherlands: The Research File (science)
0555 Radio Moscow: DX Program
0600 BBC: Newsdesk
0600 Radio Moscow: News
0610 Radio Moscow: Actuality
0620 Radio Moscow: Daily Talk
0625 Radio Moscow: Sidelights On Soviet Life
0630 Radio Moscow: People
0645 Radio Moscow: Feature
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0745 BBC: Network UK (feature)
0800 BBC: World News
0809 BBC: Reflections (religion)
0830 BBC: Classical Music Feature
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
1000 BBC: News Summary
1001 BBC: Discovery (science)
1030 BBC: Sports International (feature)
1100 BBC: World News
1109 BBC: News About Britain
1115 BBC: Waveguide - ** (see Sun 0750)
1125 BBC: Book Choice
1130 BBC: Citizens (drama serial)
1200 BBC: Radio Newsreel
1215 BBC: Multitrack 1: Top 20 - **** (see Mon 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Network UK (feature)
1345 BBC: Recording Of The Week
1400 BBC: World News
1405 BBC: Outlook
1500 BBC: Radio Newsreel
1515 BBC: A Jolly Good Show (rock music)
1600 BBC: World News
1609 BBC: News About Britain
1615 BBC: Omnibus (topical feature)
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Citizens (drama serial)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Development '88
1830 Radio Netherlands: World News
1835 Radio Netherlands: Newsline
1850 Radio Netherlands: Images (arts feature)
1900 BBC: News Summary
1901 BBC: Outlook
1939 BBC: Stock Market Report
1945 BBC: Report On Religion - **** - News on modern religion.
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Meridian (arts feature)
2030 Radio Netherlands: World News
2035 Radio Netherlands: Newsline
2050 Radio Netherlands: Images (art feature)
2100 BBC: News Summary
2110 BBC: Turning Over New Leaves (religious books)
2200 BBC: World News
2200 Radio Moscow: News
2209 BBC: The World Today (news feature)
2210 Radio Moscow: Outlook
2225 BBC: Book Choice
2225 Radio Moscow: Daily Talk
2230 BBC: Financial News
2230 Radio Moscow: Feature
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2300 BBC: World News
2300 Radio Moscow: News
2309 BBC: Commentary
2310 Radio Moscow: Top Priority
2315 BBC: Concert Hall
2325 Radio Moscow: Sidelights On Soviet Life
2330 Radio Moscow: Home In The USSR
2340 Radio Moscow: Feature

Wednesday

0000 BBC: World News
0000 Radio Moscow: News
0009 BBC: News About Britain
0010 Radio Moscow: Outlook
0015 BBC: Radio Newsreel
0025 Radio Moscow: Daily Talk
0030 BBC: Omnibus (topical feature)
0030 Radio Moscow: Feature
0100 BBC: News Summary
0100 Radio Moscow: News
0101 BBC: Outlook
0110 Radio Moscow: Top Priority
0125 Radio Moscow: Sidelights On Soviet Life
0130 BBC: Report On Religion - **** (see Tue 1945)
0130 Radio Moscow: Home In The USSR
0145 BBC: Country Style - ** - British country music?
0200 BBC: World News
0200 Radio Moscow: News
0209 BBC: British Press Review
0210 Radio Moscow: Outlook
0215 BBC: The A-Z of Hollywood
0225 Radio Moscow: Daily Talk
0230 BBC: Citizens (drama serial)
0230 Radio Moscow: Feature
0230 Radio Netherlands: World News
0235 Radio Netherlands: Newsline
0250 Radio Netherlands: Images (art feature)
0300 BBC: World News
0300 Radio Moscow: News
0309 BBC: News About Britain
0310 Radio Moscow: Outlook
0315 BBC: The World Today (news feature)
0325 Radio Moscow: Daily Talk
0330 BBC: Discovery (science)
0400 BBC: Newsdesk
0400 Radio Moscow: News
0410 Radio Moscow: Top Priority
0425 Radio Moscow: Sidelights On Soviet Life
0430 Radio Moscow: Home In The USSR
0445 BBC: Reflections (religion)
0450 BBC: Financial News
0500 BBC: World News
0500 Radio Moscow: News
0509 BBC: Twenty-Four Hours (news magazine)
0510 Radio Moscow: Outlook
0525 Radio Moscow: Daily Talk
0530 BBC: Report On Religion - **** (see Tue 1945)
0530 Radio Moscow: Feature
0530 Radio Netherlands: World News
0535 Radio Netherlands: Newsline
0545 BBC: The World Today (news feature)
0550 Radio Netherlands: Images (art feature)
0600 BBC: Newsdesk
0600 Radio Moscow: News
0610 Radio Moscow: Top Priority
0625 Radio Moscow: Sidelights On Soviet Life
0630 BBC: Meridian (arts feature)
0630 Radio Moscow: Home In The USSR
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: Development '88
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: Classical Record Review
0830 BBC: Brain Of Britain 1988 - ***** (see Sun 1830)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup

Your Guide to Shortwave Listening in August

1000 BBC: News Summary
1001 BBC: Omnibus (topical feature)
1030 BBC: A Word In Edgeways (discussion)
1100 BBC: World News
1109 BBC: News About Britain
1130 BBC: Meridian (arts feature)
1200 BBC: Radio Newsreel
1225 BBC: The Farming World
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Development '88
1400 BBC: World News
1405 BBC: Outlook
1445 BBC: Report On Religion - **** (see Tue 1945)
1500 BBC: Radio Newsreel
1600 BBC: World News
1609 BBC: News About Britain
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1730 BBC: New Ideas
1740 BBC: Book Choice
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Multitrack 2 - *** - Pop music and news.
1830 Radio Netherlands: World News
1835 Radio Netherlands: Newsline
1850 Radio Netherlands: Feature
1900 BBC: News Summary
1901 BBC: Outlook
1939 BBC: Stock Market Report
1945 BBC: Good Books - **** (see Mon 0315)
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Assignment
2030 Radio Netherlands: World News
2035 Radio Netherlands: Newsline
2050 Radio Netherlands: Feature
2100 BBC: News Summary
2101 BBC: Network UK (feature)
2145 BBC: Recording Of The Week
2200 BBC: World News
2200 Radio Moscow: News
2209 BBC: The World Today (news feature)
2210 Radio Moscow: Outlook
2225 BBC: Talks
2230 BBC: Financial News
2240 BBC: Reflections (religion)
2240 Radio Moscow: Home In The USSR
2245 BBC: Sports Roundup
2250 Radio Moscow: Feature
2300 BBC: World News
2300 Radio Moscow: News
2309 BBC: Commentary
2310 Radio Moscow: Moscow Mailbag
2315 BBC: Write On... (letters)
2325 Radio Moscow: Actuality
2330 BBC: Multitrack 2 - *** (see Wed 1830)
2330 Radio Moscow: Daily Talk
2340 Radio Moscow: Sidelights On Soviet Life
2345 Radio Moscow: Feature

Thursday

0000 BBC: World News
0000 Radio Moscow: News
0009 BBC: News About Britain
0010 Radio Moscow: Outlook
0015 BBC: Radio Newsreel
0025 Radio Moscow: Feature
0040 Radio Moscow: Home In The USSR
0100 BBC: News Summary
0100 Radio Moscow: News
0101 BBC: Outlook
0110 Radio Moscow: Moscow Mailbag
0125 Radio Moscow: Actuality
0130 BBC: Waveguide - ** (see Sun 0750)
0130 Radio Moscow: Daily Talk
0140 BBC: Book Choice
0140 Radio Moscow: Sidelights On Soviet Life
0145 Radio Moscow: Feature
0200 BBC: World News
0200 Radio Moscow: News
0209 BBC: British Press Review
0210 Radio Moscow: Outlook
0215 BBC: Network UK (feature)
0225 Radio Moscow: Feature
0230 BBC: Assignment
0230 Radio Netherlands: World News
0235 Radio Netherlands: Newsline
0240 Radio Moscow: Home In The USSR
0250 Radio Moscow: Feature
0250 Radio Netherlands: Feature
0300 BBC: World News
0300 Radio Moscow: News
0309 BBC: News About Britain
0310 Radio Moscow: Outlook
0315 BBC: The World Today (news feature)
0325 Radio Moscow: Feature
0340 Radio Moscow: Home In The USSR
0400 BBC: Newsdesk
0400 Radio Moscow: News
0410 Radio Moscow: Moscow Mailbag
0425 Radio Moscow: Actuality
0430 BBC: Classical Record Review
0430 Radio Moscow: Daily Talk
0440 Radio Moscow: Sidelights On Soviet Life
0445 BBC: Reflections (religion)
0445 Radio Moscow: Feature
0450 BBC: Financial News
0500 BBC: World News
0500 Radio Moscow: News
0509 BBC: Twenty-Four Hours (news magazine)
0510 Radio Moscow: Outlook
0525 Radio Moscow: Feature
0530 BBC: Peebles' Choice
0530 Radio Netherlands: World News
0535 Radio Netherlands: Newsline
0540 Radio Moscow: Home In The USSR
0545 BBC: The World Today (news feature)
0550 Radio Netherlands: Feature
0600 BBC: Newsdesk
0600 Radio Moscow: News
0610 Radio Moscow: Moscow Mailbag
0625 Radio Moscow: Actuality
0630 Radio Moscow: Daily Talk
0640 BBC: The Farming World
0640 Radio Moscow: Sidelights On Soviet Life
0645 Radio Moscow: Feature
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0745 BBC: Network UK (feature)
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: Country Style - ** (see Wed 0145)
0830 BBC: John Peel (progressive rock music)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
1000 BBC: News Summary
1001 BBC: Assignment
1100 BBC: World News
1109 BBC: News About Britain
1115 BBC: New Ideas
1125 BBC: Book Choice
1130 BBC: Citizens (drama serial)
1200 BBC: Radio Newsreel
1215 BBC: Multitrack 2 - *** (see Wed 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Network UK (feature)
1400 BBC: World News
1405 BBC: Outlook
1445 BBC: Write On... (letters)
1500 BBC: Radio Newsreel
1515 BBC: The Pleasure's Yours (classical music requests)
1600 BBC: World News
1609 BBC: News About Britain
1615 BBC: Assignment
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Citizens (drama serial)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Discovery (science)
1830 Radio Netherlands: World News
1835 Radio Netherlands: Newsline
1850 Radio Netherlands: Media Network - ***** - One of the best SW radio programs on the air.
1900 BBC: News Summary
1901 BBC: Outlook
1939 BBC: Stock Market Report
1945 BBC: Here's Humph!
2000 BBC: World News

Your Guide to Shortwave Listening in August

2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Meridian
2030 Radio Netherlands: World News
2035 Radio Netherlands: Newsline
2050 Radio Netherlands: Media Network - ***** (see Thu 1850)
2100 BBC: News Summary
2101 BBC: Talking From... (Northern Ireland, Scotland, Wales)
2115 BBC: A Jolly Good Show (rock music)
2200 BBC: World News
2200 Radio Moscow: News
2209 BBC: The World Today (news feature)
2210 Radio Moscow: Outlook
2225 BBC: Book Choice
2225 Radio Moscow: Feature
2230 BBC: Financial News
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2245 Radio Moscow: Science And Engineering
2300 BBC: World News
2300 Radio Moscow: News
2309 BBC: Commentary
2310 Radio Moscow: Actuality
2315 BBC: Seven Seas
2320 Radio Moscow: Daily Talk
2325 Radio Moscow: Sidelights On Soviet Life
2330 Radio Moscow: Radio Bridge
2340 BBC: The Farming World
2345 Radio Moscow: Feature

Friday

0000 BBC: World News
0000 Radio Moscow: News
0009 BBC: News About Britain
0010 Radio Moscow: Outlook
0015 BBC: Radio Newsreel
0025 Radio Moscow: Feature
0030 BBC: Music Now (modern classical music)
0045 Radio Moscow: Science And Engineering
0100 BBC: News Summary
0100 Radio Moscow: News
0101 BBC: Outlook
0110 Radio Moscow: Actuality
0120 Radio Moscow: Daily Talk
0125 Radio Moscow: Sidelights On Soviet Life
0130 Radio Moscow: Radio Bridge
0145 BBC: Talking From... (Northern Ireland, Scotland, Wales)
0200 BBC: World News
0200 Radio Moscow: News
0209 BBC: British Press Review
0210 Radio Moscow: Outlook
0215 BBC: Health Matters
0225 Radio Moscow: Feature
0230 BBC: Citizens (drama serial)
0230 Radio Netherlands: World News
0235 Radio Netherlands: Newsline
0245 Radio Moscow: Science And Engineering
0250 Radio Netherlands: Media Network - ***** (see Thu 1850)
0300 BBC: World News
0300 Radio Moscow: News
0309 BBC: News About Britain
0310 Radio Moscow: Outlook
0315 BBC: The World Today (news feature)
0325 Radio Moscow: Feature
0330 BBC: The Vintage Chart Show
0345 Radio Moscow: Science And Engineering
0400 BBC: Newsdesk
0400 Radio Moscow: News
0410 Radio Moscow: Actuality
0420 Radio Moscow: Daily Talk
0425 Radio Moscow: Sidelights On Soviet Life
0430 BBC: Country Style - ** (see Wed 0145)
0430 Radio Moscow: Radio Bridge
0445 BBC: Reflections (religion)
0450 BBC: Financial News
0500 BBC: World News
0500 Radio Moscow: News
0509 BBC: Twenty-Four Hours (news magazine)
0510 Radio Moscow: Outlook
0525 Radio Moscow: Feature
0530 Radio Netherlands: World News
0535 Radio Netherlands: Newsline
0545 BBC: The World Today (news feature)
0545 Radio Moscow: Science And Engineering
0550 Radio Netherlands: Media Network - ***** (see Thu 1850)
0600 BBC: Newsdesk
0600 Radio Moscow: News
0610 Radio Moscow: Actuality
0620 Radio Moscow: Daily Talk
0625 Radio Moscow: Sidelights On Soviet Life
0630 BBC: Meridian (arts feature)
0630 Radio Moscow: Radio Bridge
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: Write On... (letters)
0745 BBC: Seven Seas
0800 BBC: World News
0809 BBC: Reflections (religion)
0830 BBC: Music Now (modern classical music)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
1000 BBC: News Summary
1015 BBC: Seven Seas
1030 BBC: Five Faces of Jazz
1100 BBC: World News
1109 BBC: News About Britain
1115 BBC: Talking From... (Northern Ireland, Scotland, Wales)
1130 BBC: Meridian (arts feature)
1200 BBC: Radio Newsreel
1215 BBC: Europe's World
1230 BBC: Business Matters
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: John Peel (progressive rock music)
1400 BBC: World News
1405 BBC: Outlook
1445 BBC: Nature Notebook
1500 BBC: Radio Newsreel
1600 BBC: World News
1609 BBC: News About Britain
1615 BBC: Science In Action
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Music Now (modern classical music)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 Radio Netherlands: World News
1830 BBC: Multitrack 3 - **** - Sarah Ward presents innovative rock music.
1835 Radio Netherlands: Newsline
1850 Radio Netherlands: Rembrandt Express (magazine)
1900 BBC: News Summary
1901 BBC: Outlook
1939 BBC: Stock Market Report
1945 BBC: Personal View

Your Guide to Shortwave Listening in August

2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 Radio Netherlands: World News
2030 BBC: Science In Action
2035 Radio Netherlands: Newsline
2050 Radio Netherlands: Rembrandt Express (magazine)
2100 BBC: News Summary
2101 BBC: Network UK (feature)
2115 BBC: Europe's World
2130 BBC: Business Matters
2200 BBC: World News
2200 Radio Moscow: News
2209 BBC: The World Today (news feature)
2210 Radio Moscow: Outlook
2225 Radio Moscow: Daily Talk
2230 BBC: Financial News
2230 Radio Moscow: Feature
2240 BBC: Reflections (religion)
2240 Radio Moscow: Home In The USSR
2245 BBC: Sports Roundup
2250 Radio Moscow: Feature
2300 BBC: World News
2300 Radio Moscow: News
2309 BBC: Commentary
2310 Radio Moscow: Top Priority
2315 BBC: From The Weeklies (press review)
2325 Radio Moscow: Sidelights On Soviet Life
2330 BBC: Multitrack 3 - **** (see Fri 1830)
2330 Radio Moscow: Feature
2345 Radio Moscow: Science And Engineering

Saturday

0000 BBC: World News
0000 Radio Moscow: News
0009 BBC: News About Britain
0010 Radio Moscow: Outlook
0015 BBC: Radio Newsreel
0025 Radio Moscow: Daily Talk
0030 BBC: Personal View
0030 Radio Moscow: Feature
0040 Radio Moscow: Home In The USSR
0045 BBC: Recording of the Week
0050 Radio Moscow: Feature
0100 BBC: News Summary
0100 Radio Moscow: News
0101 BBC: Outlook
0110 Radio Moscow: Top Priority
0125 Radio Moscow: Sidelights On Soviet Life
0130 Radio Moscow: Feature
0145 BBC: Nature Notebook
0145 Radio Moscow: Science And Engineering
0200 BBC: World News
0200 Radio Moscow: News
0209 BBC: Commentary
0210 Radio Moscow: Outlook
0215 BBC: Network UK (feature)
0225 Radio Moscow: Daily Talk
0230 BBC: People And Politics
0230 Radio Moscow: Feature
0230 Radio Netherlands: World News
0235 Radio Netherlands: Newsline
0240 Radio Moscow: Home In The USSR
0250 Radio Netherlands: Rembrandt Express (magazine)
0300 BBC: World News
0300 Radio Moscow: News
0309 BBC: News About Britain
0310 Radio Moscow: Outlook
0315 BBC: The World Today (news feature)
0325 Radio Moscow: Daily Talk
0330 BBC: Europe's World
0330 Radio Moscow: Feature
0340 Radio Moscow: Home In The USSR
0345 BBC: Business Matters
0400 BBC: Newsdesk
0400 Radio Moscow: News
0410 Radio Moscow: Top Priority
0425 Radio Moscow: Sidelights On Soviet Life
0430 BBC: Here's Humph!
0430 Radio Moscow: Feature
0445 BBC: Reflections (religion)
0445 Radio Moscow: Science And Engineering
0450 BBC: Financial News
0500 BBC: World News
0500 Radio Moscow: News
0509 BBC: Twenty-Four Hours (news magazine)
0510 Radio Moscow: Outlook
0525 Radio Moscow: Daily Talk
0530 BBC: Personal View
0530 Radio Moscow: Feature
0530 Radio Netherlands: World News
0535 Radio Netherlands: Newsline
0540 Radio Moscow: Home In The USSR
0545 BBC: The World Today (news feature)
0550 Radio Netherlands: Rembrandt Express (magazine)
0600 BBC: Newsdesk
0600 Radio Moscow: News
0610 Radio Moscow: Top Priority
0625 Radio Moscow: Sidelights On Soviet Life
0630 BBC: Meridian (arts feature)
0630 Radio Moscow: Feature
0645 Radio Moscow: Science And Engineering
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: From The Weeklies (press review)
0745 BBC: Network UK (feature)
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: A Jolly Good Show (rock music)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Personal View
1000 BBC: News Summary
1001 BBC: Here's Humph!
1015 BBC: Letter From America
1030 BBC: People And Politics
1100 BBC: World News
1109 BBC: News About Britain
1115 BBC: The A-Z of Hollywood
1130 BBC: Meridian (arts feature)
1200 BBC: Radio Newsreel
1215 BBC: Multitrack 3 - **** (see Fri 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Network UK (feature)
1345 BBC: Sportsworld
1400 BBC: News Summary
1401 BBC: Sportsworld
1500 BBC: Radio Newsreel
1515 BBC: Sportsworld
1600 BBC: World News
1609 BBC: News About Britain
1615 BBC: Sportsworld
1700 BBC: World News
1709 BBC: Words
1715 BBC: The Ken Bruce Show (music mix with entertainment news)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Music Series
1830 Radio Netherlands: World News
1835 Radio Netherlands: Newsline
1850 Radio Netherlands: Over To You! (letters)
1900 BBC: News Summary
1901 BBC: Play Of The Week
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Meridian (arts feature)
2030 Radio Netherlands: World News
2035 Radio Netherlands: Newsline
2050 Radio Netherlands: Over To You! (letters)
2100 BBC: News Summary
2115 BBC: Classical Music Feature
2130 BBC: People And Politics
2200 BBC: World News
2200 Radio Moscow: News
2209 BBC: From Our Own Correspondent - **** (see Sun 0315)
2210 Radio Moscow: Outlook
2225 BBC: Nature Notebook
2225 Radio Moscow: People
2230 BBC: New Ideas
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2245 Radio Moscow: Feature
2300 BBC: World News
2300 Radio Moscow: News
2309 BBC: Words
2310 Radio Moscow: Moscow Mailbag
2315 BBC: The Tony Myatt Request Show
2325 Radio Moscow: Daily Talk
2330 Radio Moscow: Radio Bridge
2350 Radio Moscow: Sidelights On Soviet Life

frequency SECTION

MT Monitoring Team

EAST COAST:

Greg Jordan, Frequency Manager

1855-I Franciscan Terrace
Winston-Salem, NC 27127

Joe Hanlon, PA

WEST COAST:

Bill Brinkley, CA

Dave Kammler, CA

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0015		Voice of Kampuchea, Phnom-Penh	9693	11938		
0000-0030		BBC, London, England	5975	6005	6175	7325
			9515	9580	9590	9915
			12095	11955		
0000-0030		Kol Israel, Jerusalem	9435	11605	12080	
0000-0030		Radio Berlin Int'l, East Germany	6080	9730		
0000-0030		Radio Korea, Seoul, South Korea	15575			
0000-0030	M	Radio Norway Int'l, Oslo	9620	11840		
0000-0030	S,M	WINB, Red Lion, Pennsylvania	15145			
0000-0050		Radio Pyongyang, North Korea	15115	15160		
0000-0055		Radio Beijing, PR China	9770	11715	15455	
0000-0100		(US) Armed Forces Radio and TV	6030	11790	15345	
0000-0100		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0000-0100		CBC Northern Quebec Service	6195	9625		
0000-0100		CBN, St. John's, Newfoundland	6160			
0000-0100		CBU, Vancouver, British Colombia	6160			
0000-0100		CFCF, Montreal, Quebec	6005			
0000-0100		CFCN, Calgary, Alberta	6030			
0000-0100		CHNS, Halifax, Nova Scotia	6130			
0000-0100		CKWX, Vancouver, British Colombia	6080			
0000-0100		CFRB, Toronto, Ontario	6070			
0000-0100		FEBC, Manila, Philippines	15445			
0000-0100		(US) Far East Network, Tokyo	3910			
0000-0100		KSDA, Guam	15125			
0000-0100	T-A	KVOH, Rancho Simi, California	9495			
0000-0100		KYOI, Saipan	15405			
0000-0100		Radio Australia, Melbourne	15140	15160	15240	15320
			15395	17750	17795	
0000-0100		Radio Baghdad, Iraq	11775	11810		
0000-0100	S,M	Radio Canada Int'l, Montreal	5960	9755		
0000-0100		Radio Havana Cuba	9655			
0000-0100		Radio Luxembourg	6090			
0000-0100		Radio Moscow, USSR	9530	9600	9610	9700
			9765	9865	11710	11750
			11780	12060	15245	15425
0000-0100		Radio Moscow World Service	17570	17635	17740	17850
			17860			
0000-0100		Radio New Zealand, Wellington	15150	17705		
0000-0100		Radio for Peace, Costa Rica	7375v			
0000-0100		Radio Thailand, Bangkok	9655	11905		
0000-0100		SBC Radio One, Singapore	5010	5052	11940	
0000-0100		Spanish Foreign Radio, Madrid	9630	11880		
0000-0100	T-S	Superpower KUSW, Utah	15580			
0000-0100		Voice of America, Washington	5995	6130	9455	9775
			9815	11580	11695	11740
			15205			
0000-0100	T-A	Voice of Nicaragua, Managua	6100			
0000-0100		WCSN, Boston, Massachusetts	9852.5			
0000-0100		WHRI, Noblesville, Indiana	7400	9495		
0000-0100		WRNO New Orleans, Louisiana	7355			
0000-0100		WYFR, Oakland, California	5950	6085	9680	
0000-0100	T-A	WYFR Satellite Net, California	9505			
0030-0045		BBC, London, England*	6195	7235	9570	11820
			15435			
0030-0100		BBC, London, England	5965	5975	6005	6120
			6175	7135	7325	9515
			9580	9915	9590	11955
			12095	15435		
0030-0100		HCJB, Quito, Ecuador	9720	11775	11910	15155
0030-0100		Radio Austria Int'l, Vienna	9875			
0030-0100		Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0030-0100		SLBC, Colombo, Sri Lanka	6005	9720		
0030-0100		WINB, Red Lion, Pennsylvania	15145			
0035-0040		All India Radio, New Delhi	3925	4860		

LEGEND

- The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- In the space between the end time and the station name is the broadcast schedule.

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

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

- [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- The last entry on a line is the frequency. Codes here include "SSB" which indicates a Single Sideband transmission, and "V" for a frequency that varies. [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- v after a frequency indicates that it varies
- Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (the are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

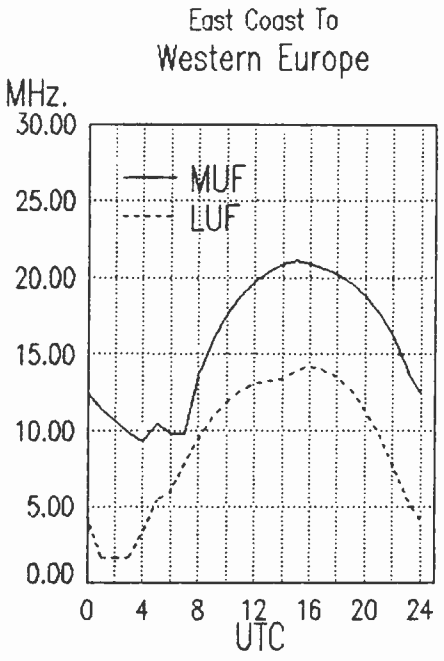
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

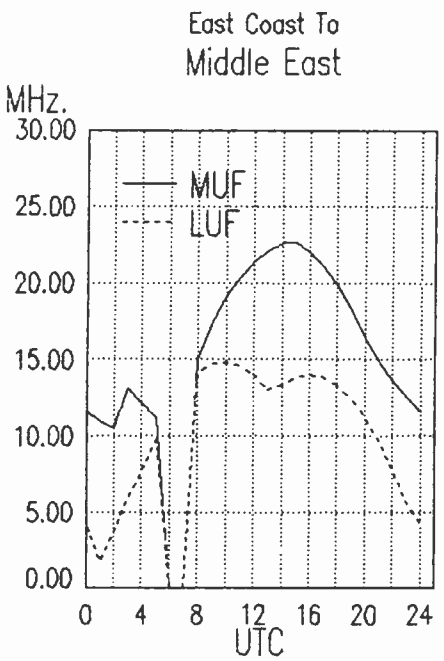
frequency SECTION

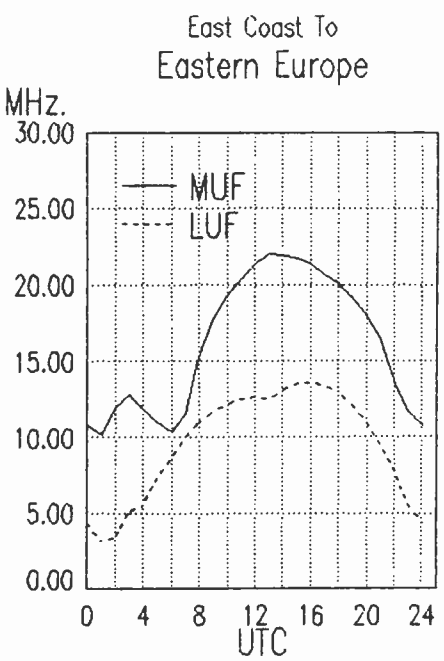
0045-0100	A	Radio New Zealand, Wellington	15150	17705		
0050-0100		Vatican Radio, Vatican City	6150	9605	11780	

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0103	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0100-0110		Vatican Radio, Vatican City	6150	9605	11780	
0100-0115		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0100-0120		RAI, Rome, Italy	9575	11800		
0100-0125		Kol Israel, Jerusalem	9435	11605	12080	
0100-0130	W,A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0100-0130		Radio Japan, Tokyo	15280	17810	17835	17845
0100-0130		Laotian National Radio	7113v			
0100-0145		Radio Berlin Int'l, E. Germany	6080	9620	9730	11785
0100-0150		Deutsche Welle, West Germany	6040	6085	6145	9565
			9735	11865		
0100-0150		Radio Baghad, Iraq	11775	11810		
0100-0155		Radio Austria Int'l, Vienna	9875			
0100-0200		(US) Armed Forces Radio and TV	6030	11790	15345	
0100-0200		BBC, London, England	5975	6005	6120	6175
			7325	9515	9590	9915
			9975			
0100-0200		CBC Northern Quebec Service	6195	9625		
0100-0200		CBN, St. John's, Newfoundland	6160			
0100-0200		CBU, Vancouver, British Colombia	6160			
0100-0200		CFCF, Montreal, Quebec	6005			
0100-0200		CFCN, Calgary, Alberta	6030			
0100-0200		CHNS, Halifax, Nova Scotia	6130			
0100-0200		CKWX, Vancouver, British Colombia	6080			
0100-0200		CFRB, Toronto, Ontario	6070			
0100-0200		(US) Far East Network, Tokyo	3910			
0100-0200		FEBC, Manila, Philippines	15445			
0100-0200		HCJB, Quito, Ecuador	9720	11775	15115	
0100-0200	T-A	KVOH, Rancho Simi, California	17775			
0100-0200		KYOI, Saipan	15405			
0100-0200		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17795	
			17750			
0100-0200		Radio Canada Int'l, Montreal	9735	9755	11845	11940
0100-0200		Radio Havana Cuba	9655			
0100-0200		Radio Japan, Tokyo	5960	11815	17810	
0100-0200		Radio Luxembourg	6090			
0100-0200		Radio Moscow, USSR	9530	9600	9610	9700
			9765	9865	11710	11750
			11780	11860	12060	15245
			15425	15455		
0100-0200		Radio Moscow World Service	17570	17675	17685	17740
			17850	17860	17880	
0100-0200		Radio New Zealand, Wellington	12045	15150		
0100-0200		Radio for Peace, Costa Rica	7375			
0100-0200		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9630	9740	11990	
0100-0200		Radio Thailand, Bangkok	9655	11905		
0100-0200		SBC Radio One, Singapore	5010	5052	11940	
0100-0200		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0100-0200		Spanish Foreign Radio, Madrid	9630	11880		
0100-0200	T-S	Superpower KUSW, Utah	11695			
0100-0200		Voice of America, Washington	5995	6130	7205	9455
			9775	9815	11580	11740
			15160	15205	17735	
0100-0200		Voice of Indonesia, Jakarta	9680	11790		
0100-0200		WCSN, Boston, Massachusetts	9852.5			
0100-0200		WINB, Red Lion, Pennsylvania	15145			
0100-0200		WHRI, Noblesville, Indiana	7400	9495		
0100-0200		WRNO, New Orleans, Louisiana	7355			
0100-0200		WYFR, Oakland, California	5950	7440	9680	
0100-0200	T-S	WYFR Satellite Net, California	9505			
0130-0140	T-S	Voice of Greece, Athens	7430	9420	11645	
0130-0145	TWFS	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0130-0155	S	Radio Austria Int'l, Vienna	9875			
0130-0200		Radio Veritas Asia, Philippines	15330	15365		
0145-0200		Radio Berlin Int'l, E. Germany	6080	9620	9730	11785
0145-0200		Radio Korea, Seoul, South Korea	7275	15375		





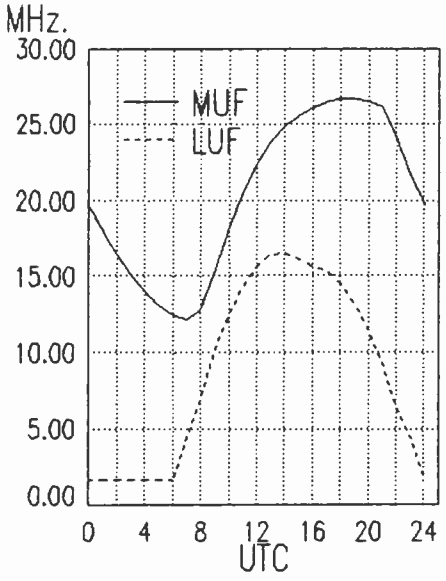


frequency SECTION

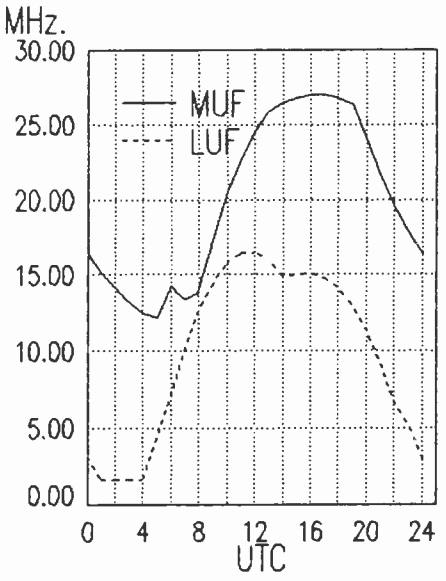
0200 UTC [10:00 PM EDT/7:00 PM PDT]

0200-0215		Vatican Radio, Vatican City	7125	9650		
0200-0230		BBC, London, England	5975	6005	6175	7325
			9410	9515	9590	9915
0200-0230		Burma Bcasting Service, Rangoon	7185			
0200-0230	S	Radio Austria Int'l, Vienna	9875			
0200-0230		Radio Berlin Int'l, E. Germany	6080	9620	9730	11785
0200-0230		Radio Kiev, Ukrainian SSR	9640	9800	11790	13645
			15180	15455		
0200-0230		Swiss Radio Int'l, Berne	5965	6135	9725	9885
			12035			
0200-0230		WINB, Red Lion, Pennsylvania	15145			
0200-0250		Deutsche Welle, West Germany	6035	7285	9690	11945
0200-0250		Radio Bras, Brasilia, Brazil	11745v			
0200-0255		Radio Bucharest, Romania	5990	6155	9510	9570
			11810	11940		
0200-0255		RAE, Buenos Aires, Argentina	9690	11710		
0200-0300		(US) Armed Forces Radio and TV	6030	11790	15345	
0200-0300		CBC Northern Quebec Service	6195	9625		
0200-0300		CBN, St. John's, Newfoundland	6160			
0200-0300		CBU, Vancouver, British Colombia	6160			
0200-0300		CFCF, Montreal, Quebec	6005			
0200-0300		CFCN, Calgary, Alberta	6030			
0200-0300		CFRB, Toronto, Ontario	6070			
0200-0300		CHNS, Halifax, Nova Scotia	6130			
0200-0300		CKWX, Vancouver, British Colombia	6080			
0200-0300		(US) Far East Network, Tokyo	3910			
0200-0300		HCJB, Quito, Ecuador	9720	11775	15155	
0200-0300	T-A	KVOH, Rancho Simi, California	17775			
0200-0300		KSDA, Guam	17865			
0200-0300		Radio Australia, Melbourne	15180	15240	15320	17715
			17750	17795		
0200-0300		Radio Cairo, Egypt	9475	9675		
0200-0300		Radio Havana Cuba	6140			
0200-0300		Radio Korea (South), Seoul	7275	15575		
0200-0300		Radio Luxembourg	6090			
0200-0300		Radio Moscow, USSR	9530	9600	9610	
			9765	9700	9865	11710
			11750	12060	15245	15425
			15455			
0200-0300		Radio Moscow World Service, USSR	17570	17740	17600	17675
			17685	17850	17860	17880
0200-0300		Radio Orion, South Africa	3955			
0200-0300		Radio for Peace, Costa Rica	7375v			
0200-0300	A	Radio New Zealand, Wellington	15150	17705		
0200-0300		Radio Polonia, Warsaw, Poland	6095	6135	7145	7270
			9525	11815	15120	
0200-0300		Radio RSA, South Africa	6010	9580	9615	
0200-0300		Radio Thailand, Bangkok	9655	11905		
0200-0300		SBC Radio One, Singapore	5010	5052	11940	
0200-0300		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0200-0300	T-S	Superpower KUSW, Utah	11695			
0200-0300		Voice of America, Washington	5995	7205	9650	9775
			9815	11580	11745	15205
0200-0300		Voice of Asia, Taiwan	7285			
0200-0300		Voice of Free China, Taiwan	5985	7445	9680	11740
			11860	15345		
0200-0300		Voice of Kenya, Nairobi	6045			
0200-0300		WCSN, Boston, Massachusetts	9852.5			
0200-0300		WHRI, Noblesville, Indiana	7400	9495		
0200-0300		WRNO, New Orleans, Louisiana	7355			
0200-0300		WYFR, Oakland, California	5950			
0200-0300		WYFR Satellite Net, California	9505			
0215-0220		Radio Nepal, Kathmandu	5005	7165		
0230-0240		Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0230-0245		Radio Pakistan, Islamabad	7010	11570	15115	15580
			17660			
0230-0300		BBC, London, England	5975	6005	6175	7325
			9410	9515	9660	9845
			9915	11955		
0230-0300		Radio Finland, Helsinki	9635	11945		
0230-0300		Radio Netherland, Hilversum	6020	6165	9590	9895
0230-0300	T-A	Radio Portugal, Lisbon	6060	9600	9635	9680
			9705			

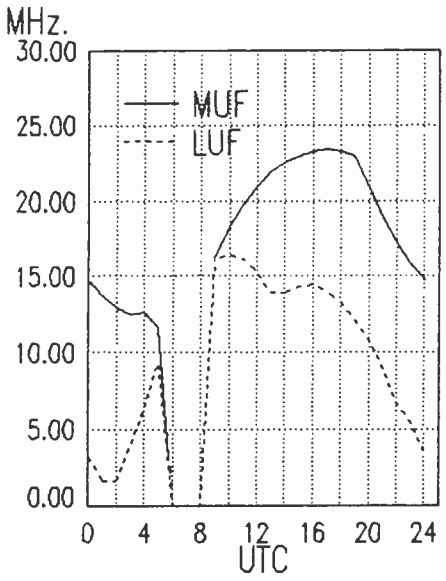
East Coast To West Africa



East Coast To Central Africa



East Coast To East Africa



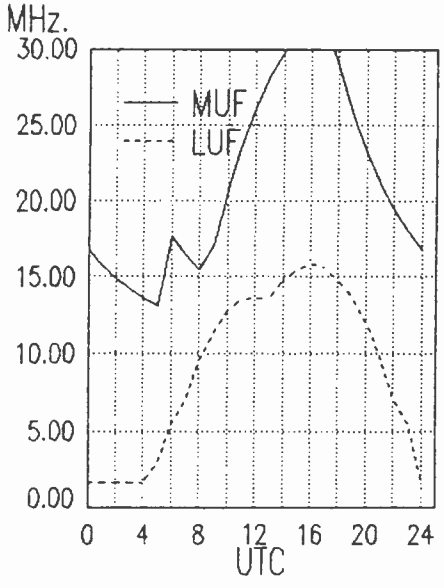
frequency SECTION

0230-0300		Radio Sweden, Stockholm	9695			
0230-0300		Radio Tirana, Albania	7065	9760		
0230-0300	S,M	WINB, Red Lion, Pennsylvania	15145			
0240-0250		All India Radio, New Delhi	3905	4860	4880	4895
			5960	5990	6110	6120
			7195	7295	9550	9610
			11830	11870	15305	
0250-0300		Radio Yerevan, Armenian SSR	11790	13645	15180	

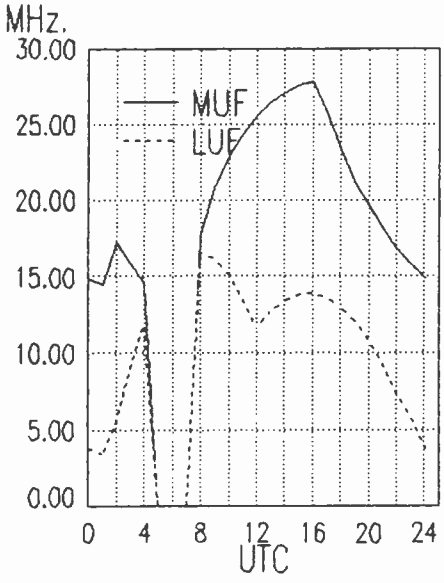
0300 UTC [11:00 PM EDT/8:00 PM PDT]

0300-0307		Radio Pakistan, Islamabad	5090	5930	7095	
0300-0310		CBC Northern Quebec Service	6195	9625		
0300-0325		Radio Netherland, Hilversum	6020	6165	9590	9895
0300-0330		BBC, London, England	3955	5975	6005	6155
			6175	6195	7325	9410
			9515	9660	9915	12095
0300-0330		Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0300-0330		Radio Cairo, Egypt	9475	9675		
0300-0330		Radio Japan, Tokyo	11870	15195	17810	17825
			21610			
0300-0330	S,M	WINB, Red Lion, Pennsylvania	15145			
0300-0345	A	Radio New Zealand, Wellington	15150	17705		
0300-0350		Deutsche Welle, West Germany	6010	6120	9545	9605
			9700	11785		
0300-0350		Voice of Turkey, Ankara	9445			
0300-0355		Radio Beijing, PR China	9770	11715	15455	
0300-0355		Radio Polonia, Warsaw, Poland	6095	6135	7145	7270
			9525	11815	15120	
0300-0356		Radio RSA, South Africa	6010	9580	9615	
0300-0400		(US) Armed Forces Radio and TV	6030	11730	11790	
0300-0400		CBN, St. John's, Newfoundland	6160			
0300-0400		CBU, Vancouver, British Colombia	6160			
0300-0400		CFCF, Montreal, Quebec	6005			
0300-0400		CFCN, Calgary, Alberta	6030			
0300-0400		CHNS, Halifax, Nova Scotia	6130			
0300-0400		CKWX, Vancouver, British Colombia	6080			
0300-0400		CFRB, Toronto, Ontario	6070			
0300-0400		(US) Far East Network, Tokyo	3910			
0300-0400		HCJB, Quito, Ecuador	9720	11775	15155	
0300-0400	T-A	KVOH, Rancho Simi, California	9495			
0300-0400		La Voz Evangelica, Honduras	4820			
0300-0400		Radio Australia, Melbourne	11945	15160	15240	15320
			15395	17750	17715	17795
0300-0400		Radio for Peace, Costa Rica	7375			
0300-0400		Radio Havana Cuba	9655	6140	9770	
0300-0400		Radio Moscow, USSR	9600	9640	9765	11710
			12070	13605	13645	13665
			15425	15455	17570	17675
			17685	17740	17850	17860
			17880			
0300-0400		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9630	9740	11990	
0300-0400		Radio Sofia, Bulgaria	9560	9595	11735	11750
0300-0400		Radio Thailand, Bangkok	9655	11905		
0300-0400		SBC Radio One, Singapore	5010	5052	11940	
0300-0400		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0300-0400	T-S	Superpower KUSW, Utah	9815			
0300-0400		Trans World Radio, Bonaire	9535			
0300-0400		Voice of America, Washington	6035	7170	7200	7280
			9525	9550	9575	9740
			11835			
0300-0400		Voice of Free China, Taiwan	5985	9680	11745	
0300-0400		Voice of Kenya, Nairobi	6045			
0300-0400		Voice of Nicaragua, Managua	6100			
0300-0400		WCSN, Boston, Massachusetts	9852.5			
0300-0400		WHRI, Noblesville, Indiana	7355	7400		
0300-0400		WRNO, New Orleans, Louisiana	6185			
0300-0400		WYFR, Oakland, California	5950	9520	15566	
0310-0330		Vatican Radio, Vatican City	6150			
0313-0400		Radio France Int'l, Paris	3965	7135	7175	
			9550	9790	9800	11670
			11700	11995		
0330-0340	S-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985

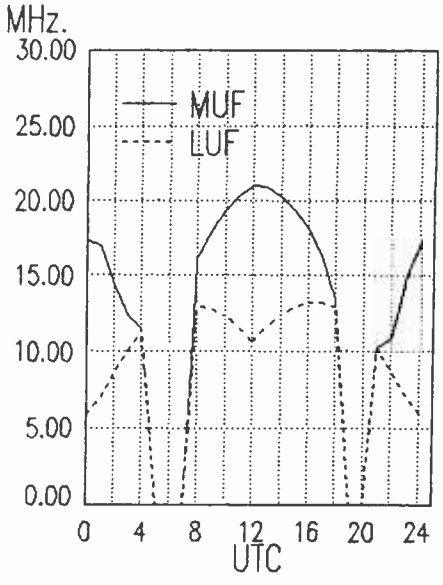
East Coast To South Africa



East Coast To Indian Ocean



East Coast To Central Asia

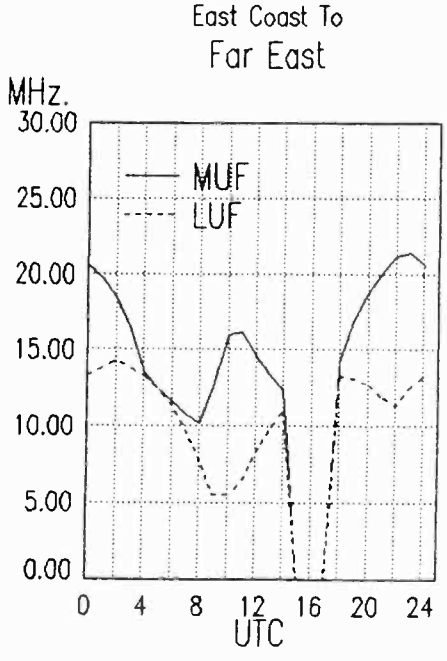


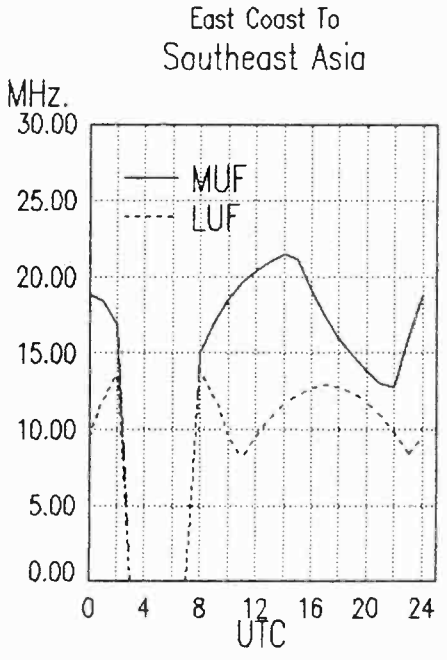
frequency SECTION

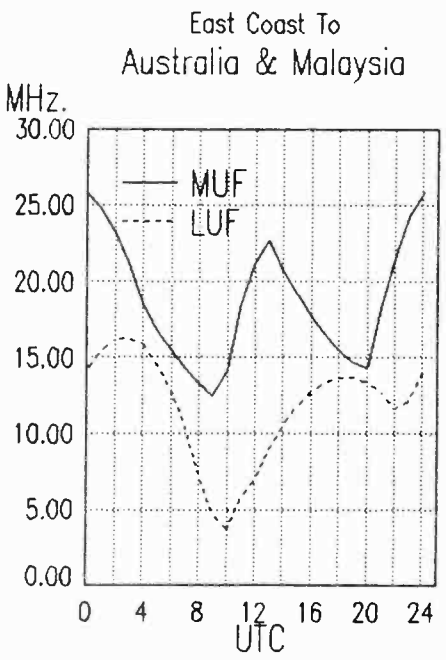
		6020	6040	6080	6140	
		9520				
0330-0400	BBC, London, England	3955	5975	6005	6155	
		6175	6195			
		9410	9660	9915	12095	
0335-0400	Radio New Zealand, Wellington	11790	15150			
0330-0400	Radio Tanzania, Dar es Salaam	9684				
0330-0400	Radio Tirana, Albania	7065	9500			
0330-0400	Radio Sweden, Stockholm	11705				
0330-0400	United Arab Emirates Radio	9640	11940	15435	17890	
0335-0340	All India Radio, New Delhi	3905	4860	9610	11830	
		11870	11890	15305		
0340-0350 T-S	Voice of Greece, Athens	7430	9395	9420		
0345-0400	Radio Berlin Int'l, East Germany	9620	11785			
0350-0400	RAI, Rome, Italy	9710	11905	15330		

0400 UTC [12:00 AM EDT/9:00 PM PDT]

0400-0405	Radio Uganda, Kampala	4976	5026			
0400-0410	Radio Thailand, Bangkok	9655	11905			
0400-0410	RAI, Rome, Italy	9710	11905	15330		
0400-0415	Kol Israel, Jerusalem	9010	9435	12080		
0400-0420	Radio Botswana, Gabarone	4820				
0400-0420 T-S	Radio Zambia, Lusaka	3345	6165			
0400-0425	Radio Bucharest, Romania	6155	9510	9570	11830	
		11940				
0400-0425	Radio Netherland, Hilversum	7210	9850			
0400-0426	Radio RSA, South Africa	7270	9580			
0400-0430	BBC, London, England	3955	5950	5975	6005	
		6155	6195	7120	7160	
		7185	9410	9580	9915	
		12095				
0400-0430	La Voz Evangelica, Honduras	4820				
0400-0430	Radio Berlin Int'l, East Germany	5965	9620	11785		
0400-0430 M	Radio Norway Int'l, Oslo	9650	11760			
0400-0430	SLBC, Colombo, Sri Lanka	6005	9720	15425		
0400-0430	Radio Tanzania, Dar es Salaam	9684				
0400-0430	Swiss Radio Int'l, Berne	6135	9725	9885	12035	
0400-0430	Trans World Radio, Bonaire	9535				
0400-0450	Radio Pyongyang, North Korea	15160	15180			
0400-0455	Radio Beijing, PR China	9645	11980			
0400-0455	RAE, Buenos Aires, Argentina	9690	11710			
0400-0500	(US) Armed Forces Radio and TV	6030	11730	11790		
0400-0500	CBC Northern Quebec Service	6195	9625			
0400-0500	CBN, St. John's, Newfoundland	6160				
0400-0500	CBU, Vancouver, British Colombia	6160				
0400-0500	CFCF, Montreal, Quebec	6005				
0400-0500	CFCN, Calgary, Alberta	6030				
0400-0500	CHNS, Halifax, Nova Scotia	6130				
0400-0500	CKWX, Vancouver, British Colombia	6080				
0400-0500	CFRB, Toronto, Ontario	6070				
0400-0500	(US) Far East Network, Tokyo	3910				
0400-0500	FEBC, Manila, Philippines	11850				
0400-0500	HCJB, Quito, Ecuador	9720	11775	15155		
0400-0500	KYOI, Saipan	17780				
0400-0500	Radio Australia, Melbourne	11910	11945	15160	15240	
		15320	17715	17795		
0400-0500	Radio Havana Cuba	5965	6035	6140	9655	
		9770				
0400-0500	Radio Moscow, USSR	7185	9600	9610	9640	
		9765	11790	12050	13605	
		13645	13665	13675	15180	
		15320	15425	17570	17600	
		17685	17740	17850	17860	
		17880				
0400-0500	Radio New Zealand, Wellington	11780	15150			
0400-0500	SBC Radio One, Singapore	5010	5052	11940		
0400-0500 T-S	Superpower KUSW, Utah	9815				
0400-0500	Voice of America, Washington	5995	6035	7170	7200	
		7280	9525	9575	11835	
		11925				
0400-0500	Voice of Kenya, Nairobi	6045				
0400-0500	WCSN, Boston, Massachusetts	9870				
0400-0500	WINB, Red Lion, Pennsylvania	15145				
0400-0500	WHRI, Noblesville, Indiana	7365	7400			
0400-0500 M-A	WMLK, Bethel, Pennsylvania	9455				
0400-0500	WRNO, New Orleans, Louisiana	6185				
0400-0500	WYFR, Satellite Net, California	9520				





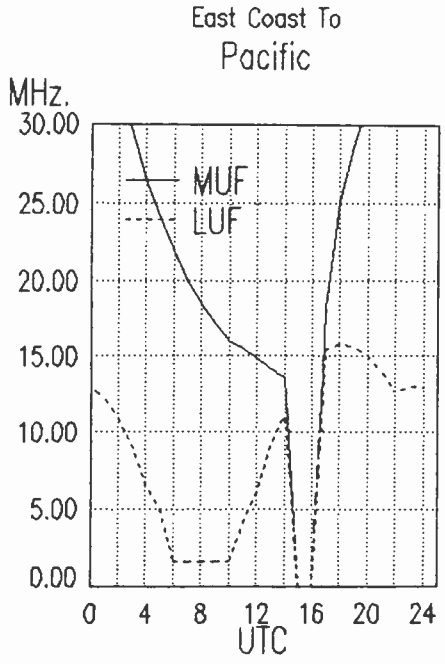


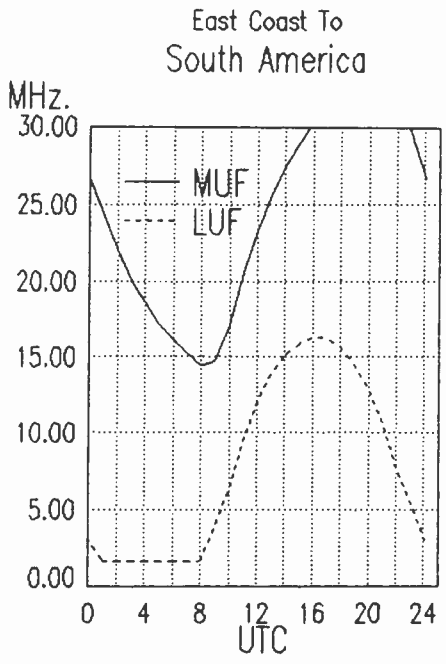
frequency SECTION

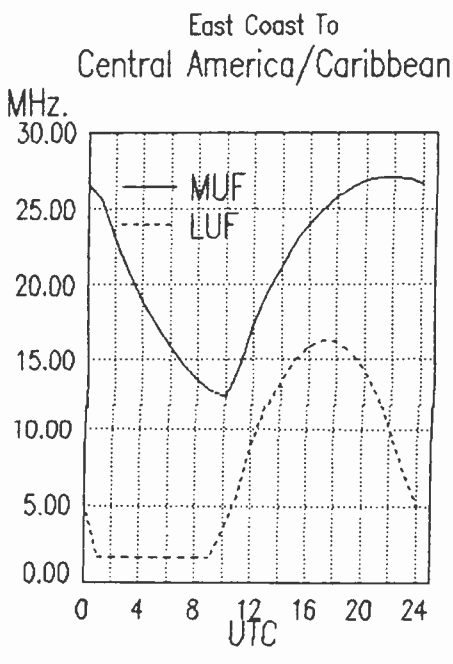
0425-0440		RAI, Rome, Italy	5980	7275		
0430-0455		Radio Austria Int'l, Vienna	6155	9875	15410	
0430-0500		BBC, London, England	5975	6005	6155	6195
			7120	7185	7210	9410
			9510	9580	9750	11945
			12095			
0430-0500		Deutsche Welle, West Germany	7150	7225	9565	9765
			11765			
0430-0500		Radio Finland, Helsinki	6120	9670	11715	15185
0430-0500		Radio Tirana, Albania	9480	11835		
0430-0500	S,M	Trans World Radio, Bonaire	9535			
0430-0500		Trans World Radio, Swaziland	3205	7205		
0430-0500		Voice of Nigeria, Lagos	7255			

0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0510		CBC Northern Quebec Service	6195	9625		
0500-0510		Radio Lesotho, Maseru	4800			
0500-0510	M-A	Radio Zambia, Lusaka	3345	6165		
0500-0515		Deutsche Welle, West Germany	7150	7225	9565	9765
			11765			
0500-0515		GBC, Accra, Ghana	4915			
0500-0515		Vatican Radio, Vatican City	9645	11725	15190	
0500-0530	M	Radio Norway Int'l, Oslo	11735	15310		
0500-0530	S,M	Trans World Radio, Bonaire	9535			
0500-0530		Trans World Radio, Swaziland	3205	5055	7210	
0500-0550		Deutsche Welle, West Germany	6045	6120	9635	9700
0500-0555		Radio Beijing, China	9690			
0500-0600		(US) Armed Forces Radio and TV	6030	11730	11790	
0500-0600		BBC, London, England	3955	5975	6005	6195
			7105	7160	7185	9410
			9510	9580	12095	
0500-0600		CBC Northern Quebec Service	6195	9625		
0500-0600		CBU, Vancouver, British Colombia	6160			
0500-0600		CFCF, Montreal, Quebec	6005			
0500-0600		CFCN, Calgary, Alberta	6030			
0500-0600		CHNS, Halifax, Nova Scotia	6130			
0500-0600		CKWX, Vancouver, British Colombia	6080			
0500-0600		CFRB, Toronto, Ontario	6070			
0500-0600		(US) Far East Network, Tokyo	3910			
0500-0600		FEBC, Manila, Philippines	11850			
0500-0600		HCJB, Quito, Ecuador	6230	9720	11775	
0500-0600		Radio Australia, Melbourne	11910	15160	15240	15395
			17715	17750,	17795	
0500-0600		Radio Havana Cuba	5965	6035	9655	9770
0500-0600		Radio Japan, Tokyo	11870	17810		
0500-0600		Radio Kuwait	15345			
0500-0600		Radio Moscow, USSR	9635	9765	12030	12050
			12070	13605	13645	15180
			15455	17570	17600	17625
			17665	17675	17685	17850
			17860	17880		
0500-0600		Radio New Zealand, Wellington	11780	15150		
0500-0600		Radio Thailand, Bangkok	9655	11905		
0500-0600	S	Radio Zambia, Lusaka	11880			
0500-0600		SBC Radio One, Singapore	5010	5052	11940	
0500-0600		Spanish Foreign Radio, Madrid	6125			
0500-0600	S	Superpower KUSW, Utah	6155			
0500-0600	S	Swaziland Commercial Radio	6155	9705		
0500-0600		Voice of America, Washington	3990	5995	6035	7200
			7170	7280	9575	9670
			9740	11835	11925	
0500-0600		Voice of Kenya, Nairobi	6045			
0500-0600		Voice of Nigeria, Lagos	7255	15120	15185	
0500-0600		WCSN, Boston, Massachusetts	9870			
0500-0600		WHRI, Noblesville, Indiana	7365	7400		
0500-0600	M-A	WMLK, Bethel, Pennsylvania	9455			
0500-0600		WRNO, New Orleans, Louisiana	6185			
0500-0600		WYFR, Oakland, California	9705	11580		
0500-0600	T-S	WYFR Satellite Net, California	9520			
0510-0520		Radio Botswana, Gaborone	3356	4820	7255	
0515-0530	M-F	Radio Canada Int'l, Montreal	15245			
0530-0545		BBC, London, England*	3990	6050	6140	7210
			9750			
0530-0555		Radio Bucharest, Romania	9640	11840	11940	15340
			15380	17720		
0530-0600		Radio Netherland, Hilversum	6165	9715		
0530-0600		Radio Tirana, Albania	7300			







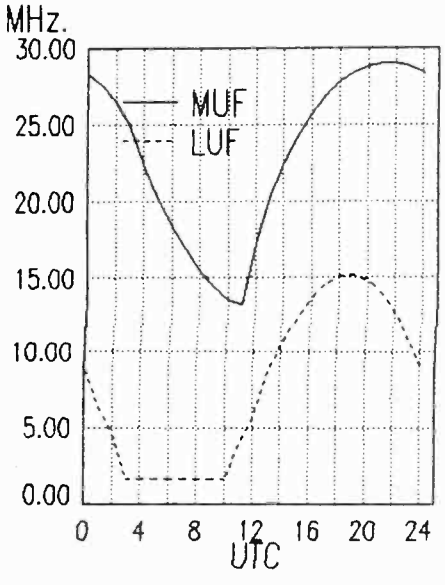
frequency SECTION

0530-0600		Trans World Radio, Swaziland	5055	7210		
0530-0600		UAE RAdio, United Arab Emirates	15435	17775	21700	
0545-0600		Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0545-0600	M-F	Radio Canada Intl, Montreal	15245			
0555-0600		Ghana Broadcasting Corp., Accra	4915			
0555-0600		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	

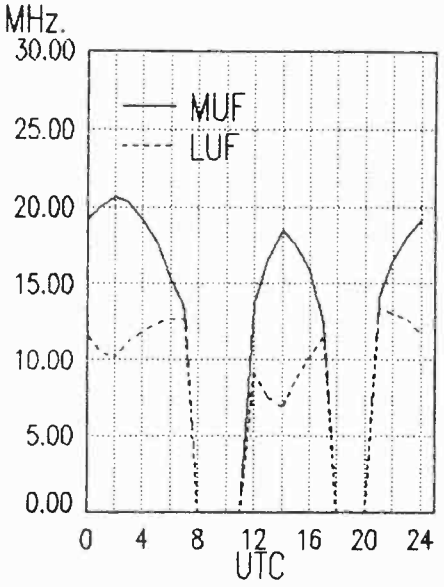
0600 UTC [2:00 AM EDT/11:00 PM PDT]

0600-0615		Radio Ghana, Accra	3366	4915		
0600-0615	M-A	Radio Zambia, Lusaka	6165	7235		
0600-0620		Vatican Radio, Vatican City	6185	9645		
0600-0625		Radio Netherlands, Hilversum	6165	9715		
0600-0630		Laotian National Radio	7113			
0600-0630		Radio Australia, Melbourne	11910	11945	15160	15240
			15315	15395	17715	17750
			17795			
0600-0630		Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0600-0630		Trans World Radio, Swaziland	5055	6070	7210	
0600-0630		Voice of Kenya, Nairobi	6045			
0600-0645		HCJB, Quito, Ecuador	6230	9720	11775	
0600-0645		Radio Berlin Int'l, East Germany	5965	11810		
0600-0645	S	Radio Cameroon, Yaounde	4850			
0600-0650		Radio Pyongyang, North Korea	9530	15160	15180	
0600-0700		(US) Armed Forces Radio and TV	6030	11730	11790	
0600-0700		BBC, London, England	3955	5975	6195	7105
			9600	9640	12095	15280
0600-0700		CBC Northern Quebec Service	6195			
0600-0700		CBU, Vancouver, British Colombia	6160			
0600-0700		CFCF, Montreal, Quebec	6005			
0600-0700		CFCN, Calgary, Alberta	6030			
0600-0700		CHNS, Halifax, Nova Scotia	6130			
0600-0700		CKWX, Vancouver, British Colombia	6080			
0600-0700		CFRB, Toronto, Ontario	6070			
0600-0700		(US) Far East Network, Tokyo	3910			
0600-0700	F	FEBA, Mahe, Seychelles	17855			
0600-0700		King of Hope, South Lebanon	6215			
0600-0700		KYOI, Saipan	17780			
0600-0700		Radio Havana Cuba	9525			
0600-0700		Radio Korea, Seoul, South Korea	6060	7275	9570	
0600-0700		Radio Kuwait	15345			
0600-0700		Radio Moscow, USSR	12030	13605	13645	15150
			15180	17570	17625	17675
			17685	17850	17860	17880
0600-0700		Radio New Zealand, Wellington	11780	15150		
0600-0700	A,S	Radio Thailand, Bangkok	9655	11905		
0600-0700	S	Radio Zambia, Lusaka	11880			
0600-0700		SBC Radio One, Singapore	5010	5052	11940	
0600-0700	S	Superpower KUSW, Utah	6155			
0600-0700		Trans World Radio Monte Carlo	7105			
0600-0700		Voice of America, Washington	5995	6035	6080	6095
			6125	7280	7325	9530
			9540	9550	11915	
0600-0700		Voice of Asia, Taiwan	7285			
0600-0700		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0600-0700		Voice of Nigaria, Lagos	15185			
0600-0700		WCSN, Boston, Massachusetts	9495			
0600-0700		WHRI, Noblesville, Indiana	7365	7400		
0600-0700	M-A	WMLK, Bethel, Pennsyvlania	9455			
0600-0700		WYFR, Oakland, California	5950	6065	7355	9520
			9852.5	15257		
0615-0630		Radio Korea, Seoul, South Korea	13670			
0615-0630	M-A	Vatican Radio, Vatican City	15190	17730		
0615-0700		Deutsche Welle, West Germany	9610	9700	11765	15185
0630-0700	A	CPBS-1, China*	11330	15550	15590	17605
0630-0655		Radio Austria Int'l, Vienna	6000	6155	15410	
0630-0655		Radio Netherland, Hilversum	9895	11930		
0630-0700		Radio Australia, Melbourne	11945	15160	15240	15315
			15395	15425	17715	17750
			17795			
0630-0700		Radio Bucharest, Romania	21600			
0630-0700		Radio Finland, Helsinki	6120	9560	11755	15270
0630-0700		Radio Polonia, Warsaw, Poland	6135	7270	15120	
0630-0700		Radio Tirana, Albania	7205	9500		
0630-0700		Swiss Radio Int'l, Berne	3985	6165	9535	12030
			15430	17570		
0630-0700		Trans World Radio, Swaziland	5055	6070	7210	9725
0630-0700	A,S	Voice of Kenya, Nairobi	7270			
0645-0700		BBC, London, England*	6150	7260	11945	

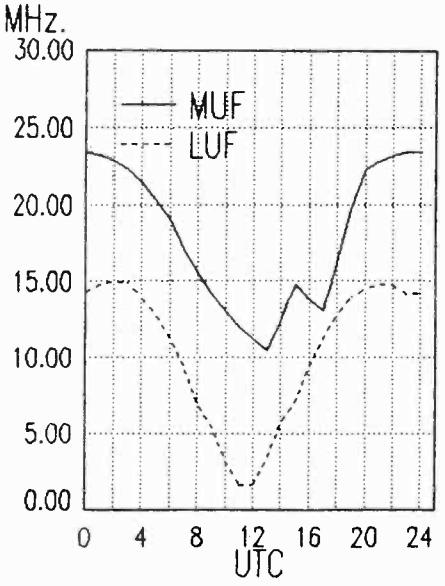
East Coast To
West Coast



West Coast To
Central Asia



West Coast To
Far East

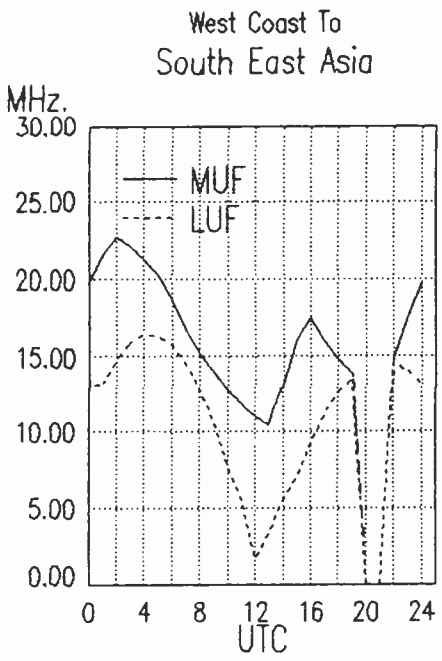


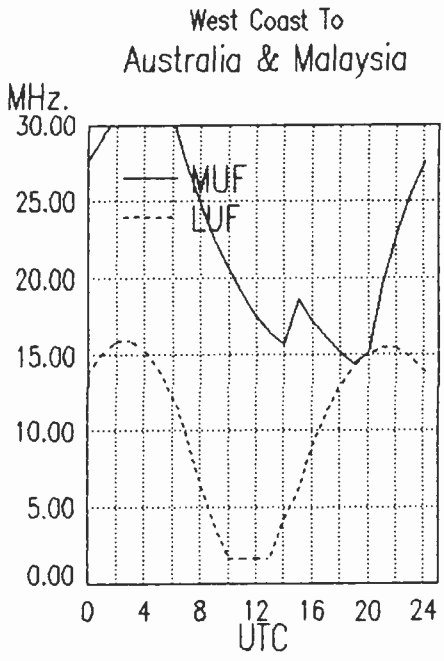
frequency SECTION

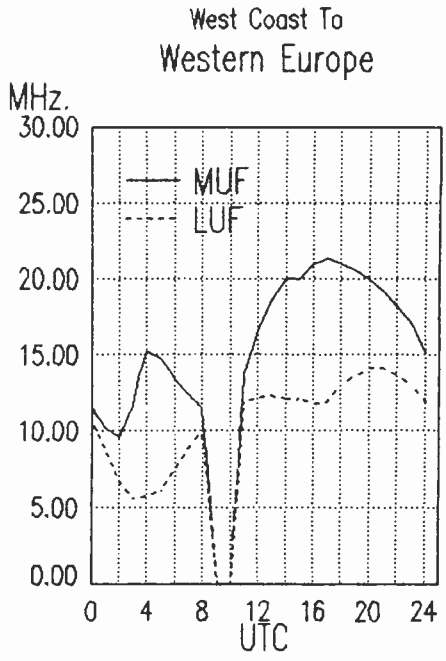
0645-0700		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		
0645-0700	M-F	Radio Canada Int'l, Montreal	6050	6140	7155	9740
			9760	11840	15235	
0645-0700		Radio Ghana, Accra	6130			
			11705	11800		
0645-0700		HCJB, Quito, Ecuador	6130	6230	9720	11775
0645-0700		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		
0645-0700	M-F	Radio Canada Int'l, Montreal	6050	6140	7155	9740
			9760	11840	15235	
0645-0700		Radio Ghana, Accra	6130			
			11705	11800		

0700 UTC [3:00 AM EDT/12:00 AM PDT]

0700-0703		Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0700-0710		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		
0700-0710		Radio Sierra Leone, Freetown	5980			
0700-0715		Radio Ghana (HS), Accra	3366	4915		
0700-0730		BBC, London, England	5898	5950	5975	9410
			9600	9640	11860	12095
			15280			
0700-0730		Burma Bcasting Service, Rangoon	9730			
0700-0730		Radio Australia, Melbourne	5995	9655	9845	15160
			15240	15395	17715	17750
0700-0730		Radio Bucharest, Romania	21600			
0700-0730		Radio New Zealand, Wellington	12045	15150		
0700-0730	S	Radio Zambia, Lusaka	11880			
0700-0745		WYFR, Oakland, California	6065	7355	9852.5	
0700-0750		Radio Pyongyang, North Korea	15340	17795		
0700-0800		AWR, Forli, Italy	7257			
0700-0800		CBU, Vancouver, British Colombia	6130			
0700-0800		CFCF, Montreal, Quebec	6005			
0700-0800		CFCN, Calgary, Alberta	6030			
0700-0800		CHNS, Halifax, Nova Scotia	6130			
0700-0800		CKWX, Vancouver, British Columbia	6080			
0700-0800		CFRB, Toronto, Ontario	6070			
0700-0800		ELWA, Monrovia, Liberia	11830			
0700-0800		(US) Far East Network, Tokyo	3910			
0700-0800		HCJB, Quito, Ecuador	6130	9610	9745	11835
			11925			
0700-0800		King of Hope, South Lebanon	6215			
0700-0800		KYOI, Saipan	17780			
0700-0800		Radio Ghana, Accra	6130			
0700-0800		Radio Havana Cuba	9525			
0700-0800		Radio Japan, Tokyo	5990	15195	15235	17810
			21695			
0700-0800		Radio Kuwait	15345			
0700-0800		Radio Moscow, USSR	9765	12055		
0700-0800	A,S	Radio Thailand, Bangkok	9655	11905		
0700-0800		SBC-1, Singapore	11940			
0700-0800		Soloman Islands Broadcasting Corp	9545			
0700-0800	S	Superpower KUSW, Utah	6135			
0700-0800		Trans World Radio, Swaziland	6070	9725		
0700-0800		Voice of Free China, Taiwan	5985			
0700-0800	A,S	Voice of Kenya, Nairobi	7270			
0700-0800		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0700-0800		Voice of Nigeria, Lagos	15120	15185		
0700-0800		WCSN, Boston, Massachusetts	9495			
0700-0800		WHRI, Noblesville, Indiana	9620			
0700-0800		WYFR, Oakland, California	6065	7365	9620	11580
0715-0800	A,S	Radio Berlin Int'l, East Germany	6040	7185	9730	21465
			21540			
0715-0730	M-A	Vatican Radio, Vatican City	11725	15190		
0715-0735	S	FEBA, Mahe, Seychelles	15115	17785		
0720-0730	M-A	Vatican Radio, Vatican City	6248	9645	11740	
0725-0800		Trans World Radio, Monte Carlo	7105			
0730-0800		ABC, Alice Springs, Australia	2310	[ML]		
0730-0800		ABC, Katherine, Australia	2485			
0730-0800		ABC, Tennant Creek, Australia	2325	[ML]		
0730-0800		Radio Australia, Melbourne	9655	11720		
0730-0735		All India Radio, New Delhi	5990	6010	6020	7110
			7205	9610	9675	11850
			11935	15235	15250	17705





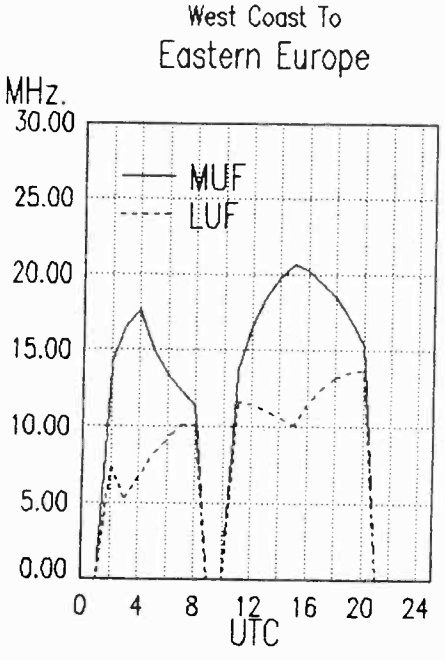


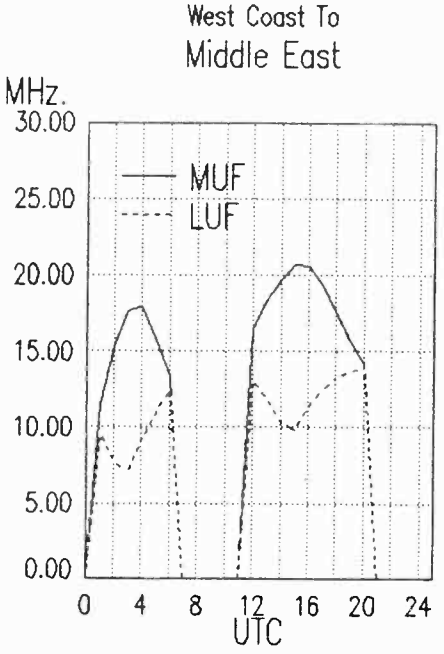
frequency SECTION

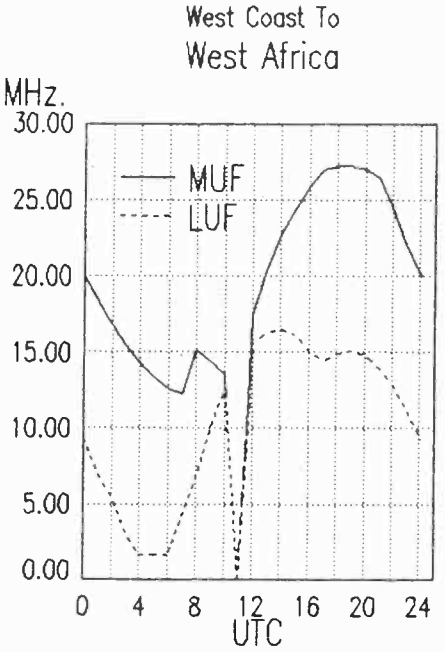
0730-0745		BBC, London, England*	3975	6010	7230	9915
0730-0755		Radio Finland, Helsinki	6120	9560	11755	
0730-0800		BBC, London, England	9600	9640	11955	15360
0730-0800		Radio Netherland, Hilversum	9630	9715		
0730-0800		Radio Prague, Czechoslovakia	11685	17840	21705	
0730-0800		Radio Sofia, Bulgaria	9700	11720		
0730-0800		Swiss Radio Int'l, Berne	3985	6165	9535	
0740-0750	W	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		
0745-0800		Radio Prague, Czechoslovakia	6055	7345	9505	

0800 UTC [4:00 AM EDT/1:00 AM PDT]

0800-0805	M-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0800-0805		Soloman Islands Broadcasting Corp	9545			
0800-0815	M-A	Radio Zambia, Lusaka	6165	7235		
0800-0825	M-F	BRT, Brussels, Belgium	11695	15510		
0800-0825		Radio Netherland, Hilversum	9630	9715		
0800-0825		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0800-0830		HCJB, Quito, Ecuador	6130	9610	9745	11835
			11925			
0800-0830		Radio Bangladesh, Dhaka	12030	15525		
0800-0830		Radio Tirana, Albania	9500	11835		
0800-0830		Voice of Islam, Pakistan	15525	17870		
0800-0835	S	FEBA, Mahe, Seychelles	15325,	17785		
0800-0835		Trans World Radio, Swaziland	6070	9725		
0800-0850		Radio Pyongyang, North Korea	9530	11830	15160	15180
0800-0900		ABC, Alice Springs, Australia	2310	[ML]		
0800-0900		ABC, Katherine, Australia	2485			
0800-0900		ABC, Tennant Creek, Australia	2325	[ML]		
0800-0900		BBC, London, England	9410	9640	11860	12095
			15070	15360	15400	
0800-0900		CBN, St. John's, Newfoundland	6160			
0800-0900		CBU, Vancouver, British Colombia	6160			
0800-0900		CFCF, Montreal, Quebec	6005			
0800-0900		CFCN, Calgary, Alberta	6030			
0800-0900		CHNS, Halifax, Nova Scotia	6130			
0800-0900		CKWX, Vancouver, British Colombia	6080			
0800-0900		CFRB, Toronto, Ontario	6070			
0800-0900		(US) Far East Network, Tokyo	3910			
0800-0900		King of Hope, South Lebanon	6215			
0800-0900		KNLS, Anchor Point, Alaska	6150			
0800-0900		KTWR, Guam	11805			
0800-0900		KYOI, Saipan	11900			
0800-0900		Radio Australia, Melbourne	5995	6080	9580	9655
			9710	11720		
0800-0900		Radio Korea, Seoul, South Korea	7550			
0800-0900		Radio Moscow, USSR	12055	15295		
0800-0900		SBC Radio One, Singapore	5010	5052	11940	
0800-0900	S	Superpower KUSW, Utah	6135			
0800-0900		Trans World Radio, Monte Carlo	7105			
0800-0900		Voice of Indonesia, Jakarta	11790	15105		
0800-0900	A,S	Voice of Kenya, Nairobi	7270			
0800-0900		Voice of Nigaria, Lagos	7255	15185		
0800-0900		WHRI, Noblesville, Indiana	7355	9510		
0800-0900		WYFR, Oakland, California	11580	15495		
0815-0830	S	Radio Austria Int'l, Vienna	6155	11915	15410	15415
			17870			
0815-0830		Radio Korea, Seoul, South Korea	9570			
0815-0845	M-F	Voice of America, Washington DC	7175	9575	9750	11710
			11915	15600	17715	21500
			[ML]			
0830-0840		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0830-0855		Radio Austria Int'l, Vienna	6155	11915	15410	15415
0830-0855	M-A	Radio Netherland, Hilversum	9630			
0830-0900	S	Bhutan Beasting Service, Thimpu	6035			
0830-0900		FEBC, Manila, Philippines	11850	15350		
0830-0900		HCJB, Quito, Ecuador	6130	9745	11925	
0830-0900		Radio Beijing, China	9700	11755	15440	
0830-0900		Radio Finland, Helsinki	15245	17795		
0830-0900		Radio Netherland, Hilversum	9630	21486		
0830-0900		Radio Prague, Czechoslovakia	11685	17840	21705	





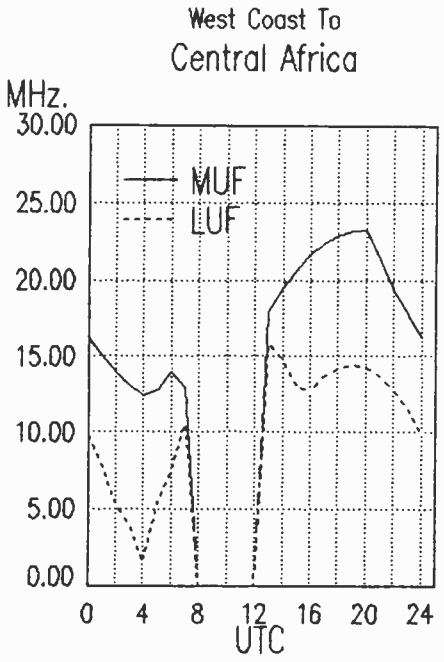


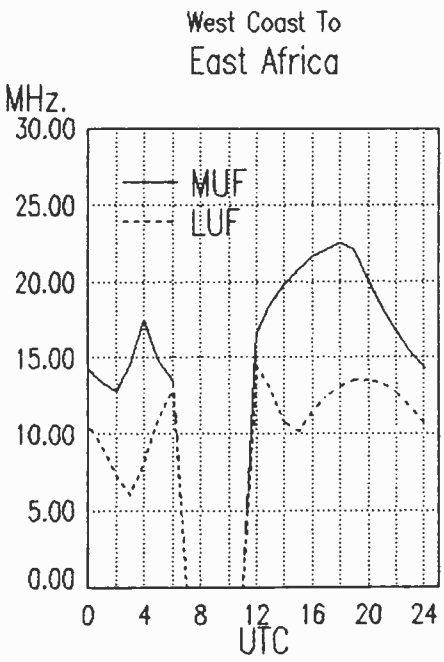
frequency SECTION

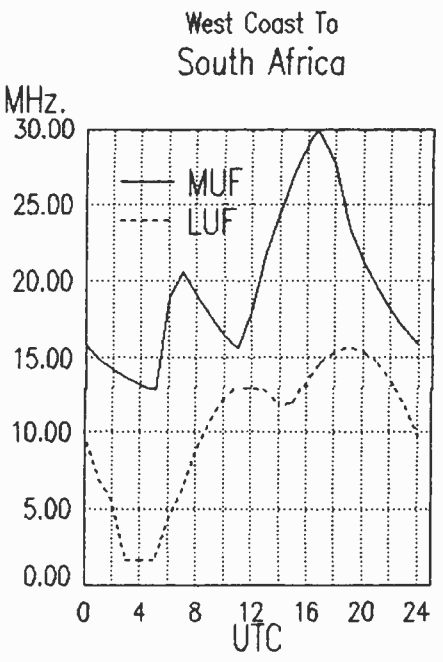
0830-0900		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
0830-0900		Voice of Nigeria, Lagos	15120			
0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0845-0900		Radio Berlin Int'l, East Germany	21540			
0845-0900		Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705

0900 UTC [5:00 AM EDT/2:00 AM PDT]

0900-0905		Africa No. 1, Gabon	7200	15200		
0900-0910		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0900-0910		Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0900-0910		Voice of Lebanon, Beirut	6548			
0900-0925	M-F	BRT, Brussels, Belgium	17595	21810		
0900-0930		FEBC, Manila, Philippines	11850	15350		
0900-0930		KTWR, Agana, Guam	11805			
0900-0930		Nippon Broadcasting Corp.	3925			
0900-0930		Radio Beijing, China	9700	11755	15440	
0900-0930		Radio Berlin Int'l, East Germany	21540			
0900-0930		Radio Netherland, Hilversum	21485			
0900-0930	A,S	Radio Prague, Czechoslavkia	11685	17840	21705	
0900-0950		Deutsche Welle, West Germany	9720	15510	17780	21650
			21680			
0900-1000		ABC, Alice Springs, Australia	2310	[ML]		
0900-1000		ABC, Katherine, Australia	2485			
0900-1000		ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S	Adventist World Radio, Portugal	9670			
0900-1000		(US) Armed Forces Radio and TV	6030	9530	9565	
0900-1000		BBC, London, England	9740	11750	11860	11955
			12095	15070	15400	15360
			17790	18080		
0900-1000		CFCF, Montreal, Quebec	6005			
0900-1000		CFCN, Calgary, Alberta	6030			
0900-1000		CHNS, Halifax, Nova Scotia	6130			
0900-1000		CKWX, Vancouver, British Colombia	6080			
0900-1000		CFRB, Toronto, Ontario	6070			
0900-1000		(US) Far East Network, Tokyo	3910			
0900-1000		HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000		King of Hope, South Lebanon	6215			
0900-1000		KNLS, Anchor Point, Alaska	6150			
0900-1000		KYOI, Saipan	11900			
0900-1000	S	Superpower KUSW, Utah	6135			
0900-1000		Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000		Radio Australia, Melbourne	5995	6080	9580	9655
			9710	9760	11720	15415
0900-1000		Radio Japan, Tokyo	11885			
0900-1000		Radio Moscow, USSR	12010	12055		
0900-1000	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000		Radio Tanzania, Dar es Salaam	7165			
0900-1000		SBC Radio One, Singapore	5010	5052	11940	
0900-1000		Trans World Radio, Monte Carlo	7105			
0900-1000		Voice of Kenya, Nairobi	7270			
0900-1000		Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000		WHRI, Noblesville, Indiana	7355	9510		
0915-0950	M-A	Radio Ulan Bator, Mongolia	9615	12015		
0930-0935		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0930-0940	M-F	Radio Canada Int'l, Montreal	5960	9755		
0930-0945		BBC, London, England*	9725	11955		
0945-1000	S	Radio Budapest, Hungary	7220	9585	15160	15220
			17710	17780	21525	
0930-1000		CBN, St. John's, Newfoundland	6160			
0930-1000		Radio Beijing, China	9700	11755	15440	







frequency SECTION

0930-1000		Radio Sweden Int'l, Stockholm	15390			
0945-1000		BBC, London, England*	5995	7180	9725	11955
0945-1000	S	Radio Budapest, Hungary	9585	9835	11910	15160
0945-1000	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	

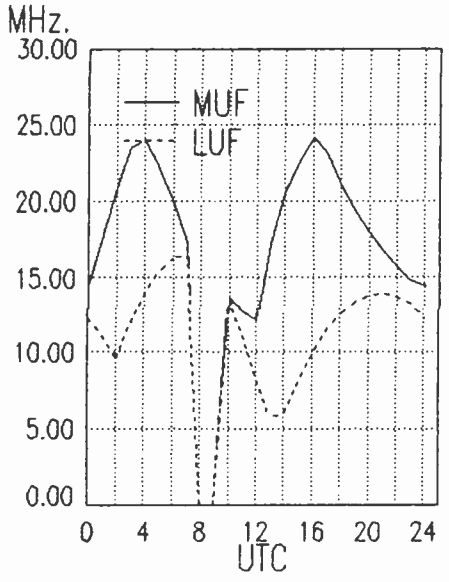
1000 UTC [6:00 AM EDT/3:00 AM PDT]

1000-1030		Deutsche Welle, West Germany	9735	11785	17765	21600
1000-1030		HCJB, Quito, Ecuador	6130	9745	11925	
1000-1030		Kol Israel, Jerusalem	9385	11700	15485	15640
			15650	17635	17685	21625
1000-1030		Radio Afghanistan, Kabul	4450	6085	15435	17720
1000-1030		Radio Beijing, China	9700	11755	15440	
1000-1030	S	Radio Norway Int'l, Oslo	9590	15180	15235	17780
1000-1030		Radio Tanzania, Dar es Salaam	7165			
1000-1030		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
1000-1030		Voice of Ethiopia, Addis Ababa	9560			
1000-1030		Voice of Vietnam, Hanoi	12020	15010		
1000-1055	A	Trans World Radio, Monte Carlo	7105			
1000-1100		ABC, Alice Springs, Australia	2310	[ML]		
1000-1100		ABC, Katherine, Australia	2485			
1000-1100		ABC, Tennant Creek, Australia	2325	[ML]		
1000-1100		(US) Armed Forces Radio and TV	6030	9565	9700	
1000-1100		All India Radio, New Delhi	11860	11915	15130	15335
			17387	11785		
1000-1100		BBC, London, England	9740	9750	11750	17790
			12095	15070	15400	18080
1000-1100		CBN, St. John's, Newfoundland	6160			
1000-1100		CFCF, Montreal, Quebec	6005			
1000-1100		CFCN, Calgary, Alberta	6030			
1000-1100		CHNS, Halifax, Nova Scotia	6130			
1000-1100		CKWX, Vancouver, British Colombia	6080			
1000-1100		CFRB, Toronto, Ontario	6070			
1000-1100		(US) Far East Network, Tokyo	3910			
1000-1100		KNLS, Anchor Point, Alaska	6150			
1000-1100		KTWR, Agana, Guam	11805			
1000-1100		KYOI, Saipan	11900			
1000-1100		Radio Afghanistan, Kabul	15435	17720		
1000-1100		Radio Australia, Melbourne	9580	9655	9770	15415
1000-1100		Radio Moscow, USSR	9600	12055	15150	
1000-1100		Radio New Zealand, Wellington	6100	9540		
1000-1100	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
1000-1100		SBC Radio One, Singapore	5010	5052	11940	
1000-1100		Superpower KUSW, Utah	6135			
1000-1100		Voice of America, Washington	5975	5985	9590	
1000-1100		Voice of Kenya, Nairobi	7270			
1000-1100		Voice of Nigeria, Lagos	7255	15120		
1000-1100		WHRI, Noblesville, Indiana	7355	9510		
1000-1100		WYFR, Oakland, California	5985			
1005-1010		Radio Pakistan, Islamabad	15606	17660		
1015-1030		Radio Korea, Seoul, South Korea	11740			
1030-1040		Voice of Asia, Taiwan	5980			
1030-1055		Radio Austria Int'l, Vienna	17870			
1030-1100		HCJB, Quito, Ecuador	6130	11925		
1030-1045	A	Radio Budapest, Hungary	7220	9585	9835	15220
1030-1100		Radio Netherlands, Hilversum	6020	9675		
1030-1100	A,S	Radio Tanzania, Dar es Salaam	7165			
1030-1100		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]
1030-1100		UAE Radio, United Arab Emirates	15435	17865	21605	
1040-1050	H	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		
1040-1050	M-A	Voice of Greece, Athens	11645	15630		
1045-1100	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	
1055-1100	S	Trans World Radio, Monte Carlo	7105			

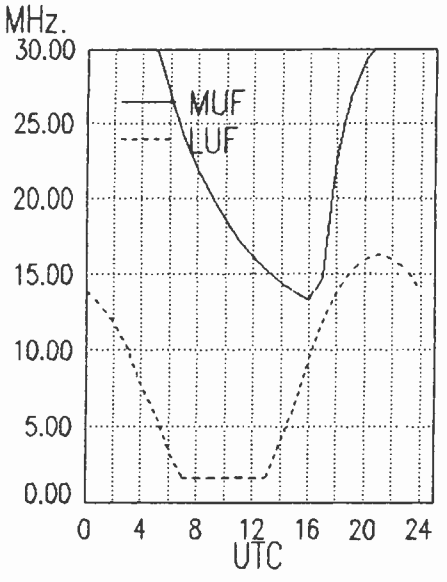
1100 UTC [7:00 AM EDT/4:00 AM PDT]

1100-1105		Radio Pakistan, Islamabad	6090	7290		
1100-1105	A	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
1100-1110	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			

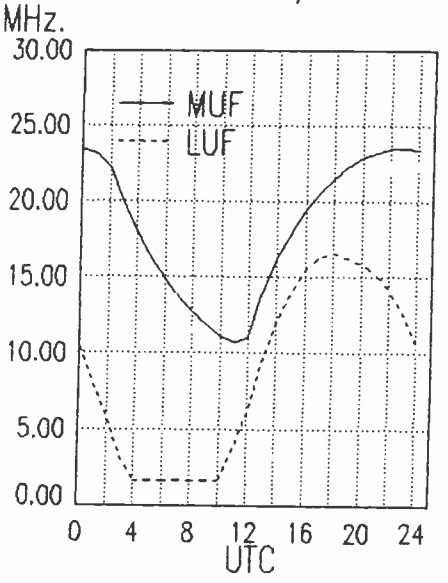
West Coast To
Indian Ocean



West Coast To
Pacific



West Coast To
Central America/Caribbean

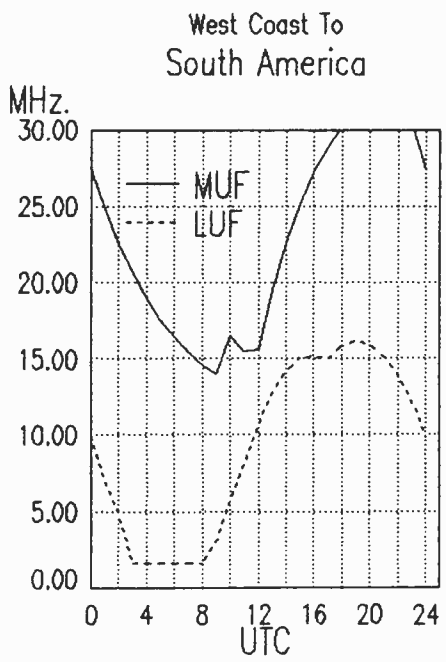


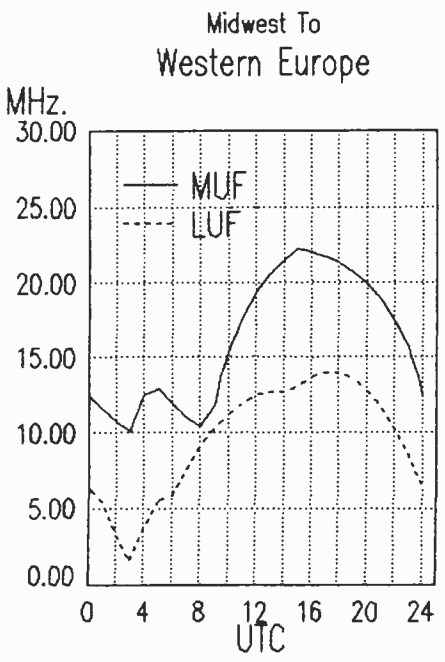
frequency SECTION

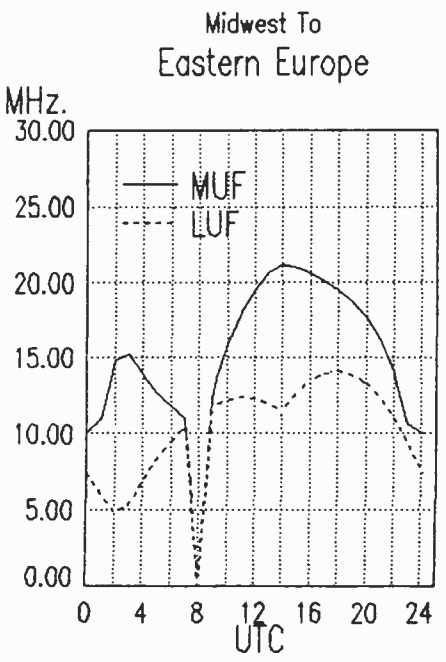
1100-1115		Radio New Zealand, Wellington	6100	9540		
1100-1120		Radio Pakistan, Islamabad	15606	17760		
1100-1125		Radio Netherland, Hilversum	6020	9675		
1100-1130		HCJB, Quito, Ecuador	6130	11925		
1100-1130		Radio Finland	11945	15400		
1100-1130		Radio Japan, Tokyo	5990	6120	7210	17810
1100-1130		Radio Mozambique, Maputo	9525	11818	11835	
1100-1130		Radio Sweden Int'l, Stockholm	6065	9630	21690	
1100-1130		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]
1100-1130		Swiss Radio Int'l, Berne	11935	13685	15570	
1100-1130		Voice of Vietnam, Hanoi	7430	9732		
1100-1150		Radio Pyongyang, North Korea	6576	9600	11735	
1100-1155		Radio Beijing, China	15455			
1100-1200		ABC, Alice Springs, Australia	2310	[ML]		
1100-1200		ABC, Katherine, Australia	2485			
1100-1200		ABC, Tennant Creek, Australia	2325	[ML]		
1100-1200		(US) Armed Forces Radio and TV	6030	9700		
1100-1200		BBC, London, England	5965	6195	9510	9740
			11750	11775	12095	15400
			17790	18080		
1100-1200		CBN, St. John's, Newfoundland	6160			
1100-1200		CFCF, Montreal, Quebec	6005			
1100-1200		CFCN, Calgary, Alberta	6030			
1100-1200		CHNS, Halifax, Nova Scotia	6130			
1100-1200		CKWX, Vancouver, British Colombia	6080			
1100-1200		CFRB, Toronto, Ontario	6070			
1100-1200		(US) Far East Network, Tokyo	3910			
1100-1200		KYOI, Saipan	11900			
1100-1200		Radio Australia, Melbourne	5995	7215	9580	9645
			9710	9770	11800	
1100-1200		Radio Korea, Seoul, South Korea	15575			
1100-1200		Radio Moscow, USSR	9600	12055	15225	
1100-1200		Radio RSA, South Africa	21590			
1100-1200	A,S	Radio Tanzania, Dar es Salaam	7165			
1100-1200	S	Radio Zambia, Lusaka	11880	[IRR]		
1100-1200	S	Superpower KUSW, Utah	9850			
1100-1200		Voice of America, Washington	5975	5985	6110	6165
			9590			
			9760	11715	15160	
1100-1200		Voice of Asia, Taiwan	5980	7445		
1100-1200		Voice of Kenya, Nairobi	7270			
1100-1200		Voice of Nigeria, Lagos	7255	15120		
1100-1200		WHRI, Noblesville, Indiana	5995	11790		
1100-1200		WYFR, Oakland, California	5950	7355		
1110-1120	M-F	Radio Botswana, Gaborone	4820	5955	7255	
1115-1200		Radio Berlin Int'l, East Germany	15445	17880	21465	21540
1115-1125		Radio France Int'l, Paris	6175	9790	9805	11670
			11700	11845	15155	15195
			15300	15315	15435	17620
			17850	21620		
1115-1130		Vatican Radio, Vatican City	11840	21485		
1115-1145		Radio Korea, Seoul, South Korea	7275	11740		
1115-1145		Radio Nepal, Kathmandu	5005			
1115-1200		Trans World Radio, Bonaire	11815	15355		
1130-1157		Radio Austria Int'l, Vienna	15320			
1130-1200		Deutsche Welle, West Germany	15410	17765	17800	
1130-1200		HCJB, Quito, Ecuador	11740			
1130-1200		Radio Australia, Melbourne	15320			
1130-1200		Radio Japan, Tokyo	5990	6120	7210	
1130-1200		Radio Netherland, Hilversum	5995	9715	15560	17575
			17605	21480		
1130-1200		Radio Thailand, Bangkok	9655	11905		
1130-1200		Radio Tirana, Albania	9480	11855		
1130-1200		Voice of Islamic Republic Iran	11790			
1135-1140		All India Radio, New Delhi	6065	7110	9610	9675
			11850	15320		
1140-1145	M-A	Vatican Radio, Vatican City	6248	9645	11740	
1145-1200		BBC, London, England*	5995	7180		
1145-1200		Radio Bangladesh, Dakha	15255	17740		
1145-1200		Radio Prague, Czechoslovakia	6055	7345	9505	

1200 UTC [8:00 AM EDT/5:00 AM PDT]

1200-1205	M-A	Port Moresby, Papua New Guinea	3295	4890	5960	6020
			6040	6080	6140	9520
1200-1215		BBC, London, England*	3915	6065	7275	
1200-1215		Radio New Zealand, Wellington	6100	9540		
1200-1215		Vatican Radio, Vatican City	15190	17865		

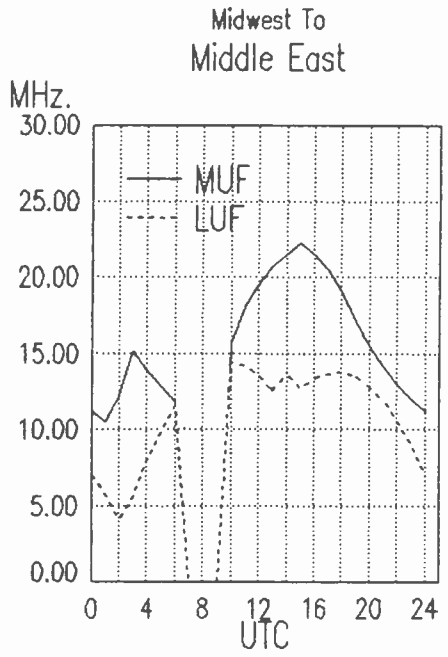


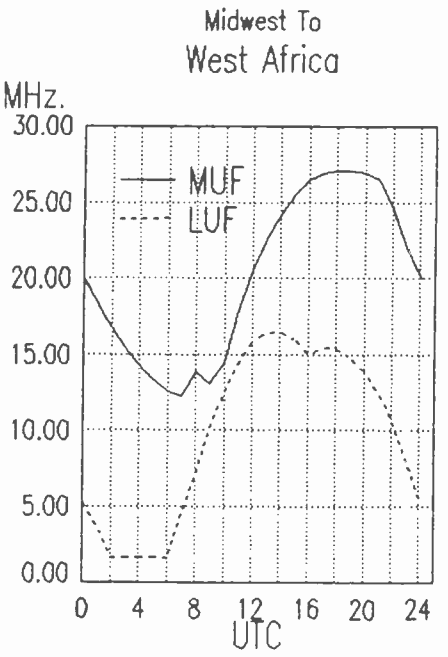


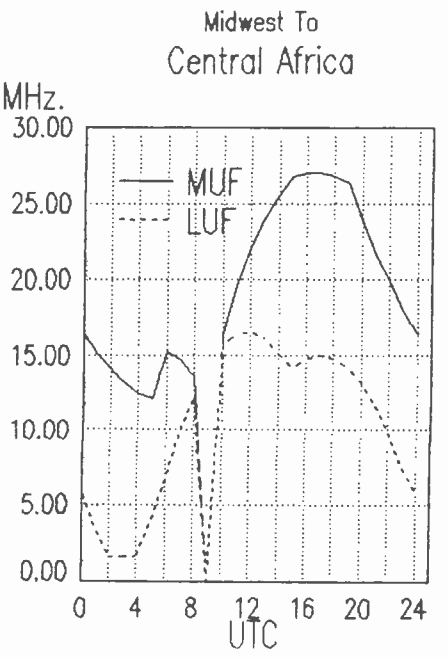


frequency SECTION

1200-1215		Voice of Kampuchea, Phnom-Penh	9693 11938
1200-1220		Radio Bucharest, Romania	17720 21665
1200-1220	M-F	Radio Budapest, Hungary	9585 9835 11910 15160 15220
1200-1225	M-F	Radio Finland, Helsinki	11945 15400
1200-1225		Radio Polonia, Warsaw, Poland	6095 7285
1200-1230	S	Radio Austria Int'l, Vienna	6155 9685 11915 15320
1200-1230		Radio Netherland, Hilversum	5995 9715 15560 17575 17605 21480
1200-1230		Radio Somalia, Mogadishu	6095
1200-1230		Radio Tashkent, Uzbek, USSR	5945 7275 9540 9600 11785
1200-1230		Radio Thailand, Bangkok	9655 11905
1200-1230	S	Radio Zambia, Lusaka	11880 [IRR]
1200-1235	M-A	Radio Ulan Bator, Mongolia	9615 12015
1200-1236		HCJB, Quito, Ecuador	6075
1200-1250		Radio Pyongyang, North Korea	9600 9555 11735
1200-1255		Radio Beijing, China	7335 9530 9635 9665 9770 11600 11715 11755
1200-1300		ABC, Alice Springs, Australia	2310 [ML]
1200-1300		ABC, Katherine, Australia	2485
1200-1300		ABC, Tennant Creek, Australia	2325 [ML]
1200-1300	S	Adventist World Radio, Africa	17890
1200-1300		(US) Armed Forces Radio and TV	6030 6125 15430
1200-1300		BBC, London, England	5965 6195 9740 11750 11775 12095 15070 18080
1200-1300		CBN, St. John's, Newfoundland	6160
1200-1300		CFCF, Montreal, Quebec	6005
1200-1300		CFCN, Calgary, Alberta	6030
1200-1300		CHNS, Halifax, Nova Scotia	6130
1200-1300		CKWX, Vancouver, British Colombia	6080
1200-1300		CFRB, Toronto, Ontario	6070
1200-1300		(US) Far East Network, Tokyo	3910
1200-1300		HCJB, Quito, Ecuador	11740 15115 17890
1200-1300		KYOI, Saipan	11900
1200-1300		Radio Australia, Melbourne	5995 6060 6080 7205 7215 9580 9645 9710 9770 11705
1200-1300		Radio Moscow, USSR	6000 7135 11670 11900 13790 15140 15150 15225 15420 15460 15475 15490 15540 15585 15595 17655 17820
1200-1300		Radio RSA, South Africa	21590
1200-1300	A,S	Radio Tanzania, Dar es Salaam	7165
1200-1300		SBC Radio One, Singapore	5010 5052 11940
1200-1300	S	Superpower KUSW, Utah	9850
1200-1300		Trans World Radio, Bonaire	11815
1200-1300		Trans World Radio, Sri Lanka	11920
1200-1300		Voice of America, Washington	6110 9760 11715
1200-1300		Voice of Kenya, Nairobi	7270
1200-1300		Voice of Nigeria, Lagos	7255 15120
1200-1300		WCSN, Boston, Massachusetts	5980
1200-1300		WHRI, Noblesville, Indiana	5995 11715
1200-1300		WYFR, Oakland, California	5950 6175 6185
1200-1300		WYFR Satellite Net, California	13695
1215-1300		Radio Berlin Int'l, E. Germany	15445 17880 21465 21540
1215-1300		Radio Cairo, Egypt	17675
1230-1235		All India Radio, New Delhi	3905 4800 4920 7280 9565 9615 11620 11735 15120
1230-1245		Radio Korea, Seoul, South Korea	7275 11740
1230-1255		Radio Austria Int'l, Vienna	6155 9685 11915 15320
1230-1300		BBC, London, England*	6125 7255 6195 9635 9660 11780 12040 15270 15390 15435 17695
1230-1300		Radio Bangladesh, Dhaka	11750 15525
1230-1300		Radio Sweden, Stockholm	15190 15430
1240-1250	M	Radio Free Europe, Munich*	5985 7115 9695 9725 11895 15355
1245-1255		Radio France Int'l, Paris	9805 11670 11845 15155 15195 15300 15315 15365 21620 21645
1245-1300		Radio Berlin Int'l, E. Germany	9665 11705 11785 15170 15240



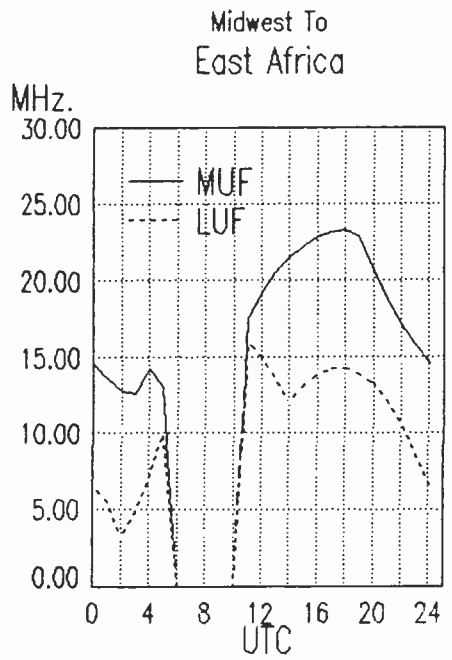


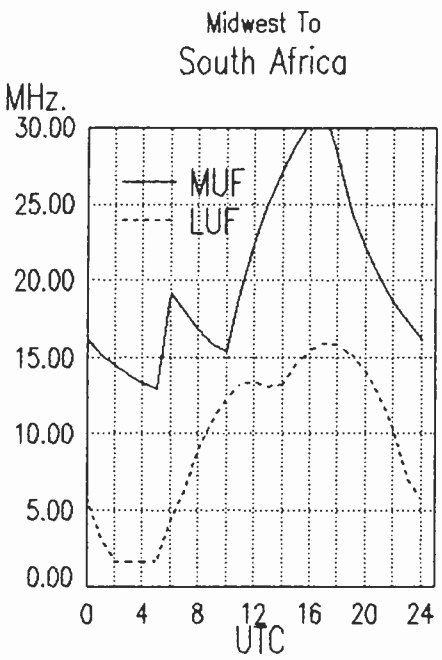


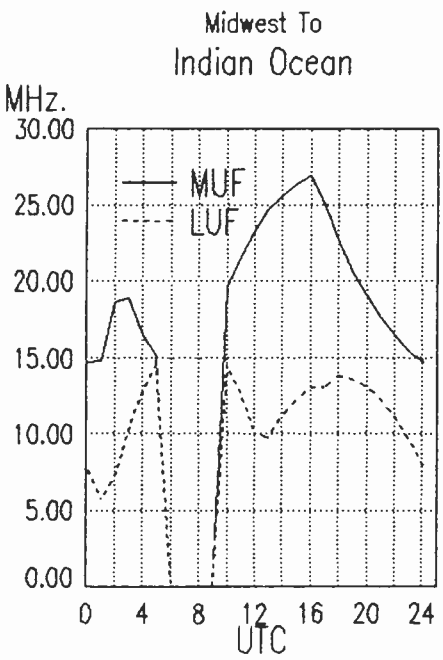
frequency SECTION

1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1305		Port Moresby, Papua New Guinea	3295	4890	5960	5980
			6020	6040	6080	6140
			9520			
1300-1315		Radio Berlin Int'l, East Germany	21465	21540		
1300-1325		Radio Bucharest, Romania	9690	11940	15405	17720
1300-1330		BBC, London, England	5995	6195	7160	9510
			9740	9750	11750	11775
			12095	15070	18080	21470
1305-1330	S	Radio Austria Int'l, Vienna	15320			
1300-1330		Radio Berlin Int'l, E. Germany	9665	11705	11785	15170
			15240			
1300-1330		Radio Cairo, Egypt	17595			
1300-1330		Radio Finland, Helsinki	11945	15400		
1300-1330		Radio Ghana, Accra	4915	7295		
1300-1330	S	Radio Norway Int'l, Oslo	15310			
1300-1330		Swiss Radio Int'l, Berne	11965			
1300-1330		Trans World Radio, Sri Lanka	11920			
1300-1330		Voice of Kenya, Nairobi	7270			
1300-1332	A,S	Trans World Radio, Bonaire	11815	15345		
1300-1350		Radio Pyongyang, North Korea	9325	9345	9600	
1300-1355		Radio Beijing, China	11600	11755	15280	15455
1300-1400		ABC, Alice Springs, Australia	2310	[ML]		
1300-1400		ABC, Katherine, Australia	2485			
1300-1400		ABC, Tennant Creek, Australia	2325	[ML]		
1300-1400		(US) Armed Forces Radio and TV	9700	15330	15430	
1300-1400		CBC Northern Quebec Service	9625	11720		
1300-1400		CBN, St. John's, Newfoundland	6160			
1300-1400		CBU, Vancouver, British Colombia	6160			
1300-1400		CFCF, Montreal, Quebec	6005			
1300-1400		CFCN, Calgary, Alberta	6030			
1300-1400		CHNS, Halifax, Nova Scotia	6130			
1300-1400		CKWX, Vancouver, British Colombia	6080			
1300-1400		CFRB, Toronto, Ontario	6070			
1300-1400	S	ELWA, Monrovia, Liberia	11830			
1300-1400		(US) Far East Network, Tokyo	3910			
1300-1400		FEBC, Manila, Philippines	11850			
1300-1400		HCJB, Quito, Ecuador	11740	15115	17890	
1300-1400	M-A	KYOI, Saipan	11900			
1300-1400		Radio Australia, Melbourne	5995	6060	6080	7205
			9580			
1300-1400	S	Radio Canada Int'l, Montreal	9625	11720	11955	15440
			17820			
1300-1400		Radio Jordan, Amman	9560			
1300-1400		Radio Korea, Seoul	9570	9750	15575	
1300-1400		Radio Moscow, USSR	11840	15135	15410	
1300-1400	A,S	Radio Tanzania, Dar es Salaam	7165			
1300-1400		SBC Radio One, Singapore	5010	5052	11940	
1300-1400	S	Superpower KUSW, Utah	9850			
1300-1400		Voice of America, Washington	6110	9760	11715	15160
1300-1400		Voice of Malaysia	7295			
1300-1400		Voice of Nigeria, Lagos	7255	15120		
1300-1400		WCSN, Boston, Massachusetts	5980			
1300-1400		WHRI, Noblesville, Indiana	9455	11790		
1300-1400		WYFR, Oakland, California	5950	7355	9565	
1300-1400		WYFR Satellite Net, California	13695			
1305-1315		Radio France Int'l, Paris	6175	9790	9805	11670
			11845	15155	15195	15300
			15315	15365	17620	17720
			17850	21645		
1330-1355	M-A	BRT, Brussels, Belgium	15510	15590		
1330-1355		Radio Austria Int'l, Vienna	15320			
1330-1400		BBC, London, England	5995	6195	9510	12095
			15070	21470		
1330-1400		All India Radio, New Delhi	9545	10330	11810	15335
1330-1400	M-A	Bhutan Beasting Service, Thimpu	6035			
1330-1400		Laotian National Radio	7113			
1330-1400		Radio Finland, Helsinki	11945	15400		
1330-1400		Radio Korea, Seoul, South Korea	7275			
1330-1400		Radio Tashkent, Uzbek, USSR	5945	7275	9540	9600
			11785			
1330-1400		Swiss Radio Int'l, Berne	11695	13685	15135	15570
			17830	21695		
1330-1400		UAE Radio, United Arab Emirates	17865	21605		
1330-1400		Voice of Islamic Republic Iran	9525	9685	9770	
1330-1400		Voice of Kenya, Nairobi	6100			
1330-1400		Voice of Turkey, Ankara	15255			





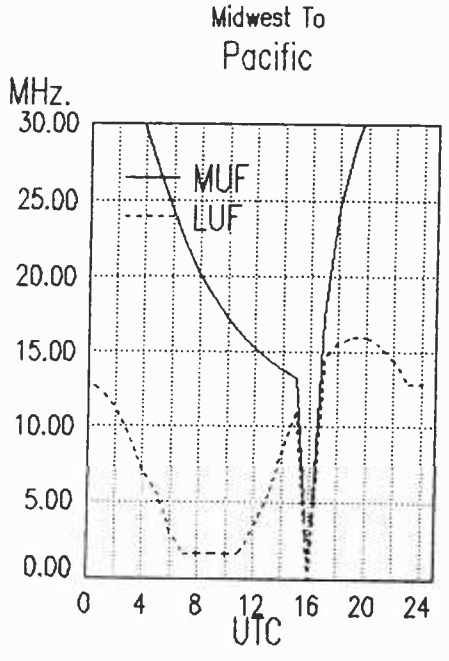


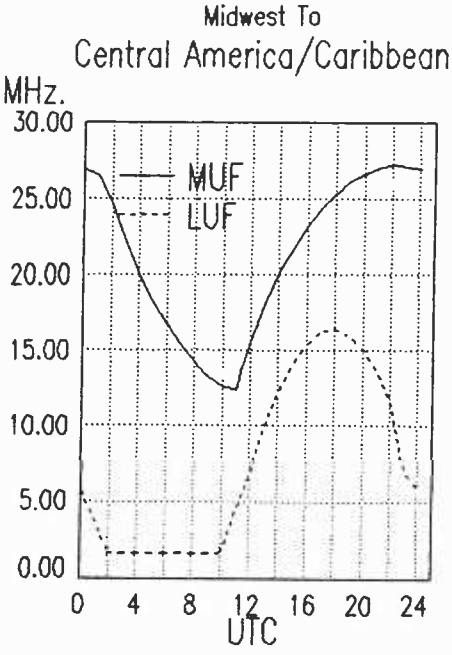
frequency SECTION

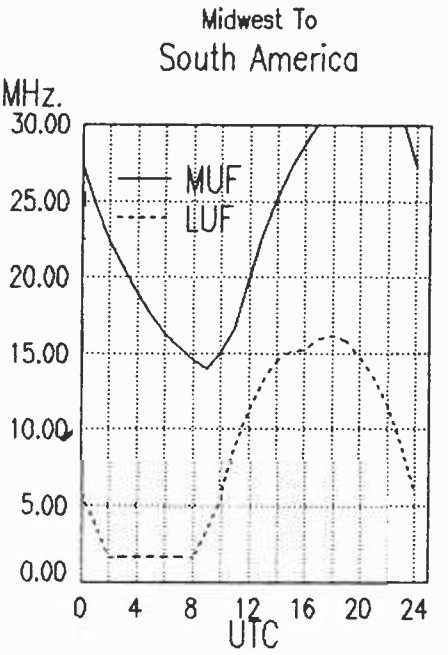
1330-1400		Voice of Vietnam, Hanoi	9840	15010			
1332-1400	A	Trans World Radio, Bonaire	11815	15345			

1400 UTC [10:00 AM EDT/6:00 AM PDT]

1400-1425		Radio Austria Int'l, Vienna	9665	12010	15320		
1400-1425		Radio Finland, Helsinki	11945	15400			
1400-1427		Voice of Nigeria, Lagos	15120				
1400-1430		ABC, Alice Springs, Australia	2310	[ML]			
1400-1430		ABC, Tennant Creek, Australia	2325	[ML]			
1400-1430		Radio Finland, Helsinki	11755	15185	17800		
1400-1430	S	Radio Norway Int'l, Oslo	15190	15300	15305	15310	
1400-1430		Radio Peace and Progress, USSR	17645				
1400-1430		Radio Polonia, Warsaw, Poland	6095	7285			
1400-1430		Radio Sweden, Stockholm	15345	15390			
1400-1430		Radio Tirana, Albania	9500	11985			
1400-1430		Voice of Ethiopia, Addis Ababa	9550	11710			
1400-1430		Voice of Republic of Iran	15085				
1400-1450	T	Radio Free Europe, Munich*	5985	7115	7695	9725	
			11895	15355			
1400-1450		Radio Pyongyang, North Korea	6576	11735			
1400-1455		Radio Beijing, China	11600	15165			
1400-1500		ABC, Katherine, Australia	2485				
1400-1500		ABC, Perth, Australia	9610				
1400-1500		Adventist World Radio, Italy	7275				
1400-1500		All India Radio, New Delhi	9545	11810	15335		
1400-1500		(US) Armed Forces Radio and TV	9700	15330	15430		
1400-1500		BBC, London, England	5995	6195	7180	9740	
			9750	11750	12095	15070	
			15260	17705	17790	21710	
			21470				
1400-1500		CBN, St. John's, Newfoundland	6160				
1400-1500		CBC Northern Quebec Service	9625	11720			
1400-1500	M-A	CBU, Vancouver, British Colombia	6160				
1400-1500		CFCF, Montreal, Quebec	6005				
1400-1500		CFCN, Calgary, Alberta	6030				
1400-1500		CHNS, Halifax, Nova Scotia	6130				
1400-1500		CKWX, Vancouver, British Colombia	6080				
1400-1500		CFRB, Toronto, Ontario	6070				
1400-1500	S	ELWA, Monrovia, Liberia	11830				
1400-1500		(US) Far East Network, Tokyo	3910				
1400-1500		FEBC, Manila, Philippines	9670	11850			
1400-1500		HCJB, Quito, Ecuador	11740	15115	17890		
1400-1500		KNLS, Anchor Point, Alaska	9750				
1400-1500		KYOI, Saipan	11900				
1400-1500		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	9580			
1400-1500	S	Radio Canada Int'l, Montreal	11955	17820			
1400-1500		Radio Japan, Tokyo	9695	11815			
1400-1500		Radio Jordan, Amman	9560				
1400-1500		Radio Moscow, USSR	5920	6067.8	LSB	7110	
			7300	7370	9655	9825	
			9895	11655	11840	11900	
			11930	12025	12055	13680	
1400-1500		Radio RSA, South Africa	21590				
1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165				
1400-1500		SBC Radio One, Singapore	5010	5052	11940		
1400-1500	S	Superpower KUSW, Utah	9850				
1400-1500		Voice of America, Washington	9645	9760	15160		
1400-1500		Voice of Kenya, Nairobi	6100				
1400-1500		Voice of Malaysia, Kuala Lumpur	4950				
1400-1500		Voice of Nigeria, Lagos	7255				
1400-1500		WCSN, Boston, Massachusetts	13760				
1400-1500		WHRI, Noblesville, Indiana	9455	11790			
1400-1500	S	WRNO, New Orleans, Louisiana	11965				
1400-1500		WYFR, Oakland, California	5950	9535	11830	15215	
1400-1500		WYFR Satellite Net	13695				
1415-1420		Radio Nepal, Kathmandu	3230	5005			
1415-1500		Radio Berlin Int'l, East Germany	15240	17880			
1425-1500	S	Radio Austria Int'l, Vienna	9665	12010	15320		
1430-1455	M-A	Radio Budapest, Hungary	9585	9835	11910	15160	
			15220				
1430-1500	F	ABC, Alice Springs, Australia	2310	[ML]			
1430-1500	F	ABC, Tennant Creek, Australia	2325	[ML]			
1430-1500		Burma Broadcasting Service	5985				
1430-1500		King of Hope, Southern Lebanon	6280				
1430-1500		KTWR, Agana, Guam	9780				
1430-1500		Radio Australia, Melbourne	6060	9580			





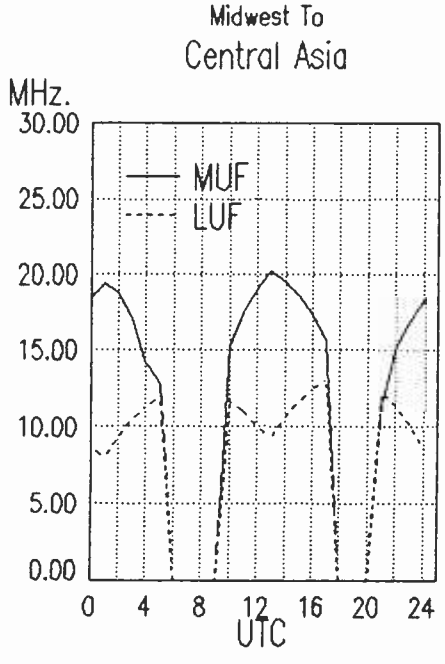


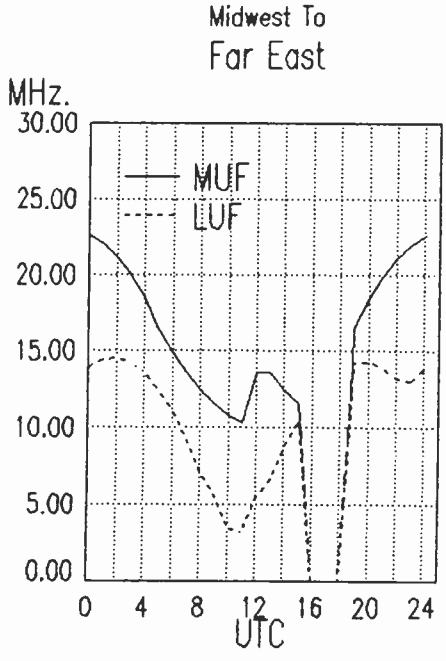
frequency SECTION

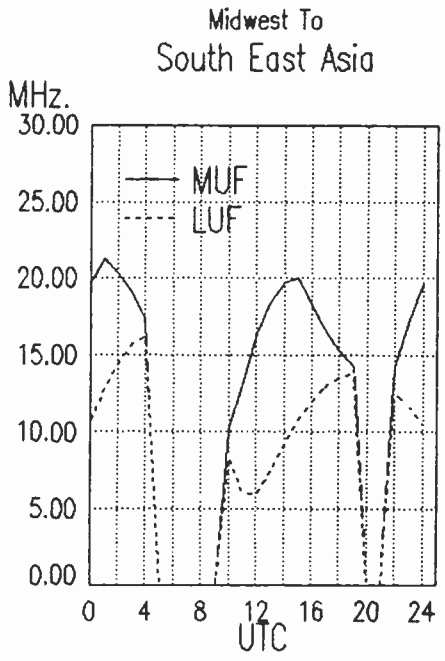
1430-1500		Radio Netherland, Hilversum	11740	13770	15560	17575
1430-1500		Radio Prague, Czechoslovakia	9605	11685	13715	15110
			15155	17705	21505	
1430-1500		Radio Sofia, Bulgaria	7245	9740	11735	
1430-1500		Radio Yugoslavia, Belgrade	7240	15240	15415	
1445-1500		Radio Berlin Int'l, East Germany	11785	15170	15255	
1445-1500	M-F	Radio Canada Int'l, Montreal	11915	11935	15160	15325
			15305	17820		
1445-1500	M-A	Radio Ulan Bator, Mongolia	9575	15305		

1500 UTC [11:00 AM EDT/7:00 AM PDT]

1500-1505		Africa No. 1, Gabon	7200	15200		
1500-1510		Vatican Radio, Vatican City	11960	15090	17870	
1500-1515		FEBA, Mahe, Seychelles	15325			
1500-1520		Radio Ulan Bator, Mongolia	9575	15305		
1500-1525		Radio Bucharest, Romania	9510	9690	11775	11940
			15250	15335		
1500-1525		Radio Netherland, Hilversum	11740	13770	15560	17575
1500-1530		Radio Berlin Int'l, East Germany	11785	15170	15255	
1500-1530		Radio Sofia Bulgaria	7245	9560	11735	15310
1500-1530	A,S	Radio Tanzania, Dar es Salaam	7165			
1500-1530		Radio Veritas Asia, Philippines	9770	15215		
1500-1550		Deutsche Welle, West Germany	7225	9735	17765	15135
			21600			
1500-1550		KTWR, Agana, Guam	9820			
1500-1550		Radio Pyongyang, North Korea	6576	7290	9325	9640
			9977			
1500-1555		Radio Beijing, China	11600	15165		
1500-1600	F	ABC, Alice Springs, Australia	2310 [ML]			
1500-1600		ABC, Perth, Australia	9610			
1500-1600	F	ABC, Tennant Creek, Australia	2325 [ML]			
1500-1600		(US) Armed Forces Radio and TV	9700	15330	15430	
1500-1600		AWR, Alajuela, Costa Rica	15460			
1500-1600		BBC, London, England	5995	6195	7180	9740
			11750	11775	12095	15070
			15260	15400	15420	17705
			17830	17885	21470	21710
1500-1600		Burma Broadcasting Service	5985			
1500-1600		CBC Northern Quebec Service	9625	11720		
1500-1600		CBN, St. John's, Newfoundland	6160			
1500-1600		CBU, Vancouver, British Colombia	6160			
1500-1600		CFCF, Montreal, Quebec	6005			
1500-1600		CFCN, Calgary, Alberta	6030			
1500-1600		CHNS, Halifax, Nova Scotia	6130			
1500-1600		CKWX, Vancouver, British Colombia	6080			
1500-1600		CFRB, Toronto, Ontario	6070			
1500-1600	S	ELWA, Monrovia, Liberia	11830			
1500-1600		(US) Far East Network, Tokyo	3910			
1500-1600		FEBC, Manila, Philippines	11850			
1500-1600		HCJB, Quito, Ecuador	11740	11810	15115	17890
1500-1600		King of Hope, Southern Lebanon	6280			
1500-1600		KNLS, Anchor Point, Alaska	9750			
1500-1600		KSDA, Agat, Guam	11980			
1500-1600		KYOI, Saipan	11900			
1500-1600		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1500-1600	S	Radio Canada Int'l, Montreal	9555	9625	11720	11915
			11955	15315	15440	17820
1500-1600		Radio Japan, Tokyo	9505	9695	11815	21700
1500-1600		Radio Jordan, Amman	9560			
1500-1600		Radio Moscow, USSR	11840	13680	15135	
1500-1600		Radio RSA, South Africa	9655	15125	17755	21590
1500-1600		SBC Radio One, Singapore	5010	5052	11940	
1500-1600	S	Superpower KUSW, Utah	9850			
1500-1600		Voice of America, Washington	9000	9760	15205	
1500-1600		Voice of Ethiopia, Addis Ababa	7165	9560		
1500-1600		Voice of Indonesia, Jakarta	11790	15150		
1500-1600		Voice of Kenya, Nairobi	6100			
1500-1600		Voice of Malaysia, Kuala Lumpur	4950			
1500-1600		Voice of Nigeria, Lagos	7255	11770		
1500-1600		WCSN, Boston, Massachusetts	13760			
1500-1600		WHRI, Noblesville, Indiana	15105	21655		
1500-1600		WRNO, New Orleans, Louisiana	11965			
1500-1600		WYFR, Oakland, California	5950	9535	11830	13695
			15215	15375	17612	
1500-1600	M-A	WYFR Satellite Net, California	13695	15375		
1505-1530		Radio Finland, Helsinki	11850	15185		





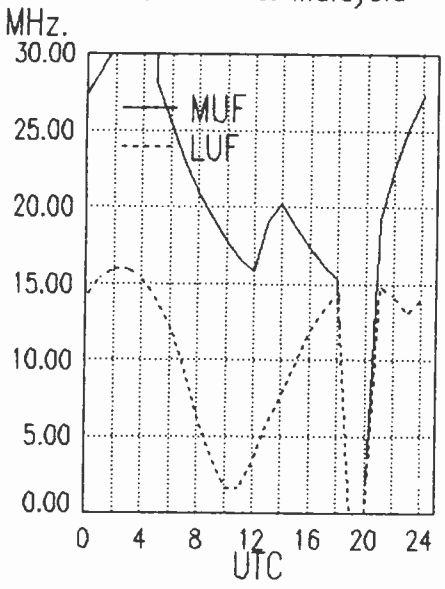


1515-1600		Radio Berlin Int'l, East Germany	6115	7295	9730	
1515-1600		FEBA, Mahe, Seychelles	11865	15325		
1530-1545		All India Radio, New Delhi	3905	3925	4860	6160
			7160	7412	9545	9950
1530-1555	M-A	BRT, Brussels, Belgium	17595	15510	21810	
1530-1555		Radio Austria Int'l, Vienna	6155	11780	11915	
1530-1600		Radio Prague, Czechoslovakia	6055	7345	9605	11665
			11685	11990	15110	13715
			17705	21505		
1530-1600		Radio Tanzania, Dar es Salaam	9684			
1530-1600		Radio Tirana, Albania	9480	11835		
1530-1600		Swiss Radio Int'l, Berne	17830	13685	21630	
1530-1600		Voice of Asia, Taiwan	5980	7445		
1530-1600		Voice of Nigeria, Lagos	15120			
1540-1550	M-A	Voice of Greece, Athens	9855	11645	15630	
1545-1600		Radio Canada Int'l, Montreal	9555	11915	11935	15315
			15325	17820		
1545-1600		Radio Korea, Seoul, South Korea	7275	9870		
1545-1600		Vatican Radio, Vatican City	11810	15120	17730	
1550-1600	H-S	KTWR, Agana, Guam	9780			

1600 UTC [12:00 PM EDT/9:00 AM PDT]

1600-1610		FEBA, Mahe, Seychelles	11865	15325		
1600-1610		Radio Lesotho, Maseru	4800			
1600-1610		SBC Radio One, Singapore	5010	5052	11940	
1600-1625		Radio Budapest, Hungary	6110	9585	9835	11910
			15160			
1600-1625		Radio Prague, Czechoslovakia	6055	7345	9605	11665
			11685	11990	15110	13715
			15110	17705	21505	
1600-1630		ELWA, Monrovia, Liberia	11830			
1600-1630	S	Radio Norway Int'l, Oslo	15220	15310		
1600-1630		Radio Pakistan, Islamabad	7365	9465	9785	11615
			11625	15125		
1600-1630		Radio Polonia, Warsaw, Poland	6135	9540		
1600-1630	M-F	Radio Portugal, Lisbon	15245			
1600-1630		Radio Sweden, Stockholm	6065	11855		
1600-1630		SLBC, Colombo, Sri Lanka	6075	9720		

Midwest To
Australia & Malaysia



1600-1630		Trans World Radio, Swaziland	5055	9525		
1600-1630		Voice of Asia, Taiwan	5980	7445		
1600-1630		Voice of Vietnam, Hanoi	9840	12020		
1600-1645	H-A	KTWR, Agana, Guam	9820			
1600-1645		Radio Nacional Angola, Luanda	7245	9535	11955	
1600-1645		UAE Radio, United Arab Emirates	15320	15435	17865	
1600-1655		Radio Beijing, China	7295	9570	11715	15130
1600-1700	F	ABC, Alice Springs, Australia	2310	[ML]		
1600-1700		ABC, Perth, Australia	9610			
1600-1700	F	ABC, Tennant Creek, Australia	2325	[ML]		
1600-1700		(US) Armed Forces Radio and TV	9700	15330	15430	
1600-1700		AWR, Alajuela, Costa Rica	15460			
1600-1700		BBC, London, England	5975	5995	6195	7105
			7180	9515	9605	9740
			11705	11775	11820	12095
			15070	15260	15400	17885
1600-1700		CBC Northern Quebec Service	9625	11720		
1600-1700		CBN, St. John's, Newfoundland	6160			
1600-1700		CBU, Vancouver, British Colombia	6160			
1600-1700		CFCF, Montreal, Quebec	6005			
1600-1700		CFCN, Calgary, Alberta	6030			
1600-1700		CHNS, Halifax, Nova Scotia	6130			
1600-1700		CKWX, Vancouver, British Colombia	6080			
1600-1700		CFRB, Toronto, Ontario	6070			
1600-1700		(US) Far East Network, Tokyo	3910			
1600-1700	S	KCBI, Dallas, Texas	11735			
1600-1700		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1600-1700		Radio Beijing, China	15130			
1600-1700		Radio France Int'l, Paris	11705	15360	17620	
1600-1700		Radio Jordan, Amman	9560			
1600-1700		Radio Korea, Seoul, South Korea	5975	9870		
1600-1700		Radio Malawi, Blantyre	3380	5995		
1600-1700		Radio Moscow, USSR	11840	11950	15135	
1600-1700		Radio Riyadh, Saudi Arabia	9705	9720		
1600-1700		Radio Tanzania, Dar es Salaam	9684			
1600-1700		WCSN, Boston, MA	21640			
1600-1700		WHRI, Noblesville, Indiana	15105	21655		
1600-1700	S	WRNO, Louisiana	11965			
1600-1700		WYFR Satellite Net	13645	15566		
1600-1700		WYFR, Okeechobee, Florida	9535	11830	15170	15215
1600-1700		Radio Zambia, Lusaka	9580			
1630-1655	M-A	BRT, Brussels, Belgium	17595	21810		
1630-1700		RTM Morocco	17595	17815		

1700 UTC [1:00 PM EDT/10:00 AM PDT]

1700-1705		Radio Uganda, Kampala	4976	5026		
1700-1715		Kol Israel, Jerusalem	9385	9640	9925	11585
1700-1715	M-A	Voice of Namibia (Angola)	11955			
1700-1725		Radio Netherland, Hilversum	6020	15570		
1700-1730		Radio Australia, Melbourne	5995	6060	6080	7205
			9580			
1700-1730		Radio Berlin Int'l, East Germany	6115	7260	9730	
1700-1730		Radio Japan, Tokyo	5990	11815		
1700-1730	S	Radio Norway Int'l, Oslo	9655	15220	15310	
1700-1730		Radio Sweden Int'l, Oslo	6065			
1700-1730		Swiss Radio Int'l, Berne	3985	6165	9535	
1700-1745		BBC, London, England	5975	5995	9515	9740
			11775	12095	15070	15260
			15400	17885		
1700-1750		Radio Pyongyang, North Korea	7290	9325	9640	9977
1700-1755		Radio Beijing, China	7295	9570		
1700-1800	F	ABC, Alice Springs, Australia	2310	[ML]		
1700-1800		ABC, Tennant Creek, Australia	2325	[ML]		
1700-1800		(US) Armed Forces Radio and TV	9700	15330	15430	
1700-1800		AWR Africa, Gabon	9625			
1700-1800		CBC Northern Quebec Service	9625	11720		
1700-1800		CBN, St. John's, Newfoundland	6160			
1700-1800		CBU, Vancouver, British Colombia	6160			
1700-1800		CFCF, Montreal, Quebec	6005			
1700-1800		CFCN, Calgary, Alberta	6030			

frequency SECTION

1700-1800		CHNS, Halifax, Nova Scotia	6130				
1700-1800		CKWX, Vancouver, British Colombia	6080				
1700-1800		CFRB, Toronto, Ontario	6070				
1700-1800		(US) Far East Network, Tokyo	3910				
1700-1800	A,S	KCBI, Dallas, Texas	11735				
1700-1800		Radio Havana Cuba	11920				
1700-1800		Radio Jordan, Amman	9560				
1700-1800	M-F	Radio Malabo, Equatorial Guinea	9553	[ML]			
1700-1800		Radio Moscow, USSR	11840	11950	15135		
1700-1800		Radio Riyadh, Saudi Arabia	9705	9720			
1700-1800		Radio Tanzania, Dar es Salaam	9684				
1700-1800		Radio Zambia, Lusaka	9580				
1700-1800		RTM Morocco	17815				
1700-1800		SBC Radio One, Singapore	5052	11940			
1700-1800	A,S	Swaziland Commercial Radio	6155				
1700-1800	M-A	Superpower KUSW, Utah	15225				
1700-1800		Voice of Africa, Egypt	15255				
1700-1800		Voice of America, Washington	6110	9575	9645	11760	
			11920	15410	15445	15580	
			15600	17785	17800	17870	
1700-1800		Voice of Kenya, Nairobi	6100				
1700-1800		Voice of Nigeria, Lagos	11770				
1700-1800		WCSN, Boston, Massachusetts	21640				
1700-1800		WHRI, Noblesville, Indiana	15105				
1700-1800		WINB, Red Lion, Pennsylvania	15295				
1700-1800	S-F	WMLK, Bethel, Pennsylvania	9465				
1700-1800		WRNO, New Orleans, Louisiana	15420				
1700-1800		WYFR, Oakland, California	9535	11830	13695	15135	
			15170				
1700-1800		WYFR Satellite Net, California	13760				
1715-1730		Radio Korea, Seoul, South Korea	9870	15575			
1715-1745		BBC, London, England*	3975	6185	7165		
1715-1800		Radio Berlin Int'l, East Germany	9665	15145	15255		
1718-1800		Radio Pakistan, Islamabad	6210	7835			
1725-1740		Radio Suriname Int'l, Paramibo	7835v				
1725-1800		Radio New Zealand, Wellington	11760	15150			
1730-1735		All India Radio, New Delhi	4840	4860	4920	6160	
			7412	9950			
1730-1755		BRT Brussels, Belgium	5910	11695			
1730-1800		KNLS, Anchor Point, Alaska	7355				
1730-1755		Radio Bucharest, Romania	7105	9530	9685	11790	
			11940				
1730-1800		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	9580			
1730-1800		Radio Berlin Int'l, E. Germany	6115	7260	9730		
1730-1800		Radio Polonia, Warsaw, Poland	6135	9540			
1730-1800		Radio Prague, Czechoslovakia	13715	15165			
1730-1800		Radio Sofia, Bulgaria	7245	9560	11735	15310	
1730-1800		Radio Yugoslavia, Belgrade	5980	6100	7240	11735	
1730-1800		RAE, Buenos Aires, Argentina	15345				
1734-1800		FEBA, Mahe, Seychelles	11760				
1745-1800		BBC, London, England	12095	15260	15400		
1745-1800		SLBC, Colmbo, Sri Lanka	11800				

1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805	A	SBC Radio One, Singapore	11940				
1800-1815		Radio Cameroon, Yaounde	3970	4750	4795	4850	
			5010				
1800-1815		SLBC, Colombo, Sri Lanka	11800				
1800-1825	A,S	FEBA, Mahe, Seychelles	11760				
1800-1825		Radio Prague, Czechoslovakia	9605	11685	11990	13715	
			15110	21505			
1800-1825		RAE, Buenos Aires, Argentina	15345				
1800-1830		BBC, London, England	9740	11820	12095	15070	
			15400				
1800-1830	S	Radio Bamako, Mali	4835	5995			
1800-1830		Radio Canada Int'l, Montreal	15260	17820			
1800-1830		Radio Mozambique, Maputo	3265	4855	9618		
1800-1830		Radio Prague, Czechoslovakia	5930	7345	13715		
1800-1830		Radio Sofia Bulgaria	7245	7155	9700		
1800-1830		Swiss Radio Int'l, Berne	3985	6165	9535		
1800-1830		Voice of Africa, Egypt	15255				
1800-1830		Voice of Vietnam, Hanoi	9840	12020			
1800-1845		Radio Abidjan, Ivory Coast	7215				
1800-1845		Trans World Radio, Swaziland	9525				
1800-1850		Deutsche Welle, West Germany	11785	13790	15135	17715	
1800-1850		Radio Bras, Brasilia, Brazil	15265				
1800-1856		Radio RSA, South Africa	17880				
1800-1900	F	ABC, Alice Springs, Australia	2310	[ML]			
1800-1900	F	ABC, Tennant Creek, Australia	2325	[ML]			
1800-1900		All India Radio, New Delhi	11935	15360			
1800-1900		(US) Armed Forces Radio and TV	9700	15330	15430		
1800-1900		CBC Northern Quebec Service	9625	11720			
1800-1900		CBN, St. John's, Newfoundland	6160				
1800-1900		CBU, Vancouver, British Colombia	6160				
1800-1900		CFCF, Montreal, Quebec	6005				
1800-1900		CFCN, Calgary, Alberta	6030				
1800-1900		CHNS, Halifax, Nova Scotia	6130				
1800-1900		CKWX, Vancouver, British Colombia	6080				
1800-1900		CFRB, Toronto, Ontario	6070				
1800-1900		(US) Far East Network, Tokyo	3910				
1800-1900	A,S	KCBI, Dallas, Texas	11735				
1800-1900		KNLS, Anchor Point, Alaska	7355				
1800-1900		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	7215	9580		
1800-1900		Radio Jamahiriya, Libya	15450				
1800-1900		Radio Korea, Seoul, South Korea	15575				
1800-1900		Radio Kuwait, Kuwait	11665				
1800-1900		Radio Malabo, Equatorial Guinea	9553v	[ML]			
1800-1900		Radio Moscow, USSR	11840	12060			
1800-1900		Radio New Zealand, Wellington	11780	15150			
1800-1900		Radio Riyadh, Saudi Arabia	9705	9720			
1800-1900		Radio Tanzania, Dar es Salaam	9684				
1800-1900		Radio Zambia, Lusaka	9580				
1800-1900	M-A	Superpower KUSW, Utah	15225				
1800-1900	A,S	Swaziland Commercial Radio	6155				
1800-1900		Voice of America, Washington	9700	9760	11760	15410	
			15445	15580	15600	17785	
			17800	17870	21485		
1800-1900		Voice of Kenya, Nairobi	6100				
1800-1900		Voice of Nigeria, Lagos	11770	15120			
1800-1900		WCSN, Boston, Massachusetts	15390				
1800-1900		WHRI, Noblesville, Indiana	13760	17830			
1800-1900		WINB, Red Lion, Pennsylvania	15295				
1800-1900	S-F	WMLK, Bethel, Pennsylvania	9465				
1800-1900		WRNO, New Orleans, Louisiana	15420				
1800-1900		WYFR, Oakland, California	11580	15170			
1800-1900		WYFR Satellite Net, California	11830	13695			
1815-1900		Radio Bangladesh, Dhaka	6240	7505			
1830-1855		Radio Austria Int'l, Vienna	5945	6155	11825	12015	
1830-1855		BRT, Brussels, Belgium	5910	9860	11695		
1800-1855		Radio Polonia, Warsaw, Poland	5995	6135	7125	7285	
			9525	11840			
1830-1900		BBC, London, England	12095	15070	15400		
1830-1900		Radio Budapest, Hungary	6110	7220	9585	9835	
			11910	15160			
1830-1900	A,S	Radio Canada Int'l, Montreal	15260	17820			
1830-1900		Radio Finland, Helsinki	6120	9550	11755	15185	
1830-1900		Radio Havana Cuba	11800				
1830-1900		Radio Kuwait	11665				
1830-1900	MWF	Radio Mozambique, Maputo	3265	4855	9618		
1830-1900		Radio Netherland, Hilversum	6020	15175	17605	21685	
1830-1900		Radio Sofia Bulgaria	9700	11720			
1830-1900		Radio Sweden, Stockholm	15240				
1830-1900		Spanish Foreign Radio, Madrid	7275	9765	11840	15375	
1830-1900		Voice of Islamic Republic Iran	9695				
1830-1900		WINB, Red Lion, Pennsylvania	15185				
1840-1850	M-A	Voice of Greece, Athens	11645	12045	15630		
1840-1900		Radio Senegal, Dakar	4950				
1845-1855		Radio Nacional, Conaky, Guinea	4833	4900	7125		
1845-1900		All India Radio, New Delhi	7412	11620			
1855-1900		Africa No. 1, Gabon	4830	15475			

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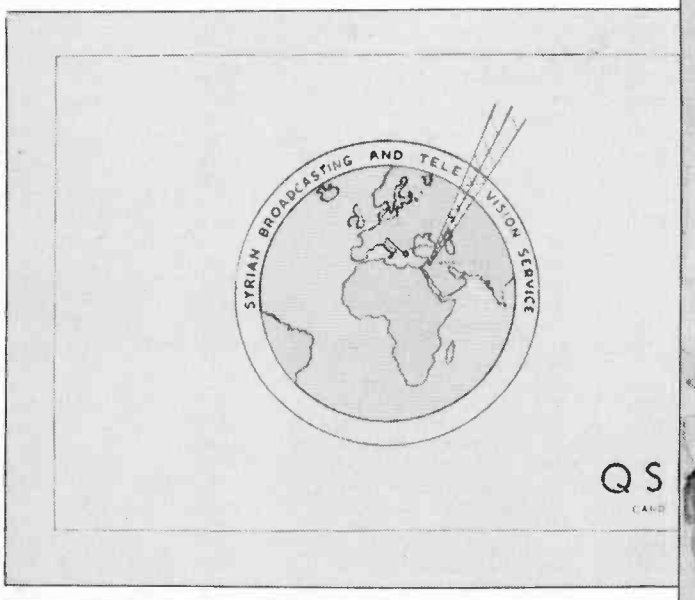
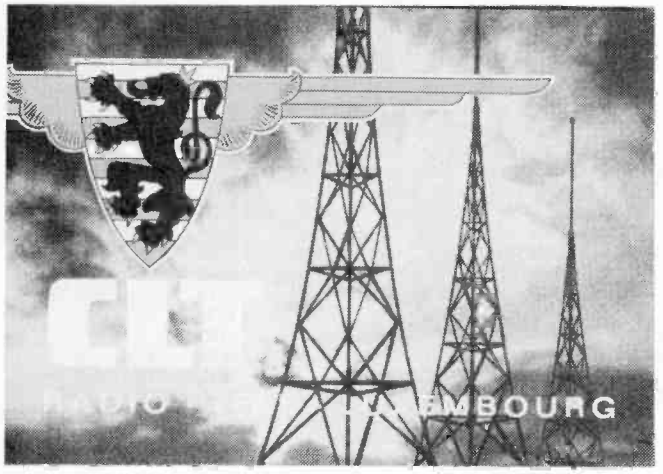
1900 UTC [3:00 PM EDT/12:00 PM PDT]

1900-1903		Africa No. 1, Gabon	15475				
1900-1915		Radio Bangladesh, Dhaka	6240	7505			
1900-1915		Radio Tanzania, Dar es Salaam	9684				
1900-1925		Radio Netherland, Hilversum	6020	15175	17605	21685	
1900-1925		Voice of Islamic Republic Iran	9695				
1900-1930	F	ABC, Alice Springs, Australia	2310	[ML]			
1900-1930	F	ABC, Tennant Creek, Australia	2325	[ML]			
1900-1930		Kol Israel, Jerusalem	11605	15485	15592		
1900-1930		Radio Afghanistan, Kabul	7160	9640			
1900-1930		Radio Berlin Int'l, East Germany	9665	11920	15255		
1900-1930		Radio Japan, Tokyo	9505				
1900-1930		Radio Kiev, Ukraine, USSR	6010	6090	6165	7170	
1900-1930	S	Radio Norway Int'l, Oslo	9590	15220	15310		
1900-1930	M-F	Radio Portugal, Lisbon	11870	15250			
1900-1930		Radio Sofia, Bulgaria	7245	9560	11735	15310	
1900-1930		Radio Yugoslavia, Belgrade	5980	7240	9620		
1900-1930		Voice of Vietnam, Hanoi	9840	12020			
1900-1955		Radio Beijing, China	6860	9470			
1900-2000		All India Radio, New Delhi	7412	11620	11935	15360	
1900-2000		(US) Armed Forces Radio and TV	9700	15330	15430		
1900-2000		BBC, London, England	15400	12095	15070		
1900-2000		CBC Northern Quebec Service	9625	11720			
1900-2000		CBN, St. John's, Newfoundland	6160				
1900-2000		CBU, Vancouver, British Colombia	6160				
1900-2000		CFCF, Montreal, Quebec	6005				
1900-2000		CFCN, Calgary, Alberta	6030				
1900-2000		CHNS, Halifax, Nova Scotia	6130				
1900-2000		CKWX, Vancouver, British Colombia	6080				
1900-2000		CFRB, Toronto, Ontario	6070				
1900-2000		(US) Far East Network, Tokyo	3910				
1900-2000		HCJB, Quito, Ecuador	11790	15270	17790		
1900-2000	A,S	KCBI, Dallas, Texas	11735				



This month's QSL's come from Elmer J. Cronkright of Wyoming, Michigan. The camel race is from Radio Beijing, and the mysterious lady of the Orient is from All India Radio.



frequency SECTION

1900-2000		KNLS, Anchor Point, Alaska	7355				
1900-2000		KYOI, Saipan	9495				
1900-2000		Radio Algiers, Algeria	9509	9685	15215	17745	
1900-2000		Radio Australia, Melbourne	6035	6060	6080	7205	
			7215	9580			
1900-2000		Radio Ghana, Accra	6130				
1900-2000		Radio Havana Cuba	11800				
1900-2000		Radio Kuwait, Kuwait	11665				
1900-2000	M-A	Radio Malabo, Equatorial Guinea	9553	[ML]			
1900-2000		Radio Moscow, USSR	9735	11840	11950	12060	
			15135	15475			
1900-2000		Radio New Zealand, Wellington	11780	15150			
1900-2000		Radio Prague, Czechoslovakia	5930	7345			
1900-2000		Radio Riyadh, Saudi Arabia	9705	9720			
1900-2000		Radio Zambia, Lusaka	9580				
1900-2000		Spanish Foreign Radio, Madrid	9765	15375	15395		
1900-2000	M-A	Superpower KUSW, Utah	15690				
1900-2000	A,S	Swaziland Commercial Radio	6155				
1900-2000		Trans World Radio Swaziland	3205				
1900-2000		Voice of America, Washington	9760	11760	15410	15445	
			15580	15600	17785	17800	
			17870				
1900-2000		Voice of Ethiopia, Addis Ababa	9595				
1900-2000		Voice of Kenya, Nairobi	6100				
1900-2000		Voice of Nigeria, Lagos	7255	11770			
1900-2000		WCSN, Boston, Massachusetts	15390				
1900-2000		WHRI, Noblesville, Indiana	13760	17830			
1900-2000		WINB, Red Lion, Pennsylvania	15295				
1900-2000	S-F	WMLK, Bethel, Pennsylvania	9465				
1900-2000		WRNO, New Orleans, Louisiana	15420				
1900-2000		WYFR, Oakland, California	11830	13695	15170	21615	
1900-2000	M-A	WYFR Satellite Net, California	13695				
1910-1920		Radio Botswana, Gaborone	3356	4820			
1920-1930	M-A	Voice of Greece, Athens	7430	9425	11645		
1930-1940		Radio Togo, Lome	5047				
1930-2000		ABC, Katherine, Australia	2485				
1930-2000		Radio Beijing, China	6955	7480	9440		
1930-2000		Radio Bucharest, Romania	11940				
1930-2000	M-F	Radio Canada Int'l, Montreal	5995	7235	11945	15325	
			17875				
1930-2000		Radio Korea, Seoul, South Korea	15575				
1930-2000	M-F	Radio Portugal, Lisbon	9605	11740			
1930-2000		Voice of Republic of Iran	9022	9770			
1935-1955		RAI, Rome, Italy	7275	7290	9575		
1940-2000	M-A	Radio Ulan Bator, Mongolia	9575	11870			
1945-2000		All India Radio, New Delhi	9755	11860			
1950-2000		Vatican Radio, Vatican City	9645				

2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005	S-F	Port Moresby, Papua New Guinea	3295	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
2000-2005		Radio Zambia, Lusaka	3345	6165			
2000-2005	M-A	Vatican Radio, Vatican City	6190	6248	7250	9625	
			9645	11700	15120		
2000-2010	A	Radio Zambia, Lusaka	3345	6165			
2000-2010		Voice of Kenya, Nairobi	6100				
2000-2015		Radio Togo, Lome	3220	5047			
2000-2015	M-A	Radio Ulan Bator, Mongolia	9575	11870			
2000-2015		Trans World Radio, Swaziland	3205				
2000-2025		Radio Beijing, China	6955	7480	9440		
2000-2025		Radio Bucharest, Romania	5990	6105	7145	7195	
2000-2030		KNLS, Anchor Point, Alaska	7355				
2000-2030		Radio Australia, Melbourne	6035	7205	7215	9580	
			9620				
2000-2030		Radio Budapest, Hungary	6110	7220	9585	9835	
			11910	15160			
2000-2030		Radio Canada Int'l, Montreal	9555	6030	11945	15325	
			17820	17875			
2000-2030		Radio Ghana, Nairobi	3366	4915			
2000-2030		Radio Korea, Seoul, South Korea	15575				
2000-2030		Radio Norway International, Oslo	9590	15310			
2000-2030		Radio Polonia, Warsaw, Poland	7125	7145	9525		
2000-2030		Swaziland Commercial Radio	6155				
2000-2030		Voice of Nigeria, Lagos	7255				
2000-2030		Voice of Republic of Iran	9022	9770			
2000-2045		All India Radio, New Delhi	7412	9755	9910	11620	
			11860				
2000-2045		WYFR, Oakland, California	11830	13695	15170	15220	
			15440	17750	21525		
2000-2050		Radio Pyongyang, North Korea	6576	9345	9640	9977	
2000-2056		Radio RSA, South Africa	7270	11900	15252		
2000-2100	M-A	ABC, Alice Springs, Australia	2310	[ML]			
2000-2100		ABC, Katherine, Australia	2485				
2000-2100	M-A	ABC, Tennant Creek, Australia	2325	[ML]			
2000-2100		(US) Armed Forces Radio and TV	9700	15330	15430		
2000-2100		BBC, London, England	5975	6005	6175	9410	
			9515	12095	15070	15260	
			15400	17760			
2000-2100		CBC Northern Quebec Service	11720				
2000-2100		CBN, St. John's, Newfoundland	6160				
2000-2100		CBU, Vancouver, British Colombia	6160				
2000-2100		CFCF, Montreal, Quebec	6005				
2000-2100		CFCN, Calgary, Alberta	6030				
2000-2100		CHNS, Halifax, Nova Scotia	6130				
2000-2100		CKWX, Vancouver, British Colombia	6080				
2000-2100		CFRB, Toronto, Ontario	6070				
2000-2100		(US) Far East Network, Tokyo	3910				
2000-2100		Radio Kuwait, Kuwait	11665				
2000-2100		King of Hope, Southern Lebanon	6280				
2000-2100		KVOH, Rancho Simi, California	17775				
2000-2100		KYOI, Saipan	9495				
2000-2100		Radio Baghdad, Iraq	9770	15230			
2000-2100		Radio Malabo, Equatorial Guinea	9553v				
2000-2100		Radio Moscow, USSR	11675	11840	11950	15535	
2000-2100		Radio New Zealand, Wellington	11780	15150			
2000-2100		Radio Riyadh, Saudi Arabia	9705	9720			
2000-2100		Radio Zambia, Lusaka	9580				
2000-2100		Superpower KUSW, Utah	15095				
2000-2100		Voice of America, Washington	9760	11760	15600		
2000-2100		Voice of Turkey, Ankara	9825				
2000-2100		Voice of Nigeria, Lagos	11770				
2000-2100		WCSN, Boston, Massachusetts	15390				
2000-2100		WHRI, Noblesville, Indiana	13760	17830			
2000-2100		WRNO, New Orleans, Louisiana	15420				
2003-2100		WINB, Red Lion, Pennsylvania	15295				
2005-2100		Radio Damascus, Syria	12085	15095			
2010-2100	A,S	Voice of Kenya, Nairobi	6100				
2015-2100		ELWA, Monrovia, Liberia	11830				
2015-2100		Radio Cairo, Egypt	9670				
2025-2045		RAI, Rome, Italy	7235	9575	9710		
2030-2055		Radio Polonia, Warsaw, Poland	6095	7285			
2030-2100		Radio Australia, Melbourne	9580	9620			
2030-2100		Radio Beijing, China	6955	7480	9440	9745	
			11790				
2030-2100	A,S	Radio Canada Int'l, Montreal	6030	9555	11945	15325	
			17820	17875			
2030-2100		Radio Korea, Seoul, South Korea	13670				
2030-2100		Radio Netherland, Hilversum	9590	9895	11740	15560	
2030-2100	M-F	Radio Portugal, Lisbon	7155	9740			
2030-2100		Radio Sofia Bulgaria	7115	7155	9700		
2030-2100		Radio Tirana, Albania	9480	11835			
2030-2100		Voice of Africa, Cairo, Egypt	15375				
2030-2100		Voice of Vietnam, Hanoi	9840	12020			
2030-2100		Spanish Foreign Radio, Madrid	7275	9765			
2040-2100		Radio Havana Cuba	15230	15300			
2045-2100		All India Radio, New Delhi	7412	9550	9910	11620	
			11715				
2045-2100		IBRA Radio, Malta	6100				
2045-2100		Radio Berlin Int'l, East Germany	5965	6125			
2045-2100		Vatican Radio, Vatican City	9625	11700	11760	15120	
2045-2100		WYFR, Oakland, California	11830	13695	15170	15566	
			17612	17845			
2050-2100		Vatican Radio, Vatican City	6190	7250	9645		

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2100 UTC [5:00 PM EDT/2:00 PM PDT]

2100-2105		Radio Damascus, Syria	11900	12085			
2100-2105		Radio Zambia, Lusaka	3345	6165			
2100-2110		Vatican Radio, Vatican City	6190	7250	9645		
2100-2110	A,S	Voice of Kenya, Nairobi	6100				
2100-2125		BRT Brussels, Belgium	5910	9925			
2100-2115		IBRA Radio, Malta	6100				
2100-2125		Radio Austria Int'l, Vienna	5945	6155	9585	9870	
2100-2125		Radio Beijing, China	6955	7480	9440	9745	
			11790				
2100-2125		Radio Bucharest, Romania	5990	6105	7145	7195	
2100-2125		Radio Netherland, Hilversum	9540	9715	9895	15560	
2100-2130		Radio Berlin Int'l, East Germany	5965	6125			
2100-2130	T,F	Radio Budapest, Hungary	6110	9585	9835	11910	
			15160				
2100-2130		Radio Japan, Tokyo	5965	7140	7280	17835	
2100-2130		Radio Korea, Seoul, South Korea	13670				
2100-2130		Radio Moscow, USSR	9490	9620	9665	9765	
			9865	11675	11840		
2100-2130		Radio Sweden, Stockholm	6065	11845			
2100-2130		Swiss Radio Int'l, Berne	9885	12035	15570		
2100-2135		ELWA, Monrovia, Liberia	11830				
2100-2140		Radio Havana Cuba	15230	15300	15340		
2100-2145		Radio Cairo, Egypt	9670				
2100-2150		Deutsche Welle, West Germany	9650				
2100-2150		Radio Baghdad, Iraq	9770				
2100-2155		Radio Beijing, China	6860	9470	9860		
2100-2200	M-A	ABC, Alice Springs, Australia	2310	[ML]			
2100-2200		ABC, Katherine, Australia	2485				
2100-2200	M-A	ABC, Tennant Creek, Australia	2325	[ML]			
2100-2200		All India Radio, New Delhi	9550	9910	11715		
2100-2200		(US) Armed Forces Radio and TV	15330	15345	15430		
2100-2200		BBC, London, England	3995	5975	6005	6175	
			6180	7325	9410	12095	
			15070	15260	17760		
2100-2200		CBC Northern Quebec Service	9625	11720			
2100-2200		CBN, St. John's, Newfoundland	6160				
2100-2200		CBU, Vancouver, British Colombia	6160				
2100-2200		CFCF, Montreal, Quebec	6005				
2100-2200		CFCN, Calgary, Alberta	6030				
2100-2200		CHNS, Halifax, Nova Scotia	6130				
2100-2200		CKWX, Vancouver, British Colombia	6080				
2100-2200		CFRB, Toronto, Ontario	6070				
2100-2200		(US) Far East Network, Tokyo	3910				
2100-2200		King of Hope, Southern Lebanon	6280				
2100-2200		KSDA, Agat, Guam	11965				
2100-2200	M-A	KUSW, Salt Lake City, Utah	17715				
2100-2200		KVOH, Rancho Simi, California	17775				
2100-2200	A,S	Radio Malabo, Equatorial Guinea	9552.5				
2100-2200	A,S	Radio Zambia, Lusaka	9580				
2100-2200		Voice of Africa, Cairo, Egypt	15375				
2100-2200		Voice of America, Washington	6040	6045	9760	11760	
			15410	15445	15580	17785	
			17800	17870			
2100-2200		Voice of Nigeria, Lagos	15120				
2100-2200		WCSN, Boston, Massachusetts	15390				
2100-2200		WHRI, Noblesville, Indiana	9770	17830			
2100-2200		WINB, Red Lion, Pennsylvania	15185				
2100-2200		WRNO, New Orleans, Louisiana	13760				
2100-2200		WYFR, Oakland, California	9852.5	15170	17845		
2100-2200		WYFR Satellite Net, California	13695	15375			
2110-2200		Radio Damascus, Syria	11765	15095			
2115-2200		BBC, London, England	3995	5975	6005	6175	
			6180	7325	9410	9915	
			12095	15070	15260		
2115-2130		Radio Yugoslavia, Belgrade	5980	7240	9620		
2125-2155	S	Radio Austria Int'l, Vienna	5945	6155	7205	9655	
2130-2145		BBC, London, England*	5965	7160			
2130-2200		BBC, London, England*	6030	7230	9635		
2130-2200		HCJB, Quito, Ecuador	15270	17790			
2130-2200		Kol Israel, Jerusalem	9435	9815	11605		
2130-2200		Radio Canada Int'l, Montreal	11880	15150	17820		
2130-2200		Radio Finland, Helsinki	6120	111745	11755	15400	
2130-2200		Radio Sofia, Bulgaria	9700	11720			
2130-2200		Radio Tirana, Albania	9480				
2130-2200		Radio Vilnius, Lithuanian SSR	6100				
2130-2200		Swiss Radio Int'l, Berne	6190				
2135-2150	S-F	ELWA, Monrovia, Liberia	11830				
2150-2200	M-F	ELWA, Monrovia, Liberia	11830				

2200 UTC [5:00 PM EDT/3:00 PM PDT]

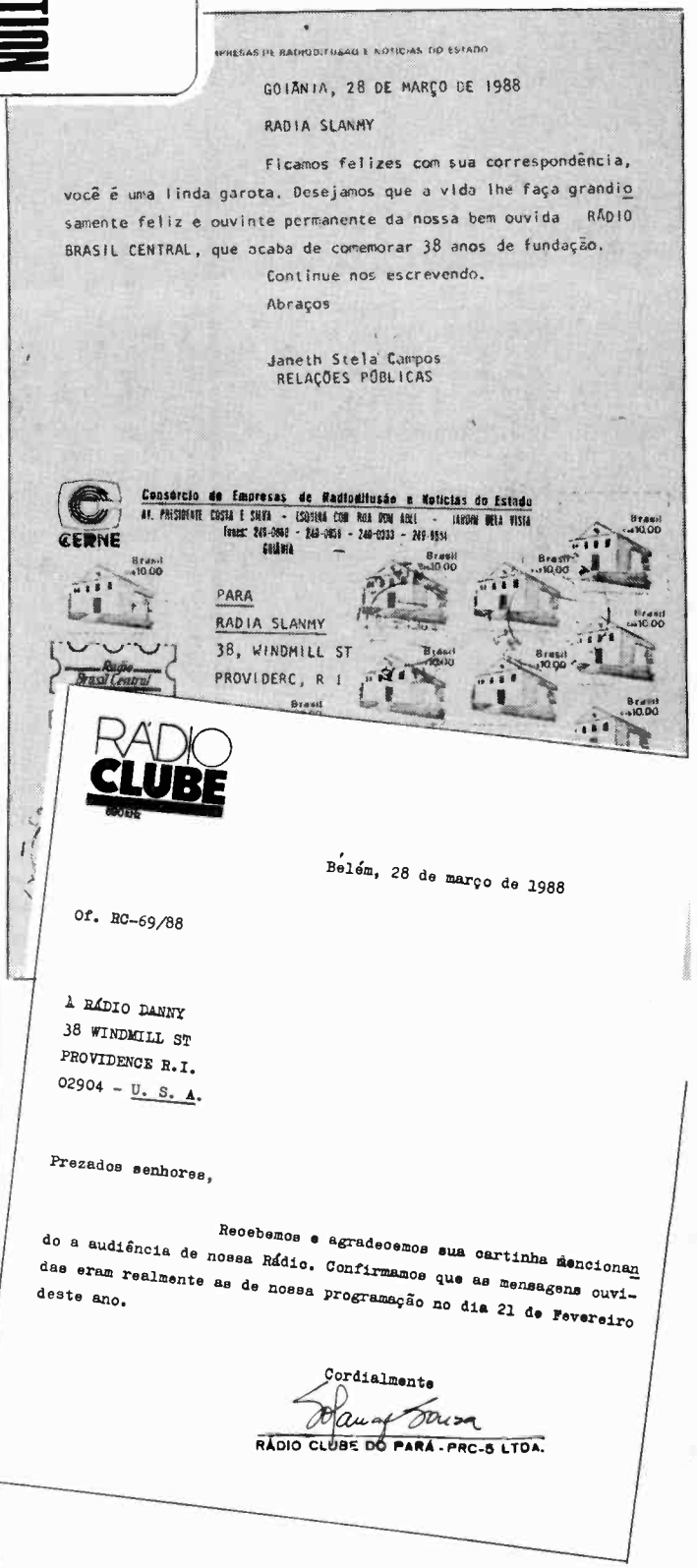
2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830			
200-2210	M-H	Port Moresby, Papua New Guinea	3925	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
2200-2210		Radio Sierra Leone, Freetown	5980				
2200-2215	M-A	ABC, Alice Springs, Australia	2310	[ML]			
2200-2215	M-A	ABC, Tennant Creek, Australia	2325	[ML]			
2200-2215		BBC, London, England*	5965	7160			
2200-2215	M-F	Voice of America, Washington	9640	11740	15120		
2200-2225		BRT, Brussels, Belgium	5910				
2200-2225		RAI, Rome, Italy	5990	9710	11800		
2200-2225		Vatican Radio, Vatican City	6015	9615	11830		
2200-2230		ABC, Katherine, Australia	2485				
2200-2230		All India Radio, New Delhi	9550	9910	11620	11715	
2200-2230		CBC Northern Quebec Service	9625	11720			
2200-2230	S	KGEI, San Francisco, California	15280				
2200-2230	M-A	KUSW, Salt Lake City, Utah	15580				
2200-2230	A,S	Radio Canada Int'l, Montreal	5960	9755			
2200-2230	S	Radio Norway Int'l, Oslo	15165	15180			
2200-2230		Radio Prague, Czechoslovakia	6055				
2200-2230		Radio Sofia, Bulgaria	9700	11950			
2200-2230		Radio Vilnius, Lithuanian SSR	9640	11790	13645	15180	
2200-2245		Radio Berlin Int'l, E. Germany	5965	9730	11965		
2200-2245		WINB, Red Lion, Pennsylvania	15185				
2200-2245		WYFR, Oakland, California	9505	11830	13695	15375	
			21525				
2200-2250		Voice of Turkey, Ankara	7135	7160	9445	17760	
2200-2255		RAE, Buenos Aires, Argnetina	9690	11710			
2200-2300		(US) Armed Forces Radio and TV	6030	11790	15345	15430	
2200-2300		BBC, London, England	5975	6005	6175	6180	
			7325	9410	9590	9915	
			12095	15070	15260		
2200-2300		CBN, St. John's, Newfoundland	6160				
2200-2300		CBU, Vancouver, British Colombia	6160				
2200-2300		CFCF, Montreal, Quebec	6005				
2200-2300		CFCN, Calgary, Alberta	6030				
2200-2300		CHNS, Halifax, Nova Scotia	6130				
2200-2300		CKWX, Vancouver, British Colombia	6080				
2200-2300		CFRB, Toronto, Ontario	6070				
2200-2300		(US) Far East Network, Tokyo	3910				
2200-2300		King of Hope, Southern Lebanon	6280				
2200-2300		KVOH, Rancho Simi, California	17775				
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395	
			17795				
2200-2300	M-F	Radio Canada Int'l, Montreal	5960	9755			
2200-2300		Radio For Peace, Costa Rica	13660				
2200-2300		Radio Havana Cuba	7140				
2200-2300		Radio Moscow, USSR	6130	9490	9610	9640	
			9665	9765	11710		
2200-2300		SBC Radio One, Singapore	5010	5052	11940		
2200-2300		Voice of America, Washington	15120	15185	15290	15305	
			15320	17740			
2200-2300		Voice of Free China, Taiwan	15440	17845			
2200-2300		WCSN, Boston, Massachusetts	15300				
2200-2300		WHRI, Noblesville, Indiana	9770	17830			
2200-2300		WRNO, New Orleans, Louisiana	13760				
2215-2230		BBC, London, England*	11820	15390			
2230-2300	A,S	CBC Northern Quebec Service	9625	11720			
2230-2300		Radio Beijing, China	3985	6165			
2230-2300		Radio Jamahiriya, Libya	11815	15450			
2230-2300		Radio Mediterran, Malta	6110				
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270	
2230-2300		Radio Tirana, Albania	7215	9480			
2245-2300		All India Radio, New Delhi	6055	7215	9535	9910	

frequency SECTION

			11715	11745		
2248-2300		WINB, Red Lion, Pennsylvania	15145			

2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2315		BBC, London, England	5975	6005	6175	6195
			7325	9410	9515	9590
			9915	12095	15070	15435
2300-2330		Kol Israel, Jerusalem	9435	11605	12080	
2300-2330		Radio Canada Int'l, Montreal	9755	11730		
2300-2330		Radio Mediterran, Malta	6110			
2300-2330		Radio Polonia, Warsaw	5995	6135	7125	7270
2300-2330		Radio Sofia, Bulgaria	9700	11950		
2300-2330		Radio Sweden, Stockholm	9695	11705		
2300-2345		WINB, Red Lion, Pennsylvania	15145			
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2300-0000		(US) Armed Forces Radio and TV	6030	11790	15345	
2300-0000		CBC Northern Quebec Service	6195	9625		
2300-0000		CBN, St. John's, Newfoundland	6160			
2300-0000		CBU, Vancouver, British Colombia	6160			
2300-0000		CFCF, Montreal, Quebec	6005			
2300-0000		CFCN, Calgary, Alberta	6030			
2300-0000		CHNS, Halifax, Nova Scotia	6130			
2300-0000		CKWX, Vancouver, British Colombia	6080			
2300-0000		CFRB, Toronto, Ontario	6070			
2300-0000		(US) Far East Network, Tokyo	3910			
2300-0000	M-A	KUSW, Salt Lake City, Utah	15580			
2300-0000		KVOH, Rancho Simi, California	17775			
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395
			17795			
2300-0000		Radio Baghdad, Iraq	6120			
2300-0000		Radio for Peace, Costa Rica	13660			
2300-0000		Radio Jamahiriya, Libya	11815	15450		
2300-0000		Radio Japan, Tokyo	11800	15195	17810	
2300-0000		Radio Moscow, USSR	9765	9865	11710	11750
			11780	12060	13660	
2300-0000		Radio Thailand, Bangkok	9655	11905		
2300-0000		WCSN, Boston, Massachusetts	15300			
2300-0000		WHRI, Noblesville, Indiana	9770	17830		
2300-0000		WRNO, New Orleans, Louisiana	13760			
2300-0000		WYFR, Oakland, California	5950	9505		
2315-2330		BBC, London, England*	11820	15390		
2315-0000		BBC, London, England	5975	6005	6175	7325
			9515	9590	9915	12095
			15435			
2320-2325	M-A	Radio Prague, Czechoslovakia	6055	9630		
2330-2355	M-A	BRT, Brussels, Belgium	9925	11695		
2330-0000	M-A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
2330-0000		Radio Canada Int'l, Montreal	5960	9755		



EMPRESAS DE RADIODIFUSÃO E NOTÍCIAS DO ESTADO

GOIÂNIA, 28 DE MARÇO DE 1988

RADIA SLANMY

Ficamos felizes com sua correspondência, você é uma linda garota. Desejamos que a vida lhe faça grandiosamente feliz e ouvinte permanente da nossa bem ouvida RÁDIO BRASIL CENTRAL, que acaba de comemorar 38 anos de fundação.

Continue nos escrevendo.

Abraços

Janeth Stela Campos
RELAÇÕES PÚBLICAS

Consórcio de Empresas de Radiodifusão e Notícias do Estado

CERNE

GOIÂNIA

PARA
RADIA SLANMY
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PROVIDERC, R I

Rádio Brasil Central

RÁDIO CLUBE

Belém, 28 de março de 1988

Of. RC-69/88

À RÁDIO DANNY
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PROVIDENCE R.I.
02904 - U. S. A.

Prezados senhores,

Recebemos e agradecemos sua cartinha mencionando a audiência de nossa Rádio. Confirmamos que as mensagens ouvidas eram realmente as de nossa programação no dia 21 de Fevereiro deste ano.

Cordialmente

RÁDIO CLUBE DO PARÁ - PRC-5 LTDA.

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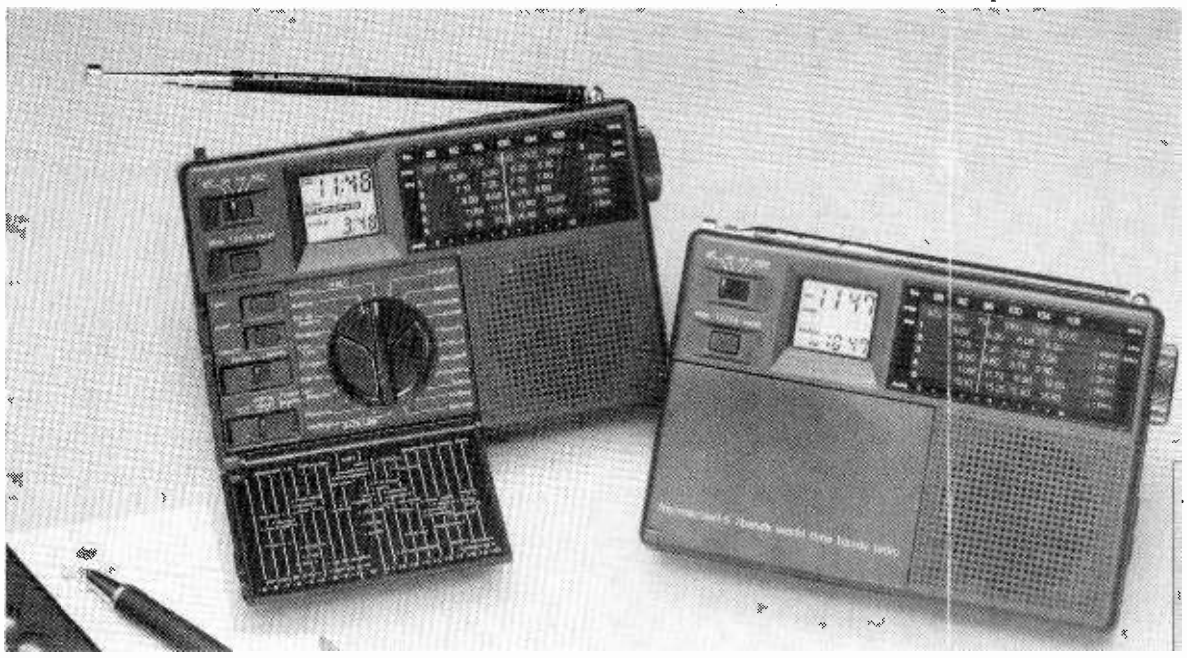
magne tests...

Lawrence Magne

Editor-in-Chief
Passport to World Band Radio



The Opal OP-35/ Siemens RK 702 Portable

When you think of world band radios from Germany, Grundig is usually the first thing that springs to mind. They've been in that business for decades and their radios generally perform well within their price ranges.

But Grundig isn't the only German firm in the shortwave radio business. Siemens is another.

If you're in the physical sciences, Siemens needs no introduction. They've traditionally made the good stuff -- things like $150,000 electron microscopes. But Siemens also markets shortwave radios made for them by other manufacturers.

Made In Bloom County by Penguins?

One of these radios is the Siemens RK 702, made by Opus Electronics Inc. -- that's "Opus," as in Bloom County -- which also sells the same radio as the Opal OP-35. There's nothing about the country of origin on the radio, the manual or the box it comes in. But even though the box shows stationery from the Westin Hotel in Hong Kong, industry sources report that Opus is actually located in Taiwan.

What is especially interesting about this firm is that it is reportedly headed by a former officer of Sangean, which is also located in Taiwan. Sangean makes some very nice shortwave portables both for itself and other firms, including Siemens. So the background of experience at Opus should be there to do a good job.

To begin with, the RK 702 -- or OP-35 -- is really compact, and weighs only a third of a kilogram, or under twelve ounces, with batteries.

The '702 tunes the AM band to just above 1600 kHz -- the new AM band in the Americas will go to 1700 kHz -- plus the international FM band from 88-108 MHz. Of course, what we're interested in is shortwave, and here we find that while Siemens may be noted for excellence in scientific products, its world band radios (at least this one) are not in the same league.

Limited Coverage

To begin with, the '702 covers only the 49, 41, 31, 25 and 19 meter bands. These are the most important bands, but they're still just five out of the thirteen bands found within the shortwave spectrum.

The readout is analog -- that is, it uses a bandspreaded dial with a needle instead of a numeric channel or frequency display. This means it's less accurate to tune than a radio with digital readout. But for a travel portable in this price range, you really can't expect any more than this. Of course, it can't demodulate single-sideband or other sophisticated "utility" signal modes.

The radio's other features are pretty much limited to an elevation panel on the back cover, a bandswitch, a volume control and a tuning knob. I say "pretty much," because this radio also has one very unusual feature: a multizone clock/timer arrangement that's called -- believe it or not -- the "World Time Handy Radio Humane Wake System."

Nice Clock...

This fancy clock not only displays local time and UTC in 12- or 24-hour formats, it also allows you to dial up the local time for many of the world's cities. That list of cities is fairly extensive, but it conspicuously omits reference to the People's Republic of China -- another tipoff that the radio comes from Taiwan.

The clock also has a timer (that "World Time Handy Radio Humane Wake System" again) to wake you up or lull you to sleep. Plus it displays both local time and UTC in 12- or 24-hour format. Seconds aren't shown, though, except by a flashing colon.

...But Radio Gets No Cigar

That's all very nice, but the radio's shortwave performance on the few bands it covers is pretty uninspiring. To begin with, an assortment of whistles of varying pitch and Morse-code-type sounds from images are a serious annoyance. In fact, these are so bad that they even show up on the AM band at night.

You see, if you have stations too close to each other on the dial, there'll be a whistle that has a constant pitch equal to the distance they're apart on the dial. That's normal.

But on low-quality radios you can also get a whistle that varies in pitch as you tune up and down the band. That variance in pitch is the tipoff that the whistle is being caused by an internal shortcoming in your radio: mediocre image rejection.

To make matters worse, the '702's selectivity is mediocre. You can listen at night to powerful stations, such as the BBC relayed from Canada, only to find that the station you want to hear is getting overwhelmed from time-to-time by competing stations on nearby channels. This is the kind of ear-grating reception that can make shortwave listening about as pleasant as listening to termites eat.

Be an Antenna

There's also coupling between the operator's body and the '702's oscillator circuitry. What this means is that the set can actually detune by the better part of a channel if you, say, quit holding the radio in the palm of your hand and place it on a table instead.

The set's sensitivity is only fair, too, so you don't hear as many stations as you might with a better radio. But there is a silver lining of sorts. Although the speaker is really tiny -- even smaller than the one on Sony's micro 'SW1 -- the audio quality isn't too bad.

In all, it's more like you're getting a clock with a radio, rather than the other way around. The clock is a fun thing to have -- Casio and others make things like this -- but the radio is about as mediocre as you can get.

As of now, neither the Siemens RK 702 nor the Opal OP-35 is available for sale within North America, although an agent in Texas appears to be trying to line up dealers. But if either one does become available, industry sources indicate that the most likely suggested retail price in the US would be $99.95. That's not a bundle, but this radio doesn't do much to justify even that sort of price when you consider that other models, such as the Magnavox or Philips D1835, list for less, perform better, and cover much more of the shortwave spectrum.

You can hear Larry Magne's equipment reviews the first Saturday night each month over Radio Canada International's popular SWL Digest. For North America, it's 8:10 PM Eastern Time on 5960 and 9755 kHz; for Europe, 2008 UTC on 5995, 9670, 11945, 15325, 17820 and 17875 kHz.

Larry's "What's New In Equipment" is also featured various other Saturdays throughout the month, while Passport editors Don Jensen and Tony Jones report on world broadcasting the third Saturday night each month.

Passport's "RDI White Paper" equipment reports are carried in the US by EEB and Universal Shortwave; in Canada by PIF Book-by-Mail; and in Europe by Interbooks and the Swedish DX Federation. A free catalogue of the latest editions of these exhaustive laboratory and "hands-on" reports -- which cover, warts and all, the most advanced radios and antennas on the market -- may be obtained by sending a self-addressed stamped envelope to Publications Information, International Broadcasting Services, Ltd., Box 300, Penn's Park PA 18943 USA.

Larry Wiland

292 S. Turner Rd.
Youngstown, OH 44515

The AOR Model AR800

Imagine if you will, a tiny handheld scanner with incredible sensitivity, coverage of 800 megahertz and all of the major scanner bands, and clear audio -- all wrapped up in a case sturdy enough to survive a jungle war. The recently-released AOR company's model AR800 handheld programmable scanner is all this and more.

This little wonder measures only 5" high by 2-1/4" wide by 1-11/16" deep and weighs a scant 19 ounces. But don't let the small size fool you -- this radio has big features and lots of them. Performance is equal to (and in some cases better than) models twice its size and cost.

What Do You Get?

The AR800 scanner is housed in a rugged, handsome black cabinet, and comes with two antennas. According to the manufacturer, the thin, "duckie-type" one is "for reception in the 400 and 800 MHz bands" and the standard-sized "duckie" for is for "lower frequencies." Also included is a wall-mounted power supply/charger and an instruction pamphlet.

Actually, frequency coverage is even better than advertised -- 30-50 MHz, 118-175 MHz, 436-526 MHz and 800-1000 MHz. However, we are advised by the factory that there are some unit-to-unit variations in sensitivity outside the specified frequency ranges (30-49, 118-174, 436-512, 830-950 MHz).

Selectable search increments of 5, 10, 12.5, and 25 kHz are available in all bands except the UHF and 800 MHz band (where spacing is automatically 12.5 kHz and not user-selectable). Sensitivity (12 dB SINAD) is typically 0.4 uV for low and high VHF, 0.8 uV on aircraft (AM), 0.5 uV on UHF and 1.0 uV at 800 MHz. The first IF is 21.4 MHz and the second IF is 455 kHz. Selectable AM/FM mode is provided, as are "delay" and "hold" for scanning and searching.

The search feature allows the user to look for new and unknown frequencies between two user-programmable search limits. New-found frequencies can then be programmed into any one or more of the 20 available memories. A "manual" button is provided for "stepping" between memories or search limits, and a "clear" button quickly erases mistakes in programming. An easy-to-read LCD frequency display is illuminated with a small incandescent bulb. Scanning speed is 13 channels per second.

Performance *is the AR800's ace-in-the-hole -- Nothing short of amazing!*

But Wait! There's More!

The AR800 has a rubber keypad, large volume and squelch knobs, a keypad lock switch to prevent accidental entries while handling the radio or carrying it and an on/off switch for the lamp which illuminates the LCD display. In the realm of connectors, there's a BNC antenna jack, an earphone jack and a jack for connection to the wall-mount charger.

A huge clip exists on the back of the scanner will hang the AR800 on a belt the size of Santa Claus's if need be! Not included with the AR800, but available from the manufacturer, are a leather carry case, cigar lighter plug/charger (for mobile use), magnet-mount antenna (also for same), an earphone, a BNC to PL259 adaptor, and various replacement parts -- including NICAD batteries.

Operating the AR800

While the scanner programs in pretty much the same way as most handhelds, there are still a few differences worth noting. Programming data into the memories involves entering the frequency by punching-up the appropriate numbers on the keypad, pushing the "E" (enter) key, and then pushing the number(s) of the appropriate channel. Searching involves not only programming-in the search limits, but also selecting the search increments, and whether you wish AM or FM mode as well. To lock a channel out of the scanning sequence, you must punch-up the number of the channel to be deleted while the radio is scanning. Restoring the locked-out channel is done in the same fashion.

The delay feature works on all channels not on a "per-channel" basis as on many competitors' models. But none of these minor differences really inhibit the scanner's performance and, with a bit of practice, the AR800 is really easy to use.

Impressions

Most noticeable is the scanner's tiny size -- truly a handheld in all respects and nearly meeting the definition of a pocket radio. It fits easily into the palm of one's hand and can be inconspicuously carried around. All controls are well-labeled and easy to read and the keypad is easy to use and gives good tactile feedback when entering data. The audio is unbelievably clear: Even at full volume (140 mW), very little distortion is present.

The AR800's real "ace-in-the-hole" is performance. It can be described as nothing short of amazing -- it is very hard to imagine that a scanner this small can perform so well and be so sensitive, too. Performance on all bands ranges from very good to outstanding. There are a few birdies here and there but again, it appears to have quite a few less than most other handhelds. Image and intermod rejection are excellent. The AR800 will perform for almost seven continuous hours on a single charging of its batteries and requires roughly the same amount of time to recharge.

Shortcomings

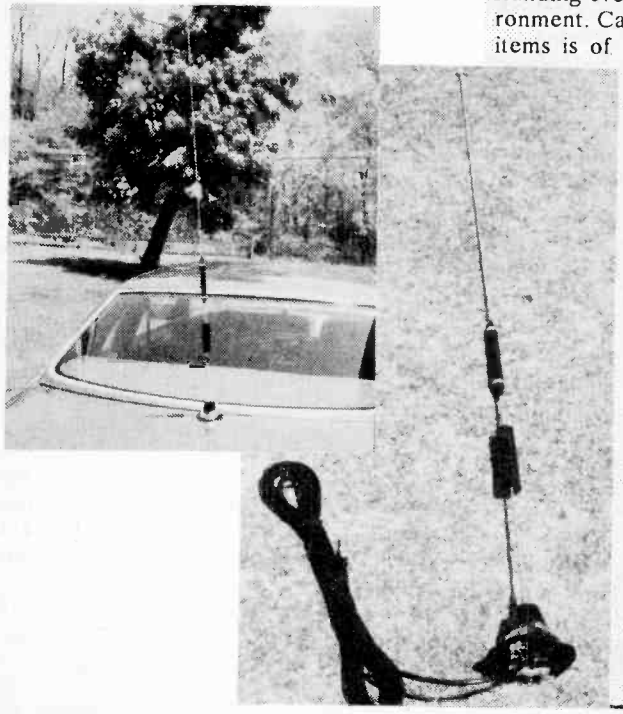
This radio has very few shortcomings but the two most noticeable are the poor lighting of the LCD display for nighttime use and the fact that channels are not "directly accessible." In other words, to get to any given channel of the available 20, you must step through all the others. More memory channels would also have been an asset to a radio with such enormous frequency range.

Additionally, unlike other scanners where you press "manual" to disable the scan sequence to stay on one channel, on the AR800 you must press two keys in succession: "Program" and "manual". If you press manual alone, the scanner will move up one channel. This procedure is not mentioned in the instructions.

Also, while the audio is crystal clear -- better than any other hand-held scanner we've ever tested -- it has low volume. This makes it difficult to hear in a noisy environment such as a car with the windows down. Here, the optional earphone would be helpful.

All in all, the AR800 is a fantastic performer and worthy of consideration by both the seasoned scanner hobbyist or the first-time buyer.

The AR800 is available at a discount price of only $249 including shipping from Grove Enterprises, P.O. Box 98, Brasstown, NC 28902; credit card orders only 1-800-438-8155.



Antenna Specialists Mobile Antenna

A recent addition to the growing market of mobile scanner antennas is the Antenna Specialists Company's model MON-52 all-band mobile monitor antenna. Designed for continuous reception of frequencies between 25-1000 MHz, this 45" antenna features some new approaches to the problem of designing a feasible, true, all-band antenna capable of performing well not only in a mobile environment, but doing so in frequency ranges just short of microwaves.

One of the first things you notice about the MON-52 is the unusual cylindrical device situated immediately below the loading coil. This is a new approach to improved 800 MHz (and above) reception invented by the manufacturer called a "Micro-Choke."

Micro Choke is a strategically-placed 3-1/2 inch hollow metal cylinder which resonates at 800 MHz (and above) and according to the maker, "offers substantially improved performance over most mobile scanner antennas currently on the market."

The MON-52 is a trunk-lip mounted antenna which can be installed on the edge of an automobile's trunk in about a half hour. Very complete, illustrated and easy-to-understand directions are provided, and installation is a "snap." Best of all, everything is in "plain English" and does not require an interpreter to decipher the instructions.

All antenna pieces and assemblies are well-made and appear capable of withstanding even the most severe mobile environment. Cast parts and plating on various items is of the highest quality.

The coaxial cable appears to be high-grade RG-58, and is already cut and terminated at the proper points. On the antenna mount end, it is securely soldered to the base. Where it connects to the scanner the cable is terminated with a standard, Motorola-type plug (like the one found on most auto radios). About 25 feet of cable is provided to interconnect the antenna to the radio in a vehicle.

Performance in Use

The MON-52 is rated for continuous coverage between 25 and 1000 MHz. In use (attached to a BEARCAT 950 scanner), the antenna seemed to favor some bands. In the VHF low band, the antenna faired from average to a bit below-average. Strong signals came in clearly, although weak ones tended at times to fade in and out. However, on the VHF high and aircraft bands, the antenna really performed! Signals from 40 to 50 miles away were received with no problem, pouring in loud and clear. Even the "weak ones" gave clear copy, and low-power (local) mobiles came in like "gangbusters."

The antenna also performed very well in the UHF band (406-512 MHz). Low-power signals from 20-30 miles away could be read clearly and came in effortlessly. The MON-52 seems to do best in this band, and could very well be a "UHFer's dream." A lot of other mobile monitor antennas are lacking here.

In the 800 MHz range the antenna showed only average reception of all but the strongest of signals. Even slightly weak signals tended to "picket fence" in and out, with many disappearing totally whenever a change in terrain was encountered.

Some Overall Impressions

The disappointing 800 MHz performance might be a result of the antenna itself or the type of coaxial cable (RG-58) included with the scanner. Also, the Motorola-type plug terminating the antenna cable seemed a bit inappropriate for an antenna that covers near-microwave frequency bands where cable loss and type of connectors used can greatly affect reception quality and signal strengths. Perhaps a very low-loss connector (N, BNC, etc.) would help here as well as the use of a lower-loss cable (RG-6/RG-8u, etc.).

The antenna is long and heavy. On a moving vehicle, this means a lot of movement, from waving in the wind at high speeds to causing structural vibration of the antenna mast (possibly contributing to the "picket-fencing" effect it exhibits on the "800" band and on weak signals in general). A reduction in mass (i.e. weight, size) could also help the slightly ungainly aerodynamics that the test antenna exhibited. Nonetheless, it is a very strong, tough antenna.

A tuning chart is included in the directions for cutting the MON-52 specifically for operation in the 37-50 MHz range. So, low-banders, do not despair. You can adapt this antenna for your needs, albeit at the sacrifice of all-band performance.

All in all, the MON-52 is a good mobile monitor antenna with many fine features and a lot of coverage for the price (retails for around $40-45).

mt

demaw's workbench

Doug DeMaw

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Brasstown, NC 28902

Tooling around

How long has it been since you picked up a soldering iron just for fun? At least 50% of the thrills which accompany our electronics hobby are found in the workshop. If you lack experience, don't worry! I have always believed strongly in the principle called "learn by doing." Trial and error can sometimes be frustrating, but you learn by your mistakes. And you'll remember the pitfalls to avoid when you tackle your next project. Gradually, over time, your skills will increase to a point where you will feel confident about building and testing a circuit.

How to get started

Complex electronics projects should be avoided at the start of your workshop adventure. This includes most kits, since you need to become familiar with the appearance of components in order to recognize which part goes where. Simple one- or two-stage circuits are more suitable for you, the beginner. If you should be unable to make them function correctly, you will not become destitute because of wasted components.

Basic projects such as audio preamplifiers, field-strength meters and crystal oscillators are fun to build and they are useful. For example, a one-stage audio amplifier can be used to boost the output of a microphone or to increase the volume of headphones. A field-strength meter is handy for checking antennas, adjusting them and observing the radiation patterns. A 100 kHz crystal oscillator is useful for generating markers that you may use for receiver calibration.

There are countless small projects of this type. They all can serve as the foundation for your learning process.

You don't need an elaborate workshop?

I have spoken to countless would-be experimenters. They all seem to have the idea that they need a laboratory filled with sophisticated, expensive test equipment. Let's erase this spectre now! You can do a fine job of building circuits with only a 40-watt pencil type of soldering iron, a low-cost VOM (volt-ohmmeter) and simple hand tools. Start small and grow as your skills increase.

As a beginner, you don't need a fancy workbench or shop tools, either. Many of us started by using an old card table as a workbench. Holes were drilled with a manually operated "eggbeater" style hand drill. Jacknives served a host of purposes (and still do!). Of course you will need such items as a hacksaw, electrical tape, a set of files and a magnifying glass (for close work).

Understanding circuit diagrams

Many electronics enthusiasts fail to tackle that first project because they are unable to read a circuit diagram. I urge you to concentrate on this facet of the hobby before you try to build your first project. You may become confused by the electrical symbols, owing to a variety of ways they are presented in the magazines. There seems to be no standard for rendering the symbols.

The USA does have a standard for this (ANSI), but *QST* magazine is the only hobby journal that seems to follow the ANSI code. So, you will need to compare, for example, the various illustrations for coaxial connectors as you read the magazines. Likewise for ground-connection symbols, transistors and coils. It will not take long, though, before you can identify the component by its symbol.

One confusing point is the symbol for circuit ground. You will find many of these in a circuit diagram. Individual ground points are shown in order to avoid countless long circuit lines that would otherwise join these points. This tends to clutter a diagram, which can cause confusion.

Think of the circuit ground as a common conductor, such as a metal chassis or mainframe for a piece of equipment. Ideally, each ground lead should be as short and direct as practicable. In other words, a 1/4 inch lead to ground is far better than one that is, say 3 inches long.

Leads with excessive length (ground or signal leads) introduce unwanted inductance (reactance), and this can spoil the gain of an amplifier stage. It can also cause self-oscillation, which makes an amplifier act like an oscillator. If each ground lead is kept short and is returned to the chassis or PC-board ground, the entire metal ground conductor for the composite unit becomes the master circuit ground, or *bus* as it is often called.

Rule number one calls for keeping all circuit connections short. This includes the length of the leads on component (called pigtails). In other words, if you mount capacitors and resistors on a PC board, make their bodies fit snugly against the circuit board. Don't end up with pigtails that are 1/4 or 1/2 inch long! Most beginners make the mistake of using long circuit and component leads. This can cause performance failure in even the simplest of circuits.

In essence, you may think of a schematic diagram as you do a road map. A few evenings of study can make a diagram easy to follow, and this will aid your confidence immeasurably. Please refer to Fig. 1 for an example of right and wrong construction techniques.

This Business of Soldering

Neat, effective soldering is essential to good circuit performance. You have possibly heard people discuss "rosin joints" and "cold solder joints". This condition results from the use of cheap solder or insufficient heat when forming the joint. Quality solder contains a high percentage of tin. I recommend 60/40 solder (60% tin and 40% lead). It should have a resin or rosin core -- not an acid core!

The surfaces to be soldered must be reasonably clean (minus oxidation). You should place the tip of the iron against both conductor surfaces, allow a short period for heating, then carefully feed the solder to this area. Use only enough solder to ensure a

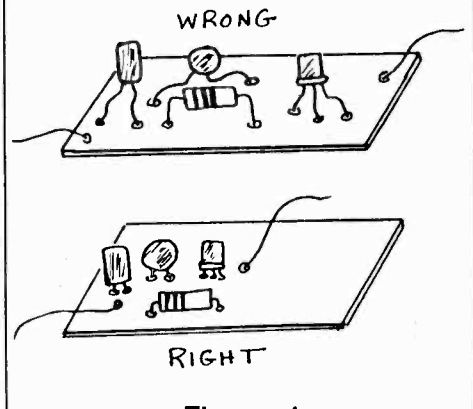


Figure 1

Examples of the right and wrong way to mount parts on a PC board. Example A shows components with excessive lead lengths. The long leads can cause circuit instability and low gain. Short leads are shown at B. The parts should be snugged against the PC board, or nearly so as shown.

good joint. The completed connection should look smooth and shiney after it cools. If the joint is dull and rough, chances are that you will have a cold-solder connection. This may cause a resistive union and it may become intermittent later on.

Too much heat can cause damage. Extensive application of heat may cause a PC board foil to lift from the phenolic or glass-epoxy base material. Similarly, too much heat can flow up the component leads and destroy a transistor, IC, diode or capacitor. Even if a resistor or capacitor is not destroyed by heat, it may still become defective or suffer a permanent change in value.

When you solder a MOS (metal oxide silicon) semiconductor (such as a 40673 dual-gate MOSFET) into a PC board you may experience device failure from static charges. The thin internal layer of insulating material can be perforated easily by static charges, such as those found on soldering irons or plastic. Handling them with your fingers can also cause damage, if your body happens to be charged. This will happen if the air in your workshop is very dry and especially when there is carpeting on the floor.

Some precautions are in order when you work with MOS devices: (1) Ground the metal portion of your soldering pencil to a good earth ground (2) Use an iron that has a UL-approved three-wire ac cord. (3) Install the MOS device last -- after the other components are in place on the PC board. (4) connect an earth ground to the ground foil on the PC board before mounting the MOS device. Generally speaking, this procedure will ensure a damage-free assembly effort.

Can You Make a PC Board?

A PC board is a flat piece of phenolic or glass-epoxy material that has a thin coating of copper completely covering one side. Components are mounted on one side and their pigtails soldered to the other through holes drilled in the board.

I know a great many would-be experimenters who feel that making a PC board is beyond their ability. I do not agree with them. I do, however, recommend that you avoid what is called the "photo-etching" process at the beginning since it is somewhat complicated. You'll fare a lot better by applying etch-resist material to the board's copper surface, then removing the unwanted copper by means of ferric chloride (available at Radio Shack and Kepro Corp.).

Your first task is to develop a pattern for the PC board. You may do this by collecting the parts that will be used, then making a scale pencil sketch of the pattern. Use the parts as a guide to layout. This will ensure that all of them will fit into the allocated space. They can be laid horizontally on the board, or if you want a more compact module, you can design the pattern for vertical placement of some of the parts, such as resistors and capacitors with axial leads.

When you complete the pencil-sketch pattern, use Scotch tape to hold the pattern in place on the PC board to which the pattern will be transferred. Carbon paper is inserted between the pencil sketch and the copper surface of the board. Now, trace the pencil pattern (use a ball-point pen) onto the copper surface of the PC board. Remove the carbon paper and sketch.

At this time you can apply ordinary enamel paint as etch resist. Use a fine artist's brush for this job. Paint the areas that are to be retained. Allow the paint to dry completely, then immerse the PC board in ferric-chloride etchant solution that has been preheated to 90-100° F (this ensures rapid etching). I heat my ferric chloride in a glass jar in my microwave oven.

Etching time varies with the thickness of the copper. I find that 15 - 30 minutes is required for most board material that I use. The etchant needs to be agitated at three-minute intervals to prevent residue from building up on the PC board. Residue slows the etching process.

I like to drill a small hole at one end of the PC board, insert a piece of no. 24 enamel wire, then dangle the board vertically in the fluid. I use the wire to lift the board up and down a few times to agitate the work.

Avoid getting the etchant on your skin or in your eyes. Wash such areas immediately if you come in contact with the fluid. Rubber gloves are ideal for protecting your hands when working with these chemicals.

Once the unwanted copper is etched away, wash the board in clear, warm water to remove all of the chemical. You may now drill the board and mount the parts.

An alternative etching methods calls for the use of a Moto Tool or similar hobby motor. If you have a steady hand and good eyes you can rout the copper from the areas to be etched. This is a quick and easy method that I frequently use for one-shot PC boards.

You may purchase etch-resistant circles and lines at Radio Shack. These may be pressed onto the copper surface of the PC board to serve as etch resist. Your board will look more professional if you use this method.

Ammonium persulphate powder may be dissolved in water for use when etching. It produces a clear fluid that doesn't leave the brown stains that come from ferric chloride.

If you don't want to become involved with circuit-board etching, please consider point-to-point wiring on a piece of unclad perforated board material. Tinned copper wire may be used for providing dc and ground bus lines, and for joining the various circuit points. A neat module can be built in this manner, should you desire to try this construction technique.

In closing this discussion on PC boards I want to say that a finished PC board need not be a work of art. Don't be ashamed if your board foils are of non-uniform width, or if they are a bit jagged or fuzzy around the edges. If circuits could think, they wouldn't care how the pattern looks, provided the connections are correct! In other words, don't be afraid to try your hand at making PC boards!

Next month: our first project!

Desk Top Active Receiving Antennas

Loop and Omni-Directional Configurations

by Ken Cornell (W2IMB)

For reception in the low to high frequency spectrum, most radio buffs use a long wire antenna of some type. And a well-designed and properly located long wire will provide excellent reception.

However, in the average urban or suburban location, the receiving antenna is bombarded with man-made electromagnetic radiated noise from countless types of appliances and electronic equipment. This noise, just like atmospheric static, is picked up by the antenna. And just as a long wire antenna picks up lots of radio stations, it also picks up a lot of noise.

Plus, there's the more practical consideration that many monitors live in apartments and condominiums where such an antenna is impossible. The simple devices I describe here may be the answer to increased listening pleasure.

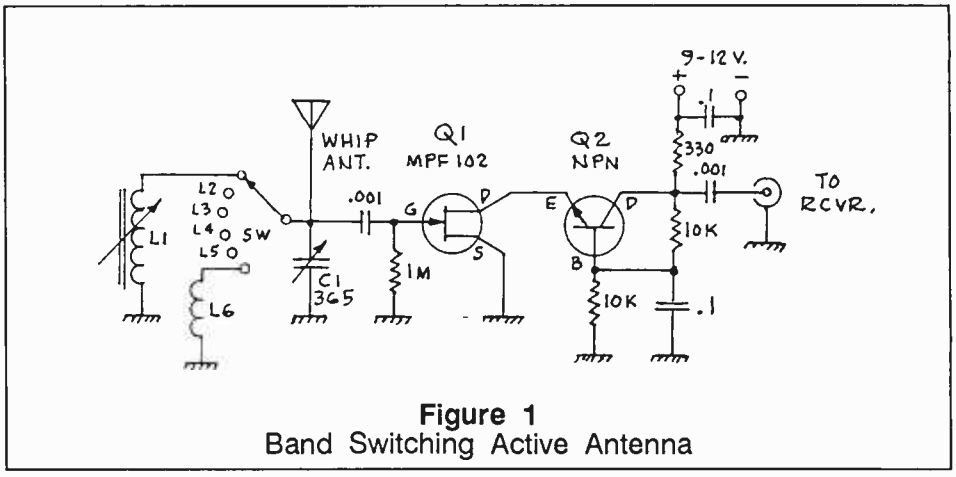


Figure 1
Band Switching Active Antenna

The Active Antenna

Active receiving antennas have gained popularity in recent years. They consist of a short whip antenna mounted on a weathertight enclosure that contains a solid state broadband preamplifier. Coaxial cable is used to connect them to a power supply isolator/receiver coupler located at the receiving position. Being small in size, the active antenna can be mounted in a remote location for best results.

I use three active antennas: one in the front of my house, another mid-way on the side and a third in the rear. I use a switch to select the one that offers the best signal to noise ratio (S/N/R). In the majority of cases, any one of them will outperform my inverted "U" antenna.

Tuned Circuit Preamplifier

Most active antennas use a broadband amplifier circuit; considering the good performance they offer I reasoned a tuned circuit amplifier would be better! My experiments with this type of amplifier proved they rivaled the other antennas to an unexpected degree.

Whip Configuration

I built several prototypes using a whip 30 inches long. One used plug-in coils, another with a tapped coil and the third using coils that could be switched in to cover the low to high frequency range. The band switching and the plug-in coil configurations slightly outperformed the tapped coil unit.

Loops, Too

Next I experimented with small loop antennas for the tuned circuit. Loop antennas are directional and exhibit the classic "Figure 8" pattern with the gain lobes off the plane of the loop and a sharp null off the sides. For the loop model, the preamplifier is mounted on a small baseboard that contained a support for a 3/4 inch spaced banana plug socket.

I made four loops from 1/8 inch diameter copper tubing, 10", 23", and one 12 inches in diameter using 3 turns spaced 1/2 inch apart. Another was 13 inches O.D. x 11 inches I.D. wound as a spiral with 3 turns spaced 1/2 inch apart. The loops were contained in a cross frame (wood) and mounted on a 3/4 inch spaced banana plug at the bottom of the vertical support. The 10 inch loop was self supporting on the banana plug.

Circuit Information

Figure 1 shows the circuit diagram for the whip configuration. In this case, I indicate the band switching model. A tapped coil could be substituted for the individual coils and for the plug in model a switch is needed. Figure 2 shows the input circuit for the loop configuration.

I mounted Q1 and Q2 and the associated parts on a small piece of perf board. The coils, switch and 365 pf tuning capacitor are mounted on a separate assembly. I used six coils connected to a single pole six position rotary switch. For details on the coils see coil winding data. Q2 can be any small signal low noise general purpose NPN transistor (2N5401 used here). Resistors are 1/4 watt size and capacitors should have a 35 volt minimum rating.

Winding the Loops

To wind the three-turn solenoid loop, use a pail as a form. The copper tubing is soft and is easily worked into a respectable loop. Use three pieces of 1/2 inch square wood strips at the top and two sides with 3/16 inch holes spaced 1/2 inch apart to contain the tubing, three holes in the top and side strips and four at the bottom to accommodate the start and finish of the winding.

The flat spiral loop and the 23 inch diameter loop should be laid out on a large piece of cardboard (from old box). To lay out these loops, use a yardstick with a hole drilled in the end to accept an ice pick or scribe. At the appropriate distance, drill a hole that will allow the point of a felt tip pen to poke through. Now stick the ice pick through the yardstick and use the pen to draw a circle on the cardboard. Cut the circles out and use them to form the tubing.

The spiral requires a little fussing and it will be strictly a matter of using your eye to obtain a good looking loop. The spiral does not require cross arms on the supports. Drill

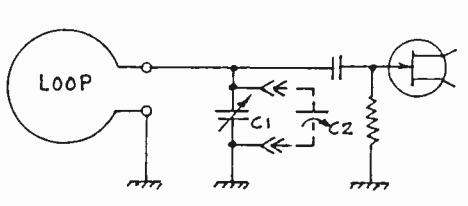


Figure 2
Active Loop Antenna

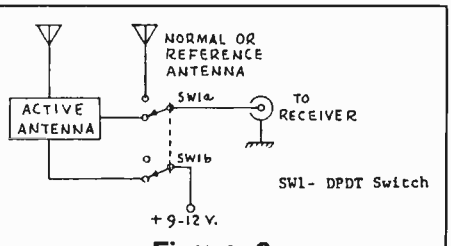


Figure 3

three holes spaced 1/2 inch apart on the top of the vertical support and the two sides. Four holes are drilled in the bottom vertical support and the tubing is threaded through the holes (use care and patience).

The tuning range for the loops are: 10 inch diameter: 7.5 to 23.5 MHz and 23 inch diameter: 5.25 to 16 MHz. The 12 inch, three turn, loop tunes 3.5 to 8.5 MHz. An Arco/-Elmenco #309 mica compression trimmer (C2, fig. 2) is connected across C1 to tune the 160 meter band with the three turn loop. Performance of all the three turn loops is similar. (The spiral may be a bit sharper off the sides.)

Coil Data for Whip Model

On the band switching model, all coils are wound on 5/16 inch diameter slug tuned forms, however the slugs are removed from the forms used for the two higher frequency coils. Use enameled copper for the close solenoid windings except for coil #6. Winding data as follows.

1- 130 to 280 kHz, 370 turns #32 wire.
2- 1200 to 2500 kHz., 110 turns #32 wire.
3- 2200 to 6000 kHz., 70 turns #32 wire.
4- 3750 to 10,500 kHz., 28 turns #32 wire
5- 7000 to 21,500 kHz., 11 turns #22 wire
6- 10,000 to 30,000 kHz., 7 turns #22 wire (wound over 5/8" length.

The above ranges suit my particular interests, but by adding or subtracting turns plus the slug adjustments, any portion of the low to high frequency spectrum can be covered.

Power

Use any 9 to 12 volt power supply or AC adapter for power. Power drain is only 6 ma. at 9 volts, so battery operation is ok. Be sure to install a battery off/on switch though.

Comparisons

By using a DPDT switch you can switch between your long wire antenna and the active unit to compare results (see figure 3).

In conclusion, I realize there is a school of thought that dictates that longer and higher is better when it comes to antennas. It may be hard to believe that a miniature version can be an excellent performer. All I can say is "hearing is believing".

Our Apologies

"The Pros and Cons of Matchmakers," published in June's Experimenter's Workshop, was submitted by Philip Acardi, not Ike Kerschner, as written. Our apologies, Phil!

Wave Traps for the Broadcast Band

by Ike Kerschner

Do you have a strong local broadcast station that blocks half the band and covers up those rare stations stations you are trying to hear? Have you thought of or even tried to obtain enough explosives to blast the station to kingdom come?

Well forget it! There is a better, less noisy way that does not disturb folks as much as explosives. It's called a wave trap. This little device is easy to construct and can be built two ways, either as a parallel or series trap.

The parallel trap configuration produces a high impedance to the frequency it is tuned to and reduces the strength of the incoming signal. Figure 1 is the circuit for a parallel trap.

A series trap on the other hand presents a low impedance to the interfering signal and it is shunted to ground. See figure 2.

Both traps use the same components. Capacitor C1 is a 50 to 400pf ceramic padder, coil L1 is a conventional ferrite loopstick antenna coil. All components are available at the local Radio Shack or radio service shop.

The ferrite antenna coil has three connection lugs on it, use the two that have a single wire to each and let the one with twisted wires going to it open.

Don't know if you should use parallel or series? Then wire the unit as shown in figure three. If you want to try a parallel trap connect lugs 1 and 3 together and attach the antenna here. Now run a wire from lug 2 to the antenna input on your radio.

For the series trap, remove the jumper between lugs 1 and 3, now connect lug one to the radios antenna terminal (note: you must attach the antenna connection to terminal one also). Be sure to connect a good ground to terminal 3.

Build the trap in a small metal box or cannister of some kind and be sure to ground the box and radio well.

Tune C1 for minimum signal from the interfering station, now adjust L1 for minimum and go back and touch up C1. That's all there is to it.

Good luck with your trapping!

Figure 1

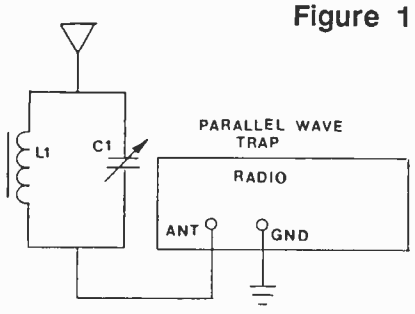


Figure 2

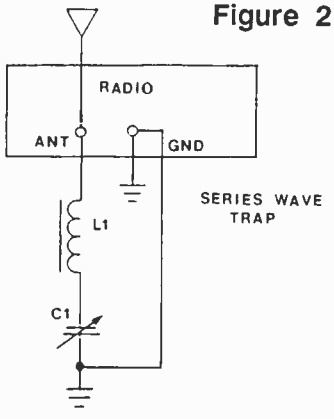
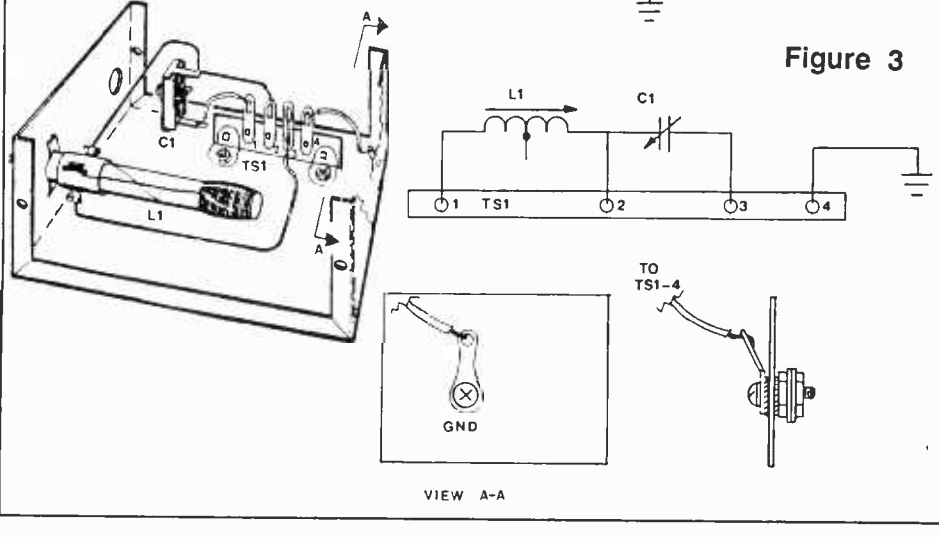


Figure 3



W. Clem Small, KR6A, CET

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Weybridge, VT 05753

Start Your Own Antenna Farm

with this easy-to-make vertical antenna

We all dream of owning our own antenna "farm" someday. Given the proper amount of acreage, we could erect all the antennas we desire and monitor or operate on all-bands, and in any direction with a vengeance. Very few of us indeed achieve that dream, but it is possible to have your own antenna farm on VHF or UHF without having a lot of real estate at your disposal.

This month we will build a simple antenna which can be tailor-made to the frequency of your choice. Total time needed for this project? About ten or fifteen minutes. And the cost is just about zero, because it is made from the end of the antenna's lead-in cable! In fact, this antenna is so easy and inexpensive to make that you can make one for each VHF or UHF band which you monitor without straining your budget -- or your patience! Maybe having that antenna farm is not so far in the future, after all.

A really easy-to-install vertical

The antenna just mentioned is a version of the sleeve dipole. To make one for yourself, just follow the directions below.

1. Take the coaxial 75 ohm (actually any impedance should be fine for receive-only applications) feedline that you will use to feed the antenna, and get your hands on the antenna-end of the cable (the end away from the coaxial connector).

2. Check table one to find the length to use for the frequency you want to monitor. Add about 25 percent to that length, because the length of the braid you work with changes as you work with it. Measure off this length from the antenna-end of the cable, and mark that point on the cable jacket.

3. Carefully cut a circle in only the outer vinyl or plastic jacket of the coaxial cable at the distance which you measured in step two. Don't cut down into the braid! Then cut the vinyl lengthwise from this circle to the antenna-end of the cable, and peel off the jacket from the quarter-wavelength of cable which you measured off. This will expose the braided shield underneath the jacket. Discard the quarter-wavelength of jacket which you peeled off.

4. Grasp the braid in one hand. With the other hand, grasp the coaxial cable jacket a few inches below the place where the braid is exposed, and gently begin to work the exposed braid down toward the place where the jacket is still on the cable. The braid will get a bit "fatter" as you do this. As you continue to make it fatter, at some point you will be able to start sliding the fattened braid back down along the remaining cable jacket, in the direction of the connector end of the cable.

5. Continue to work the braid down over the remaining jacket, until it is fully pulled down on the outside of the jacket, as it appears in figure one. The braid will now be turned inside-out over the end of the vinyl jacket. If there is aluminum foil under the braid, either remove it, or fold it down with the braid.

6. Now cut the braid and the center conductor to be one-quarter wavelength each, as shown in figure one.

7. Tie or tape a string to the tip of the top quarter-wavelength element, to use in hanging the antenna. Use nylon or plastic string as cotton or natural fiber will absorb moisture and possibly degrade antenna performance.

Your antenna is now complete!

If you want to use the antenna outside, seal it up against the weather. You can put it inside a plastic water pipe which has its top sealed. Sometimes the whole antenna can be insulated by painting it with a clear varnish without harming its performance.

Note that this is true only sometimes, not always. Some coatings I have used have degraded performance. If you have access to high-grade electronic insulating varnish, use that. Otherwise try the antenna before and after varnishing it, to see if you have ruined the antenna. If you have, cut it off the end of the coax, and make another! If you are going to mount the antenna indoors (corner of your room, attic, etc.) then you don't need to seal it.

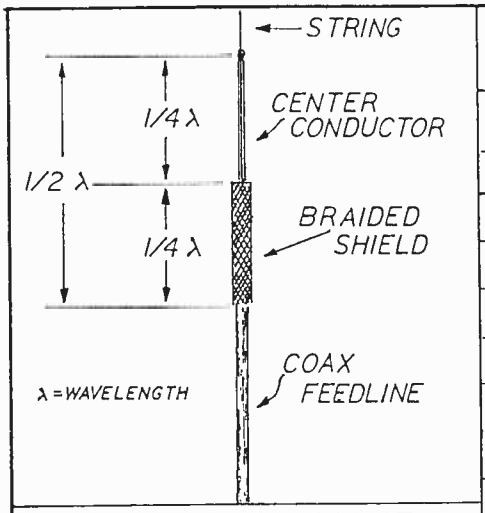

FIG. 1. EASY TO MAKE SLEEVE DIPOLE

TABLE 1
QUARTER WAVELENGTHS AT VARIOUS FREQUENCIES

FREQ	LENGTH	
MHZ	INCHES	CENTIMETERS
800	3.5	8.9
460	6.1	15.5
300	9.4	23.8
150	18.7	47.5
130	21.6	54.9
100	28.1	71.3
40	70.2	178.3

TO CALCULATE LENGTH IN FEET:
QUARTER WAVELENGTH = 234/FREQ IN MHZ

Using the antenna

The sleeve antenna is, like most VHF-UHF antennas, designed for vertical mounting. When so mounted, it is vertically polarized, and gives a nondirectional response pattern. This makes it a natural for general all-around monitoring or communication. Mount the antenna as high as practical, and clear of metal objects, live foliage, and electrical wiring. If lightning is a problem in your area, don't forget lightning protection.

And now for something completely different

The nondirectional response pattern of vertical antennas makes them a good choice for more than just all-around monitoring. One other common use is for AM broadcasting, where the audience often is to be found scattered out "all-around" the antenna. Although many broadcast antenna patterns are designed to be directional, the single vertical radiator still has its uses.

On the broadcast band, a station's coverage during daylight hours is essentially via groundwave propagation. At night, when the ionosphere starts "bouncing" some of the signals back to earth, these skywaves and the groundwave can interfere with each other. The result can be the fading of signals at locations distant from the station.

Recently there has been considerable interest in two new "antiskywave" antenna designs, which hold hope of pushing the skywave-induced fading out farther from the antenna. This, of course, will allow more listeners to enjoy fade-free reception. A consideration of the rule of antenna reciprocity tells us that these antiskywave antennas should, if used as receiving antennas, have a lower angle of "radiation" than the simple vertical designs we now use. Experiments are planned to determine the effectiveness of these designs, and as more is published on their performance, I will describe them in this column.

RADIO RIDDLES

Last Month:

Last month I asked you if the "line-of-sight" which we talk about in VHF-UHF communications is actually something different from the optical line-of-sight which we know from our visual experience. The answer is "yes."

Both radio waves and visible light waves are examples of electromagnetic radiation. As the frequency of electromagnetic waves increases, there is less and less tendency for the waves to bend away from a straight path when acted upon by outside forces. The U.S. Navy bases much of its long-distance communications on the fact that long wave radio signals bend around the earth easily.

As we go higher in frequency towards the VHF-UHF bands, there is less of a tendency for the waves to follow the curvature of the earth, and more of a tendency for them to travel in a straight line. But VHF-UHF waves, which are lower in frequency than light waves, still bend a bit more than do light waves. Thus, the radio line-of-sight goes past the visual horizon, and is longer than the visual line-of-sight.

This Month:

There is at least one antenna design in which an antenna seems to be constructed out of nothing! What is that antenna design? Check in again next month for the answer to this bit of antenna trivia.

ask bob

Bob Grove, WA4PYQ

P.O. Box 98
Brasstown, NC 28902

Q. *What do airport metal detectors and X-ray machines do to portable scanners? (Bill Black, Augusta, GA)*

A. According to Eastern Airlines' security office, neither X-ray machines nor metal detectors cause any adverse effect to scanners, computer disks, wristwatches, photographic film, calculators, tape recordings, or any other sensitive consumer items.

Eastern has over 200 walk-through metal detectors manufactured by Infinetics Corporation and over 100 X-ray machines built by Astrophysics Corporation. In addition to passenger screening at security gates, baggage is also X-rayed before international flights.

It would take over 1000 exposures to these airline X-ray devices to equal the amount of radiation you receive with just one dental X-ray!

Q. *Recently I heard on 9172 kHz upper sideband a network of stations identifying with WWJ call signs and referring to an interstate in Utah. What is this agency? (Alan Rayment, Nelson, BC, Canada)*

A. You heard a test from a new network installed by the Federal Highway Administration (FHWA). Their tests are conducted quarterly, generally in the middle of the week (Wednesday and Thursday), on a variety of frequencies assigned to the Department of Transportation.

Q. *Electrical line noise heard on my Uniden CR2021 disappears when I switch to battery power. Is there a line noise filter I can buy for AC use? (James Taylor, Webster, NY)*

A. A number of line noise filters are on the market, some from Monitoring Times advertisers and others from discount stores. If you opt for the discount store variety, make sure it says that it is a noise filter and not just a transient voltage protector.

Q. *What can I put on my scanner to remove the annoying tone on 152.51 MHz mobile telephone so that it will continue to scan, but stop on channel when there is a call? (Skywarn Civil Defense, Talhina, OK)*

A. Absolutely nothing. A scanner stops when it detects the presence of a signal, whether or not it is a tone or talking. If you added an external notch filter to remove the annoying on-hook tone, the scanner would still stop because a signal is present.

The early model Bearcat BC210 had such a Bell-Tel filter, but it proved troublesome, sometimes erratically skipping over other channels which had voice traffic. It has not been re-incorporated into recent scanners.

Q. *When listening to shortwave I sometimes hear an echo effect. Is this due to reception of a delayed second path or is it purposely sent by the broadcaster to emphasize the audio? (Walt McCrystal, Henrietta, NY)*

A. Yes! Twilight often exhibits multipath phenomena such as echoes from delayed signal paths, and some broadcasters (especially Cubans) seem to delight in using electronic echoes to dramatize their voicecasts.

Q. *Is any scanner manufacturer planning to offer a two-tone squelch decoder for fire-paging use? (John Miller, Anchorage, AK)*

A. Not to our knowledge in the foreseeable future. If scanner listeners would like such a device which can be added externally to their scanners, allowing the scanner to remain on and only break squelch when a specific two-tone sequence is received, write to Grove Enterprises. If enough requests are received, such a device will be scheduled for development.

Q. *I am new to monitoring and wonder if there is a more detailed list of frequencies for the greater Los Angeles area than found in Radio Shack directories? (James G. Messer, Calimesa, CA)*

A. Indeed there is. One of the most detailed books available for its part of the country is Robert Kelty's "Government Radio Systems," $25 from Mobile Radio Resources, 2661 Carol Drive, San Jose, CA 95125.

Kelty's 360 page book lists every imaginable detail about local, state and federal agencies and frequencies found in the VHF and UHF spectrum throughout the state of California. It is accurate and highly recommended.

MODIFYING THE BEARCAT

Entering Duplicate Frequencies

Recent Uniden hand-held scanners (BC-100XLT, 200XLT, 205XLT) reject attempted re-entry of a duplicate frequency already in memory. While this saves memory space from duplication, sometimes it is desirable to scan one frequency more often than others, yet the operator may not want the constant interruption of the priority function.

The answer is simple: press the "enter" key twice! The first time, "error" appears along with the channel number for the original entry, but the second press will store the duplicate frequency. Several owners have reported their scanners "defective" because of the initial rejection of a duplicate frequency!

Locking Out Pre-Programmed Channels

One of the nice features of the compact BC760/950XLT Bearcat scanner is its pre-programmed frequency banks. Separate pushbuttons allow the unit to search through allocated frequency banks for locally-active police, fire/emergency, aircraft, marine and weather channels.

If you would like to lock out a pre-programmed channel in the service search mode, simply press the lockout key when that frequency comes up. To restore the frequency, press the lockout key again for 2.5 seconds. (Thanks to Bob Parnass as described in *The Radio Enthusiast*).

Q. I have a Yaesu FRG960, Grove Scanner Beam and Dressler ARA500 active antenna, yet I still cannot receive cellular telephone calls. How come? (E. A. Woitkowski, West Newbury, MA)

A. Well, first keep in mind that it is unlawful to listen in on cellular or mobile telephones according to the Electronic Communications Privacy Act of 1986 (ECPA). But that doesn't answer your question.

Assuming that your equipment is all working properly and not being overloaded by strong local signals, there is no reason why you shouldn't be able to hear such signals for a distance of several miles. Some readers report cellular reception of 20 or more miles distance.

Cellular bases transmit in the 869-894 MHz range; the mobiles transmit 45 MHz lower (824-849 MHz).

Q. At night I can hear a brief tone followed by Morse code "di-dah-dit, di-dah-dit" (RR) on the minute (00 seconds) underneath the signal of WJR, Detroit (760 kHz). Are there any TIS stations in this range? (Walt McCrystal, Henrietta, NY)

A. Travelers information stations (TIS) utilize only 530 and 1610 kHz, so that's out. Since that part of the spectrum is for broadcasting only (except for local, license-free, low power -- 100 milliwatt -- part 15 devices), I doubt that you will find a licensed utility assignment on that frequency.

Several possibilities do, however, exist: Cuban jammer (Floridians -- do you hear it?); closeby industrial or scientific timing device; illegal fishing or navigational beacon; intermod or image from a low frequency beacon or shortwave navigational, timing or jamming station. Any reader thoughts on this? We don't hear it in Brasstown; is anyone else hearing it?

Q. Recently, I have been hearing an erratic "chirping," "squeaking" and "croaking" sound on 160 MHz railroad channels. I live near a hospital. Is it the railroad or the hospital I'm hearing? (Robert Brock, Phoenix, AZ)

A. Good question! Are the sounds heard only on railroad frequencies? Hotbox detectors may be the culprit--do you hear the sounds when trains are passing? There are other types of telemetry as well. Take your scanner down to the railroad yard and see if they are stronger; ask a yard foreman for his ideas.

If it's not the railroad system, the hospital is certainly suspect. Low power radio devices are in frequent use there for a variety of telemetry and data transmission purposes for remote monitoring of patients.

Questions or suggestions sent to MT are printed in this section as space permits. If you prefer an answer by mail, you must include a self-addressed, stamped envelope.

LETTERS

continued from page 3

CB (Again)

Thanks for the article on CB in the June issue. Let's have a little more.

Richard J. Cox, KA1EFZ
Peabody, Massachusetts

I am a CBer who was offended by the "Technical Topics" article concerning CB. It was biased and one-sided. Yes, it is true that there are some irresponsible radio operators out there who believe they can act like jerks on the air. But not everyone who talks on the CB is a "maggot." There are a lot of good CBers out there, too.

Paul Foust
Moreno Valley, California

The author of your CB article in the June issue would probably die if he had to listen to CB down here in Natchez, Mississippi. First, there's the good 'ole boy with the high-powered linear amplifier who screams, "Aw dee oooh" for 20 minutes at a time. Then there's the 40 year old woman who acts like she's 15 when she gets on the air. Another guy sings, "I need a man to trim my tree." Needless to say, I've put my CB equipment in storage.

Daryle Young, Jr.
Natchez, Mississippi

Hurumph!

Reading a radio magazine about the wonderful world of shortwave, I invested $2,000.00 in two shortwave radios and antennas. I sure got shortchanged.

To some countries, I send verification and return postage but get no answers.

And where is all the music? So far, there hasn't been too much of it. All I get is talk and more talk. And if you hear news, it is the same, like a parrot talking.

A. Vojack
Phoenix, Arizona

First, we do not ever recommend that anyone spend 2,000 bucks on any hobby before they're certain that they like it. As for the disappointment you've had over the programs you're hearing, it sounds quite possibly like you've got a problem with your receiver. Are you sure it's hooked up correctly? Are you listening at the right times? Using the frequency and propagation charts in Monitoring Times? In order to get the most out of any shortwave radio, you've got to invest something else: time, patience and the willingness to learn. It's just not as easy as listening to FM. Good luck. -- Ed.

Is it Full Moon Yet?

This is the most famous spy story pertaining to radio communications.

The scene takes place at an eloquent diplomatic banquet. Among the assembled guests there is a ravishingly beautiful blonde. Seated next to her is an erudite diplomatic type. He deliberately drops his spoon on the floor underneath the table. On the pretense of going to retrieve it, he bends down and grabs her ankle. She does not say anything.

Then he touches her knee. Still there is no reaction. Emboldened by these events, he then grabs her thigh... and recoils in horror when he encounters a hidden radio transmitter. The blonde demurely leans over and whispers in his ear, "Don't stop now, I'm secret agent X9."

Let this be a stern warning to all you monitoring types. You may never know where your next great frequency may come from. So beware, prepare, ensnare.

Withheld
Los Angeles, California

Since you devote space to "organized superstition" broadcasters (religion), I'll be letting my subscription to *Monitoring Times* expire. Their nonsense is disgusting and revolting to sensible, logical and scientific-minded individuals. Science and superstition are *not compatible* despite what the sophists and some theologians claim.

Pope Sikola
Colorado Springs, Colorado

Shortwave is often called "The Battleground of Ideas." That presupposes that the listeners are thoughtful people. In the shortwave broadcasting spectrum alone, there are stations that espouse, among other things, Chinese communism, Judaism, New Age philosophy, glasnost, democracy and Pan-African unity. There's even a pro-nazi and an anarchist pirate on the air from time to time.

As a colleague in broadcasting business was fond of saying, "If you don't like what you hear on the radio, turn the dial or turn it off." This is a magazine that is designed to provide readers with information on communications. We hope you enjoy it, but what you choose to do with it is your business. -- Ed.

In your magazine, you are constantly asking people to let you know what they're hearing on the radio. So I wanted to let you know that last night I tuned into a local station that was playing the Beatles *White Album*. I sat around drinking beer and listening to the music.

Pete Wahlquist
Reseda, California

You listened to the Beatles when the Soloman Islands has been coming in like gangbusters on 9545 at 0800? Peter, shame on you. -- Ed.

Wow! If only Australia had a monthly publication like *Monitoring Times!* Although *MT* is mainly for U.S. monitors, it makes really great reading and I look forward to it each month. Keep up the great work!

Alan Muddle
Dungog, NSW Australia

Low-Power Transmitters

Back in January, we ran an article on legal, low-powered AM broadcast band transmitters called, "DXing the Teeny Tiny AMs". The article continues to elicit a large number of requests from readers asking where they can obtain one of these transmitters.

One firm, called Talking House, produces a combination transmitter/cassette player unit primarily targeted for the real estate trade. The price is $200.00 for one unit; $150.00 for two and $137.00 for five or more. Their address is 500 Main Street, Fond du Lac, Wisconsin 54935 or you can call toll-free, 1-800-444-TALK. Mastercard and Visa are accepted.

Another firm, called Information Station Specialists at Box 51, Zeeland, Michigan 49464, has low-powered AM transmitters as well. Top of the line is the 2.5 mile AM transmitter which requires a license. It comes with two frequencies -- 530 or 1610 AM -- and starts at $1,500.00. Next is the license-free half-mile AM transmitter which comes complete with antenna and power supply for $800.00.

Finally, Information Station Specialists offers their model "Transcorder 2000," a .5 mile AM transmitter. Also license free, it comes complete with cassette player and timer and can be purchased for $395.00. Information Station Specialists number is 1-616-772-2300. Be sure to tell them that you read about their products in Monitoring Times.

Letters should be addressed to ***Letters to the Editor****, Monitoring Times, P.O. Box 98, Brasstown, NC 28902 and should include the sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted. Because of the volume of mail received, personal replies are not always possible.*

The Versatile PRO-2004

(Part II)

Over the past year we have presented a number of improvements for the popular PRO-2004 scanner. In our July issue, page 93, we told how Bill Evans of West Lafayette, Indiana, increased scan/search speed to about 30 channels per second by replacing a crystal on the controller board (PC-3). This month we present even more refinements.

Sensitivity

While the PRO-2004 is acclaimed for its many attributes, sensitivity is not one of them. In large population areas this is an advantage; it seems virtually immune to intermod from strong signal overload. But in rural areas the use of a low noise preamplifier is recommended. Be sure the rear-panel attenuator switch is set to 0 dB.

In our June issue we reported that Kenneth Camuccio of New Jersey recommended replacing the BNC antenna connector which is often intermittent. Since that is such a beast of a job, our equipment reviewer, Larry Wiland, suggests an alternate fix.

Holding the male BNC from the antenna in one hand and a fine-point pick or needle in the other, gently bend the internal spring leaves which surround the center insulator slightly outward so that they will make a tighter fit when mated to the PRO-2004.

Jim Nieznanski of West Allis, Wisconsin, discovered that the simple addition of a Radio Shack FM trap (#15-577) between the antenna and the scanner reduced desensitization of the radio when used in strong signal areas, allowing it to operate at higher sensitivity, especially on high band. Jim also added a Radio Shack #15-578 variable attenuator which he adjusts for any residual overload.

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Aug 5-7	Austin, TX	TX State Convention/ Joe Makeever W5EBJ 8609 Tallwood Dr, ustin, TX 78759
Aug 7	Berryville, VA	Shenandoah Valley ARC/ John Knode N4MM RFD #1 Box 73A, Boyce, VA 22620
Aug 13	Springfield,MO	SW Missouri ARC/ Linda Baxter 2616 West Woodlawn, Springfield, MO 65083
Aug 13	Indpls, IN	Shadow of Pyramid ARC/ David Johnston 9511 /Angola Court, Indianapolis, IN 46268
Aug 13-14	Cedar Rapds,IA	Cedar Valley ARC/ Tom Zuber WN0DRC 4201 Dalewood Ave SE, Cedar Rapids, IA 53403
Aug 20-21	Huntsville, AL	Huntsville ARC/ Jim Brashear WB4EKJ 3002 Boswell Dr, Huntsville, AL 35811
Aug 21	Warren, OH	Warren ARA/ Patty Hillier KE8KH 18334 Rt 62, Beloit, OH 44609
Aug 21	Santa Brbra,CA	Santa Barbara ARC/ Walt Haake K6YJG 3643 Torino Dr., Santa Barbara, CA 93105
Aug 21	Marysville, OH	Union Co ARC/ Gene Kirby W8BJN 13613 US 36, Marysville, OH 43040
Aug 27-28	Madison, GA	Confed Sig Corps Inc/ Roy Jordan WB4ILR 1142 Shoreham Dr, College Park, GA 30349
Aug 28	Mulich Hls,NJ	Gloucester ARC/ John Fisher K2JF PO Box 370, Pitman, NJ 08071
Aug 28	Bluefield, WV	East River ARC/ Charles Gatchell, KE8EI 24 Fairfield Place, Princeton, WV 24740
Sep 2-4	Anaheim, CA	SW Div Convention/ Len Gerardi NC6H 15742 Claredon St, Westminster, CA 92683
Sep 3-4	Shelby, NC	Shelby ARC/ John Ledford N4GOQ SARC, P.O. Box 2206, Shelby, NC
Sep 10	Windsor, ME	Augusta Emerg ARU/ Arnold Smith KA1KPW RR 1 Box 475, Augusta, ME 04330
Sep 11	Marshall, MO	Indian Foothills ARC/ Randy Ebers KE0MV 125 Lakeview, Marshall, MO 65340
Sep 11	Gaithersbrg,MD	Fndtn for Amateur Rdo/ Robert Moore N3CKD 9449 Mayflower Ct, Laurel, MD 20707
Sep 11	Monett, OH	Ozarks ARC/ Carl Adcock WB0RSZ Rt. 1 Box 247, Aurora, MO 65605
Sep 11	Butler, PA	Butler Co. ARA/ John Varljen K3HJH 174 Oak Hills Hts, Butler, PA 16001
Sep 11	Joliet, IL	Bowling Brook ARC/ Ed Weinstein WD9AYR 7511 Walnut Ave, Woodbridge, IL 60432
Sep 17-18	Peoria, IL	Peoria Area ARC/ Superfest '88 P.O. Box 3461, Peoria, IL 6164 (SASE) Talk-in 146.16/76 W9UVI
Sep 17-18	Va. Beach, VA	Roanoke Div Conv/ Art Thiemens AA4A1 2836 Greenwood Rd, Chesapeake, VA 23321
Sep 18	Mt.Clemens, MI	L'Anse Creuse ARC/ Ralph Wilcox KA8YOJ 39610 Chart St., Mt. Clemens, MI 48045
Sep 24	Goshen, NY	Orange Co ARC/ Barbara Chistopher N2AWI RD 2 Box 447, Wallkill, NY 12589
Sep 25	Berea, OH	Cleveland Hamfest Assoc/ Glenn Williams AF8C 513 Kenilworth Rd, Bay Village, OH 44140

Monitoring Times is happy to run announcements of radio events open to our readers. Send your announcement at least 60 days before the event to: Monitoring Times Convention Calendar, P.O.

STOCK EXCHANGE

NOTE: Monitoring Times assumes no responsibility for misrepresented merchandise.

NON-COMMERCIAL SUBSCRIBER RATES: $.10 per word; NON-SUBSCRIBER RATE: $.25 per word. All ads must be paid in advance to Monitoring Times. All merchandise must be personal and radio-related. Ads for Stock Exchange must be received 45 days prior to the publication date.

COMMERCIAL RATES: $30 per 1-3/4" must accompany ad, payable to *Monitoring Times*. Send 1-3/4" square camera-ready copy, or any square copy to be reduced, or send text for typesetting.

Wanted: R7000 parts or junker; Zenith Trans-Oceanic 12-band, 11-band 1000, 2000, or 3000; Sony CRF 230 multiband, Toshiba Globetrotter or other older multiband radios. Harald Herp, 6615 Michele Ct., Huntingtown, MD 20639 [301] 855-7071

For Sale: BEARCAT 300 - $180.00; GROVE MiniTuner TUN-3 - $35.00; AEA computer patch, CP-1 with SWL Text (for Commodore 64) - $180.00; KENWOOD R-2000 - $425.00. All excellent, Will ship. Sam Stoddard, 1920 Granada Blvd, Coral Gables, FL 33134 [305] 444-2484.

For Sale: INFO-TECH M600A with parallel printer interface $400. David Cook, 11649 Shasta Lane, Oklahoma City, OK 73162. [405] 755-0795 9:30 to 6:00 weekdays.

Wanted: TUBE CHECKER that will check 6JB6 tubes for Drake radios. R.H. McDuffee, 5821 Cin-Brookville Rd., Okeana, OH 45053.

BEARCAT 100XL $100.00; REALISTIC PRO-2004 $300.00; OPTO ELECTRONICS 120H $100:00; HUSTLER DCL $15.00; Mobile Scanner antenna $10.00; Old issues of POPULAR COM or MT. Evan Anderson, 2312 Lincolnwood Dr., Evanston, IL 60201 or call [312] 866-9792.

HARRIS RF505A commercial/military, digital synthesized 15kHz-30MHz, all solid state, SSB/ISB/CW, CW filter, manual, $1,200 [603] 889-1067.

SELL brand new PANASONIC RF-B60 boxed, cost $260, first check $175 received. Stephen Clifton, 800 West End Avenue, New York, NY 10025.

PANASONIC RF-3100, like new, 500kHz-30MHz, box, manual, paid $400.00, sell $225.00, will ship COD. John Gardner, 10990 Del Norte St. #11, Ventura, CA 93004 [805] 659-4129.

BEARCAT of REGENCY (Realistic, Radio Shck, etc.) crystals $2.00 each postpaid, specify scanner make and desired frequency, trades considered, many popular and hard to find including federal - Box 1239, Charleston, SC 29402.

6-SCANNERS both programmable and crystal types, numerous accessories, new antennas, mobile mounting packsges, frequency research provided, no dealers, hobbyists only [803] 723-5061.

For Sale: REALISTIC PRO 2021 all accessories in box, like new condition - $225. Also GRE 800 MHz converter, used very little, works great. Adds 400 MHz to displayed frequency - $45. I pay shipping on both. Call Russell [915] 387-2717. Leave message if not here.

SANGEAN ATS-803, brand new, never used - $145.00; excellent portable shortwave. Money order. Ted Miller, P.O. Box 59031, Chicago, IL 60659.

SWLTEXT cartridge for C64 - $35; MFJ 1200 CW computer interface - $22; RADIO SHACK PRO-47 scanner - $35; LAFAYETTE solid state VHF high and low FM receiver - $35; two DRAKE 85° LNBs - $25 each. *WANTED:* 1" & 2" scope tubes, AUTECH QF1A audio filter, FL44A SSB filter, SP3, SP230, SP820 or SP180 speakers. David, Box 6463, Mobile, AL 36660 [205] 478-8823.

UNIDEN MADISON - $215; UNIDEN GRANT - $125; UNIDEN PC 244 - $144. All radios almost new. [913] 887-6052 evenings, P.O. Box 109, Lecompton, KS 66050.

For Sale: SONY ICF 2010 less than 1 yr old with Radio West filter mod. Excellent condition box, manual, carry strap, handbook. Will ship UPS $270. Louis L. Mauroner, 3520 Magazine, New Orleans, LA 70115 [504] 897-1405.

Wanted to buy: CASSETTE TAPE of NYPD, or LAPD during periods of heavy activity. Ed Anderson, P.O. Box 4492, London, Ontario, Canada N5W5J5

WASHINGTON, OREGON & BRITISH COLUMBIA SWLs/DXers: UNITE! Join DX/Northwest, a regional club seeking your participation. Meet other shortwave enthusiasts through meetings, DXpeditions, and the monthly Grayline Report newsletter. For information and sample issue, send SASE (or IRC): DX/Northwest, 205 SW Clark #C-4, Issaquah, WA 98027-3772.

Wanted: Pair of MOTOROLA HT-220's, VHF-Hi. Also want police radar speed guns. Mark Hartman, 14 Silver Lane, Kirkwood, MO 63122. Call [314] 966-3894

THIS COULD BE YOUR AD!

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Look again!

We apologize that due to our error, the price of the product in the following ad was misprinted in the July issue. Won't you take a second look and give them a try?

Missed that call again?

Let's face it, the audio from your mobile rig, scanner or HT is the weak link in your communications system. Use your car cassette or portable cassette deck and Kasi*Comm™ to enhance your handi-talki, mobile or scanner audio. Just put Kasi*Comm™ into your deck and plug into your external speaker jack, no modifications required. Specifically designed for communications equipment. Full 30 day guarantee, money back if not satisfied. Send $13.95 (ILL residents add 7%) plus $2.00 S/H to:

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Closing Comments

"Thank You"

On an average day, we open hundreds of letters. Among these will be comments from our readers concerning what they like in *MT*, what they don't like in *MT* and what they would like if we would only do it! These comments are vital to our commitment to providing exactly the kind of magazine that you want *MT* to be.

New topics raise new questions. Is there enough interest in a topic to justify a new column dedicated to it? How much will our expanded page count, now at 104, cost us in terms of printing and mailing fees? Remember, *MT* is paid for almost entirely by subscriptions, not by advertising, accounting for the wealth of information in its pages each month.

Although *Monitoring Times* is a wholly-owned subsidiary of Grove Enterprises, its editorial policy is to be evenly objective toward all advertisers. *MT* must stand on its own financially -- not one penny of Grove Enterprises money bails it out! In fact, Grove has to pay the same advertising rates and wait in line for new product announcements and reviews to appear as anyone else!

There are other pragmatic issues as well: Should we, instead of increasing page count, sacrifice an existing column which doesn't seem to be drawing reader comment? Is there a qualified expert available to write on the proposed subject? Will *MT* get too big, making it more of a chore to read than a pleasure?

We are not alone in this quest for balance and perfection; every magazine from club bulletin to *Time* faces it. If the answer were pat, the formula would appear in every writer's and publisher's text. Searching through the muddle to reach nirvana is the challenge and those who come closest survive.

But one common denominator influences every publication: reader feedback. Without it -- or ignoring it -- a magazine is dead in the water. While there are occasional over-reactions (*"Your article on ____ was inexcusable; I'm letting my subscription expire."*), the vast majority of letters are well thought out and extremely valuable in establishing goals and directions.

Even more encouraging is the fact that your letters overwhelmingly reassure us that we are succeeding in our editorial mandate to maintain journalistic integrity, reporting with balance, objectivity and expertise in the field of radio monitoring.

The old saw, "Keep those cards and letters coming, folks"! is as valid now as it was when it was first penned decades ago. Thanks to all of you for your considered thoughts. Every letter is read and appreciated.

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Publisher

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