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MONITORING TIMES

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- QSL Advice from Don Moore
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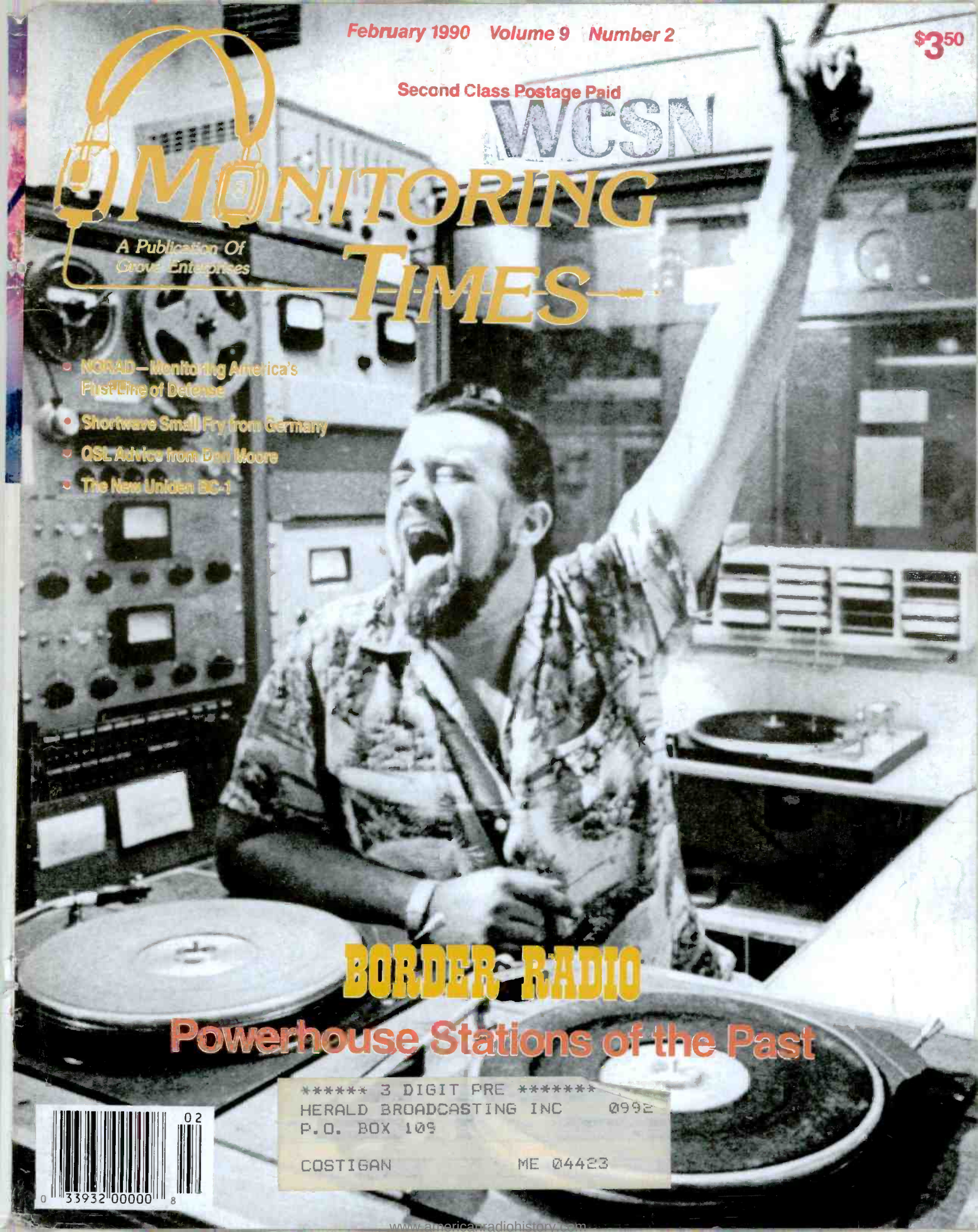

BORDER RADIO

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450 MHz	< 3 mv	< 5 mv	< 3 mv	< 1 mv	< 5 mv
850 MHz	< 3 mv	< 20 mv	< 5 mv	NA	< 5 mv
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MONITORING TIMES

February 1990

Border Radio *by Durrell Roth* 6

Border Radio. Anyone who listened to the radio between the 1930s and the 1960s will remember the outrageous, high-powered radio stations south of the border. Designed to capture the ears of North Americans from Texas to the Arctic, they became a haven to everything from on-air psychics to quack doctors to hillbilly singers.

Radio has never been so exciting - or so much fun -- since radio's wild west. Radio historian Durrell Ross tells the story.

Why is this man smiling? Clue: His name is Dr. Brinkley

Fiesta QSL! *by Don Moore* 10

QSLs are more than mere post cards from radio stations. They are tangible representations of an intangible event. And they are an exciting opportunity to reach out across the miles and make contact with someone at a radio station hundreds, even thousands of miles away.

QSLing is an art -- some say a dying one -- that can double both the challenge and the satisfaction of radio monitoring. Don Moore offers some super tips on QSLing a specific breed of radio station -- the Latins.

NORAD: America's First Line of Defense *by Larry Van Horn and Jack Albert* 14

One-third of a mile inside and fourteen hundred feet below Cheyenne Mountain is the home of NORAD, the North American Aerospace Defense Center. Commanding a worldwide communications network, it is NORAD's job to provide surveillance, threat assessment and early warning against potentially hostile forces.

In this edition of *Monitoring Times*, we look at this high-tech operation from two perspectives. As a monitoring objective, it is necessarily elusive. And, as *Monitoring Times* columnist Jack Albert found, as a top-secret government operation, it does not welcome uninvited visitors.

ON THE COVER: Wolfman Jack was one colorful personality who used "border blaster" stations to broadcast material (rock and roll music) not accepted by most U.S. stations.

DXing the Other Germans

by Charles Sorrell **18**

These are exciting times in Europe, as anyone who has turned on a radio in recent months can attest. And, as with all large scale political upheavals, the media can not only play a vital role but can themselves be shaped and molded by events.

In the two Germanies, which some political analysts say are on the brink of reunification, are a number of small, seldom mentioned shortwave broadcasters. Not Deutsche Welle or Radio Berlin International, these are the other Germans. Resident DXpert Charles Sorrell takes us on a tuning tour of these worthwhile targets.

And more . . .

Equipment reviews this month include Magne's look at the Panasonic RF-B40 compact portable (and a "worthy competitor"). Bob Grove tries out the tiny Bearcat BC-1 -- a preprogrammed scanner for law enforcement, CB channels and weather only, while Ricky Stein daydreams about the Jupiter II wideband handheld. (Yes, it does exist, but, no, you can't get it in the U.S.) And for pulling in that signal, "What's New?" examines the truly professional Create CLP 5130-1 VHF/UHF antenna.

Did you always like to read the technical columns, but were never sure you had what it took to "do-it-yourself?" Well, Uncle Skip will help you make sure you've "got what it takes" in the tool department, anyway. Peruse his checklist before you start to putter.

And speaking of hesitating before going to town with the soldering iron, Bob Kay says, *"Don't clip that diode!"* At least, not until you've given it a lot of thought, because afterward may be too late...

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MONITORING TIMES

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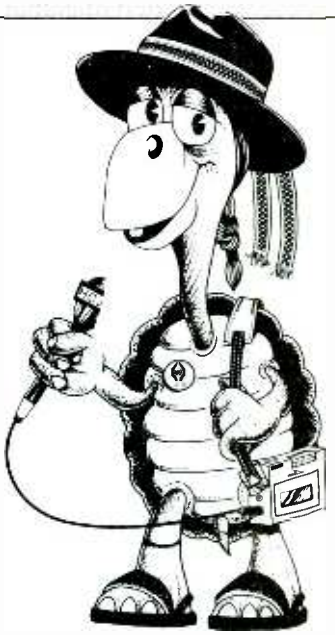
LETTERS

"Some time ago you featured a device that used radio waves to track down stolen cars," says Jack Krelar, "Do you have the frequency?"

We do now. According to the W5YI report, the FCC has approved 173.075 MHz as a national channel for these systems. The frequency, just below TV channel 7, is shared with the federal government.

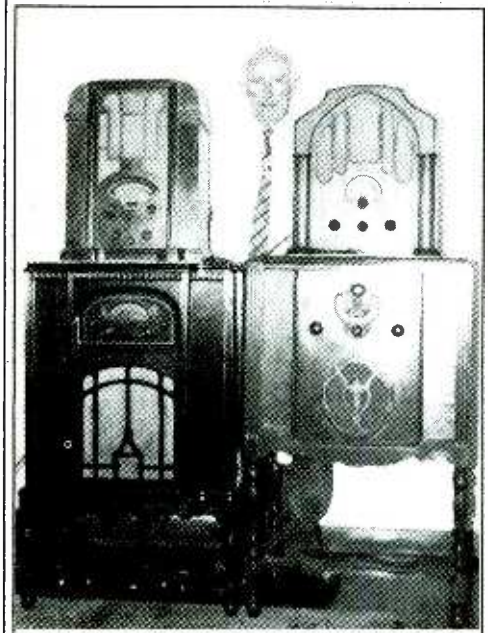
Here's how one system, Lo-Jack, works. A Motorola transceiver is installed in the customer's vehicle and radio tracking equipment is installed in police cars. When a car is reported stolen, base station transmitters send out a coded signal that activates the Motorola transmitter in the stolen vehicle and it begins to give off its own unique signal that police can track.



SWBC stations are fond of mascots: RCI has their Ian McFarland, and HCJB now has Galo the Turtle.

In the United States where unbridled competition is king, radio station mascots often reflect excitement or speed. In the world of international radio, the mascot's are chosen to reflect something of the broadcaster's country, such as Radio Sweden's dancing bear. Radio Canada International uses Ian McFarland.

Then along comes HCJB's new logo, Galo, the Galapagos Tortoise. A likable sort of fellow, Galo holds a microphone and cassette recorder, ready to get the news, quick as a . . .



Bryan Marsh, secretary and treasurer of the New Zealand Vintage Radio Society, checks in to say hello. He passes along this photo of himself with a few of his favorite old timers -- radios, that is.

Over in Maryland, Ron Bruckman says that he is putting together a local scanning publication and has sent us a xerox of the front cover -- nothing else, just the front cover -- of *Radio Monitors Newsletter of Maryland.*

"It will mainly serve to provide local readers with confirmed frequencies for the Maryland area," says Ron, "plus it will serve as a way to get fellow scanner and shortwave enthusiasts together." A noble goal indeed. Here's the address for anyone who would like to check this out: P.O. Box 394, Hampstead, Maryland 21074.

Another club note comes from Ernie Dellinger of the Toledo Area Radio Enthusiasts (TARE). Ernie asks us to remind residents in that area of their monthly meeting. The membership of TARE meets on the third Thursday of each month at 7:00 PM at the Big Boy Restaurant, 6609 Airport Highway, Holland, Ohio. Says Ernie,

"We're a rather small group of radio and communications buffs covering everything from 'DC to Daylight' in shortwave, scanning, ham -- you name it, we kick it around." If you'd like more information, give Ernie a call at 865-4284.

And finally, you might want to join up with our good friends at the American Shortwave Listener's Club. The club publishes a great little bulletin on an every-other-month basis and is a super way to get-together with shortwave listeners from all over the United States, see what they're hearing, what type of radios they use, and so forth.

It's all very informal and non-competitive. Check it out. Send Stew MacKenzie two bucks and he'll send you a sample copy. Then sign up, for goodness sake! The address is 16182 Ballad Lane, Huntington Beach, California 92649-2204. "And thanks for your support of the club," adds Stew.

[More "Letters" on p.100]

COMMUNICATIONS

CB -- When you can't phone for help

CB Radio -- Coming Back

CB radios, a craze during the gasoline crisis of the 1970s, are making a comeback. This time, the sales are attributed to women, retirees and young people who want a way to summon help -- but who don't want to shell out the big bucks for a cellular phone.

"It's not a boom, but it's a nice, steady, gradual increase," said John Chass, vice president of marketing for Midland International Corp., a major supplier of the radios in Kansas City. "The preponderance of people we've surveyed are using the CB for emergency use. They don't buy a CB to talk 24 hours a day."

According to Midland, the average price for the radios runs between $30 and $60. Twenty-two percent of all CB buyers are women. Thirty percent of the men who buy CBs say they are buying them for women.

CB Can be Dangerous to Your Health

Two Indiana cousins were eletrocuted and a third was thrown some 25 feet when a citizen's band radio antenna they were moving touched a high voltage power line.

According to deputy coroner Jerry J. Dunnichay, Douglas Lawrence, 28, and Robert Van Horn, 21, were working in the dark. "They thought they had enough room (between them and the electrical wires, but)... it slipped, got away from them, and hit the wires. They dropped right there at the scene."

A third man, Ralph Lawrence, was knocked down but recovered enough to attempt artificial resuscitation on the victims.

Monitoring Action

A group of radio monitors is being credited by police for helping to end a bizarre highway chase on Ohio's Interstate 70. According to news accounts, Columbus police officer Dennis Minotti was chasing a speeding vehicle when suddenly the driver and a passenger simply opened the car doors and bailed out.

According to the *Advertiser-Tribune,* while Minotti was busy using his squad car to force the runaway vehicle into a ditch, three members of the Emergency Radio Monitors of Central Ohio, Robert Brady, Michael Brady and Kris Hurt, assisted in the apprehension of the suspects.

Power lines may contribute to rising cancer risk

Grundig Dies

Max Grundig, the radio pioneer whose electronics company grew from a small shop to worldwide enterprise, died at the age of 81.

Born May 7, 1908, Mr. Grundig began tinkering with radios as a 15-year-old apprentice in the Bavarian city of Nuremberg. Together with a friend, he opened his own shop in 1930, selling radios and producing transformers. Company officials did not give a cause of death.

Electromagnetic Cancer Link (Again)

According to an Associated Press report, an unpublished study by a Johns Hopkins professor of epidemiology has added to the rising sense of concern over the cancer risk caused by electromagnetic fields. Dr. Genevieve Matanoski found a statistically significant link between cancer and human exposure to electromagnetic fields from the network of electrical wires that crisscross the nation.

Matanoski admitted that her findings were preliminary and required further testing, but said that the study had changed her view about a cancer link to power lines. "I thought that the theory was

Answer: "Earthquakes, propagation, weather and your health." Okay, what's the question?

wrong," she said. "I'm not so sure anymore."

Some scientific findings have indicated that the electromagnetic fields generated by power lines can interfere with the functioning of DNA and RNA, the controllers of cell production.

Aches and Pains: The Sun's To Blame

Soviet scientists say that not only do recent solar storms affect radio reception, but are also to blame for bad weather, earthquakes, volcano eruptions, and even poor health.

According to Tass, a group of scientists meeting in Azerbaijan believe that thousand-fold increases in the tension of Earth's magnetic field during solar storms causes powerful circular currents in the molten interior of the planet. In turn, these currents are said to cause tectonic activity accompanied by eruptions and quakes.

No explanation was given on how the solar storms affect weather or health.

FCC Grants New Radio Service

Last January, ham Kenneth Seymour of Beaverton, Oregon, petitioned the FCC for a new radio service. The new service, using short distance, 3 watt portable radios with voice and homing capability, will be used by backpackers, skiers, mountain climbers, and others who need the security of radio communications while in wilderness areas.

Usually, it takes years of work and lots of expenses to get the FCC to create a new radio service. In this case, the FCC decided that Seymour's idea was meritorious and granted the petition, stating a rulemaking to create PELTS -- the Personal Emergency Locator Transmitter Service -- 220-222 MHz.

FCC allows a new radio service for wilderness communications

The FCC was inclined to speed the granting of PELTS by the fact that many people are obtaining 121 and 243 Emergency Locator Transmitters (ELTs) and Emergency Position Indicating Radio Beacons (EPIRBs) intended for ships and aircraft, and using them as personal emergency devices.

Thanks to Ed Cichorek, Somerset, New Jersey; Steve Forest, Cincinnati, Ohio; Karl Heil, Blue Mounds, Wisconsin; James Laman, Tiffin, Ohio; Howard Lash, South Holland, Illinois; Thomas J. McKeon, Indianapolis, Indiana; Brian Smith, Indianapolis, Indiana; D.J. Trigilio, Capitola, California; Bob Valliant, Honolulu, Hawaii; and the *W5YI Report*.

Write On!

***MT* columnists welcome your response to their columns. It's the way to keep *MT* lively and up-to-date.**

Please address your letter to the author c/o Monitoring Times P.O. Box 98 Brasstown, NC 28902.

If you request a personal reply, you should always enclose a self-addressed, stamped envelope.

BORDER RADIO

A bizarre chapter in radio history, featuring radio's first "superblasters"

by Durell Roth

Border radio is a story of psychics, preachers, and quacks. From the 1930s to the 1960s, these colorful personalities pitched everything from eternal salvation to sexual rejuvenation on outlawed stations located along the U.S.-Mexican border.

But Border Radio is also the story of super-power transmitters -- border blasters as they were called. Owned by Mexican companies and financed with American dollars, they operated at power levels of up to 500,000 watts.

There were people like entrepreneur Carr Collins who claimed that his Crazy Water Crystals from Mineral Wells helped "...cure a sluggish system." Paul Kallinger, "Your good neighbor along the way," entertained millions of latenight travelers on XERF, the 250,000 watt voice of Villa Acuna; and Wolfman Jack was "...comin' at you baby, from the mighty XERB."

The products, the personalities, and the super-power transmitters are all part of a tale that forms what is undoubtedly the most bizarre chapter in the history of commercial broadcasting.

Paul Kallinger in the studio at XERF

The Border Radio story begins in 1927. That year marked the passage of the Radio Act, a piece of law that established the Federal Radio Commission (FRC) and the federal regulations needed to rein in the chaotic broadcasting industry. Within three years of its creation, the FRC was pursuing rebel broadcasters who were not "serving in the public interest."

Mexican radio law, on the other hand, didn't try to legislate the ethics of its broadcasters or listeners. Here, the psychics, preachers and quacks were out of Washington's reach.

In July of 1930 the International Broadcasting Company hired Will Branch, a radio engineer from Fort Worth. Branch's job was to design and build the first border blaster, XED, the 5000 watt voice of Reynosa. Programming had already gotten under way some six months earlier on the mid-channel frequency or 965 kc, telegraphing its intentions by calling itself "The Voice of the Two Republics."

XED sounded warm and friendly, promoting good will between the nations by offering a mix of Mexican and hillbilly music and selling time to local businesses like the Carta Blanca Beer Company. The station was well-engineered and technically state-of-the-art.

XER (The Sunshine Station Between the Nations), located in Villa Acuna across the Rio Grande from Del Rio, began regular programming in October 1931. It operated on a frequency of 735 kc, using a twelve wire vertical-fan antenna suspended between two 300-foot towers. Programming followed the standard border station format of fortune-tellers, preachers, local musicians, and broadcasts by the station's flamboyant owner, Dr. John R. Brinkley.

Brinkley was an M.D. from an "Eclectic" medical school who had gained international fame for his "goat-gland transplant operation." Operating out of Milford, Kansas, "The Doctor" earned his living by transplanting slivers of goat testicles into the sexual organs of middle age men. His radio station, KFKB, was used to promote the benefits of this miracle surgery on flagging libidos.

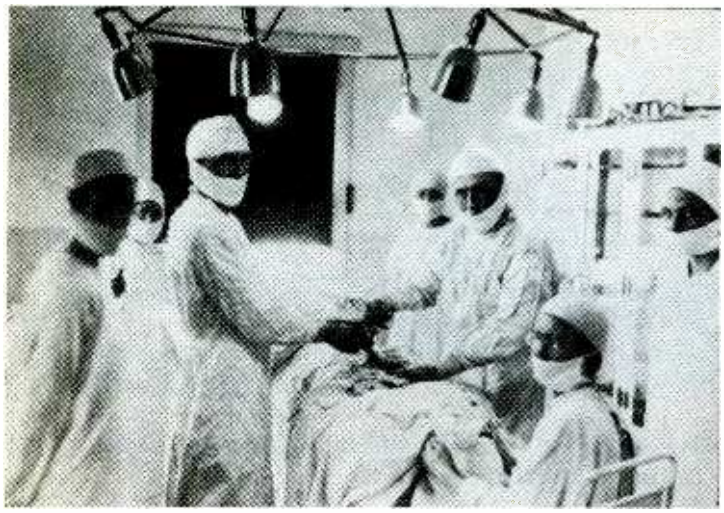
Not everyone thought Brinkley's work so amazing. The American Medical Association chastised Brinkley for his on-the-air practices and the Kansas Medical Board followed suit by revoked his license to practice in that state. If that weren't enough, the FRC refused to renew the Doctor's license to operate a station.

The impact of all this notoriety seemed negligible, however. Brinkley's hospital continued to offer the goat gland package, KFKB continued to operate and the money continued to pour in. Eventually Brinkley did sell KFKB. But he was not about to give up on radio. He set up remote studios in Milford to broadcast over his border station, XER.

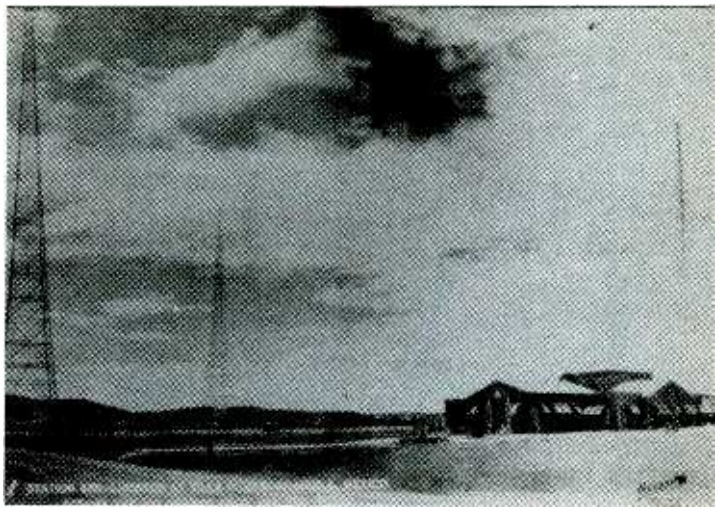
So successful was XER that both Milford and Del Rio experienced an economic boom. Soon neighboring cities began to see border blasting as an investment in the future, and in 1932, Will Branch constructed another station fifty-six miles down river at Piedras Negras. XEPN, The "Voice of the Western Hemisphere," began regular operation in November of that year with 50,000 watts on 585 kc. The station charmed a naive radio audience with stories of romantic Old Mexico.

In a fit of jealousy, cancer quack Norman Baker tried to sell the Laredo Chamber of Commerce on his idea of building XENT (a 150,000 watt station) in Nuevo Laredo. Yet despite his dubious celebrity status, wealth, and eccentric dress (his trademark was purple -- purple cars, suits, houses...), Baker lacked the charm and charisma that had opened doors for Doctor. He was unsuccessful in generating interest but got a station on the air nonetheless, personally bankrolling the entire project -- including electric generators to power his broadcasting dream.

Construction of Baker's XENT began in early 1933, and the buildings of the new station were unmistakable against the drab



Dr. Brinkley and associates operating; "Doctor" is standing second from right.



Station XER - Doctor's station showing three towers and the vertical-fan antennas.

backdrop of Nuevo Laredo. The rambling mission-style buildings were painted... purple.

In October, Doctor and Mrs. Brinkley and their associates moved to Del Rio. Doctor leased several floors of the Roswell Hotel for a clinic and the entire hotel basement for his x-ray equipment and lab.

His business grew rapidly, and as Christmas approached, the Brinkleys prepared gift baskets for the less fortunate of Del Rio, and further down river the "purple dragon," Norman Baker, prepared to blast into operation on XENT. Baker just couldn't keep up with Brinkley, though, and didn't hit the air until after Christmas.

By the end of 1933, XER had a new 180 kW transmitter and a new antenna that effectively increased that power to 360,000 watts. It looked like prosperity was here to stay, but over the horizon a storm was brewing that would eventually cause the demise of border blasting.

Stateside radio interference from these mid-channel super-power stations had become intolerable. The FRC was powerless to control the outlaw stations, and the AMA had no power in Mexico to censor the blatant quackery of Baker or the questionable practices of Brinkley. Broadcasting along the border was completely out of control.

Help eventually came, oddly enough, in the form of a diplomatic gesture from Mexico. Newly adopted regulations required that all medical programs be approved by the Mexican government before broadcast, and that all English programs must be broadcast first in Spanish. No remote studios were allowed.

All the border stations apparently complied, at least in part -- except XER. The Mexican Health Department levied fines against the station for violating the new regulations.

Brinkley ignored the fines, and so, on February 24, 1934, Federal troops seized the Sunshine Station and closed its doors. Doctor, true to form, appealed the government's actions, then cleverly bought time on other stations, including his old KFKB, while his case was in court.

The clean-up campaign continued, and Mexico required all of its stations to change to internationally accepted frequencies instead of the mid-channel ones they currently used. The high-power border stations were required to move to U.S. clear channel frequencies to further lessen interference. By April of 1934, the frequency change had been completed, and the May issue of *Broadcasting* listed both the old and new frequencies of all Mexican stations -- except Doctor's XER.

After lengthy court battles, the Mexican supreme court allowed Brinkley back on the air, and late in 1935 XER was reborn as XERA. Operating on a new frequency of 840 kc, Doctor again offered advice on everything from politics and religion to renewed sexual vitality.

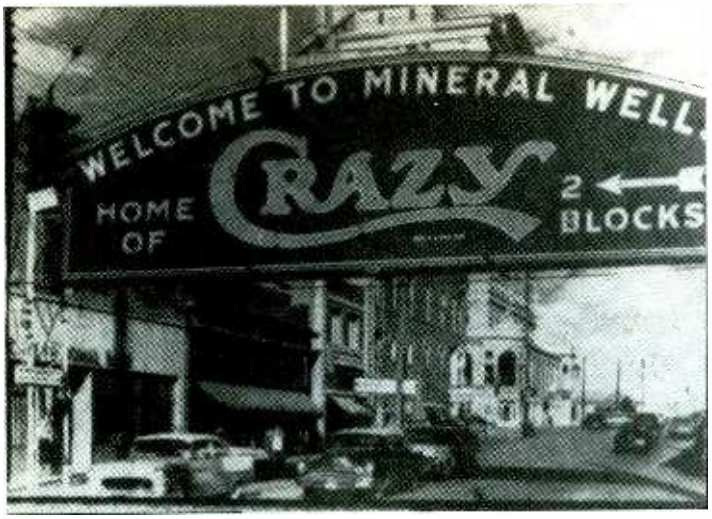
For several years, border blasting maintained a precarious equilibrium. Early in 1938, though, Doctor decided to increase the XERA transmitter output power to 500,000 watts. In order to achieve the new high power level, James Weldon, chief engineer at XERA, combined the high-efficiency Doherty amplifier circuit with eight newly developed Western Electric 320A tubes.

On September 15, 1938, regular programming resumed with an effective radiated power of a little more than 1,000,000 watts. Doctor was pleased to announce that he now operated "the most powerful broadcasting station in the world."

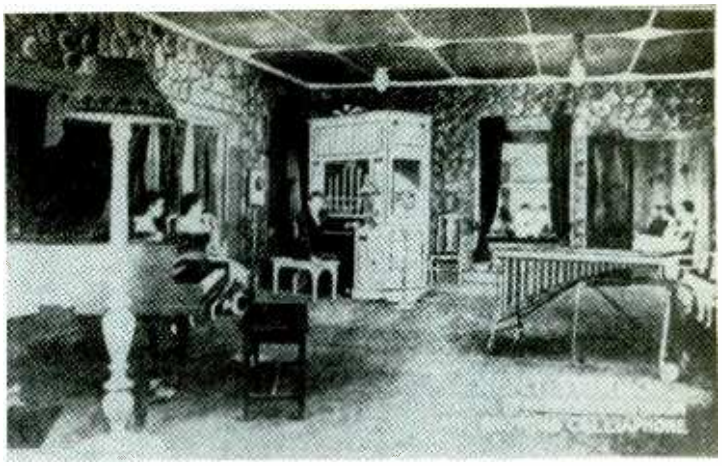
Shortly after his latest station hit the air, however, another physician opened a rival clinic in Del Rio and offered the so-called Brinkley treatment at substantially reduced rates. Enraged and undercut, Doctor moved his medical empire to "The World's Most Beautiful Hospital" in Little Rock, Arkansas, but continued to broadcast over XERA using electrical transcriptions.

Doctor was now telling potential patients to go to Little Rock instead of Del Rio. But Doctor's love affair with his "Queen City of the Rio Grande" never faltered. Maintaining his residence in Del Rio, he commuted weekly to Little Rock, but the trips soon became physically and emotionally exhausting.

To add to his troubles, his nemesis, Dr. Morris Fishbein, wrote a series of articles entitled "Modern Medical Charlatans" for the AMA journal *Hygeia*, saying that "in John R. Brinkley, quackery reaches its apotheosis." Brinkley sued Fishbein for $250,000.



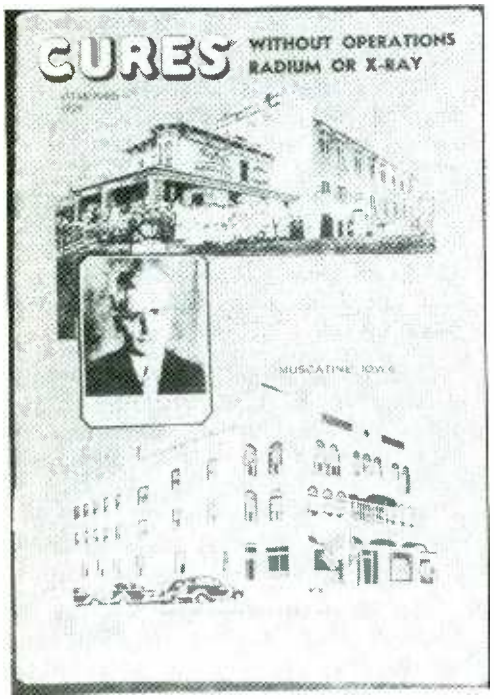
Downtown Mineral Wells, the home of Crazy Water Crystals that "helped cure a sluggish system"



The studio of XENT, station of Norman Baker, the "purple cancer-man."

The trial, held in Val Verde County in March of 1939, attracted national attention. Del Rions were pulling for the man who had brought bright lights, gay parties, and prosperity to their town during some of the worst economic times. But a week after the trial began, the jury returned a verdict in favor of Dr. Fishbein.

The business of border blasting was beginning to crumble. In 1939 Mexico ratified the provisions of an international agreement that cleared the way for definite action against XERA, and later, the "purple cancer-man," Norman Baker, was indicted on charges of mail fraud and sentenced to prison at Leavenworth.



Cover of the booklet published by Baker's hospital to help sell his cancer treatments.

XERA continued operating until late 1941, when the newly elected president of Mexico ordered its expropriation and silenced the Sunshine Station Between the Nations.

The loss of XERA, more law suits, and endless commuting had broken Doctor's spirit. He suffered a heart attack, then a blood clot, and finally gangrene, which made it necessary to amputate his left leg. Bed ridden, his health continued to worsen until May 26, 1942, when a second heart attack claimed his life.

The shining star and father of border radio, John Brinkley, was gone, but his spirit lived on in Del Rio entrepreneurs Don Howard and Walter Wilson. In 1947, using the Doctor's old transmitter building, they breathed life into the station and XER/XERA was reborn as XERF, the new 250,000 watt voice of Villa Acuna.

Home of popular announcer Paul Kallinger, XERF now pitched products like "Pounds Off" and "Kolorbak," along with the rich color of hillbilly and country music. Kallinger helped make hits out of otherwise obscure songs by playing them first on the big "X."

Country music had become a staple on the border stations but times were changing. While on the air one evening, Kallinger received a call from an aspiring young rock and roll musician wanting to be a guest on his show. "Sorry," he said, "but I don't allow rock and roll on this show." The caller said thank you and hung up. Kallinger had just turned down Elvis Presley.

Because of its strong world-wide signal, XERF was sought by country artists like Hank Snow, Ernest Tubb, Hank Williams, and others to boost sales and make hits out of their latest songs. Young announcers would aspire to work at the station and even the notorious Wolfman Jack, who listened to XERF as a boy, cut his teeth there before moving on the the mighty XERB in Tijuana.

Today, Spanish has replaced English on the border stations. Even Wolfman's XERB is now XERP (Radio Express) serving Southern California. XEG, the once 250,000 watt Gospel Voice of North America, now broadcasts in Spanish as Radio Melodia.

But what about XERF, the cornerstone and birthplace of border blasting? For years the station operated at only five thousand watts, but recently the experimental 250,000 watt RCA transmitter was revived and there are apparently periodic tests at something close to that power. And, as recently as a year ago, there was talk at XERF of renewing Doctor's old transmitter power, 500 kW. Border radio, it seems, is alive and well.

mt

Illustrations for this article were reprinted from the 1987 book, *Border Radio*, with the kind cooperation of authors Gene Fowler and Bill Crawford. If you'd like to know more about the fascinating world of Border Radio, the book is available in a hardback edition for just $18.95 plus $2.50 UPS from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376. It even contains an Evatone soundsheet recording of many of the stations mentioned above.

You may also want to read "Superpowers and Borderblasters" by John D. Price in the May and July 1979 editions of *Broadcast Programming and Production.*

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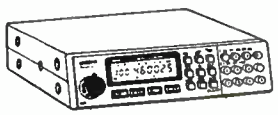

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FIESTA QSL:

Verifying the Latins

by Don Moore

Stung by the venomous DX bug, the QSL crazed DXer sends out dozens of reception reports. Soon, the big boys -- Netherlands, Spain, Japan, HCJB, Moscow, Australia -- all verified. The bug demands more and more QSLs. Where does the DXer turn? South of the border, Latin America -- home to half of the world's shortwave broadcast stations. With a little work, a plentiful supply of QSLs awaits.

For many DXers, that's exactly what happens when the DX bug strikes. So, if you've QSLed all the big broadcasters, and the DX bug wants more, don't worry. There are more QSLs waiting in the tiny stations of Latin America. This article will tell you all the basics of snaring some rare Latin American QSLs, and even get you started with a list of some of the easier to verify stations.

Every experienced DXer develops their own insights over time on verifying the Latins. I've been more fortunate than most, in that I've been able to live and travel extensively in Latin America. In that time, I visited over a hundred shortwave broadcast stations; talked to numerous station managers, secretaries, and engineers; looked at over a thousand reception reports sent by DXers; and even served as QSL secretary for La Voz del Junco when I lived in Honduras. This article is based on all those experiences.

Fan mail

Today we hear a lot from certain international broadcasters about how they no longer need, and sometimes no longer want, reception reports. Those that do reply do so more out of courtesy, it seems, than anything else. But what about these little Latin American stations? Those stations aren't even broadcasting to North America -- they're just trying to be hard in their own region.

Distant reception reports are of no technical value to the small Latin American broadcasters. Instead, Latin American stations view reports as a type of fan mail, written by people who like listening to their stations. This is not so odd when one realizes that for most stations, letters from local listeners far outnumber DX reports. Latin Americans like to send fan letters, music requests, and messages to their favorite stations. This is especially true in smaller towns and rural areas where people don't have telephones to call up their local broadcasters.

Most stations are impressed that DXers struggle with weak, interference-ridden signals to listen to them. Reception reports, and the trinkets enclosed with them, often become part of the station itself. Rare is the station that doesn't have pictures of DXers, or stickers from overseas stuck on the wall someplace. Many stations, such as Radio Tezulutlan in Guatemala and Radio Nueva America in Bolivia, have a wall devoted to small gifts sent by DXers. One of my biggest thrills, while visiting Ecuador's Radio Zaracay and Bolivia's Radio Illimani, was walking in and seeing stickers and postcards I had sent them years before, mounted on the wall.

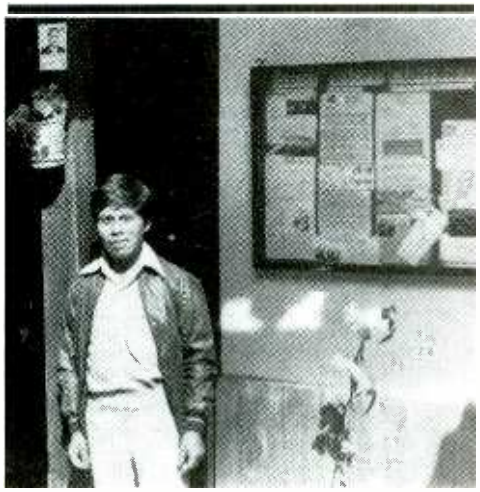
Other stations, such as Radio Quito, Guatemala's La Voz de Nahuala, and Peru's Radio Ancash, file all the foreign reports they receive chronologically in looseleaf notebooks. Peru's Radio Nuevo Continente went a step further and built two glass showcases in the station lobby, just to display reception reports.

There probably are stations that, as we sometimes imagine, toss reports in the circular filing cabinet. I don't doubt one bit a story told by another American DXer who visited Peru, about how he encountered reception reports cut up into squares in a station outhouse. But, despite those exceptions, overall, Latin American stations do value reception reports.

Why don't they answer?

The biggest complaint DXers have about Latin American stations is that reception reports often go unanswered. Why stations don't reply is a complex issue. But the key is that the stations are as different as the people who work at them.

However much they may be appreciated, reception reports to Latin American stations are unsolicited. If you were receiving a dozen unsolicited letters a month, written in mechanical or mediocre English, how many would you answer? A few of us would answer them all, a few would answer none. Most of us would answer some of the letters -- probably whichever ones were most interesting to us, and what's interesting would vary from person to person.



Your reports are appreciated: Director Maximo Teran Terrones of Peru's Nuevo Continente stands by the showcase displaying foreign reception reports.

So it is with Latin American stations. Some are excellent verifiers. Radio Quito, for example, receives twenty reports a week and answers them all. Others never verify. The vast majority fall in the middle -- the sometimes verifiers. The key to verifying these stations is writing an interesting and personal report. A poor one might be verified occasionally, if it happens to arrive on a slow day and there's nothing else to do. But, by and large it's the better reports that get verified.

In looking over reception reports at the various stations I visited, I noticed that the best reports were always written by the big name DXers, the ones who always report rare Latin American QSLs to DX bulletins. The poorer the report, the less often I recognized the DXer's name. The worst reports came from people whose names I had never seen in the DX press -- people who probably rarely had their reports answered, and so had no QSL items to contribute to DX bulletins. This article is a crash course in writing the kind of reception reports that the big name DXers use to get scores of rare QSLs -- the kind of report that those sometimes-verifiers will want to verify.

Getting down to business

Writing reports to the Latin Americans is a lot different than writing to the international broadcasters. First off, there's language. With the exception of some missionary stations and a few others known to accept English reports, reception reports must be written in Spanish (Portuguese in the case of Brazil). In looking over reception reports at stations I've visited, I was always surprised by the number of reports written in English.

In every Latin American country, with the probable exception of Cuba, English is the most studied foreign language. At any station, it is likely that there is someone who has studied English. If not, somebody probably has a kid brother or nephew or son in high school who is studying English. Why not write to these stations in English then? Lots of DXers do. They have a poor reply rate, however. There are a number of reasons for this. If you studied two years of Spanish in high school, and received a letter in fluent Spanish, how long would it take you to answer it? You would probably answer a letter in English from Kalamazoo first.

Another reason to avoid writing in English is cultural-political. Whether one agrees or disagrees with the politics, Latin Americans feel that North Americans, especially those of the United States, are too dominating. American tourists and business men go to Latin America and expect everyone to speak English to them. American-made products come with English only instructions. Latin Americans resent this, yet they can be very positive when an American shows interest and

respect in their culture and their point of view. Making a realistic effort to use Spanish shows that interest and respect.

Of course, if you don't speak Spanish (or Portuguese), it can be difficult to write a report in the language. Fortunately, there is help available. First, there are fill-in-the-blank report forms that some clubs and DX merchants sell. Forget those. All stations I talked to said they found fill-in-the-blank forms to be cold and impersonal; they were highly disliked.

As another method, over the years several DX clubs have developed four or five page reporting guides, which give entire paragraphs and sentences for the DXer to type into a letter-like report. These are okay, but reports made with these forms all sound the same. Some station personnel commented how sometimes DX reports all seemed to have been written by the same person. That's clearly the result of too many reports being written with these short reporting guides.

To make a good report, and get around the linguistic barrier, there are only two choices: either learn to speak the language with near fluency, or use the Spanish (or Portuguese) *Language Lab* (available from many *Monitoring Times* advertisers). *Language Lab* is basically a take-off on the old club reporting guides, but it offers dozens of ways to say different things.

The written report should start out with a nice long personal letter, followed by the actual reception report and request for a verification. Unlike Americans, who like to "get down to business," Latin Americans like to move slower, and chat a while. Getting right to the point seems very rude. This is not to say that short and to-the-point reports won't sometimes get verified. In the world of Latin American QSLing, there are always exceptions! But overall, the personal approach is best. The DXers who are known for getting great Latin American QSLs, all write chatty personal letters.

Unfortunately, while *Language Lab* is great for the actual reception report, it does not have enough sentences for conveying personal information. The only way to get around this is to write up a page or two of sentences about yourself, your family, and your community, and find someone who speaks the language well to translate them for you. This will make your report more personal and also eliminate any chance that it will sound just like someone else's. How long and personal should you make your report? A good rule of thumb is to pretend you're writing an introductory letter to a foreign penpal.

The hardest part of making a Latin American report is getting the program details, especially if you don't speak the language. Without at least a basic knowledge of Spanish, it will be hard to get more than the type of music played and when the IDs are announced. For all DXers, a Spanish phrase book and dictionary are indispensable. Also, if you haven't already studied Spanish, take time to learn the pronunciation rules. Although Spanish is an easy language to pronounce, some letters are assigned different sounds than in English. When listening for a key word, you have to know what it sounds like in Spanish.

Keep it personal: Vicepresidente Daniel Sanchez Rocha issues the QSL cards at Bolivia's Radio Panamericana.

Overall, the best tool in picking out program details is experience. The more you listen, the more you will become familiar with the programming. At the same time, you will learn some basic Spanish DX vocabulary. Good program details include the text of products advertised (ads for "bancos," "farmacias," and "supermercados" are especially easy to pick out), and program names.

The type of music played is another important detail. Types such as "musica rock" and "musica romantica" are easy to distinguish, but the DXer should also learn to recognize other types of Latin American music, such as Mexican ranchera, Guatemalan marimba, Colombian "musica tropical," and Ecuadorian pasillos. This, too, comes with experience.

In general, though, Latin American stations will not pore over your program details to prove whether or not you have heard them. They will assume that you must have, otherwise you wouldn't have written. Poor program details will probably not hurt your chance for a reply -- although highly detailed ones that come from knowing the language well might help.

More tricks of the trade

Language is not the only way reporting to the Latin Americans is different from reporting to the big international broadcasters. Remember how the big boys all want reports with the time in UTC and reception quality in SINPO code? For the Latin Americans, you can forget all about UTC and SINPO. These little stations neither use nor understand them.

Instead, state the time and date you heard the station in the station's local time, which you can get from publications such as the World Radio TV Handbook. Be sure to note if the country is on regular or summer time (it's reversed in the southern hemisphere!). If in doubt as to which zone a city is in, in the case of countries with multiple time zones, use the time for the capital city, and identify it as such. As for reception quality, it should be stated in sentence form. *Language Lab* gives dozens of options for discussing signal strength, interference, etc.

Another difference between reporting to Latin Americans and reporting to the big broadcasters is the use of veri-signers. A veri-signer is anyone who issues the verifications at a particular station. When writing to an international broadcaster, the report is usually addressed to the station. However, when writing to a Latin American station, it is sometimes advantageous to address a report to a specific person at the station who is known to answer reports. That way, the report should get to the person at the station who is most likely to answer it.

Veri-signers' names can be found in "The QSL Report" in *Monitoring Times*, or in the QSL columns of various radio club bulletins. If no veri-signer is known, then your report probably should be address simply to the manager (El Gerente). Alternately, it could be addressed to the secretary or the engineer, although remember that many of the smallest stations have neither. Also, reports can be addressed to a specific program that was heard.

Return postage

When writing to Latin American stations, it is usually a good idea to include return postage for your reply. Religious and educational stations, and some smaller commercial stations, just don't have the cash to mail replies to DXers. Even though most of the commercial stations probably are doing well enough that mailing a few letters wouldn't bankrupt them, the economic crisis in Latin America is forcing everyone to tighten their belts.

One of the biggest misunderstandings in the DX hobby today concerns sending return postage to Latin American stations. Many DXers continue to believe that it is okay to send International Reply Coupons (IRCs) to Latin American stations. Otherwise excellent articles on DXing Latin America continue to propagate this myth (including a 1988 article on DXing Colombia in *MT*).

The fact is that sending IRCs to Latin America is a waste of money. IRCs are all but impossible to exchange in much of Latin America. In some countries, such as Peru, Ecuador, Guatemala, and Honduras, IRCs can only be exchanged at the main post office in the country's capital after mountains of bureaucratic paperwork. No provincial station manager is going to make a thirty or a three hundred mile trip to exchange IRCs. Missionary station HRVC in Honduras is located just six blocks from the main national post office. Yet exchanging IRCs in Honduras is such a hassle that they ship them to their mission's headquarters in the United States.

Again, there are exceptions. Some stations, such as HRVC and Guatemala's TGN, are willing to deal with the hassle of exchanging IRCs. But unless a station has said that they will accept IRCs, IRCs are a waste of money and should not be included. It does not matter if some DXer reports getting a QSL from Radio Fantastico after sending IRCs for return postage. I'd bet a hundred to one that those IRCs are still stapled or paperclipped to the DXer's reception report. I saw dozens of IRCs like that at Latin American stations.

The best form of return postage for Latin

TWENTY-FIVE BEST BETS for Latin American QSLs

Unless otherwise stated, these stations are well heard in North America during the evening (0000-0400 UTC) and/or mornings (0900-1130 UTC). Some frequencies may vary slightly. Unless otherwise stated, use the *World Radio TV Handbook* address.

GUATEMALA: TGN, Radio Cultural 3300. Wayne Berger's station, profiled in the June 1988 MT, verifies with a card and small pennant. Reports to this one can be in English and include IRCs.

GUATEMALA: Radio Buenas Nuevas 4800. Israel Rodas, the gerente at this station answers reports with a Spanish letter. Only on the air between 1130-1230 and 2330-0030.

HONDURAS: HRVC, La Voz Evangelica 4820. This missionary station verifies with its own QSL card. English reports and IRCs are okay.

HONDURAS: Radio Luz y Vida 3250. This missionary station is not as easy to hear, but manager Don Moore verifies reports by letter. English reports okay. The author is no relation to this Don Moore, although when I lived in nearby Santa Barbara, our mail was occasionally mixed up!

COSTA RICA: TIFC, Faro del Caribe 5055, 6175, 9545. Best on 5055. Verifies with its own QSL card and pennant. English reports and IRCs okay.

COSTA RICA: Radio for Peace International 7375/13660. Veri-signer James Latham QSLs with a full-data QSL card and letter. English reports okay.

CUBA: Radio Rebelde 5025. Jorge Luis Mas Zabala of the "relaciones publicas" department verifies reports with QSL card, letter, and pennant. Because of U.S. trade embargo, it is illegal to send return postage to this station. Routed through Canada or Mexico, mail from Cuba is very slow.

DOMINICAN REPUBLIC: Radio Amanecer 6025. Station engineer Socrates Dominguez or station director Pastor Fidel Ferrer verify reports by letter.

VENEZUELA: La Voz de Carababo 4780. Not easy to hear because of a co-channel utility station, but if you catch it, DXer Jairo Salazar is the veri-signer. Send your report and a dollar bill to his personal address P.O. Box 3551, El Trigal, Valencia 2002, Carabobo, Venezuela.

VENEZUELA: Ecos del Torbes 4980. All reports verified by a QSL card.

VENEZUELA: Radio Rumbos 4970. Reports verified with full color postcard QSLs. Sometimes very slow at answering mail.

COLOMBIA: Radio Guatapuri 4815. This station only uses shortwave a few times a year for special occasions, but all reports are verified by letter.

ECUADOR: Radio Quito 4920. The easiest Ecuadorian station kto hear, after HCJB. All reports verified with a QSL card and sticker. English reports are okay, although Spanish is preferred.

ECUADOR: Radio Zaracay 3395. Manager Holger Velastegui or staff members verify reports with a letter, and sometimes a pennant.

ECUADOR: Radio Catolica 5055. Padre Antonio Arregui verifies reports with a letter and plastic station pennant.

GALAPAGOS: La Voz de los Galapagos 4810. This Catholic station verifies reports with a QSL card featuring photos of Galapagos wildlife. Padre Victor Maldonado is the v/s.

PERU: Radio Tropical 4935. Gerente Luis F. Mori Reategui verifies with a form letter and pennant.

PERU: Radio del Pacifico 4975/9675/9950. Reports to this Peruvian are answered by a letter from J. Petronio Allaluca.

PERU: La Voz de la Selva 4825. Best heard in the mornings around 1000. DXer Dione Blas Rojas, who works at the station, asks for one dollar to cover her costs of verifying.

BOLIVIA: Radio Panamericana 6105. Another hard to hear station, but vice-presidente Daniel Sanchez Rocha, who is an SWL, verifies all correct reports with a QSL card and small pennant.

ARGENTINA: Radio Nacional LRA 6060. DXer Gabriel Ivan Barrera will personally pick up your QSL card. Send your report and one dollar to his office at Florida 716 2B, 1005 Buenos Aires, Argentina.

BRAZIL: Radio Naconal Manaus 4845. DXer Eudson Monteiro Lima works in the Amazon regional office of Radio Nacional. He can verify reports for both Manaus, and the other regional Radio Naconal stations on 3375, 4765, 4815, 4875, 4915, and 4945. Send your Portuguese reports and a couple of dollars (depending on how many stations you're reporting) to Eudson at Rua Sao Vicente, 10 Morro da Liberdade, 69073 Manaus, Amazonas, Brazil

BRAZIL: Radio Bandeirantes 11925. Check for this one evenings around 0200. Reports verified by form letter and sticker.

BRAZIL: Radio Cultura do Sao Paulo 17815. Brazil's local entry in the 16 meter band verifies reports with a letter.

BRAZIL: Radio Poti 4965, not an easy catch, but SWL veri-signer Maria Luiza Marquez da Luz verifies reports with QSL card and letter.

American stations are mint stamps -- uncancelled stamps of that country. Mint stamps take a lot of the burden off the station -- they don't have to wait in line at the post office. Mint stamps do have their disadvantages. If postal rates go up, the stamps could become worthless overnight (this is especially true in some Latin American countries with double, triple, and even quadruple digit inflation). So, it's foolish to stockpile large quantities.

Also, if you include loose mint stamps, there's nothing to prevent someone at the station from using your stamps to write Uncle Carlos. This might especially be a problem at smaller stations in Peru and Bolivia, where staffs get paid very poorly. To get around Uncle Carlos, put the stamps on a self-addressed airmail envelope, and send the station an SASE. Of course, then your reply won't come in embossed station envelopes. But, the smallest stations can't afford embossed envelopes anyway. For the bigger stations of Venezuela, Colombia, and Ecuador, where staffs are better paid, loose mint stamps are probably okay.

In North America, mint stamps can be obtained from Bill Plum at 12 Glenn Road, Flemington, New Jersey 08822. Send an SASE for a price list. Bill's service is excellent -- all orders are filled within twenty-four hours of receipt. Unfortunately, mint stamps are expensive -- a dollar or more per set -- but are competitive with IRCs. An alternative method of getting mint stamps is to focus on a particular country, say Colombia, and get a penpal there who will sell you mint stamps. If you have a few DX buddies, you can take this a step further. If each gets a penpal in a different country you can exchange stamps.

Sister stations Radio Oriental and Radio Montecarlo are two of the few stations to verify in Uruguay.

The last method of return postage is to include a dollar bill. With IRCs at ninety-five cents, and most mint stamps over a dollar, it doesn't cost any more. U.S. dollars can be exchanged easily in most banks. A dollar bill even pays the station to verify, in that after stamps are bought for the QSL, there should still be enough change left over to buy a couple of Inka Kolas.

However, mint staps are preferred over bills. For one thing, the enclosure of a dollar bill is more likely to cause a letter to be stolen. Secondly, dollar bills are a form of hard currency highly desired for savings in the inflation-ridden countries of Latin America. I suspect that many station personnel, instead of exchanging the dollar to buy stamps, stuff it in a cookie jar.

Enclosures

Unlike the big broadcasters, most Latin American stations do not issue QSL cards. Instead, reception reports are commonly verified by letter. Some DXers initially find this a letdown, but it shouldn't be. Sometimes the long personal letters stations send on a beautiful artistic letterhead are a lot nicer than any QSL card. Rarely, however, do these letters contain a "full-data veri," with the time, date, and frequency of reception. This upsets some purists who think all veris should be full-data, but most DXers accept the letters as verifications, in the spirit of friendship that they are sent in. Those who get picky and demand more will just turn stations off to DXers.

However, there is one way around this issue of the full-data veri, and it's useful in other ways too. This is including a "ppc," or prepared card. A prepared card is simply a blank generic QSL card with spaces for the station name, DXer's name, and the time, date, and frequency the station was heard. You can make your own with index cards, or alternately, they can be bought from Bill Plum (address above).

For each report sent, it's a good idea to fill out a ppc and include it, so that all the station has to do is sign and seal the card to verify your report. Prepared cards are not particularly attractive QSLs, but fortunately most stations will also send a letter or other enclosures. Occasionally, the PPC is all that is received. Assumedly, this might be because the station personnel are too pressed for time to write a letter, and otherwise would not have answered at all. That's the main reason for including a ppc with every report -- a ppc veri is better than no veri at all.

A long personal letter, return postage, and a prepared QSL card . . . that should be it, right? No, afraid not. If you want to make your report

stand out, you also have to include a few little gifts (also known as bribes). These don't have to be anything fancy.

Good ones are postcards, stickers from your local AM/FM stations, articles from your local paper about the station's country (be sure they're complimentary!), and pictures of your family or your DX shack. Pamphlets from nearby tourist attractions are especially good, since they are free. If it's the right season, include a Christmas card. You might even send a small pennant from a nearby university, if the station is known to send pennants out.

One way of sending a gift and making your job of reporting a bit easier, is to send a taped report. Of course, you still need to include a letter, but instead of listing program details, just include about five minutes of the station's programming (preferably including an ID) on a cassette. Then fill up the rest of the tape with music you think the station will like. Be sure to keep the station's tastes in mind, though. If you heard them playing Frank Sinatra, they may not appreciate hard rock! (Also, remember that it is illegal to tape copyrighted music.)

Follow-ups

Writing a good reception report will keep your number of unanswered reports as low as possible. Still, remember that many reports may not get verified, at least not on the first try. After a reasonable amount of time has elapsed (about three months), and no QSL has been received, many DXers send a follow-up report. A follow-up is just a copy of the original report accompanied by a short note explaining that you assume your original report was lost in the mail, since it was not answered, and therefore you've decided to send this copy. (*Language Lab* has all the phrases you'll need). Never accuse the station of not answering your report, or you'll probably eliminate any chance of getting a reply.

To facilitate the follow-ups, it is a good idea to keep a master file of photocopies of all your Latin American reception reports. With each report, keep a list of the enclosures you sent, so you don't send the same postcard the second (or third) time around. Of course, if you type your reports on a word processor, you can keep your report files on disk. Most stations that don't answer the original report will answer after two or three follow-ups. However, there will still be some holdouts. How many follow-ups you send to these depends on how determined you are to verify a particular station, and how deep your pocketbook is.

For those stations that don't verify, and you decide to give up on, be sure to keep a copy of your report, or at least a detailed log of the station. Sometimes an opportunity to verify the station may come up years later. Some DXers have had luck sending ten and fifteen year old reports to stations that are now medium wave only, and therefore get few, if any, reports. Also, you might be able to have the QSL picked up in person by a third party (or visit the station yourself). In 1984, while living in Honduras, I obtained a QSL for a DX friend from Radio Primero de Mayo, which used to broadcast on 4790 in the early 1960s. The assistant manager,

La Voz de Cutervo is a rarely verified Peruvian station.

who verified the report, wasn't even born yet when the DXer made his 1963 reception!

Mind your manners

Once the QSL arrives and is neatly mounted in an album or on the shack wall, the work's not done yet. Don't forget to send the station a thank you note. Too many DXers skip this step, which is one of the reasons some stations are such irregular verifiers. Ecuador's Radio Popular and La Voz de las Caras, which almost never verify, even told me they stopped issuing QSLs just because they never received thank yous, and therefore assumed that DXers didn't really appreciate the QSLs. If more hobbyists took the time to thank stations, it would be a lot easier to QSL many of these stations.

Unfortunately, *Language Lab* does not include a section on writing thank you notes. You could get a friend who knows the language to translate a short generic thank you note for you. To keep costs down, thank yous can be mailed on plain post office postcards or via seamail. It doesn't matter how simple the thank you is, or how long it takes -- just so it's sent.

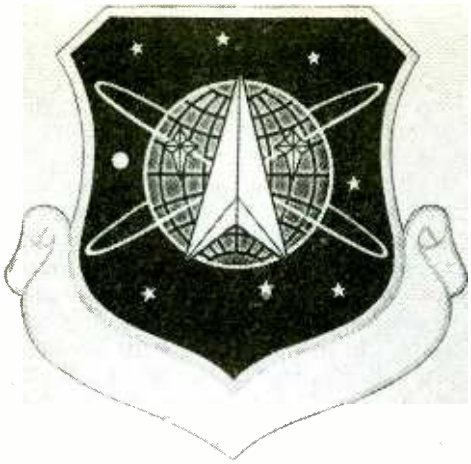
Getting started

Now it's time to satisfy the DX bug, and get some Latin American QSLs. Start tuning the tropical bands, pick out a strong Latin American station, and begin taking down some program details. To make it easier, though, here's a list of twenty-five of the better verifiers in Latin America. Most of these stations are well heard in North America between 0000-0400 and /or 0900-1130 UTC. Unless otherwise stated, use the address in the *World Radio TV Handbook*.

If you carefully follow the guidelines in this article, you should probably verify sixty or seventy percent of these stations on your first try, and the rest after one or two follow-ups. Some will even include stickers, or, with luck, a pennant. *Buena suerte!* (Good luck!)

mt

All photos by Don Moore or Theresa Bries



NORAD

America's First Line of Defense

by Larry Van Horn

A hollowed-out mountain in the Colorado Rockies at the eastern edge of the Continental Divide is the location of the nerve center that would sound the first alarm of an aerial attack against North America. Cheyenne Mountain, near Colorado Springs and neighboring Pikes Peak, shields the North American Aerospace Defense Command facility that keeps a computerized watch on aircraft, missiles or space satellites that might pose a threat to the United States and Canada.

The inside of the 100 million-year-old mountain was tunnelled in the early 1960s to make room for a complex of 15 steel buildings. They house the computers, communications gear, display screens and aerospace technicians -- everything needed to keep track of air and space vehicles on courses that would take them toward North America.

As a terminal point for worldwide surveillance and attack warning networks, the center was moved in the mid-sixties from an above ground and vulnerable building in Colorado Springs to the granite shielded security of Cheyenne Mountain, where it is safe from all but a direct hit by a multimegaton warhead.

The heart of the underground complex is the NORAD Command Post, which began operations inside Cheyenne Mountain in 1966.

In this capsulized amphitheater, the NORAD commander in chief and his battle staff are given almost instantaneous information from sky-sweeping sensors such as those watching for ballistic missiles and aircraft, or for satellites circling the earth.

Computers automatically translate the information into symbols on background maps of North America or the world to give the Command Post staff an up-to-the-minute picture of the air and space situation.

Sharing the mountain complex with the men and women of the NORAD Command Post are technicians of Missile Warning and Space Defense Operations Centers, an Air Defense Operations Center that maintains data on the status of air defense forces, a US civil defense National Warning Center, NORAD weather support unit, and communications and intelligence centers.

Some 1,400 people -- members of the US Army, Navy and Air Force; the Canadian Forces; and civilian technicians - are needed to keep the complex functioning on a 24-hour-a-day basis year round. During a normal day there are about 500 people in the complex, with approximately 250 on each of the two night shifts.

Ties with the Outside

Lifelines of the facility -- links with the outside -- are the communications circuits. They must be fast and reliable. "When we pick up a telephone," a NORAD official declared, "we expect to talk to someone at the other end -- right now."

Cheyenne Mountain is at the hub of a vital communications system. The system utilizes satellites, microwave routes and buried cables. There are two microwave antennas on the mountain. The communications system also has two coaxial cables buried deep for many miles from the facility. Any one of the antennas or cables can carry the entire communications load for the complex.

Most of the communications traffic is computerized data, flowing from computers at surveillance and warning installations directly to computers in Cheyenne Mountain.

There are 87 separate operational computers that feed data to the different operational centers in the complex.

The communications and computer systems, both internal and external to Cheyenne Mountain, and the worldwide connecting sensors form the largest and most complex command and control network in the free world.

Aerospace Defense Cockpit

These are the lines that also carry vital intelligence to the NORAD commander in chief and his advisers at their positions in the three-level command post.

On the lower level are the command director and his assistant, along with data-display and communications technicians; these people keep the Command Post functioning around the clock.

They monitor the aerospace situation, maintain information on air defense forces, recall the commander in chief and other members of the battle staff when necessary. They also display on scopes and screens information depicting the current air defense status, as well as missile warning and space surveillance activities.

Overlooking the display screens from the upper level is the US civil defense National Warning Center. It is located in the Command Post to have access to warning information at the same time it is available to NORAD. The center would sound the alarm over civilian alerting circuits such as the NOAA weather radio network.

Keystone of the control operation in the mountain is a specially designed command and control system; it is based on the speed and reliability of computers that receive, process, store and display air defense information.

If the NORAD commander calls for a particular display in the command post, a technician punches up the request. The system queries a computer, translates computer material into symbology, and displays it to the battle staff.

Data can be shown on console scopes or one of two screens, each 12 by 16 feet, that form part of the forward wall of the Command Post.

Without leaving his or her chair, the display technician can build a picture of North America that will show tracks of unidentified aircraft approaching the continent. For more detailed information on any track, data can be called up from the memory core of the computer.

By pushing more buttons, the operator can command a computer to display the paths of orbiting satellites, positions of foreign submarines off continental shores, or the status of weapons available to NORAD for defense against a bomber attack.

Information displayed in the Command Post can come from a Distant Early Warning Line site on the Greenland ice cap or a Ballistic Missile Early Warning System radar in Alaska, for example, and flow through the computer and onto the display consoles without ever being processed by human hands.

This is done in "real time" so the battle staff can watch the aerial track at almost the same time it is being tracked by a NORAD sensor.

In the event an attack comes, the NORAD commander in chief and his staff would provide attack warning to the National Command Authorities and manage the aero-

A Close Encounter of the NORAD Kind

by S.W. Arthur

When I was vacationing in Colorado last summer, the wife and I decided to visit Colorado Springs. We heard that there was a nice zoo near Cheyenne Mountain. The locals said that it was close to NORAD, the super-secret North American Aerospace Defense Command. "What a way to kill two birds with one stone!" I figured. "While she's checking out the lions, I can use my radios to eavesdrop on NORAD."

NORAD is housed in a secured bunker which is located approximately one mile beneath Cheyenne Mountain. It contains a "war room" which gathers intelligence from satellites, radar, and aircraft on a continuous basis. In fact, NORAD's primary responsibility is to use this information to detect the intrusion of hostile aircraft. I had the HF frequencies listed in Bob Grove's *Shortwave Directory* (see below).

Antenna farm as seen from the zoo

We made the morning trek by traveling south out of Denver on Interstate 25. Cheyenne Mountain was clearly visible from the Interstate when we were 15 miles north of Colorado Springs. I had to stop for gasoline when we got into town so I purchased a local map.

The map clearly showed the zoo and something I didn't expect: the Will Rogers Shrine of the Sun. Both locations were accessible from the Cheyenne Mountain Highway. There was also a road suspiciously called -- believe it or not -- Norad, which apparently runs along the southeast side of the mountain. A place called Security was also on the map which, again, according to locals, is a town populated primarily by retired military personnel. At the foot of Cheyenne Mountain was Ft. Carson.

We continued south on I-25 and as we reached the center of town, I could see the antenna farm on top of Cheyenne Mountain. (I was well equipped with radio gear.) I was looking for a sign that would lead me to the zoo but we started to get south of town. I noticed an exit that was marked "Authorized Vehicles Only." I didn't want to exit there because if I encountered a guard post, I didn't know what they would say if they saw the radio gear in my van. I turned around at Academy Boulevard.

Checking the map again, I traveled north on I-25 and turned off on Lake Avenue which led to the zoo. When we got there I noticed a parking lot off to the side and a gate just ahead. I drove to the gate and a lady collected the entrance fee and gave me a small map to the zoo.

At that time we decided to continue up the side of the mountain to the Will Rogers Shrine. The road zig-zagged up past the zoo and the shrine was in sight (about 1000 feet up). As we continued up the mountain, the antenna farm (which I saw earlier) went out of view because it was blocked by a north ridge. Half way up we stopped at a scenic view parking area to enjoy the sight. We must have been several thousand feet up because we were able to see Colorado Springs and probably Kansas.

When we reached the shrine, there was a small trading post to the left. We continued to the end of the road. A sign to the right clearly stated that the road ended, but it appeared that it continued up the side of the mountain. We parked just below the ➔

space defense battle over the United States and Canada from inside Cheyenne Mountain.

Within the NORAD complex is the Air Defense Operations Center that controls interceptor forces throughout the country. From NORAD the Air Defense system fans out to five Regional Operations Control Centers (ROCCs). These regional centers use remote radar/communication sites along the United States coastline to communicate with Air Defense command interceptor aircraft. There is quite an extensive communication system that can be monitored in the UHF military aircraft band 225-400 mHz.

The ROCC that serves the SE United States is headquartered at Tyndall AFB, Fl. The callsign used by the 23rd NORAD command center is 'Oakgrove'. A number of frequencies are available to Eglin and the interceptor aircraft they control. Frequencies that I have monitored here in St. Augustine, Florida include:

228.8, 234.7, 238.5, 251.0, 256.6, 263.2, 270.4, 275.0, 278.6, 287.8, 292.7, 298.5, 302.4, 306.4, 325.5, 338.4, 344.0, 356.0, 364.2 (Primary) 369.0, 375.1, 386.2, 392.8

I have the following information in my files concerning other areas of the country and NORAD air defense frequencies in use:

West	Northeast	Southeast	NCentral
228.6	228.7	228.8	229.1
235.9	235.8	234.7	233.6
238.6	239.2	238.5	251.8
239.7	252.0	251.0	254.4
260.9	254.8	256.6	258.0
261.4	265.4	263.2	262.2
271.0	278.4	270.4	278.2
273.4	282.5	275.0	284.8
282.6	288.0	278.4	289.0
287.7	292.8	278.6	292.4
288.4	298.8	287.8	309.5
293.6	303.9	289.0	312.8
293.8	316.2	292.7	318.4
328.0	326.4	298.5	327.2
346.9	338.8	302.4	346.9
348.2	342.1	306.4	348.8
351.5	346.9	325.5	357.2
355.2	347.4	338.4	364.2
359.8	351.6	344.0	371.0
364.2	364.2	346.9	379.0
374.0	371.8	356.0	396.8
386.0	376.2	364.2	
390.2	389.2	375.1	
394.2	394.8	386.2	
397.8	399.0	392.8	

Some of the callsigns frequently heard on NORAD channels include: "Goliath" (North Central area); "Ringmaster" (NORAD Headquarters, Cheyenne Mtn, CO; "Sierra Pete" (West coast area); and Huntress (New England area); "Baldwin & Coronet" (Hawaiian Islands).

NORAD HF Frequencies

from the *Grove Shortwave Directory*

5297	10452	14364
9023 (Delta)	11214 (Charlie)	14894
9793	11284	18027
10194	11441	20855

dead end because that area was designated as parking for the shrine.

It was a little past noon so we decided to have lunch. While sitting in the back of the van with the tailgate up (the front of the van faced Colorado Springs), I turned on the shortwave receiver and started to tune some of the NORAD frequencies that are listed above. I didn't hear any activity.

While I was eating my sandwich, I noticed that there were signs beyond the parking area in the woods and also on a large boulder which was situated at the last curve (behind the van about 50 feet). The blacktop ended at the boulder and a gravel road continued up the hill. The signs indicated that it was "private property" and violators would be prosecuted.

I also noticed that some sort of piping ran up the side of the mountain as far as the eye can see. "No Trespassing" signs were located near the pipes. It was quite clear that someone didn't want trespassers walking on their property.

Like in the movie "Close Encounters of the Third Kind" I had an insatiable urge to journey up to the top of the mountain. I wanted to see that antenna farm. I wondered "where did the road go"? Is it a service road which leads to the antenna farm or is it some sort of rear entrance to NORAD?

I noticed that there was a metal plate leaning against the boulder and it was facing the gravel road. It appeared to be a sign, but I couldn't read it while sitting in the van. Only a portion of the back side was visible. It was only a few inches from the sign that was fastened to the boulder so I figured, "What the heck, I'll investigate."

I walked beyond the spot where the paved road ends. I thought it was a sign but it turned out to be a metal cover or some sort of bulkhead. Then I looked up and noticed that the road did indeed continue up the side of the mountain. I also noticed tire tracks! The tracks appeared to be somewhat fresh. I remembered that I replaced a truck tire that had this type of tread when I was in the army. These were the footprints of a two and a quarter ton military vehicle.

As I walked back towards the van, I noticed a slender young lady in a white dress coming towards me. She was carrying a walkie talkie. I saw her talking to someone on the "HT" but I couldn't hear what she was saying. She met me half way and said, "It's alright to picnic in the parking area but that's private property up there." I said, "OK."

I wonder what she would have done if she knew I had enough radio gear to monitor any NORAD frequency from 100 kHz to 1000 MHz. When I got to the van, the wife was very nervous and wanted to leave. She was worried that we were being watched. I calmed her down and we finished lunch.

We decided to go into the Will Rogers Shrine. The shrine was approximately 150 feet high from the base to the very top. As you approach it, you can hear tape recordings of Will Rogers through speakers that are located near the entrance. Inside, a stairway led to the top of the tower.

As we walked up the stairway, I noticed that the windows facing the mountain were stained glass, making it impossible to photograph the gravel road. However, the windows on the southeast side were clear revealing the view of Colorado Springs. When you reach the top of the shrine, you can step out on a balcony and catch the breathtaking view, but again, a wall blocks the view of the mountain. I was hoping I could snap a picture of the antenna farm at the top. We decided to visit the trading post.

When we crossed the road going to the trading post, I noticed a diagonal arrow-shaped sign that said, "Board shuttle here." I wondered, "Does this shuttle go up the mountain or down?" It could have provided transportation for people who were parked in the lot near the zoo entrance.

When we walked into the trading post, much to my surprise, the lady in the white dress was sitting at the counter. She said to me, "So we meet again"! I noticed that there were no windows facing the parking lot where we had the encounter. So how did she know I was walking on sacred ground? I figured there must be surveillance cameras in the wooded area and someone radioed to her about the intrusion.

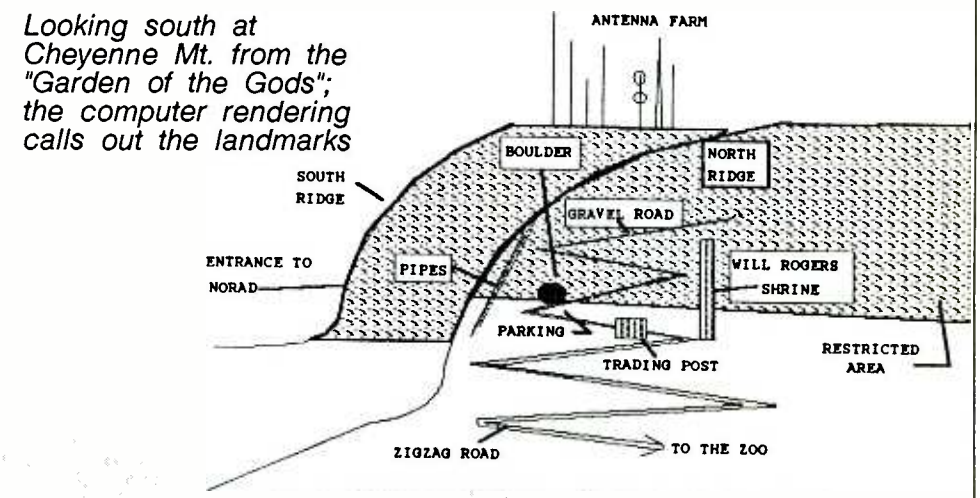
But why is a concession worker doubling as a security guard? And why are they guarding private property? Or is it military property? The trading post had the usual souvenirs and Will Rogers memorabilia but I noticed something unusual.

There was a sign-in book on a window sill near the north wall. I saw it when I was checking to see if the window was facing the parking lot. Why was there such a book here in the first place? I glanced down to see if the book had names like Lieutenant Smith or Colonel Right. They appeared to be civilian names. I wanted to page through it but the "gal" in the white dress was watching me like a hawk. We left the trading post and went down to the zoo.

Well! there you have it. After thinking about the incident, I wish I could have stayed around a little bit longer. I wanted to check out some of the VHF frequencies in the Colorado Springs area. I think if I had the time, I could have copied some HF activity coming from the antenna farm on Cheyenne Mountain.

But the next time I visit the Will Rogers Shrine, I'll be sure to bring a frequency counter. Then when the "gal" in the white dress approaches me, I'll just ask her "can you key up one more time"!

Looking south at Cheyenne Mt. from the "Garden of the Gods"; the computer rendering calls out the landmarks



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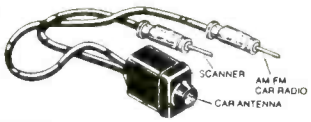

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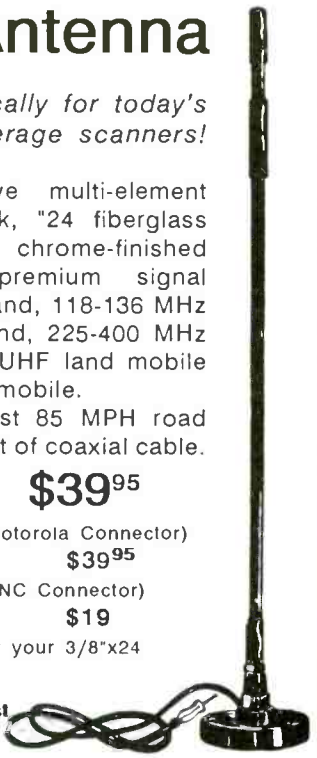

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DXing the Other Germans

by Charles Sorrell

There sits Germany, fountainhead of so many twentieth century ills. There sits Deutschland, on centerstage again, as the East convulses from communism to something else and the West (and everyone else) wonders if, when, and how it will ever be whole again.

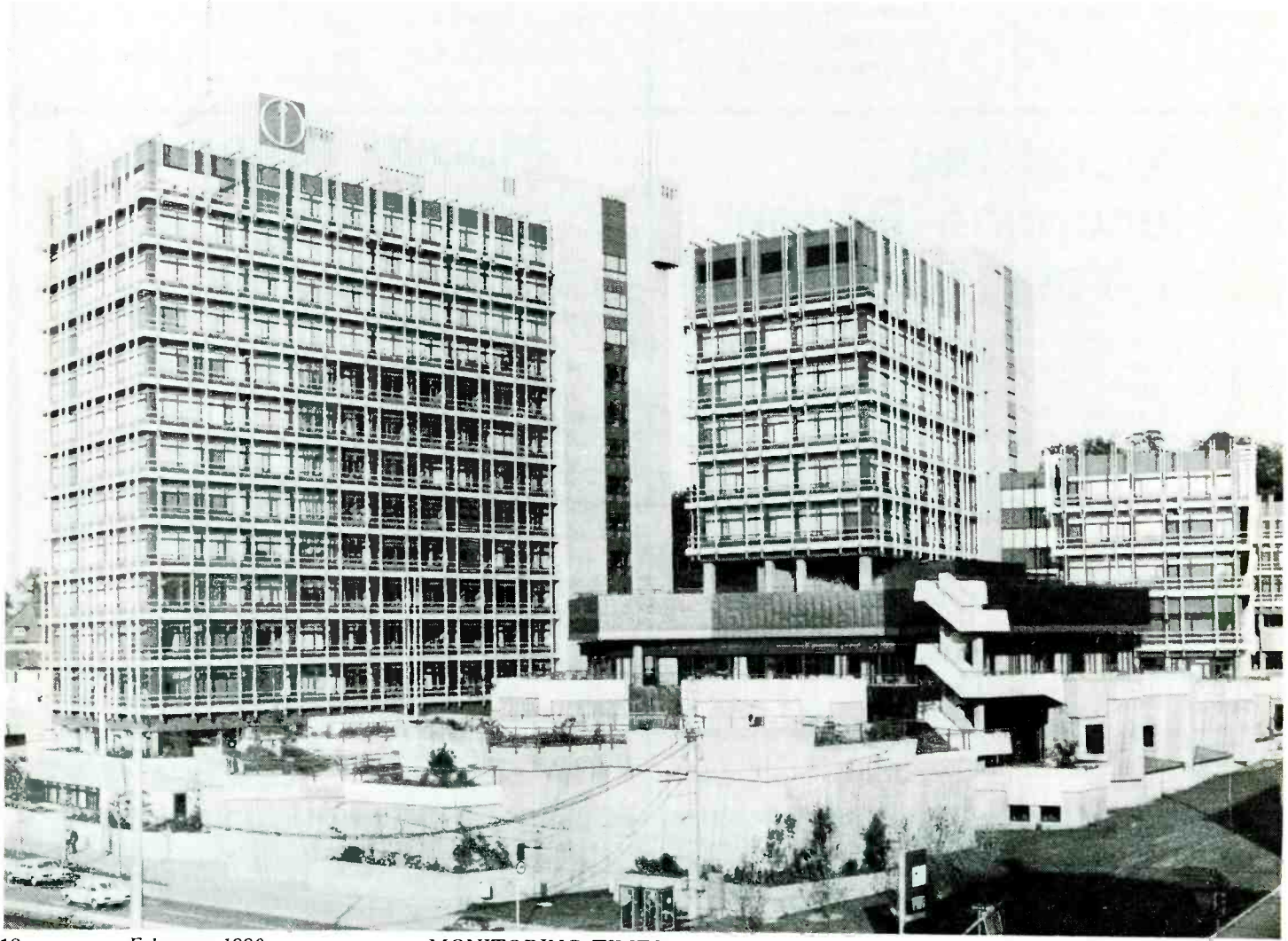
And there sits Germany on your shortwave radio. If you listen to the set very much, then you've surely heard the two official voices, one on each side: the Federal Republic's Deutsche Welle (Voice of Germany) and the GDR's Radio Berlin International.

If you are into shortwave broadcast DXing in any depth, you've undoubtedly also had Radio Free Europe/Radio Liberty which are based in Germany, as well as the Voice of America's two relay points inside Germany at Munich and Wertachtal.

There's more to it, though. Several other German stations use shortwave and have since as early as a couple of years after the end of World War Two; though there are fewer such stations than there were once and they are all inside the Federal Republic.

These stations are actually large regional broadcasters set up as public corporations. The shortwave aspect of their operations is only a small part of quite extensive operations. These include from a few to many FM and AM outlets as well as TV. Each operates from two to five networks with formats specializing in news, public affairs, light music, pop, rock,

The headquarters of Suddeutscher Rundfunk in Stuttgart



and so on. There are nine such regional broadcasters in the Federal Republic, though less than half use any shortwave.

These stations are not often reported by shortwave broadcast DXers, even though most are using at least moderate power. The problem one expects is that each uses just one frequency and the signals tend to get overwhelmed by larger international broadcasters.

They are not the sort of station you're likely to trip over as you tune across the band, but you can hear them if you know when and where to look. Here's an idea of what to look for and when and where:

BAYERISCHER RUNDFUNK, based in Munich, has a shortwave transmitter at nearby Isamaning. BR operates five radio networks aired over more than 80 FM stations and two high-power AM transmitters using 801 kHz.

The 100 kW shortwave transmitter operates on 6085 and airs BR's third network in German from 0430 to sign-off around 2305. Foreign language newscasts are aired weekdays at 0810 (English), 0820 (Italian) and 0830 (French).

Actually, this transmitter is on the air around the clock. When BR3 isn't on, the station is airing ARD programming. ARD is a sort of German National Association of Broadcasters that's also in the programming business. The ARD programming, though, is produced by the various member organizations.

ARD helps to fill the late night hours on members' schedules with a light music and news format (Nachtexpress), a classical music program (Nachtkonzert), and a pop/rock format (Nachtrock).

The Voice of Germany also uses 6085 at times, but there is a break for an hour or so at 0150. The post 0600 hours are also a good time to hear this station. Reception reports go to Rundfunkplaz 1, 8000 Munich 2, Federal Republic of Germany.

SUDDEUTSCHER RUNDFUNK (South German Radio) operates four networks on a string of AM and FM stations, the primary one being at Muhlaker with 500 kW on 575 kHz. The shortwave uses 6030 with 20 kW (also from Muhlaker) and is on in German carrying SDR's Network 1 from 0400-2305 (Sunday sign-on is at 0450).

This station is probably less frequently heard than most of the others, at least in North America, but checking 6030 at its sign-on time, or later, will eventually produce a signal. Reports can be sent to Neckarstrasse 230 (or Postfach 106040) 7000 Stuttgart 1, in the Federal Republic of Germany.

SUDWESTFUNK (Southwest Radio) is based in Baden-Baden. It operates three networks over some 60 FM and 9 AM stations, including one of 600 kW! The SRD3 network is carried on a shortwave frequency of 7285 between 0445-2305, using 20 kW. The station is reported by North American listeners at times, usually late at night, even after 0600. Reception reports go to Postfach 820, 7570 Baden-Baden.

Sometime this year Sudwestfunk and Suddeutsch Rundfunk are due to merge.

radio bremen

Karlheinz Calenberg + Monika Kluth

What this may mean for the shortwave services of the two stations is unknown.

RADIO BREMEN, in Bremen, operates four networks, but compared to the others, Radio Bremen is a small operation since there are only eight FMs and one AM station involved. On shortwave, Radio Bremen runs a 50 kW transmitter on 6190. It carries the Radio Bremen first network daily except Saturday from 1400-1700 and Saturdays only at 0800-1100, all in German.

The best opportunity to hear this one would be Saturdays at the 0800 sign-on. Reception reports go to Heinrich Hertzstrasse 13, 2800 Bremen.

SENDER FREIS BERLIN is one of two western broadcast outposts in Berlin that can be heard on shortwave. If you wondered why Radio Bremen has such a limited schedule on 6190, it's because the rest of the time is used by this station. Sender Freis Berlin runs its First Program on Sundays through Fridays from 1700 and on around to 1400. On Saturdays it runs between 2300-0800 and 1100-2300.

Besides shortwave, it operates four networks over as many FM transmitters plus three AM frequencies. Reports go to Masurenalle 14, 1000 Berlin 19.

RIAS (Radio in the American Sector), also in Berlin, is funded by both the U.S. and West German governments. RIAS has two networks which air over four FM and three AM transmitters. On shortwave, RIAS operates around the clock with 100 kilowatts on 6005.

Despite that fairly hefty power level, the station is rather difficult to hear in North America because of interference. The best chance for a logging is late at night when the congestion is likely to be less, although it's also reported by some at around 2300 during the winter months. Reports go to Kufsteinerstrasse 69, 1000 Berlin 2.

Another interesting target is **DEUTSCHLANDFUNK**, which operates a number of FM and AM transmitters from its Koln headquarters. Deutschlandfunk produces some of the foreign language programs heard on the Voice of Germany. Programs in Czech and Slovak, Polish and Hungarian all carry the Deutschlandfunk imprimatur and can be QSLed separately direct from Deutschlandfunk with its own card.

Times and frequencies of these programs vary. The most recent Voice of Germany schedule lists them as follows: Czech/Slovak: 0530-0600 on 7270 and 9650; 1130-1200 on 5995, 6015, 7150, and 9770; and 1930-2030 on 9615 and 11865. In Polish at 0600-0630 on 7270 and 9650; 1315-1350 on 6015, 7150, and 9770; and 1900-1930 on 9615 and 11865. And in Hungarian at 1230-1300 on 6015, 7150, and 9770; and 2030-2130 on 9615 and 1865.

As for East Germany, there are, of course, no such private broadcast entities in existence, at least not yet. Still, there is something besides Radio Berlin International you can go after. There's a strictly home service called Stimme der DDR active on 6115 and which can be heard here in the evening and very early morning hours. Some have reported reception as late as 0700.

Stimme der DDR is reported to issue its own QSL card. Reports to Nalepastrasse 18-150, 1160 Berlin, German Democratic Republic.

So there are more DX targets in Germany than first meet the ear! And if you are into QSL collecting, you'll welcome the knowledge that the Germans are good QSLers (never mind DW's no-site cards!). Indeed, the German regional stations have long been known for their very attractive QSL cards. Some stations will even include a souvenier catalogue from which you can purchase station mugs, clocks and even dolls!

With all the great changes taking place in East Germany, these days it's a good idea to hear and verify the German stations now because you never know how changes in the political alignment of things may also change what's on the air one day -- perhaps in the not too distant future!

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Blizzard!

by Bob Kay

High above the bustling crowds and noisy city traffic, the icy fingers of a cold, February wind, silently pulled a gray mantel of clouds across the morning sky. By 10 AM, local radio stations were predicting that a major snow storm would hit the Philadelphia area by sunset.

In the grocery store parking lots, panic stricken motorists sounded their horns and aggressively pursued the more desirable parking spaces. Inside the store, shoppers forced their carts through crowded isles, and impatiently elbowed their way into long check out lines.

On the scanner radio, the business bands suddenly came alive. Contractors could be heard making last minute preparations to protect partially constructed buildings, and freshly poured cement. Taxi drivers were suddenly swamped with calls and security companies were asking first shift employees to work overtime.

By 3:30 p.m., snow had been falling for more than two hours. Realizing that the road conditions were getting worse, commuters began leaving work early. As a result, the 5 o'clock rush hour was in full swing by 4 p.m.

Snow plows tried to keep the roads clear, but heavy snow and freezing temperatures soon turned the roads into a sheet of ice.

The train, bus and trolley frequencies were filled with activity. Track crews were experiencing difficulty in keeping switch tracks operative. "We can't keep this pace up much longer," a track supervisor yelled into his microphone. "Do the best you can." a switch tower operator replied.

Commuters that took to the highways, were not doing much better. When motorists discovered that many of the roads were impassable, they simply abandoned their cars and began walking home. "We got a real mess out here," a state trooper reported. "There are dozens of abandoned cars, and people are walking in the middle of the highway."

With snow falling at the rate of one inch per hour, snow plow operators could not keep the roads clear. To make matters worse, abandoned vehicles prevented the trucks from plowing and salting the main roads. "We have abandoned vehicles blocking the highway," a snow plow operator reported.

As more and more people left their cars sitting on the highway, police began to block off some of the more dangerous sections. "This is real crazy," a trooper reported. "The highway looks more like a parking lot."

Shortly after sunset, the snow covered roads began to freeze. On the 6 p.m. local news, one reporter suggested that office workers spend the night at work. "This is a major snow storm," he began. "Spending the night in your office may be the safe thing to do."

With wind gusts of 40 miles per hour, and over eight inches of snow already on the ground, the runway supervisor at Philadelphia International Airport was finally forced to admit defeat. "Close her down for the night," he told the tower.

Immediately following his announcement, the ground control frequency became jammed with transmissions from grounded planes. After enduring several minutes of radio traffic that sounded like a CB jamboree, the tower finally ordered all transmissions to cease.

"We will get everyone off the runway as quickly as possible," the ground control operator stated. "Be patient and do not transmit unless you are asked to do so."

However, planes already in the air were equally affected. Inbound flights had to be rerouted to other airports and there was a lot of unauthorized chit-chat between pilots. The most intriguing event occurred shortly after the airport had closed. A small, single engine Cessna called the control tower and asked permission to land.

"The airport is closed, sir," the tower replied.

"I don't have enough fuel to go anywhere else," the Cessna pilot replied.

"Are you declaring an emergency?" the tower asked.

"No, but if I don't land soon, there will be an emergency."

From that point, the tower began giving the pilot landing directions. However, the Cessna was experiencing difficulty in making the required course corrections.

"Tower," he began, "forget about giving me corrections in degrees. I have limited instrumentation on board."

After a brief pause, the flight controller replied, "Ok, adjust your course a little to the right--steady--okay--looking good--hold that." The pilot was truly flying by the "seat of his pants."

After the Cessna was safely on the ground, a commercial pilot remarked, "Now that's what I call flyin'--somebody buy that pilot a drink!"

When the airport closed, thousands of stranded travelers flocked to nearby hotels. At the same time, stranded motorists were doing the same. By 9 p.m., the area hotels were filled to capacity. Weary travelers, unable to find lodging,

elected to sleep in hotel lobbies. As a result, hotel security frequencies, airport transportation and local taxi frequencies, provided hours of interesting monitoring.

When streets became impassable, local residents used the highways for recreational purposes. Kids were sledding on hilly roads, skiers glided through major intersections, and snowmobiles were being driven across roads, yards, and fields. On the FM walkie talkie frequencies, there was a great deal of chit chat between individuals that were using low power transmitters.

The cordless phone frequencies were also unusually active. On week nights, cordless activity normally became quiet after 10 p.m.. On this night, the snow fall had people excited. Practically every cordless frequency was in use, and nearly every conversation centered around the snow storm. After hearing that several people were without electrical power, the utility company frequencies became the next target.

It only took a few seconds of monitoring to realize that electric crews were out in full force. The heavy, wet snow was causing tree limbs to snap, and pull down electrical wires. Service calls were so numerous that road supervisors advised dispatchers to hold the calls that did not threaten life or property.

With the clock nearing 11 p.m., it was almost time to watch the nightly news. Realizing that reporters would be outdoors and reporting "live" on the storm, the news frequencies were visited next. Technical crews for all three major networks were heard making radio checks, and several reporters were rehearsing their opening lines.

When the eleven o'clock news finally aired, the updated forecast was predicting that high winds and blizzard conditions would continue until the following morning. Total snow fall was expected to be near 15 inches.

Halfway through the news, the phone rang. A few minutes later my wife came into the den and explained that a friend of ours, was stranded at a nearby hospital.

"So, what," I said. "Can't she sleep at the hospital?"

"Nancy has already worked two shifts," my wife began. "If another nurse doesn't come in to relieve her, she will be forced to stay on duty for a total of 24 hours."

"If she can't leave until someone comes in to relieve her, she might as well plan on spending the night," I said. "No one in his right mind will be going out in this weather."

"Well, that's why she called us. She knew that we had a Jeep and that you had driven in similar conditions."

"I'm not going out," I said sternly.

My wife folded her arms across her chest and returned my stern gaze. "The lady who is scheduled for the midnight shift, lives along the way to the hospital. You simply pick her up, take her to work and then take Nancy home."

Before I could answer her, the lights suddenly flickered and then the entire house went dark.

"What happened?" she asked.

"A tree limb probably fell on some power lines. It's been happening all night."

As my wife hunted for a flashlight, I turned on my hand held scanner. When she returned, I was standing in the dark and cursing.

"What's wrong?" she asked.

"Can you believe it? My batteries are dead!"

"What about Nancy?" she insisted. "I still have her on the phone downstairs."

"Do we have any double 'A' batteries?" I asked.

"Nope, you used them the last time that thing went dead."

As I stood in the dark and tried to think of where I might find some batteries, she directed the narrow flashlight beam into my eyes.

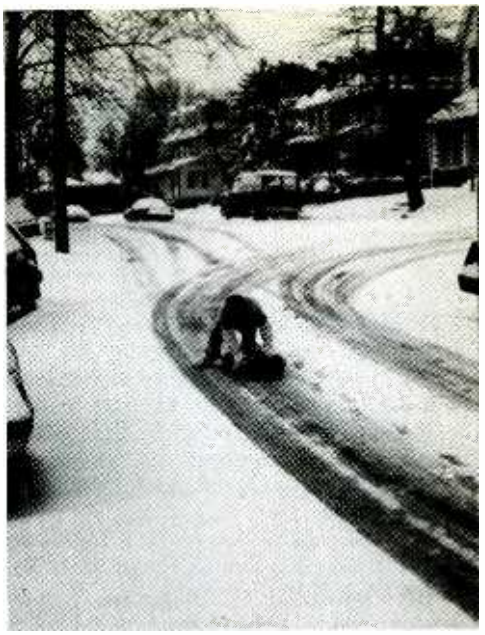
"Bob, Nancy is a good friend. And she doesn't ask for favors very often..."

"Okay, okay," I said. "I'll do it."

Before she raced down the steps to tell Nancy the good news, she gave me hug and a quick kiss. "Nancy will really be grateful," she said.

Although these events took place more than five years ago, my family has never forgotten the good deed that I performed that night. Whenever the story is recalled, I generally just smile and allow everyone to think that I did it purely out of kindness and concern for the nurses. No one ever knew that my first priority that night was to buy batteries for my scanner radio!

mt



When the roads became impassable, local residents used the highways for sledding, skiing and riding snowmobiles.

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. Manuscripts should be approximately 1,000 words and include at least one clear photograph.

Shortwave Broadcasting

Glenn Hauser
Box 44164-MT
Tucson, AZ 85733

AFGHANISTAN The Radio Afghanistan home service, program one, is monitored: 0130-0430 UTC on 7235, 9755; 0430-1230 on 17720, 21600 (including external service in English at 0900-1030); and 1230-1730 on 9635, 11985. External service at 1700-2000 (including English at 1900-1930) on 9635, 7215, 6020. Some of these are Soviet relays, likely to continue with the Najibulla administration not crumbling (Victor Goonetilleke, Sri Lanka, *Union of Asian DXers*)

/non/ Radio Free Afghanistan, via Radio Liberty from Germany and/or Spain: 0230-0330 on 9555, 11895; 1430-1530 on 11885, 15445, 17770, 21530 (Bob Padula, Radio Australia)

ANTARCTICA Missing since January 1989, LRA36, Radio Nacional has been heard again on 15476 USB with full carrier with a much better signal, not the old AM transmitter, from 2135 with talks including multilingual IDs, 2245 "Horizontes de Hielo" (*Ice Horizons*), and closing an hour earlier around 2335. Seems to be Mon-Fri only, subsequently drifting to 15477 with distorted, bare audible signal (Ernie Behr, Kenora, Ont., *World of Radio*)

ARGENTINA Back after a 12-year absence is Radio Belgrano, 1 kW on 11781.2, daily at 1200-2000, sometimes later on Sundays with sports; it's a state-owned commercial station in poor economic condition; heavy interference from Brazil on 11780 (Gabriel Ivan Barrera, Argentina)

RAE has a new directora, Sra. Viva (Bibi?) Campos, who has many years of radio experience and plans to renovate antequated equipment (Barrera, *Radio-Enlace*)

Radio Rivadavia is back on the sideband feeder of 15780 kHz, sometimes upper, sometimes lower, around 1100-2300 UTC, but not daily, serving Base Esperanza in Antarctica where LRA36 is located. The opposite sideband alternates among three other Buenos Aires stations, Radio del Plata, Radio Mitre and Radio Continental. Sometimes in the 1000-1100 period 15780 carries two-way conversations between children and families (Nobuyoshi Aoi, Radio Japan) See ICELAND, which also uses 15780 USB!

ARMENIA Radio Yerevan's North American service used to come via Far East sites only for reception mainly in California, but now two lower frequencies are shown, likely from European sites for the east coast, 7400 and 9765 in addition to 15180, 17665, 17690, at 0330-0400 with an English segment during the last few minutes. Radio Yerevan also provides taped programs to Armenian stations in Boston and Los Angeles. (via BBC Monitoring) Does anyone know which stations these are?

AUSTRALIA Morale is low among Radio Australia staffers; bewildered professionals have been marched into workshops on "exploring alternative ways of identifying what is relevant to report on" in keeping with RA's newly restricted focus, trying not to offend neighboring countries (Michael Barnard, Melbourne *Age*, via *OzDX*)

To try to improve relations with Indonesia, RA is sending younger Australian women correspondents there, to replace less culturally-sensitive middle-aged men (*Communicator*) That's one of few tidbits of interest on the new *Communicator* from which all DX news appears to have been banished, as the show goes on *ad nauseam* about telecommunications in various Asian and Pacific countries.

Radio Australia's program day in English is now split into "Breakfast" at 1700-0400, and "Come Home" blocks at 0400-1700 UTC, as it no longer even pretends to care about listeners beyond Asia and the Pacific. Many of the old-favorite features have been axed, such as *Smith's Weekly*. To request a copy of their full schedule by time, try phoning 011-61-3-235-2360.

BHUTAN Thimpu heard Mon-Sat on new 5023, quite stable but announced as 5025, as early as 1115 when it might make it to western North America, with a brief English segment around 1347, and again from 1415 to closing at 1500; low modulation on speech and it doesn't sound like a new 50 kW transmitter (Peter Bunn, Victoria, *OzDX*) Features after 1415: Sat., *About Town*. Sun., *Listeners' Choice* of music. Mon., *Country & Western*. Tue., *Topical Evening*. Wed., *Australian music*. Thu., *UN Calling Asia*. Fri., *For Your Listening Pleasure* (*Kuensel*, the Bhutan newspaper, via Eric Bopp, *DX Spread*)

BOLIVIA Radio Horizonte, Riberalta at 0215-0400 sign-off on new 4988, ex-5160, but still announcing 4525 (Daniel Camporini, Argentina, *Radio Nuevo Mundo*) Radio Nueve de Abril reactivated on 3200.4 at 0105-0132 (Julian Anderson, Argentina, *RNM*) La Cruz del Sur signed off 4875.57 at 2358 (Chuck Bolland, FL, RCI *SWL Digest*)

BRAZIL Radio Universitaria de Guarulhos is on new 3325, heard from 0740 past 0825 (Toshiaki Sakai, Japan, RNM) Radio Sentinela da Amazonia, Obidos, Para on 3285 at 0145 (*SW Bulletin*) The outlet on 4815 in Benjamin Constant heard at 0300 is now called Radio Cabocla de Tabatinga. (Radio Maua, Sao Paulo, heard testing 9765 at 1330 (Antonio Ribeiro da Motta, Brazil, RCI *SWLD*)

CANADA RCI's English and French staffers are being reorganized into target-area groups instead of language groups. This may affect who produces which program, and how they are scheduled. Typo last month: *Air Farce* Sunday at 1800, not 1300.

CHINA BBC's Hong Kong relay on 7180 has been jammed in Beijing during Mandarin broadcasts before 1300 and at 1430-1500, but not during English in between (BBC *Waveguide*) It's a new type of jamming, overmodulated music and Chinese talk (Arthur Cushen, New Zealand, Radio Netherlands *Media Network*) Later, China stopped jamming VOA in mid-December (NHK *DX Corner*) shortly after the Scowcroft-Eagleburger "kowtow" mission, and we have also heard that a VOA correspondent has been allowed back to Beijing.

Amnesty International's China Hotline, if you would like to send a telegram supporting those still being tried in the aftermath of the Tiananmen massacre, is 1-800-888-5284 (Jack Healey, A.I. USA Director, via *DX Spread*)

COLOMBIA New on 6000 kHz is La Voz de Antioquia, heard after the Brazilian, Guaiba, closes at 0500 (Daniel Camporini, Argentina, *Radio-Enlace*)

CZECHOSLOVAKIA Those who would like to contact Radio Prague, especially about programs from the democratic Civic Forum organization, may phone 260152 (David Hermges, Austrian *SW Panorama*) English news segments during the Interprogram can be the earliest source of late-breaking news, on 6055, 7345 and 9505, daily at 0730, 0845, 0945, 1045, 1145, 1245, and except Sunday at 1345; sometimes also at 0745 (Bill Peek, NC, *World of Radio*)

ECUADOR Radio Centro, Ambato, the new station on 3290, sent a QSL in only 3 weeks, saying power is 500 watts, address Apartado Postal 574. Though listed on 1130, it's called Estacion 112 (Tom Williamson, *DX Ontario*) Illustration via Rowland Archer, NC

HCJB program previews: *DX Partyline*, Jan. 27/29 visits the Radio New Zealand archives; Feb. 3/5, verifying utility stations; Feb. 17/19, visit to VOA Greenville, Arthur Cushen. Listen Sat at 0800, 1030, 2130; UTC Tues 0200, 0600. *Passport*, Feb. 5/6 an in-depth look at the birth of New Zealand, after the news at 1900, 0130, 0500, 0900. *Happiness Is*, 1230, 0230, 0730, 1000: Feb. 2 & 9, Ecuadorian mountains; Feb. 3, an Ecuadorian market; Feb. 8, teen peer pressure; Feb. 16, abortion. (via Brent Allred, HCJB)

ETHIOPIA /non/ Two clandestines use the same variable frequencies, 9343, 9311, 7890, 7830, 7010, 6944--Voice of the Broad

Masses of Ethiopia at 0400-0445 and 1945-2030 via transmitters of Voice of the Tigre Revolution, which uses them at 0445-0530, 1500-1630, and 1900-1945 (BBC Monitoring)

GERMANY EAST Radio Berlin International has revised its program schedule to North America: Mon, *Spotlight on Sport*, *DX Club*. Tues, *People in Profile*, and *Stamp Album* alternating with *Faces & Places*. Wed, *Viewpoint*, *Sounds Around* (All kinds of music). Thurs, *Out and About*, *Midweek Sports*. Fri, *Berlin in Focus* alternates with GDR-teries (on international relations). Sat, *Give Peace a Chance*, *Yours for the Asking*. Sunday, *Mailbag*. In addition to the times given last month, one more repeat of the previous day's programs airs at the early hour of 1000 UTC on 11890, 15240 (via John Carson, OK and Tom Kuca, NY)

HONDURAS Radio Landia, reactivated on 4965, heard around 1200; also the second harmonic of Radio Mundial on 2840 (Don Moore, MI, RCI *SWLD*)

Sani Radio, 4755, explains its name: Sani is a Miskito workd for the fiber from the majao tree, used for tying up sacks. Years ago children would imitate radio missionaries by connecting two half-coconut shells with sani, and it has since come to mean people communicating by word of mouth. (Lic. Jacinto Molina, Director, via Rowland Archer, NC)

HONG KONG The daily Vietnamese program on 7290 at 2300-0100 and 1100-1300 to discourage boat people is officially denied by the government, and transmitted without identification (Gordon Darling, WDXC *Contact*) see also CHINA

ICELAND ISBS uses 10 or 20 kW SSB transmitters: 1215-1245 on 15780, 15767, 13830, 13790; 1410-1440 on 15767, 13855, 13830; 1845-1930 on 15767, 13855, 13830, 9268, 7870; 2300-2330 on 15780, 15767, 13855. The same frequency uses different azimuths from one transmission to the next. It's likely that one channel at 2300 will have changed to the 11400-11600 range (Olafur Briem, Sweden, DSWCI *SW News*) Also at 1935-1955 on 15767, 15780, 13855 (Bob Padula, *ADXN*) 15780 USB mixes with Argentina at 2310 (Bill Flynn, CA, *DX Spread*)

INDIA All India Radio weather bulletins to Himalayan expeditions are at 1215 on 3905 and 7280, giving code names such as "Zulu" and "Aztec" (Supratik Sanatani, India, *SCDX*)

IRAQ Radio Baghdad, in English: 2100-2300 on 7290, 0230-0430 on 9515, 9700 (*SCDX*)

ITALY DX Program from AWR-Europe heard at new time of 0645 Sunday at 7125 (Bill Peek, NC, RCI *SWL Digest*)

JORDAN Radio Jordan in English at 0635-1415 uses 13655 and 6135 (Rumen Pankov, Bulgaria, *SCDX*) The former can be heard fairly well in North America.

KOREA NORTH Revised English schedule for Radio Pyongyang: 2300 on 11735, 13650; 0000 on 15115, 15180; 0400 on 13650, 15180, 17765; 0600 on 13650, 15180; 0700 on 11335, 15340; 0800 on 13650, 15180 11830; 1100 on 9645, 9977, 11735; 1300 on 9325, 9345, 9640, 13650, 15180; 1500 on 9325, 9640, 9977, 11760; 1700 on 9325, 9640 9977, 11760; 2000 on 6576, 9345, 9640, 9977 (Ed LaCrosse, CA, *World of Radio*) To the Americas at 23, 00, 11 and the last two channels at 13.

The clandestine Voice of National Salvation inadvertently gave away its source when it did not turn off its 4400 transmitter until 1703, a minute after Radio Pyongyang's opening in English started (Toru Yamashita, Japan, NHK *DX Corner*)

KOREA SOUTH KBS has moved some transmitters from Suwon tu Pusan to escape environmental impact and raise power: 3930 from 5 to 10 kW; 5975 from 10 to 100; 6015 from 50 to 100; but 6135 is still 10 kW (Toru Yamashita, *ibid.*)

LAOS Soviet relay of RNL in French at 1100-1130 is on 15190, 11870 (Shigenori Aoki, *ibid.*)

LITHUANIA Radio Vilnius at 2300-2330 now uses 17690, 17655, 15180, 9765, 7400, 6100 (BBC Monitoring) Wed and Sat they include live news reports from Latvia and Estonia (Tim Hendel, *Review of International Broadcasting*) DX program on a Sat mentioned an RFD/RL listeners club in Odessa, and an office of Christan Radio Stations in Kaliningrad. Amazing! And they don't mention USSR in the station address (Ernie Behr, *ibid.*)

Radio Vilnius has invited western European journalists to visit Lithuania free for 10 days this year--in exchange for a similar visit by Lithuanians abroad (BBCM)

MONGOLIA Radio Ulaanbaatar domestic service monitored on 164, 209, 227, 4080, 4830, 4850, 4865, 4895, 4995, 7260, most unstable varying 1-5 kHz except 4850; not heard on listed 3960 or 882; and 11855, 11825 not received either though 25 meters is still announced (Yoshinori Kato, Japan, NHK *DX Corner*) Typo last month: 15305, not 15035.

MYANMAR Yangon has escaped Taiwan interference on 5985 by moving to 5990, at 0930-1600 with English after 1430, news at 1445 (Victor Goonetilleke, *UADX*)

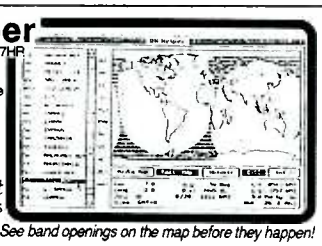
Voice of the DAB (clandestine; see last month) includes English certain days at 0215; and programs in many languages from many groups, such as the Karen National Union on Tues and Fri (*Bangkok Post* via Radio Australia) At our request they moved to 7195 to avoid BBC on 7135 (Victor Goonetilleke, *UADX*) KNU programs ID as the Voice of Kawthoolei, back on 7135; reception difficult until a special evening test at 1100-1130 in English; around 10 kilowatts. Hope 1100-1200 broadcasts will become regular (Goonetilleke, *Media Network*)

NEW ZEALAND RNZ International planned to inaugurate the new 100 kW transmitter Jan. 24 at 0400-1000 for Commonwealth Games coverage, on new 17680, with 15485, 17730 and 9850 as alternates. Game coverage continues Jan. 25-Feb. 6 at 2100-2400 and 0300-0900; with the Waitangi Day Celebration on Feb. 6. After that date, primary and (alternative) frequencies will be: 1700-1900 on 17730 (17680 or 15485); 1905-2100 on 17730 (9850); 2100-2400 on 17705 (17680 or 15485); 0330-0600 on 17705 (17680 or 15485); 0630-0930 on 17730 (9850); valid until 3 March (Ian Johnstone, manager, via John Carson, OK)

The new Print Disabled station will be on 3935 from Levin at 2100-1100; their MW outlet 2XZ on 1602 has been operating 0630-1000 Mon-Thu but will also expand (Arthur Cushen, *DX Partyline & Media Network*)

PAKISTAN Slow-speed news in English from Radio Pakistan, each sentence read twice, now airs at 0230-0245 on 9545, 15115, 17660, 17725, 21490; 1105-1120 on 17565, 21575; 1615-1630 on 13665, 15605, 17565, 17895, 21480, 21740; the last preceded by normal-speed program at 1600 (Craig Seager, Radio Australia)

PANAMA /non/ Following the U.S. invasion, Cuba's Radio Taino mentioned a "La Voz de la Dignidad Nacional" here, no further details (Tim Hendel, FL) Doubtful on SW, as Noriega had not completed his plans for a SW service. Radio Impacto, Costa Rica, stayed on late into the night as the invasion started, with news about it, apparently including coded messages, on 5044 and 6140. While U.S. TV networks were covering it continuously by 0600 UTC, VOA blithely continued with African service programming on 9575, even past 0640 when the first statement came from the president's press secretary; finally at 0647, VOA broke in with a bulletin including



Shortwave Broadcasting

taped excerpts from the statement. So for breaking news of U.S. government military adventures, don't rely on VOA (Hauser, AZ) The next day, Cuba put its Radio Rebelde network on 11840 from 1400 past 1500, instead of the usual Moscow in English (Tim Hendel, FL) But the next day, back to Moscow relays.

PERU Radio Estacion "A" is a new on in Socota, Cutervo, Cajamarca, heard at 0150 on 5265. Radio Tingo Maria is also active, 4760 at 1155 (Rafael Rojas Foinquinos, Lima, RCI *SWLD*) Onda Popular, Bambamarca, on new 5186.8 at 0345-0421, nominal 5270 (Gabriel Ivan Barrera, Argentina, *ibid.*) Radio La Voz de la Selva, 4825, has expanded its schedule to 1000-0300; plans to acquire its own generators to fight blackouts, which also put an end to a brief reactivation of Radio Amazonas on 4815 (Mery Blas, Iquitos, *Play-DX*)

PHILIPPINES FEBC, Manila, in English: 0000-0230 on 15480; 0900-1100 on 11850; 1300-1600 on 11850 (BBCM) I am now voicing a DX Report for 5 minutes UTC Sat sometime between 0100 and 0200; and a *DX Update*, Wed at 1445-1450 (Craig Edwards, Australia, *OzDX*) Unfortunately, QRMoscow at the latter time.

POLAND Radio Polonia announced that some of the 41- and 49-meter transmitters are out of service for overhaul; and 15120 has been shut down indefinitely. I only hear them on 7270, fair at 2230, 2305 and 0630; and 9675, usually extremely good at 0630, all in English (Bill Peek, NC, *World of Radio*)

ROMANIA Following the revolution, elated Radio Bucharest announcers talked of little but their country's newfound freedom; finally were allowed to interview American diplomats including the Vice Consul who said there would no longer be refugees fleeing to the west; and the station invited listeners to call at 400-9013-9996. We heard this during the 1300-1355 broadcast best on 11940, 17850, also announcing 15365, 21550. The evening transmissions to North America are poorly heard beyond the east coast: 0200-0300 and 0400-0430 on 5990, 6155, 9510, 9570, 11830, 11940--most of them interfered with 5990 the best winter possibility. Also try the European service at 1930 and 2100 on 9690, 7195, 7105 6105.

SAIPAN (& USA) It's impossible to get a QSL card from KHBI, WCSN or WSHB, so write directly to the chief engineer at any of the stations to at least get a verification letter (The Staff of Intercept Station "Kilo")

SEYCHELLES FEBA now has a weekly *World of Shortwave* segment on 15330, 9590, time varying slightly, one Tues at 1517-1521, including propagation report and a few DX tips (RCI *SWLD*)

SWAZILAND TWR is on 19 meters, seldom used previously 15210, for English at 1600-1700, 1800-1845 (WRTH *Downlink* via WDXC *Contact*)

SYRIA Some Radio Damascus programs: *Welcome to Syria*, Sat. 0230 and 2145, *Syria Today*, Fri. 2030; *Mail Bag*, Sat., Mon. and Thu. 2130; *Palestine Talk*, Mon. 2045, 2145; *Arab Women*, Tue. 2030; check 9950, 12095, 15095, 17710 (via Robert Mc Entee, *R.I.B.*)

TRIESTE /non?/ Radio Black Banana, a pirate in German on 6239.5 closed at 2257 on a Sat giving an address here (E. Oliva, Italy, *Play-DX*)

TURKEY Polis Radyosu, Ankara, left 6340 for 7380, heard at 0610, but QRMoscow prompted another move, to 7361.5, noted at 1315-1538 (Dario Monferini, Italy, *Play-DX*)

Contrary to international regulations, Voice of Turkey published and uses split frequency 15267 at 0500-0900 daily, and except Fri, 1000-1500, confirmed at 0820 (Bob Padula, Vic., RCI *SWLD*) Also heard from 0556 past 0700 parallel 11925, both strong (Ernie Behr, Ont.) That's the domestic relay in Turkish.

VOT will be getting five new 500-kW transmitters (George J. Poppin, CA) But not until mid-1992 (BBCM)

U S S R Trans World Radio has been authorized to set up a production facility in Moscow, to be shared with HCJB, FEBC, perhaps also in Minsk, Kiev (*Bonaire Wavelengths*, and *Religious Broadcaster* via Ken MacHarg) A "Program for Believers" was heard in Moscow's Russian service, one UTC Mon at 0340 on 9610. Will wonders never cease? (Thomas Richardson, *R.I.B.*) Latvian Radio first program on 5920, AM & FM, broadcasts a religious service Sundays around 0900-1200; but Tues at 0930-0950 it's the *Atheist Club Radio Journal*, or on the second Tues *Come and Join our Club*, with anti-religious features (BBCM) Is there a single American station offering such balance?

UKOGBANI While Radio New Zealand proudly covers the Commonwealth Games there with its new transmitter, BBC World Service reports on them too until Feb. 3, daily at 0445, 0940-1000, 1245, 1745, 2101 and Sat from 1430 (*R.I.B.*)

U S A Kim Andrew Elliott, audience research director at VOA, has stirred things up in an article for *Foreign Policy* magazine, calling for consolidation of U.S. external broadcasting (mainly Radio Free Europe, Radio Liberty and VOA) into a new entity with a new name, insulated like the BBC from government interference. This would greatly increase efficiency and save tens of millions of dollars (*Media Network*)

Brush fires are a problem at VOA-Greenville, Six-foot-long 50-kilowatt arcs sometimes jump from open wire transmission lines to ground (Thomas L. Vernon, *Radio World*)

FCC has turned down H. Dickson Norman's Petition for Reconsideration of the cancellation of his construction permit for NDXE. Alan Weiner, of the pirate Radio Newyork International, has enlisted the aid of Maine Sen. William S. Cohen in applying for a shortwave license, but the FCC will ask a judge to rule on his "fitness of character" (Bob Horvitz, ANARC via Will Martin)

Two North Carolina stations are relayed on 26294.3, WHTE, Hot 104 in Williamstown, heard at 2035-2004, and two weeks earlier, WCNC, 1240, Elizabeth City (Terry Palmersheim, WA, *Fine Tuning*) Also a "Power 94 FM" at 1630 on 26293 variable, and Hot 104 at 1631 (Bruce MacGibbon, OR, *DX Spread*)

World of Radio on WHUS, 91.7, Storrs CT, has been retimed to Fri 10:30 am ET.

URUGUAY Radio Sarandi has been announcing and using 4900 until 0230 (Alfredo Locatelli, Montevideo, RCI *SWLD*)

VENEZUELA Ecos del Torbes is on new 6130, formerly occupied by Radio Valles del Tuy (Gabriel Ivan Barrera, Argentina, *Radio-Enlace*)

YV En Contacto is a new DX program Sundays on Radio Nacional, a 10-minute program within one-hour magazines Sundays at 1100, 1400, 1800, 2100, 2400, 0300, on 9540 (Carlos Jose Martinez, Venezuela, *SCDX*)

/non/ La Voz de las Canyas appears to be a hoax, still heard Fri and Sat only between 2330 and 0030 on 5068 by *Play DXers* Dario Monferini and Giuseppe Zella in Italy; veries have been received by the latter and by a DXer in Spain. Linguistic analysis points to Spain rather than Venezuela; Rodriguez Lanza and Jairo Salazar in Venezuela cannot hear it; the address announced is actually a private house; Barinas ads are real, but the businesses had never heard of the station; and Canyas can mean "lies" in Venezuela and Colombia. I suspect it actually comes from Spain (Henrik Klemetz, Sweden, *SWB* and *RNM*)

Keep up with shortwave and other media developments by monitoring Glenn Hauser's broadcasts: *World of Radio* on WRNO: UTC Thurs 0130 on 7355, 1630 on 15420; UTC and on RFPI, Costa Rica: Fri 2000; UTC Sat 0030, 0430, 1930; Sunday around 0230, 2230; Tues 2230; Wed 0300, 0700, on one, two or three of: 7375, 13660, 21566, 25945. And a separate DX news report on RCI *SWL Digest*, about 15 minutes after: Sat 0337, 2137, 2207; Sunday 0037, 0107, 2307; Tues 1333, 1907; Wed 0407. See frequency section. --And by subscribing to REVIEW OF INTERNATIONAL BROADCASTING and/or DX LISTENING DIGEST. 10-issue subscriptions cost US$21 each, or both for US$40, in North America. Samples are $2 each or by overseas mail 7 IRCs each, from Glen Hauser, Box 44164-MT, Tucson, AZ 85733.

Broadcast Loggings

*Let other readers know what you're enjoying; Send your loggings to **Gayle Van Horn**, P.O. Box 98, Brasstown, NC 28902. English broadcast unless otherwise noted.*

0000 UTC on 9725
COSTA RICA: AWR/Radio Lira. Promotional for "Clubhouse Magazine," followed by "This is AWR" ID. Spiritual features "Amazing Facts" and "Voice of Gospel." (John Miller, Thomasville, GA)

0010 UTC on 9630
SPAIN: Spanish Foreign Radio. Editorial on the many changes in the two Germanys, and the affects of them upon the rest of Europe. Audible on parallel frequency 11880 kHz. (Bob Fraser, Cohasset, MA) (Harry Johnson, Ocean City, MD)

0030 UTC on 15315
NETHERLANDS: Radio Netherlands. 61st anniversary of Happy Station program, with a repeat of the 50th anniversary show of 1978. Audible on parallels 6020 and 6165. (Bob Fraser, Cohasset, MA) (Harry Johnson, Ocean City, MD)

0039 UTC on 6025
DOMINICAN REPUBLIC: Radio Amanecer. Spanish. Religious music and gospel message. Station ID and frequency quote at 0053 UTC. (Robert Landau, Secaucus, NJ)

0100 UTC on 11735
YUGOSLAVIA: Radio Yugoslavia. National news report and Yugoslavian political commentary. "Magazine Show," followed by frequency schedule and frequent IDs. (Nick Terrence, Huntington, NY)

0200 UTC on 4934
KENYA: Voice of Kenya (tentative). African music and newscast at 0220 UTC. Possible IDs at 0220 and 0300. Extremely weak signal under utility interference. (Robert Landau, Secaucus, NJ)

0210 UTC on 11740
TAIWAN: Voice of Free China. Commentary on future Chinese rule of Hong Kong. "Focus" program discussing input of American students at Women's Research Program conference on women's problems. (Bob Hurley, Baltimore, MD)

0305 UTC on 4895
COLOMBIA: La Voz del Rio Arauca. Spanish. Local and national Colombian news items to station ID. (Frank Mierzwinski, Mt. Penn, PA)

0313 UTC on 5960
GERMAN FEDERAL REPUBLIC: Deutsche Welle. Discussion on jobs for the blind in Germany. Sign-off at 0550 UTC. (John Carson, Norman, OK)

0400 UTC on 3290
NAMIBIA: Southwest African Broadcasting. German. Announcements and German marching music. Station ID at 0410. Audible in Afrikaan at 0411-0431 on 3270 kHz. (Frank Mierzwinski, Mt. Penn, PA)

0531 UTC on 4915
COLOMBIA: Armonias del Caqueta. Spanish. Fair signal for religious message and music, with breaks for frequent time checks. (Robert Landau, Secaucus, NJ)

0531 UTC on 6030
GERMAN FEDERAL REPUBLIC: Suddeutscher Rundfunk (tentative). German. Fair signal suffering interference. Instrumental music and news at the hour. (Robert Landau, Secaucus, NJ)

0551 UTC on 7255
NIGERIA: Voice of Nigeria. National news to pop music program. Program closing with comments on anti-apartheid. (John Carson, Norman, OK)

0637 UTC on 7125
ITALY: AWR. DX program and contest questions. Fair signal and strong interference/fading. (Robert Landau, Secaucus, NJ)

0650 UTC on 9765
MALTA: Voice of the Mediterranean. News topics from Libya and Malta. Arabic programming commencing at 0700 UTC (Robert Landau, Baltimore, MD)

0700 UTC on 5030
TONGA: Radio Tonga. "Radio Tonga News" that included national and regional reports on the Solomon Islands, New Guinea, and Fiji as read by a female announcer. Local weather and tide reports, commercials, and birthday greetings in Tongan. Signal fading slightly with interferences, but signal improved after 0730 UTC. (Jerry Witham, Keaau, HI)

0755 UTC on 15295
MALAYSIA: Voice of Malaysia. French/English. Easy-listening music with French announcements. Multilingual IDs at 0800, followed by news in English. (Jerry Witham, Keaau, HI)

0855 UTC on 5030.4
PERU: Radio Los Andes. Spanish. Lively Latin music program with station promotionals and IDs at 0902. (Jerry Witham, Keaau, HI)

0907 UTC on 5012
ECUADOR: Escuelas Radiofonicas Popular. Spanish. Announcements and chats with time checks and IDs. Fair signal. (Robert Landau, Secaucus, NJ)

0915 UTC on 4980
VENEZUELA: Ecos del Torbes. Spanish. Local Venezuelan vocals and station ID. Commercials with bits about city San Cristobal and ID at 0932. (Jerry Witham, Keaau, HI)

0932 UTC on 11849.8
PHILIPPINES: FEBC. "Computer Corner" program and ID, with excellent signal. (Craig Seufert, New Hampton, NH)

0934 UTC on 4991
PERU: Radio Ancash. Spanish. Peruvian music vocals and station IDs at 0942 and 0957 UTC. (Robert Landau, Secaucus, NJ)

1100 UTC on 12015
MONGOLIA: Radio Ulan Bator. Mongolian. Asian music and commentary from 1100-1155 UTC. Open carrier for three minutes to interval signal and station ID. Audible for several successive mornings. (Mark Selden, Coral Gables, FL)

1101 UTC on 4845
GUATEMALA: Radio K'ekchi. Quecha. Fair signal for religious programming and choral music. Barely audible by 1120 UTC. (Robert Landau, Secaucus, NJ)

1154 UTC on 7504
CHINA: CPBS-1. Chinese. Talk and musical interludes between music program. Time tips at 1200, station ID and information. (Frank Mierzwinski, Mt. Penn, PA)

1415 UTC on 21710
NORWAY: Radio Norway International. "Norway Today" show with news of upcoming concert season. Story of giant paperclip erected outside Oslo business college to commemorate 90th anniversary of the Norwegian invention. (Bob Hurley, Baltimore, MD) Heard on 9605 at 2300 UTC. (Bob Fraser, Cohasset, MA)

1445 UTC on 21635
FRANCE: Radio France International. International news, "Top Ten" music program, and discussion on immigrants moving to France. (Harry Johnson, Ocean City, MD) Monitored on 3965 kHz at 0351 UTC. (Robert Landau, Secaucus, NJ)

1530 UTC on 21610
SWEDEN: Radio Sweden. Stories on Nordic bookfair, exhibits from China, and Icelandic Ballet Company. (John Carson, Norman, OK)

1735 UTC on 17755
SURINAME: Radio Suriname. Dutch. Station ID and newscast by female announcer. Lengthy dialogue in Dutch, followed by national anthem and program sign-off at 1744 UTC. (Jerry Witham, Keaau, HI)

1744 UTC on 21505
CZECHOSLOVAKIA: Radio Prague. English discussion of socialism in Eastern Europe. ID at 1745, and interval signal at 1747 UTC. (Nick Terrence, Huntington, NY) Heard on 7345 kHz at 0130 UTC. (Bob Fraser, Cohasset, MA)

1840 UTC on 15475
GABON: Afrique Numero Un. French/English. Multilingual newscast, also on parallel frequency 9580 kHz. Continued reports about Angola in English and French at 1848 UTC. (Craig Seufert, New Hampton, NH) Monitored at 1935 on 15475. (Mark Selden, Coral Gables, FL)

1945 UTC on 7405
UNITED STATES: (Pirate) Hope Radio 16. Tape of "Freedom Rock" program and publication of promotionals. (Robert Landau, Secaucus, NJ)

1955 UTC on 13750
KUWAIT: Radio Kuwait. "Islamic Economics" feature with readings from the Holy Koran to illustrate points of discussion. Pop music show (Alice Cooper, Rick Nelson, Fats Domino) to 2100. National anthem and sign-off. This was not a scheduled frequency. (Bob Hurley, Baltimore, MD) Monitored on 13610 at 2045 UTC. (John Miller, Thomasville, GA)

2000 UTC on 9560
JORDAN: Radio Jordan. Numerous station IDs and international newscasts. Pop music program featuring Stevie Nicks tunes. Several local time checks. (John Miller, Thomasville, GA)

2010 UTC on 7450
UNITED STATES: Pirate-Voice of the Purple Pumpkin. Special 20th anniversary broadcast, with music tunes. Moderate signal. Also monitored on 15044 kHz at 2104 UTC. (Robert Landau, Secaucus, NJ)

2142 UTC on 4870
BENIN: ORT du Benin. French. Songs and discussion of business. Fair signal with strong to moderate interference. (Robert Landau, Secaucus, NJ)

2200 UTC on 11960
USSR: Radio Peace and Progress. Feature on the support of the People's Deputy for Japan's territorial claims to certain Soviet islands. Monitored to 2235 UTC. (Bob Hurley, Baltimore, MD)

2232 UTC on 6005
GERMAN FEDERAL REPUBLIC: RIAS. German. Talk and German pop music. Interference from BBC, and lost signal when CFCX abruptly signed on. Extremely hard to copy. (Robert Landau, Secaucus, NJ)

2237 UTC on 15235
LIBYA: Radio Jamahiriya. Arabic. Dramatic readings to chimes and pips at the hour. Newscast and Arabic music to tune out. (Robert Landau, Secaucus, NJ)

2315 UTC on 11765
JAPAN: Radio Japan. "Asia Now" show with "News Around Asia," followed by feature on boom in Korean auto industry. (Bob Hurley, Baltimore, MD)

2330 UTC on 15010
VIETNAM: Voice of Vietnam. News followed by commentary on the need for dialogue to achieve solution to the conflict in Cambodia. Signal broke up at 2345. (Bob Hurley, Baltimore, MD)

2330 UTC on 9445
TURKEY: Voice of Turkey. Instrumental music and feature on the varied accomplishments of the Turkish people. (Harry Johnson, Ocean City, MD)

2330 UTC on 9610
USSR: Radio Minsk. Russian. Feature on American organization of "People-to-People." Radio Vilnius program and sign-off at 2258 UTC. Moderate signal. (Robert Landau, Secaucus, NJ)

Utility World

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

New Life on HF

Many monitors have been commenting that shortwave communications appear to be making a come-back. Several years ago, satellites seemed to be taking over the work of shortwave as a medium for utility communications. Suddenly, services started to disappear from the high frequencies.

Now, however, the traditional shortwave bands -- 2 through 30 MHz -- are being "rediscovered." Less vulnerable than satellites and less likely to be blacked out by nuclear conflagration, the HF spectrum is being rediscovered by a myriad of government agencies -- not to mention monitors like you and I.

A good example of this is Operation SECURE. This system was organized to provide interstate communications in time of emergency. Even the U.S. Postal Service is implementing shortwave mobile tracking of suspected mail fraud and other postal infringements.

Another is the new government radio system called SHARES. This program was mandated by the White House and implemented by the National Communications System (NCS). The purpose of SHARES is to integrate the intercommunications ability of all federal agencies. The preliminary manual of participating agencies, personnel and networks is about the size of the Manhattan telephone directory.

SHARES will allow virtually every radio-licensed government agency -- FBI, Army Corps of Engineers, FEMA, State Department, Department of Interior, U.S. Navy, Postal Service, etc -- to interface during an emergency. These different agencies will also be heard utilizing routine communications to keep the system up.

As a case in point: During last fall's earthquake in San Francisco, Ute World reader Bill Battles heard NNN0NNJ (US Navy MARS station at the USCG CAMSLANT, NJ) working WGY-903 (FEMA Headquarters, Olney, MD) on 10493 kHz with a "SHARES" message for US Coast Guard CAMSPAC San Francisco, CA. The message basically said that, "All phones out. Request police officer hand carry message and wait for reply from US Coast Guard CAMSPAC, Pt. Reyes, CA."

10493 kHz is a FEMA allocation used for calling/emergency. The channel designation for this frequency within the FEMA shortwave communication system is 28. All transmissions were in USB.

Eventually, the high-tech SHARES system will employ propagation sampling, constantly testing upper and lower frequency limits, selecting optimum links on a continual basis.

New Designators Revisited

Back a few months ago, *Monitoring Times* told you about some new military designators appearing within the utility shortwave spectrum. Military designators are code names used by agencies to identify certain of their frequencies. Not much is known about the change or which system the change is associated with (see above article). However, some additional frequencies/designators have come to light. Table One now shows the complete bandplan as I know it.

Mr. UK comments on the situation that: "English monitors are equally puzzled over the 'W' designated frequencies...I think that this net is of a very high priority. I say this because the 10th ACCS Airborne Command Posts (EC-135H aircraft from Mildenhall) are often heard calling stations on this net and referring to the 'W' channels, although they seldom make contact. They normally attempt to establish contact around 1000-1400 zulu which is a bad time of day for frequency propagation to the USA on 6757/13247 kHz. These aircraft only deal with high grade traffic, so I'll let you draw your own conclusions."

I would agree Mr. UK and after seeing this latest information, add the following:

Based on Ute World logs and my own on-the-air intercepts, it appears that the designators are designed for stations communicating with SAC Command and Control units (i.e. Airborne Command Post, Ground Stations, Offutt, etc). This system probably had its birth within the Mystic Star system.

TABLE ONE
New Military Frequency Designators

WHISKEY DESIGNATORS		
W-100		See Note
W-101	5800	Listed in past as TAC Air/DEA/Mystic Star ch
W-102		See Note
W-103	6757	Listed as USAF GCCS Croughton house channel and Mystic Star channel
W-104	7475	Listed as a FAA Regional channel
W-105	7831	Listed as a USAF MARS Transcon RTTY channel
W-106		See note
W-107		See note
W-108	12070	I don't show anything on my list
W-109	13247	A truly unique frequency with a lot of different DOD agencies active here
W-110 ??		See note
W-111	17972	Listed as a Mystic Star channel
W-112		See note
SIERRA DESIGNATORS		
S-302	3113	SAC channel Floating Designators- Airborne Command Post
S-303	3295	SAC channel Alpha Mike
S-304	4495	SAC channel Echo-Airborne Command Post
S-390	4725	SAC channel Victor- Primary A/G channel
S-391	6761	SAC channel Quebec-Primary Night channel
S-392	9027	SAC channel Romeo-Primary A/G channel
S-393	11243	SAC channel Alpha One-Primary Day channel
S-311	11494	SAC channel Lima- Training Frequency
S-312	13211	SAC channel Bravo Whiskey-Airborne Command Post
S-394	13241	SAC channel Sierra-Primary A/G channel
S-395	17975	SAC channel Tango-Primary A/G channel
X-RAY DESIGNATORS		
X-904	9017	Commonly reported Mystic Star channel
X-905	11226	Listed as a USAF GCCS channel; also a commonly reported Mystic Star channel
PAPA DESIGNATORS		
P-382		See Note
P-383	15044	

NOTE: WHILE A SPECIFIC FREQUENCY HAS YET TO BE NOTED FOR THIS DESIGNATOR, REFERENCES TO THE DESIGNATOR HAVE BEEN HEARD ON THE AIR

TABLE TWO
Strategic Air Command Frequencies

FREQ	CH DESIGNATOR LO/HI PRIORITY	CHANNEL USAGE
3113	FDESIG/S-302	ABCNP
3292	FDESIG/**********	
3295	ALPHA MIKE/S-303	
3369	ALPHA SIERRA/	
4492	FDESIG/**********	
4495	ECHO/S-304	ABCNP
4725	VICTOR/S-390	PRIMARY A/G/AF REFUELING CH
4896	FDESIG/**********	
5020	FOXTROT/**********	SEE NOTE 1 - ABCNP
5026	FOXTROT/**********	SEE NOTE 1 - ABCNP
5110	FDESIG/**********	
5171	FDESIG/**********	
5215	FDESIG/**********	
5243	DESIG UNK/********	ABCNP
5328	FDESIG/**********	
5684	FOXTROT QUEBEC/***	
5700@	BRAVO QUEBEC/*****	ABCNP
5826	BRAVO UNIFORM/*****	ABCNP
6680	FOXTROT XRAY/******	
6712#	FDESIG	ALSO ALPHA TWO IN PACAF
6761	QUEBEC/S-391	PRIMARY A/G - NIGHTS
6826	GOLF/**********	
6840	DESIG UNK/********	A REAL HOT NUMBERS CHANNEL
6863	OSCAR/**********	
6870	KILO+/**********	SEE NOTE 2 - ABCNP
6886	DESIG UNK/********	
7330	YANKEE-XRAY/******	
7983	FOXTROT CHARLIE/**	
8101	ALPHA PAPA/*******	ABCNP
9023@	DESIG UNK/********	SAC/NORAD/AWACS INTERCOMM
9027	ROMEO/S-392	PRIMARY A/G
9057	PAPA/**********	ABCNP
9220	FDESIG/**********	
9234	FDESIG/**********	POSSIBLE SAC/NORAD INTERCOMM
10452#	OSCAR	PACAF DESIGNATOR
10510#	DESIG UNK	POSSIBLE PACAF CHANNEL
11100	ALPHA 21/*********	
11118@	DESIG UNK/********	ABCNP
11220	BRAVO/**********	
11243	ALPHA ONE/S-393	PRIMARY A/G - DAYS
11408	YANKEE QUEBEC/****	DATA CHANNEL
11494	LIMA/S-311	TRAINING/PRACTICE MESSAGE CH
11607	ALPHA ZULU/*******	
13205	ALPHA XRAY/*******	SAC SPECIAL OPS CHANNEL
13211	BRAVO WHISKEY/S-312	ABCNP
13241@	SIERRA/S-394	PRIMARY A/G
13547	FDESIG/**********	
13907	ALPHA CHARLIE/****	
14448	DESIG UNK/********	POSSIBLE NEW ABCNP CHANNEL
14716	SIERRA ECHO/******	
14744	ALPHA TANGO/******	
14775	FDESIG/**********	ALSO CH MIKE IN PACAF
14955	CHARLIE/**********	
15035	CHARLIE QUEBEC/***	CANADIAN FORCES (SHARED CH)
15041	MIKE/**********	PRIMARY A/G CHANNEL
15091	BRAVO XRAY/*******	TAC-TO-SAC INTERCOMM
15544	DESIG UNK/********	POSSIBLE SAC PT-TO-PT CHANNEL
15962	INDIA/**********	
17617	BRAVO HOTEL/******	
17975	TANGO/S-395	PRIMARY A/G CHANNEL
18005#	TANGO	PACAF CHANNEL
18046	JULIETT/**********	
18594	ZULU ONE/*********	
20631	WHISKEY/**********	PRIMARY A/G CHANNEL
20737#	DESIG UNK	POSSIBLE PACAF CHANNEL
20740#	LIMA	PACAF CHANNEL
20846	CHARLIE ALPHA/****	SAC-TO-CAP INTERCOMM: NOTE 3
20890	DELTA/**********	
21815	FOXTROT SIERRA/***	FLOATING DESIGS THIS CHANNEL
23337	UNIFORM/**********	
23419	DESIG UNK/********	SAC-NORAD INTERCOMM
27870	DELTA QUEBEC/*****	

NOTES:

@ = A MYSTIC STAR CHANNEL
FDESIG = FLOATING DESIGNATOR
PACAF = PACIFIC AIR FORCE
# = A PACAF CHANNEL
A/G= AIR-TO-GROUND
ABCNP = AIRBORNE COMMAND POST

NOTE 1: FOXTROT DESIGNATOR ROTATES BETWEEN THESE TWO CHANNELS. WHEN NOT DESIGNATED FOXTROT, THE FREQUENCY USES TWO LETTER DESIG THAT END WITH THE LETTERS 'A/B/C OR S'.

NOTE 2: FREQUENCY USES A TWO LETTER DESIG BEGINNING WITH KILO + ONE OTHER LETTER THAT ROTATES PERIODICALLY.

NOTE 3: OTHER PREVIOUS DESIGNATORS NOTED ON THIS CHANNEL INCLUDE: NOVEMBER ALPHA AND INDIA ALPHA.

(Note: Mr. UK notes his block arrangement for Croughton's SAC frequencies S-390 to S-395 equates to 4725 to 17975 kHz, see Table One for specifics).

The letter designator or block of numbers within a letter designator determines which system of frequencies the operator is working on or referring to.

Notice that the series beginning with S-390 are mostly SAC primary air/ground channels and that the low S-300 series are the less commonly used tactical/airborne command post and training channels. One can therefore surmise that the Sierra channels are all SAC channels.

In the summer of 1988 I published a complete list of the then known SAC designators and frequencies. For our new military monitors I am going to include that list again in Table Two of this month's column. This time I will add the new Sierra designators to that list. Frequencies without these new designators should be watched for activity and possible Sierra number designations.

Utility World

One interesting note: thru monitoring I have noticed that lesser priority units within SAC (bombers, tankers, etc.) do not appear to be using the new Sierra designators, but are continuing to use the old alpha character channel designator list most of us have become familiar with. The result of all of this is a two-tier channel designator system which is dependent on the priority of the unit utilizing the frequency as to which designator they will use.

The Papa channels are very intriguing. The one designator we do know is Papa-383 on 15041. My records indicate an interesting exchange on this frequency between Foxtrot and Kelly 1. These two stations were setting up a Fleetsatcom communications channel on 295.875 MHz.

Now we come to the X-ray channels. I feel that the X-ray channels will fall out in one of two ways. Either these channels are designated Mystic Star channels for SAC command units' tactical use or these designators are used to indicate GCCS channels used by these high priority SAC units. Some more time and logs are required to reach a positive conclusion.

Finally, there are the Whiskey channels. Like the Papa and Xray channels it is still a little early to make a positive call but this net could very well represent SAC's designators for certain SHARES or SECURE system channels. Looking at the different intercepts heard on these frequencies indicates that multiple agencies are using each of the frequencies identified thus far. This certainly fits with the information I presented at the beginning of this month's column.

There you have it, the latest information on a fascinating and still unfolding story. As always, your input and help is appreciated. Any intercepts, new designators, SHARE message intercepts are helpful and encouraged. Please include the call-signs monitored as this will be extremely helpful.

A good reference to other possible SHARE frequencies is Bob Grove's *Shortwave Directory*. Keep it handy next to the receiver to help fish out those potential government SHARE's frequencies. I would like to thank Clay Gibbs, Jack DeSmith, the ever present Bill Battles, and our good friend Mr. UK for their insight, comments and logs. It's time now to check out what you are hearing in the Utility World. Until next month...

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		

4003.7 NAM-Navy COMSTA Norfolk, VA heard sending AP-UPI news and sports at 0400. Mode was FDM channel 01, mode B 75 baud normal shift. (Bilodeau, IL)

4200.0 English female 3/2-digit number broadcast at 2324. (Robert Hurley-Baltimore, MD)

4295.0 6VA-Dakar Radio, Senegal at 0049 with a CQ CW marker. (Dix-NY)

4428.7 Several US Navy stations talking in USB then into RTTY at 0324. (Russell Wright-Houston, TX)

4600.0 An unid USB net with net control 2EM transmitting the contents of a personal letter in voice at 0137. (Hurley-MD)

4670.0 English female 3/2-digit number station heard at 0000. (Hurley-MD)

4700.0 NY291 to B7Y then both went green and a RTTY check. Many green and RTTY checks most mornings. Heard at 1447. (Bill Brinkley-Belmont-CA)

4722.0 RAF Volmet heard at 0543 in USB. Rapid run through of airport weather, including temperature, dewpoint, and QNH. (Robert L. Landau-Secaucus, NJ) *Welcome to the column Robert, please report often-Ed.*

5320.0 CG RADSTA Corpus Christi working a CG cutter in USB. Also heard the cutter on 157.050 working CG group Galveston at 0245. (Wright-TX)

5421.5 NRPX-USCGC Buttonwood (WLB-306) with traffic for NMG COMSTA New Orleans in regards to TED *(Turtle Exclusion Devices-Ed.)* enforcement protest by shrimp boats at 0243 in RTTY 170/75R. (Ricks-PA) *This was a major protest. The shrimpers were blocking coastal waterways which kept the CG hopping-Ed.*

5598.0 Gander ATC, Newfoundland working Canadian Air Force 409 in USB at 0040. Aircraft reported one engine out and asking for fire and emergency equipment to be standing by at Gander. Gander asked other aircraft to QSY to 8825 then later switched to VHF. (Joel Rose-OH) *Thanks for the log Joel and welcome to the column-Ed.*

5998.0 CSY-Santa Maria ATC, Azores working KLM 769 at 0715 in USB. (John Kolinda-OH)

6197.5 10th Marine forward, 10th Marine rear with Rest Area 41, Rest area White Lake heard at 1825 in USB. Mentioned highway intersection Route 41, 53 and 701. Using whip antenna. Convoy, I suppose. Coast Guard on 6200 and these stations were stepping on each other. (Frantz-GA)

6269.0 UFJI-NIS Akademik Mstislav Keldysh, Soviet oceanographic research ship with Russian traffic for UJY-Kaliningrad Radio at 0214. Docked at Rotterdam. Named for the head of the USSR Academy of Sciences 1961-1975. RTTY 170/50. (Ricks-PA)

6750.0 Gulf 15 (WC-130 from 53rd Weather Recon Squadron) with phone patch to MacDill Meteo via Lajes GCCS at 0324 in USB. Sent PIREP (Pilot weather report). (Ricks-PA) 902 Oscar testing RTTY transmissions between USB voice transmissions at 0134. (Hurley-MD)

6866.0 Hotel Quebec 27 with Hotel Quebec 28 with radio checks in USB and RTTY at 1500. (Frantz-GA)

6974.6 6VU-Dakar, Senegal with RY test message at 0217. RTTY 425/50N. (Bilodeau, IL)

7020.0 Q2W net control working D96, D57 and others with RTTY test transmissions at 0146 in USB. (Hurley-MD)

7533.0 German female number station. Must have been live, as she had a fit of coughing in the middle. Repeated several times with a curious siren in between messages. At 2347. (Fraser Bonnett-OH)

7700.0 Red Dog 51 net control for daytime communicator net at 1645 in USB. Various members responded in voice to 1702. (Hurley-MD)

8418.0 UISZ-Soviet spaceflight tracking ship Akademik Sergei Korolev on CW ship to ship net with UZZV-Kosmonaut Georgi Dobrovolski at 0305. This frequency was active at 1125 and 2205 UTC during Soyuz TM8 rendezvous with the MIR space station. (Ricks-PA)

8457.0 LSA-Boca Radio, Argentina heard at 0146 with a V CW marker. (Dix)

8625.2 GYU-Royal Navy Gibraltar Radio sending a DE CW marker at 2359. (Dix)

8648.0 Rich Reward working Malone and Raindrop in USB at 2317. (Dix)

8655.0 UAI-Nakhodka Radio, USSR heard at 1103 with a V CW marker. (Dix)

8690.0 3DP3-Suva Radio, Fiji sending a CQ CW marker at 0948. (Dix)

8698.0 FJP8-Noumea Radio, New Caledonia with CQ CW marker at 0952. (Dix)

8762.3 VRT-Bermuda Radio working unid cruise ship with phone patch in USB. Talked about arranging a rendezvous for transfer of a straight jacketed mental patient in USB at 0158. (Bonnett-OH)

8765.4 GKC-Portishead Marine Radio, England working the QE II with passenger phone patches in USB at 0130. (Bonnett-OH)

8864.0 Shannon ATC, Ireland working Clipper 46 with a position report in USB at 0258. (Dix)

8967.0 Trenton Military to Bandsaw Kilo (AWACS aircraft) with phone patch to Tinker AFB in USB at 1320. (Brinkley-CA)

8984.0 NMA-USCG COMSTA Miami, Fl working Teal 40 aircraft at 0155 in

USB. Comms started on 5696 and moved here. This was a SAR operation. (Henry Brown-MA) *Thanks for the log Henry and welcome to Utility World-Ed.*

8989.0 Drawback called Parity (SAC CP at Hickam Autovon 455-0111) through McClellan GCCS at 1445 in USB. (Brinkley-CA)

8993.0 Foggy 69 (KC-130) working Lana 53/54 (both H-53 helo's) during a refueling exercise with a phone patch to Raymond 15 (31st TFW, Homestead AFB, FL) via MacDill GCCS at 0149 in USB. (Ricks-PA)

9023.0 Channel "Black Jack" with Sierra Pete (NORAD Northern California intercept control) to Big Foot (NORAD Oregon, Washington intercept control). Big Foot's cipher was broken (no lead or lag tone only the data tones) so they went to land line. In USB between 1445-1457. (Brinkley-CA) Bandsaw Hotel calling Bandsaw India but no copy at 1543 in USB. Then heard Bravo Hotel calling Hotel Alpha (see 11214). At 2345 Smokeysam worked Butterfly. They then went to 20389.0 and went to green. Smokeysam then told Butterfly to meet him on 338.4 AM for tracking. (Yekich-NY)

9070.0 Male english 3/2-digit numbers broadcast heard at 1703 followed by burst-type transmission, ending at 1705 with two tones in USB. (Hurley-MD)

9155.8 WLO-Mobile Radio, AL with radio fax chart of the Gulf of Mexico followed by a chart of North American weather features. 576/120 at 0312. (Bilodeau-IL)

10277.0 Calibash working Problem with radio checks in USB and RTTY at 1700. (Frantz-GA)

10495.0 3C calling 6X for radio check in USB at 1305. Called often but no reply. (Frantz-GA)

10780.0 Cape Radio working Track Star. Signal checks, then went to 350.6 UHF but no contact. Returned to 10780 in USB at 1235. (Frantz-GA)

10797.5 LGB with SMV and others at 1025 in USB. Radio checks then sent RTTY. (Frantz-GA)

11027.5 9RL31Q-Zaire Center, Kinshasa AFTN with overflight message in reference to a Swiss Red Cross medivac flight at 0025. RTTY 425/50R. (Ricks-PA)

11179.0 AF12-Loring AFB, ME working aircraft LM66 with a phone patch in USB at 2123. (Dix)

11214.0 Bandsaw Kilo called Bandsaw Hotel and was QSY'ed to 9023 by Edmonton Military at 1312 in USB. (Brinkley-CA) Hotel Alpha calling Charlie Delta with no copy in USB at 2020. Deepcut called Raymond 24 on Charlie 6 at 2204 in USB. (Yekich-NY)

11225.5 In LSB noted several truckers using very foul language between 1500-1609. (Brinkley-CA) *Oh boy Is this going to be a new CB band. I am sure the military will appreciate it-Ed.*

11226.0 Drawback working Parity (see 8989) on channel X-905 in USB at 1455. (Brinkley-CA)

11445.0 FDY-Orleans Air, France with CW V marker at 2127. (Dix)
11467.0 AFA-Andrews AFB, MD working SAM 200 in USB at 1628. (Brian Johnson-San Diego, CA)

12525.5 UTDX-Soviet tracking ship Kosmonaut Pavel Belyayev with traffic for URD Leningrad Radio at 0316. Enroute to Buenos Aires for fuel water. RTTY 170/50. (Ricks-PA)

12560.0 Fishing fleets discussing sea conditions, catches, Jamaican accents and locations in USB at 1530. (Frantz-GA)

12682.5 PNK-Jayapura Radio, Indonesia sending a CQ CW marker at 0942. (Dix)

12714.0 UXN-Arkangelsk Radio, USSR with a CW DE marker at 1055. (Dix)

12714.0 English female 3/2-digit number station in AM at 0022. (Dix)

12720.0 UPB-Providencia Bukhta Radio, USSR sending a CQ CW marker at 2203. (Dix)

13051.5 WPD-Tampa Radio, FL sending a CW CQ marker at 1905. (Hawkins-MS)

13247.0 Rubi Red working command center on W109 with ops in USB at 2240. Best Neighbor working Paradise with signal check at 0004. Narration working Kingcrab, Firelight, and Readymaid at 0055. (Yekich-NY)

13267.0 NOAA 42/43 (WP-3D Orion weather recon aircraft) in comms with KJY-74, National Hurricane Center, Coral Gables, FL in USB at 1825. NOAA aircraft were flying out of San Juan, PR. (Ricks-PA)

14369.7 HZJ-Jeddah, Saudi Arabia sending RYRYRY DE HZJ at 0411. RTTY 425/50N. (Bilodeau-IL)

14490.0 RNK36-Bakhtar Information Agency, Moscow, USSR with news in English at 0413. RTTY 425/50R. (Ricks-PA)

14497.0 CSY66-AFTN Santa Maria, Azores with estimate message for Air France flight enroute to Paris from Cayenne, French Guiana at 0136. RTTY 850/50R. (Ricks-PA)

14654.0 5BC68-Cyprus Radio Telephone Maritime Service with voice marker in English and Greek in USB at 0410. (Ricks-PA)

From someone going off the deep end (see 8762.3) to civil disobedience (see 5421.5) -- you just never know what you'll come up with when you dive into monitoring the utilities!

14775.0 PACOM 01 working Parity (see 8989) on PACAF channel Mike. PACOM 01 had a code 3 VIP on board. Heard with a phone patch to Andrews SAM command and Hickam CP at 1620 in USB. (Brinkley-CA)

15041.0 MOPUP 77 working Albrook GCCS, Panama in USB at 1545. (Wright-TX)

15084.0 CG Air Station Houston, Ellington Field, TX with communications checks to copter at 1800 in USB. The switched to 157.050 then 381.000 MHz. (Wright-TX)

16705.0 UWQS-Soviet M/V Kildinskij Proliv with Russian traffic via Y5M-Ruegen Radio, GDR at 1429. RTTY 170/50. (Ricks-PA)

16870.0 RIT-Moscow Naval Radio, USSR heard with a V CW marker at 2103. (Dix)

16897.5 OXZ82-Lyngby Radio, Denmark with a CQ CW marker at 1735. (Hawkins-PA)

16912.0 OVC/OVH-Groennedal/Ostgroendlanske Naval Radio, Greenland monitored with a DE CW marker at 2053. (Dix)

16949.0 UPW2-Liepata Radio, Latvian SSR heard at 1924 with CQ CW marker. (Dix)

16955.0 UFL-Vladivostok Radio, USSR heard working an unid station in CW at 1012. (dix)

17050.4 4XZ-Haifa Naval Radio, Israel sending a V CW marker and 5L groups at 0209. (Hawkins-MS)

17075.0 ZSD-Durban Radio, South Africa with a CQ CW marker at 1120. (Dix)

17087.0 YDI-Constanta Radio, Indonesia working YDGD in CW at 1936. (Dix)

17100.0 UDA4-Murmansk Radio, USSR working 4LS in CW at 2148. (Dix)

17146.4 4XO-Haifa Radio, Israel at 0145 with a CQ CW marker//17060. (Hawkins-MS)

17163.0 RNO-Moscow Radio, USSR sending a CQ CW marker and traffic list at 1131. (Dix)

17170.4 CNP-Casablanca Radio, Morocco with a CQ CW marker at 1133 with QRM from WLO. (Dix) ZLB-6-Awarua Radio, New Zealand CW marker consist of DE/frequencies at 0150. (Hawkins-MS)

17177.6 DAL-Norddeich Radio, West Garmany with a V CW marker at 1745. (Hawkins-MS)

17188.0 SVD-Athens Radio, Greece heard at 0225 with DE CW marker. (Hawkins-MS)

18023.0 WGY-903 FEMA Olney, MD working phone patches and rescue traffic at 2200 in USB. Andrews working unid aircraft at 1450 in USB. Said switching to Mystic Star channel 232 or 439. And finally Bern radio working N33C, said switching to 21988 at 1528 in USB. (Brinkley-CA)

18542.5 WFK48-USIA Washington, DC with 425/75R RTTY news bulletins to stations in English at 2005. (Hawkins-MS)

21070.5 Cuban Minirex diplomatic messages sent using 170/50N RTTY to Angola in the 15 meter ham band at 1945. (Hawkins-MS) *Time to lodge another formal complaint on another communist nation ute in the ham bands-Ed.*

21964.0 New York LDOC working various aircraft in USB at 1710. (Wright-TX)

21988.0 Bern Radio working N33C but two weak to really ID (see 18023) at 1530 in USB. (Brinkley-CA)

22409.0 JOR-Nagasaki Radio, Japan with CQ CW marker at 0128. (Dix)

22482.0 HLG-Seoul Radio, South Korea sending a CQ CW marker at 0130. (Dix)

25705.0 Noted two fisherman talking at 1641 in the FM mode. (Wright-TX)

26135.0 Heard alternating tones on this channel at 2007. (Wright-TX)

26665.0 The Captain John and the Captain Butch off the coast of Galveston discussing taking George to a hospital at 1701 in USB. (Wright-TX)

The Scanning Report

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The Four Hundred Dollar Diode

With the introduction of Radio Shack's moderately priced PRO-2004, scanner buffs were suddenly launched into a new era of scanning. It was now possible to scan nearly every portion of the VHF/UHF spectrum. Better yet, it was now possible to store 300 separate frequencies into one scanner radio.

At first, the storage capacity of the radio seemed more than adequate. But when curious scanner buffs began poking around in the innards of the radio, they made a startling discovery. The channel capacity of the radio could be increased to 400 by simply cutting a single diode. It was the revenge of the scanner people. It didn't matter if we actually needed the extra channel capacity; we simply cut the diode as a matter of principle.

From the moment it appeared on the market, the PRO-2004 was plagued with problems. One of the main culprits was poor soldering across the entire Central Processing Board. Cold solder joints were especially troublesome. Over a period of time, the joints would lose their conductivity and the radio would develop some very unusual symptoms.

In addition to the soldering problems, the complex circuitry and lack of replacement parts made the radio unrepairable by most TV/radio repair shops. If your PRO-2004 broke, only Radio Shack could fix it. At first, it didn't seem all that bad. Heck, since Radio Shack made the radio, let them fix it. Right?

Yes and no. If your PRO 2004 was under warranty, you simply sent it back and Radio Shack replaced it with a brand, spanking new PRO 2005 if it was found to be unrepairable. The problem is that when scanner buffs began cutting diodes, they were simultaneously voiding thousands of radio warranties. Your diode cutting effectively released Radio Shack from their responsibility to repair the radio.

Now, don't misunderstand me. The PRO-2004 is a good radio. I've got one in my shack. But there are PRO-2004s out there with serious flaws in workmanship. As a result, some of the units are destined to break down. True, there are thousands of PRO-2004s out there that have never experienced a problem and never will. But there are thousands of others that have failed.

So how do we protect ourselves? First, if you have an unmodified PRO-2004, consider leaving it that way at least until the standard one year warranty runs out. You might even want to get Radio Shack's extended five year warranty. With the five year plan, Radio Shack will fix or replace your PRO-2004 until the year 1995.

Sure, I know what you guys are thinking. "Bob Kay has finally lost all his marbles. Instead of telling us how to modify our radios, he's selling warranties for Radio Shack."

Well, you can all relax. I'm still the same old Bob. If you have one of these radios and you void the warranty, Radio Shack isn't under any responsibility to you. On the other hand, if you extend the warranty for five years, you have effectively put a five year burden on Radio Shack. If your PRO-2004 breaks during that period, you simply take the radio back and pray that they can't fix it. An unrepairable radio is simply replaced. And if several years have passed, you might just end up with a PRO-2006!

To cut or not to cut: it's not an easy decision. However, we can help one another. If you know a good reliable firm that repairs the 2004, drop me a line and tell me about it. I'd certainly be willing to publish such a list.

In the meantime, don't cut that diode without giving it some serious thought -- it could turn out to be a four hundred dollar mistake.

Thinking about cutting that diode on your PRO-2004?

MT Treasure Hunt

I don't mind telling you guys I'm disappointed. In January's column, I asked everyone to forget about the AR 950 scanner radio. If no one responded, I was simply going to keep the radio. Heck, it seemed fair to me.

However, it didn't turn out that way. Your response to our first Treasure Hunt of 1990 has been nothing less than phenomenal. Since you are not about to let me keep the AR 950, I might as well tell you about it. (Darn!)

The folks at Ace Communications have donated a 100 channel AR 950 as the prize for our January/February hunt. The AR 950 has five separate banks consisting of 20 channels. The scanner is complete with a mobile mounting bracket, 12-volt wiring harness, and a 12-volt wall transformer for base installation.

The 950 is super sensitive, and as I mentioned last month, it is simply great for monitoring low power signals from cordless phones or baby monitors. If you are not interested in low power monitoring, you might want to try scanning the factory installed cellular bands. Yes, that's right. This little baby comes ready and willing to walk through the forbidden world of cellular communications. There's no need to cut or add a diode. You simply turn it on and scan.

When you send in your answers, remember that incorrect entries will be discarded. If you want your answers verified, please provide an SASE. All entries that correctly answer the clues will be placed in a box, and one lucky winner will be selected by a random drawing.

1. Provide the nationwide primary command post frequency of the Secret Service.
2. Provide two frequencies that are used nationwide by the Office of Engraving and Printing.
3. What image frequency would I enter into a Bearcat 800 XLT if I wanted to monitor 405.00 MHz?
4. The cordless phone base unit transmits a duplex signal. (True or False?)
5. Name a scanner radio that offers a CTCSS, Tone Squelch option.

This is your last month to win the AR 950. To enter, simply send your answers to the Treasure Hunt, P.O. Box 98, Brasstown,

NC 28902. To be eligible, all entries must be postmarked by February 28. Good Luck.

And congratulations to the winners in the last 1989 Treasure Hunt: P. Christie of Bartlett, Tennessee, and Warren Stehman, Jr., of Mount Joy, Pennsylvania, are now the proud owners of two Optoelectronic Frequency Counters, and Gary Bills of Lynn Haven, Florida, and Don Koblischke of Denver, Colorado, won the two lamps from Littlite, CAE, Inc.

Frequency Exchange

Anyone interested in the frequency for Collier and Lee counties, Florida? Michelle Shute has provided approximately 500 frequencies for your listening enjoyment. In addition to Michelle's list, John Robinson of Lakeland, Florida, has provided approximately 120 frequencies for Polk County, Florida.

Michelle's list includes the Everglades Sheriff -- 155.820, Naples fire -- 154.295, Florida State University -- 154.725, Pensacola NAS Police -- 140.40, NAS crash crews -- 148.350, and Eglin AFB security police -- 163.375.

John's list includes the following: State parks -- 44.76, Florida Inland Water Ways -- 44.80, Fresh Water Fish and Game -- 151.6, Florida Highway Patrol -- 154.665, Forestry -- 159.240, U.S. Marshals -- 163.20, and the city of Lakeland garbage collectors -- 855.7375.

I'll send both lists to your door step for three bucks and a business size SASE. Send your request to Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

If you are enjoying the warm Florida sun, our next stop is guaranteed to chase away all of those winter chills. Welcome to Puerto Rico! Edwin Berries sent in over 600 frequencies for the Policia (Police), Bomberos (Fire Department), Energia Electrica (Power Company), Auto Carreteras (Highway Authority), and Correccion-Adm de (Bureau of Prisons). In addition to the Puerto Rico loggings, there are numerous listings for nearby U.S. installations as well. Here's a peek at the list:

150.995	Policia Governor
154.775	Aquadilla, Municipio
155.550	Policia, Island Wide
284.000	Cape Operations
456.625	Chevron Industries
436.200	Energia Electrica-Aut. de
452.975	San Juan Star
457.975	San Juan Star

If you are planning to visit Puerto Rico, brush up on your Spanish and send for Ed's list. It's yours for two bucks and an SASE.

From the warm beaches of Puerto Rico, we dash northward to the cold bitter air of Baltimore, Maryland.

173.225	Baltimore Sun Circulation Department
173.375	Editorial assignments
155.715	Towson University Police
453.450	Correctional Adjustment Center
153.86	Maryland State Prison
458.10	Curtis Bay drawbridge
450.4875	Metro Traffic Control
161.76	WGRX FM Traffic Copter
452.575	AAA Auto Club

The above frequencies were provided by "Izak." Scanner buffs who want additional Baltimore area frequencies are invited to contact Izak by writing to the Frequency Exchange.

Rocky Mount, North Carolina, is our next stop. John S. Moore is new to our hobby and has provided the following airport frequencies.

Los Angeles International (LAX)

Advisory	119.5
Weather	122.5
LA Center	128.2
LA Center	128.5
Departure	120.35
Departure	124.30
Ground	121.75
Ground	121.65
Ground	121.4

Burbank, CA

Departure	124.6
Approach	120.4

Long Beach, CA

Advisory	122.4
Tower	119.4
Ground	121.9

New York -- La Guardia (LGA)

Tower	118.7
Departure	120.14
Departure	120.75
Ground	121.7

Welcome aboard, John! We look forward to seeing your future loggings as well.

Ready for a trip to the beach? Oh, don't be a sissy. The shore line of New Jersey won't be that cold -- trust me:

Ocean City Police	460.350
Ocean City Fire	154.445
Somerspoint Police	155.625
Somerspoint Fire	154.205
Ocean City Rescue	155.295
Rescue to Hospital	155.340
Ocean City Public Works	153.845
Atlantic City Police	155.130
Atlantic City Police	460.150
Longport, Ventnor, Margate	155.535
NJ State Police	154.910
NJ State Police	44.940
Sheriff	155.685
Egg Harbor Township Police	155.655
Marine Police	159.300
Atlantic County Sheriff	155.070
Pleasantville Police	155.595
Atlantic County Police	156.210
Atlantic County Rescue	155.175

If you're cold and wet from the ocean spray, don't blame me. The above list came from Patrick Piriano. By the way, Pat did remind everyone to bring a towel. Did I forget to mention that?

Since our feet are already wet, let's visit with Todd Priday in the town of Franklin Lakes, New Jersey. Todd indicates that the following frequencies are new listings that are not widely known.

Are Congressmen and Senators monitoring cellular phone calls? Bob Kay seems to think so.

Franklin Lakes Mutual Aid	158.73
Medical Dispatch	159.09
Medical Dispatch Channel A	158.79

If you would like to have the Frequency Exchange visit your town, send your favorite frequencies to the Frequency Exchange, P.O. Box 98, Brasstown, NC 28902.

Monitoring Miami's Baby Monitors

The folks in North Miami are complaining that their baby monitors are picking up the neighbors' kids. "I hear babies crying all night, and they are not mine," reported one mother. When angry residents contacted the manufacturers of the baby monitoring devices, the company was sympathetic, but it couldn't offer any solutions.

"Baby monitor frequencies are limited," a company spokesman said. "If there is a concentration of these devices in one area, the possibility of two or more of the devices operating on the same frequency is possible."

Do we have any scanner buffs living in North Miami? If so, need I say more? (News clipping from W. Earle Doan, Collingswood, NJ)

Cellular Party Line

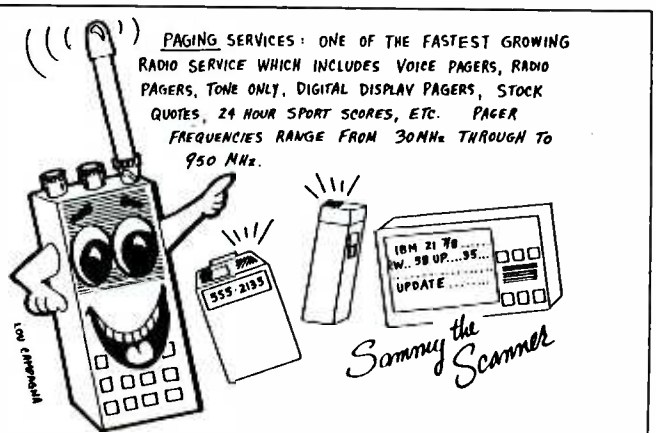
A councilwoman in Albany, New York, made some politically sensitive and potentially embarrassing remarks on her cellular car phone. Another political candidate taped her conversation from a scanner radio and then gave it to a news reporter.

When the councilwoman saw her conversation repeated verbatim in the local newspaper, she was surprised to learn that her cellular phone conversation had been monitored.

I don't know about you, but there is something about this story that just doesn't fit together. First of all, the person that monitored the phone call wasn't a scanner buff. The article referred to that individual as a "political" candidate. I guess it's safe to assume that both candidates were running for the same office.

As scanner buffs, we all realize that cellular monitoring is a game of chance. Sure, it's easy to monitor thousands of conversations, but attempting to locate the conversation of a friend (or rival candidate) would be nearly impossible.

With that in mind, there can only be one other solution. Some political candidates must assign people to monitor and record random cellular conversations. If they get lucky and record something interesting, the information is then used to smudge the campaign of the rival candidate.



Northeast Scanning News: 212 W. Broad St., Paulsboro, NJ 08066

Well, what do you think? Are political candidates taping the cellular bands? And what about elected officials? Are congressmen and senators monitoring the cellular bands in Washington DC? Give it some thought. Then send those thoughts to the Scanning Report, P.O. Box 98, Brasstown, NC 28902.

Computer Added Dispatch

The more familiar name is "CAD." A lot of readers have asked me to explain exactly what it is. Computer Added Dispatch simply means that a computer terminal has been added to the patrol car. A CAD system enables the patrol officer to make routine license and vehicle checks by accessing the information through a small computer.

The computer uses a frequency specified as a "data" channel. If you monitor this frequency, you simply hear musical "beeps." These weird noises are the computer voices of the CAD system. Some of the newer CAD systems are using hand-held portable computers that use a repeater system to access the central computer.

Yeah, I know what you are thinking. "Can these signals be monitored?" Not with a conventional scanner. But don't get discouraged. All of the results are not in.

If you are interested in exploring the possibility of decoding a data transmission, why not take a crack at it? If you fail, don't be afraid to write and tell me about it. If I print what doesn't work, perhaps it will help someone find a solution.

FAX Antenna

Some of you are already doing crazy things. And I guess that I'm partially to blame. In past columns I've provided plans for building a cordless antenna, listed the baby monitor frequencies and dared folks to monitor cellular phones.

So, I wasn't really surprised when a reader wrote and inquired about feeding his FAX machine from a rooftop antenna. Hey, don't laugh. There may be something to this. Anyone care to investigate further?

Itinerant Secrets

The itinerant frequencies can be very interesting. There's no way of telling who might be using a particular frequency. However, I never expected to find a law enforcement agency using an itinerant frequency for surveillance.

After monitoring the frequency on a twenty-four hour basis, I've come to realize that the operation is quite sensitive. After it has ended, I'll share the frequency with everyone. For now, here's a list of the more popular itinerant frequencies that are in use nationwide: 151.625, 154.570, 154.600, 464.500, 464.550

Punch them into your scanner and listen. You might be surprised. In the meantime, you are invited to share your monitoring frequencies and ideas with everyone. If you are new to the hobby, don't be intimidated if your list doesn't include federal and military frequencies. Everyone is invited to contribute, and every list is unique in one way or another.

Computerized lists are also welcomed. It doesn't matter if you send 5-1/4 or 3-1/2 inch disks. However, all software must be in standard MOS/DOS, ASCII format.

So get typing and send me your frequency list. All requests for anonymity will be granted. If you want to use a "secret" code name, feel free to do do. Just don't keep your frequencies a secret. Send them to the Scanning Report, P.O. Box 98, Brasstown, NC 28902. Keep on scanning!

Soup up with our Super Amplifier!!

Introducing a brand new product,the ***Super Amplifier™*** *is a compact pre-amp designed to work with scanners and it amplifies the reception of the VHF/UHF bands (from 100MHz to 1GHz) as high as 20db. The* ***Super Amplifier™*** *has an adjustable gain which is controlled from the back of the unit and allows amplification level of up to 20db through all frequencies, equipped with a bypass switch to return to normal scanning frequencies. As with all other GRE products, you will find the quality and design of the* ***Super Amplifier™*** *to be of the highest standard.*

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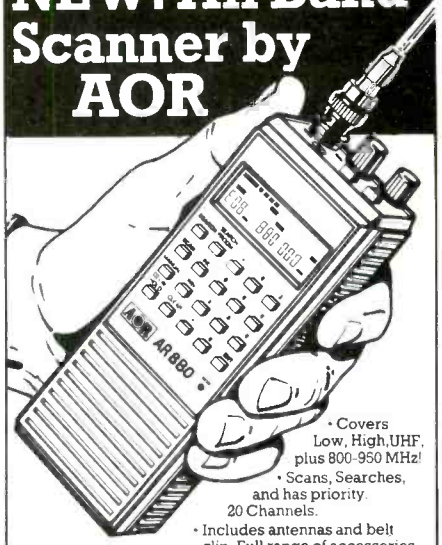
NEW! All Band Scanner by AOR



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CITIZEN'S GUIDE TO SCANNING

Bob Kay's Best Selling Book

A complete guide to scanning by popular *MT* columnist Bob Kay. A soup-to-nuts book complete with exhaustive frequency lists. A great book for anyone who scans -- wants to. $12.95 + 1.20 book rate or 2.30 UPS from DX Radio Supply, Box 360, Wagontown, PA 19376.

what's new?

Pirate Radio Directory

The new 1990 edition of *the Pirate Radio Directory* is now available. The book features basic information on how to hear pirates, where to tune them in and when they're usually on. The directory also has tips on how to QSL pirates as well as a bibliography of information sources on pirate broadcasting.

The main part of the book, however, is station-by-station profiles of some 100 pirate broadcasters heard in the previous year. Each profile gives historical information, when it was first heard and data on the station's programming.

It's a great book, written by one of the leading pirate experts, George Zeller.

The 1990 *Pirate Radio Directory* is available from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376 for $7.95 plus .90 bookrate or 2.30 UPS.

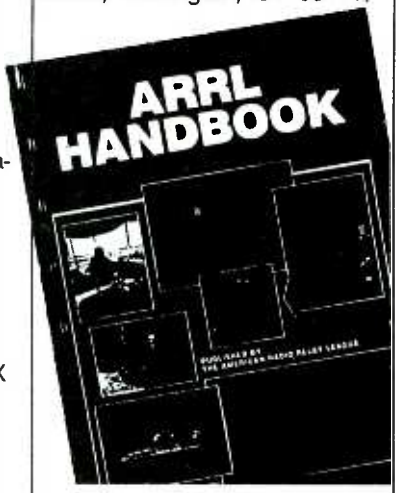
ARRL Handbook

Each year, the ARRL publishes an updated handbook; some chapters are virtually identical to previous years' pages while others are extensively revised. This year's volume is the most concentrated offering of useful technical information for the radio hobbyist for the lowest cost in existence.

Over two inches thick and exhaustively illustrated, the 1990 *ARRL Handbook* maintains its superb printing quality and easy reading. Whether you are interested in ham radio or simply want to know more details about the miracle of radio communications, the *Handbook* is the undisputed leader.

Forty separate chapters cover receivers, transmitters, antennas, electronic components, audio and power supply circuitry, test equipment and measurements, communications techniques, radio direction finding, accessories, space communications, conversion tables and much more.

Engineer or hobbyist, the *ARRL Handbook* speaks the common language. It's $23 from amateur radio dealers and the American Radio Relay League, 225 Main Street, Newington, CT 06111.



GRE Rubber Duckie

Occasionally, for whatever reason--breakage, theft, loss, experimentation--the owner of a hand-held scanner seeks a replacement flexible antenna. GRE America (425 Harbor Blvd, Belmont, CA 94002; phone 415-591-1400) has released such an antenna which they claim has slightly improved reception over the original whip provided by the manufacturers.

Black with a red cap and equipped with a standard BNC connector, the GRE antenna is 8 inches long, about 1-1/2" longer than the stock Bearcat flex whip. In A/B tests conducted at *MT* headquarters, there was little difference noted, but there may be some edge for the longer whip under marginal receiving conditions.

The GRE antenna sells for under $20 from GRE, and liberal quantity discounts are available for qualifying dealers.

Railroad Compendium

For many of us, railroad trains reflect a longing for the past; they are a vestige of a simpler time. Yet modern railroads have continued to evolve. The *Compendium of American Railroad Frequencies* tells scanner enthusiasts how to tune in to today's railways.

Alphabetized by railroad name, listings are categorized as commercial, industrial, transit, museum and tourist lines, and foreign railroads. Data includes headquarters locations, operating yards and states, markings and flags, radio frequencies and use for each frequency.

Although the compendium uses very small, closely-spaced print, the information is concise and easy to find. Introductory text provides definitions of railroad terminology and common abbreviations.

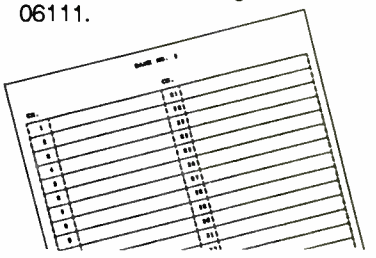
The *Compendium* is compiled by Gary L. Sturm and Mark J. Landgraf; available for $7 plus $2 shipping from Gary L. Sturm, 7629 Westford Court, Ft. Wayne, IN 46835.

Tune in the World

The lure of amateur radio has invited hundreds of thousands of Americans, young and old, to participate in an international fraternity of service, good will and just plain fun. Now in its eighth edition, the ARRL's *Tune in the World With Ham Radio* continues to inspire potential hams. It is also an excellent training manual for instructors.

Professionally written and profusely illustrated, *Tune In* contains chapters to encourage and excite newcomers with its accounts of expeditions, contests, experiments, famous hams and other perks of associating with the hobby. Other chapters explain equipment and accessories, antennas, operating procedures and even questions to prepare for the Novice Class license exam.

Tune In is an excellent springboard for the budding ham, either for you or for someone you know. The cost is $14 from the American Radio Relay League, 215 Main Street, Newington, CT 06111.



Das Scanner Indexing System

Scanners are offering more and more memory space; To avoid the ensuing confusion, is there a convenient way to keep track of all these channels? What if we want to change frequencies?

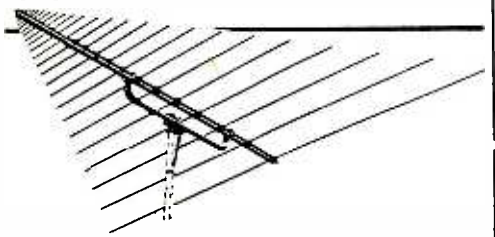
Dale Hillyard has come up with a very clever scheme which should make ardent scanner fans very happy -- printed forms with erasable overlays so that water-erasable pen entries can be

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

changed as often as desired.

Dale's printed forms are available for single, 40-channel banks ($7.95) or multiple banks of up to 400 channels ($12.95). He offers dividers ($.25), protective covers ($.20) and printed and numbered sheets ($.15). Custom configurations can be quoted from your specifications. And if you can't find a three-ring binder, Dale can provide that, too, for $5.

For this nifty erasable-pen channel/-frequency indexing system in looseleaf format, send your order to Dale Hillyard, 466 Niles Way, Reno, NV 89506. Call 702-972-7958 for additional information.



CREATE CLP 5130-1 VHF/UHF ANTENNA

$250 seems like a great deal of money to spend on an antenna, especially since most scanners average that amount. Can an antenna really be worth that much? We decided to have a closer look at the Creative Design Company's CLP 5130-1 log periodic dipole array and find out.

The obvious antenna to compare it with was the Grove ANT-1B Scanner Beam, the only other log periodic on the market for scanners. At only $52.95, what could be wrong with it to justify paying five times as much for the CPL 5130-1?

Assembling the Create

While the Scanner Beam comes factory-preassembled, requiring only pulling the elements away from the boom and snapping them into place, the Create comes as a kit. Even with its excellent manual, the CPL 5130-1 takes at least two hours to assemble.

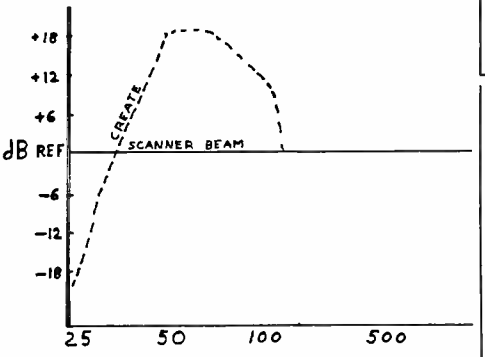
But whereas the Grove Scanner Beam is constructed of TV-type rolled aluminum tubing riveted into position, the Create is a professional transmitting antenna, utilizing heavy-gauge, seamless aluminum tubing mounted in strong element supports, all held together with plated machine screws.

When the Grove antenna is mounted securely to its mast, the U-clamps crease the boom slightly; the Create antenna employs a rugged, cast magnesium alloy bracket. The Grove measures approximately 4'Lx9'H) and uses 11 dipole elements; the Create measures approximately 7'Lx10'H and utilizes 25 elements.

The Grove antenna uses a TV balun transformer to match coaxial cable to its nominal 300 ohm impedance; the Create antenna's 50-ohm design impedance is fed directly by coax line (an N connector is provided). Both antennas may be mounted in either horizontal or vertical polarization. For scanner reception, vertical is the clear choice.

The Test

Before mounting the CLP 5130-1 in place on the tower, a number of reference signal level readings were taken with the Scanner Beam connected to an ICOM R7000 receiver. The Grove was then taken down and the Create hoisted in its place.



As seen from the accompanying graph, the Create was superior between about 49 and 110 MHz and the Grove was better below about 35 MHz. This was predictable since the Create is a true log periodic design with a sharp rolloff below 50 MHz, while the Grove is a hybrid log periodic with parasitic elements to enhance certain frequency ranges and one omnidirectional low band element at the rear.

What wasn't expected was that above 118 MHz the two antennas performed virtually identically! On high band, UHF military and land mobile, and 800 MHz the S meter showed no difference whatsoever, either in gain or directivity.

The bottom line

For transmitting purposes (the Create will accept 500 watts PEP at under 2:1 VSWR throughout its bandwidth, while the Grove is rated at less than 50 watts PEP and has considerably more "ripple"), for durability, and for directional low band characteristics, the Create is clearly superior.

For less stringent, economical, compact monitoring installations where listening between 35 and 118 MHz is secondary to 118-l000 MHz, the Scanner Beam works admirably.

(Create CPL 5031-1 antenna, $249.95 plus $6 shipping from Electronic Equipment Bank, 516A Mill Street NE, Vienna, VA 22180; order phone 1-800-368-3270)

INPUT and FEEDBACK

When it comes from our readers, it's our favorite terminology. Send us your QSLs, pics of your monitoring post, your letters to the editor; let the columnists know your tips, experiences, and opinions! *MT* will be all the better for it.

T.J. "Skip" Arey WB2GHA

Tools You Can Use

Sometimes in the dead of winter, when the weather is looking particularly bleak and snowy, I find myself staring into the flames of the fireplace. I think of times gone by. I recall, for instance, getting into trouble as a tyke. I was always getting into Dear Old Dad's toolbox. Like many kids, I was always taking something apart to try to figure out how it worked.

Well, anyway, after more than one trip to my room for trying to fix my bicycle with a hammer, Daddy finally got smart and bought me my own little toolbox.

When is this going to have something to do with radio, Uncle Skip???

Well, I guess I am here to say that my toolbox has grown and changed over the years. But, early on, I learned the importance of good tools and making good use of them.

Every newcomer to the radio monitoring hobby will reach the point that they want to try their hand at some form of electronics repair or construction. I have yet to see a piece of equipment made that could not benefit from improvement at the hands of a dedicated hobbyist.

For example, if you have been following Rich Arland's "Experimenter's Workshop" or Doug DeMaw's "Workbench" column, you are probably of the mind to warm up a soldering iron and build some exciting gadget or other.

But first things first. In order to build something, you're gonna need some tools. And while I am sure that more than a few folks out there in monitoring land have, at one time or another, expressed a strong desire to take a hammer to their receiver, you must know that there are much better tools to do the job. So roll up your sleeves, Sancho! We are about to wander through --

UNCLE SKIP'S GUIDE TO TOOLS

There are really only two ground rules to getting into the tool game.

First, buy the highest quality tools you can afford. Old Uncle Skip has bought a lot of tools over the years and I can attest to the fact that you will always get what you pay for. You can buy a complete set of "bargain" screwdrivers for $3.00, but, in the long run, you will be happier with namebrand lifetime-guaranteed screwdrivers even though they might cost $3.00 each.

Good tools are things you pass down to your progeny. Drop by my shack sometime and I'll show you my Snap-On #60 Ratchet Wrench, in continuous use for four generations!

Last, but not least, NEVER NEVER NEVER loan your tools to anyone! It is a basic law of physics that all tools loaned out to other people disappear down a Black Hole long before they are ever returned. Don't mess with the cosmos, folks!

If you hope to build the next GROVE SR-1000 or ICOM R-9000, you are going to need to start out by acquiring at least the following tools:

Long-nosed pliers
Diagonal cutters
Screwdrivers (regular and Phillips head)
Wire stripper
Soldering iron
Heat sink
Nut drivers
VOM meter
1/4 inch drill and bits

This little collection of goodies can be picked up, over time, for a few dollars a week. But even this modest collection of tools will allow you to perform all but the most exacting radio construction and repair tasks.

So let's take a look at what we are purchasing here. One general comment on purchasing standard tools such as screwdrivers, pliers, and wrenches: As you wander down the aisle of your local hardware store, you will notice that most tools come in a variety of "sizes," meaning the overall length of the tool and not its particular head size. Most common are four, six, and eight inch lengths.

You will find that, in most cases, either the four or six inch size will work best for playing inside radios. As components become smaller and more cramped together, I find myself reaching for the four inch tools more often. But if you are working on good old tube rigs, you can relax and make use of whatever size comes to hand.

LONG-NOSED PLIERS

There are long-nosed pliers and then there are long-nosed pliers. You can find them with short stubby noses and long thin pinpointy noses. To start out, pick up a pair somewhere in the middle. As your tool collection grows, you might consider adding a pair of bent-nosed pliers for hard to reach places. If you put a strong rubber band around the handles you can even use this tool as a heat sink. Most come with a wire cutter edge.

Since you are working around electricity, you will surely want to purchase a pair that has insulated handles, both to cushion your grip and keep your nose from lighting up!

DIAGONAL CUTTERS

You will probably never make use of the "side cutter" on the edge of your long-nosed pliers because you will be using your diagonal cutters for all your wire cutting tasks. Needless to say, the size of the wire you will be cutting will dictate the optimal size of your cutters. Those six-inch cutters will get you through 12 gauge or smaller wire, but if you are going to cut any multiple material wire such as coaxial cable, you will want to also pick up a pair of heavy duty "lineman's" pliers.

SCREWDRIVERS

There have been entire books written on the subject of screwdrivers (probably). And when you delve into the subject you will find that there are many different kinds of screwdrivers to choose from. But all we are interested in today would be a couple of 1/4 inch and 5/16 inch tipped regular blade screwdrivers.

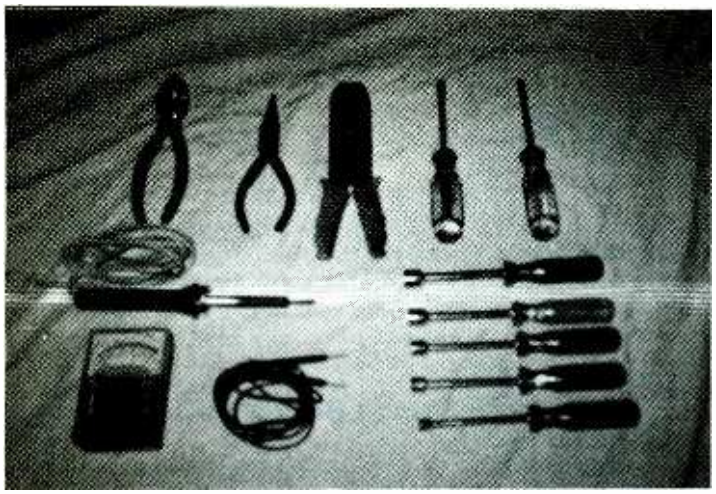
Add in #1 and #2 head Phillips screwdrivers and you will be all set to start taking the cases off every appliance in your house. When looking for quality of construction, keep in mind Chrome Vanadium or High Carbon Steel blades with ground tips. Anything less will twist its tip off the first time you encounter a particularly tough screw.

Also, using the wrong size screwdriver will most certainly damage the screw head and possibly damage even the highest quality screwdriver. Therefore, you will probably continue to buy screwdrivers of all shapes and sizes as your radio construction career progresses.

WIRE STRIPPERS

Old Uncle Skip has a way of turning adversity into success. I once fell off my skateboard and chipped one of my front teeth. Ever since, I have been blessed with the perfect 12 gauge wire stripper. But before the American Dental Association sends a SWAT team to Brasstown, allow me to state that it is much more practical to use a wirestripping tool for this task.

Most wire strippers look like a pair of pliers with a series of marked holes down the center. Inserting your wire in the appropriate gauge hole will strip the wire's insulation without damaging the inner conductor.



A few basic tools will allow you to construct most projects found in the pages of *Monitoring Times.*

SOLDERING IRON

Now here is a tool that has gone through some changes. It used to be that you could just hit the local Radio Shack for a 25 watt soldering iron and all would be right with the world. But with the advent of static sensitive components such as FET transistors and CMOS chips, one has to be a more careful shopper. You should shop for a soldering iron that has a grounded tip. They are easy to spot because they are the ones with a three-conductor power cord.

Look for an iron in the 25 watt range that has interchangeable tips. If, down the road, you plan to do a lot of work with antenna construction, you may want to invest in a 200 watt iron or gun to make those high-heat connections a breeze.

Never forget that electronics should only be soldered with rosin core solder. Acid core solder will corrode your components.

For the safety of your workbench top and possibly your happy home, make sure you purchase a sturdy soldering iron holder.

HEAT SINK

Many electronic components are sensitive to overheating. To avoid damage to components while soldering, it is wise to place a heat sink on the component lead to draw heat away from the component itself. Commercial heat sinks clip on with spring tension.

Alternatives can be, as mentioned above, a long-nosed pliers with a sound mechanical connection or a pair of surgical hemostats which can be purchased at any medical supplies store. Another trick you can use if the temperature factor is not too great is a big paper clip.

NUT DRIVERS

No, these aren't the guys in the demolition derby at the county fair. Nut drivers look like screwdrivers with socket wrench heads. They can usually be purchased in sets of six or so wrenches ranging in size from 1/8 inch to 1/2 inch for most electronics and appliance work. Larger sets tend to be for automotive repair. Some folks call these tools "spintights."

VOM METER

The Volt-Ohm-Milliammeter, also known as the Multitester, is a versatile meter that will allow even the novice electronics experimenter to do simple tasks such as checking batteries, measuring resistance, circuit tracing, and performing continuity checks. Literally hundreds of uses make this the essential meter for every workbench.

You will find both analog and digital multimeters out there in radioland. I find the analog readout units more useful because you can get a feel for the peaks as you make adjustments in whatever you are working on. Most digital meters don't update themselves fast enough to give you a good idea of this facet of measurement.

If you are going to graduate to receiver and transmitter alignment, you will want to save up for a VTVM or an FET-input multitester.

1/4 INCH DRILL AND BITS

It will not take you long to discover that you will need to drill lots of holes if you are going to build any radio gizmos. You can get away with a hand drill for most circuit boards, but if you are going to drill through metal cases or project boxes, you will need at least a light duty electric drill.

Since most of the drilling you will be doing is light duty work, you can save a little money by buying carbon steel drill bits as opposed to high-speed steel or carbide tipped bits.

LET'S GET TO WORK

Well, now you have enough tools to make yourself dangerous in your radio room. I feel compelled to remind everyone out there that tools are not toys. They must be treated with respect if they are to have long lives and are to be used safely.

Also, never forget that you will be using these tools in the world of electricity. Never perform repairs on energized equipment. Even though you are sure your piece of equipment is turned off and unplugged, always treat it as if it were energized. Observe safety precautions at all times. I don't want *Monitoring Times* to lose one single subscriber.

mt

Rod Pearson

Searching the Spectrum

In last month's column I talked about searching the last of the previously unexplored federal bands, the Military Aircraft band from 225-400 MHz. Well let's take a good look at the whole spectrum from 30-500 MHz and see where federal activity takes place.

The government has quite a few areas in the spectrum that the feds hang out on. Table One list these areas.

Table One
Federal Frequency Ranges

29.90 - 30.55	40.01 - 41.99	162.025 - 173.200
32.01 - 32.99	46.61 - 46.99*	173.4125 - 174.000
34.01 - 34.99	49.61 - 49.99*	225.000 - 400.000
36.01 - 36.99	138.00 -144.000	406.125 - 420.000
38.27 - 38.99	148.00 -150.100	

* Shared with Cordless Phones

Now that you have that handy table in front of you, what are you going to do with it? Well the best way to discover activity in your area is to run your scanner in the search mode within the above bands.

I don't want to lead you astray thinking that the only place you will find fed government radio activity is in the above frequency ranges. Nothing could be further from the truth. Remember we are talking about Uncle Sam and they make the laws. If a government agency needs cellular phone capability, then the equipment will be procured and given to that agency. Uncle Sam has popped up in weird places within the radio spectrum.

Many monitors have reported over the years, various government law enforcement agencies (i.e. - FBI, Secret Service, Customs, etc) showing up on state-wide intercity/interagency frequencies. Many states set frequencies such as 155.370. 154.950, 155.475 and many others aside for state agencies, sheriff offices, police departments, etc. to communicate amongst themselves.

The federal government in most cases also allocates these intercity type frequencies for use by their law enforcement agencies. When it comes to federal monitoring be prepared for the unexpected. For the most part however, Table One represents frequency ranges where federal activity is most concentrated and where federal stations are allocated for their operations.

So now you have Table One in front of you and you are ready to start searching for new activity in your area. Before you punch in that first frequency range, hold up a minute. You may first want to think about doing this search systematically.

Most seasoned veterans that monitor the federal channels will tell you that federal agencies do not transmit with the same frequency that, say, your local police or fire department does. Do not expect a continuous stream of calls on your local FBI channels. This lower rate of activity means that you will have to search a particular federal range for a longer length of time than you would a civilian range to record which channels are active.

The best recommendation I can give you is to spend a lot of time listening and also cut down the range of frequencies you are listening to. For instance, you would not want to search the entire 225 -400 MHz band at one shot. Not only will it take you a long time to search this large range but I guarantee you that you will miss a lot of activity.

The best policy is to search small segments within a particular range. I use a range usually of 500 kHz at a time and set on that range for a couple or three days.

During these initial searches it is a good idea to do them during the regular Monday - Friday work week. Government agencies don't work or have reduced staffs during the weekend and after the normal work day during the weekdays.

So it is time to start searching the spectrum of the federal government and be sure to write those new frequencies down. You just might want to refer back to them again.

Florida Border Patrol Revealed

Mr. CA just recently checked in for his first Fed File column and his contribution to this month's column covers the Department of Justice: US Border Patrol/Immigration and Naturalization Service in Florida. The following list represents the Florida statewide frequency and channel plan.

Dispatcher located in NE Miami
State of Florida Patrol Headquarters

162.8250	F1
162.9250	F2
163.6250	F3
163.6500	Krome Detention Camp (in Dade County, west of Miami
163.6750	F4
163.7250	F5
163.7750	F6

City	Mobile/Base (channels)
Key West Circuit---------	
Pennsuco	2/3
Miami	1/3
Florida City	1/5
Taverneer	1/4
Big Pine Key	1/3
Key West	2/4
West Coast Circuit-------	
Miles City	1/6
Alva	1/4
Arcadia	2/3
Myaccka City	1/5
Tampa	2/4
Clarmont	2/3
Winter Haven	1/6
East Coast Circuit-------	
Hillsborough	2/5
W Palm Beach	1/4
Ft Pierce	1/3
Ft Drum	1/5
Deer Park	1/4
Osteen	2/5
San Mateo	2/3
Lake Butler	1/5

Cross State Link---------
Lake Harbor 2/6

Thanks a bunch for the information CA and I hope to hear from you with more reports from there in the Sunshine state real soon.

Some Mail Catches Up

Some mail was recently forwarded from *Monitoring Times* headquarters.

✓ Richard Bradley in Tampa recently intercepted some low band government comms. Rich heard some comms on 31090 in USB related to the jet trainer crash on board the USS Lexington.

The callsign used by the Lexington was Spartan and they were talking to Store House, Pensacola Florida Base, BTF4, 402, and Foxfire. All these were code names about the plane crash on the flight deck of the Lexington and the transportation of the sailors to the pier in Pensacola. Richard heard these comms from 0144-0253 UTC.

Interesting piece of monitoring, Richard; I don't know if the Navy would verify such a reception or who you would send it to.

✓ Another Richard, Rich Ortloff in Honolulu, HI, recently sent *MT* some interesting information on a US Navy FACSFAC in Pearl Harbor, HI. The callsign used by this FACSFAC is Hula Dancer. The op areas covered by Hula Dancer include (Warning) W-189/190/191/192/193/194/195/196/ (Restricted) R-3104 & R-3107/W-187.

All areas operate on 127.0/308.1 primary, and secondary 280.7/132.0. There is one additional area which is controlled on a shared basis with Barking Sands (Pacific Missile Range Facility) W-188 East, Rainbow.

Rich mentions that Hula Dancer works with and in conjunction with the Air Force's Air Defense Identification Zone (ADIZ), callsign Baldwin & Coronet. Rich wonders if anyone has the frequencies for these folks.

✓ Phillip Cegielski in Reseda, California has checked in with a nice list of military aircraft frequencies from southern California. Some frequencies he has monitored for "Beaver Control" FACSFAC San Diego include:

Discrete frequency for air-to-air combat simulations 273.1, 301.1, 308.1, 354.9, 344.1 (usually a discrete freq for S-3 aircraft doing anti-submarine warfare), 277.8, 342.9, and 359.5.

Phil also says another group of interesting frequencies belongs to "Happy Hunter" (*Probably the interceptor control at Beaver-Ed.*). These frequencies include:

255.3 Happy Hunter Control, Discretes: 284.9, 285.8, 267.4, 318.7. Two aerial refueling frequencies that Phil has heard include 276.5 (usually conducted in W-291 op area by KC-130 aircraft from Marine Corps El Toro) and 354.4, the Edwards AFB area tanker frequency.

Phillip has also logged some Ground Control Approach (GCA) frequencies for both Miramar and El Toro. These include:

EL Toro GCA - 348.0, 255.1, 313.7, 343.7

Miramar GCA - 266.8, 253.1, 322.0, 363.6, 325.2

362.6 is a frequency used by Miramar for a "Paddles" frequency when naval aircraft are conducting carrier qualifications or FCLP's (Field Carrier Landing Practice). Phillip would also like to know if anyone has the frequencies for the following callsigns:

"Strike" "Old Salt" "Mother"

He has heard Beaver Control tell aircraft to contact these units but they never give a frequency.

Thanks for the report Phillip and stay tuned to this column as I am sure some of our other readers will be sharing their military aircraft frequencies with us.

With that I would again like to thank Larry Van Horn, our ute band editor, for sending some of the material presented this month and now it's time to get a cubo ... until next month ... 73.

Jean Baker, KIN9DD

How to Pamper Passengers at FL 350*

Readers Bill Dickerman, Don Vincent, and Ellen Morrison have all sent letters asking who -- and what -- is the airline MGM GRAND AIR? Bert Huneault (Windsor, Ontario) was also curious about them and sent a clipping to me from a local paper about this airline. After reading Bert's material and doing some research, I came up with the following info:

MGM Grand Air flies four round-trips from New York to Los Angeles on a daily basis, which by itself, sounds like it's no different from a handful of other carriers. But there's where the similarities end: It has been said by regular passengers on this deluxe airline that flying Concorde is like traveling steerage in comparison!

The deluxe carrier is owned by Kirk Kerkorian, former owner of MGM studios and the now-defunct MGM Grand Hotel in Las Vegas. He has invested the princely sum of $70 million in MGM Grand Air since acquiring the airline in 1987, and it's obvious to the lucky passengers who can afford to fly on this airline that it's something very special.

For openers, a one-way fare costs $964. What do you get for your money? Well, first of all, there are only 33 seats aboard the lavishly appointed cabins of the 727s now in use (there are three new DC-8s nearly ready to come on line). Six flight attendants (in tuxedos, yet!) are rigorously trained to fulfill any reasonable request of the fortunate passengers.

To tempt the appetites of the famous, near-famous, and infamous passengers, an onboard chef turns out entrees such as ratatouille omelets, stir-fry chicken, and other goodies. All are served on blue-and-white china plates embellished with the MGM lion's head which has been known throughout the movie world for so many years. For those who like more mundane snacks than coasters full of pistachios, walnuts, and macadamia nuts for munchies between meals, warm freshly-baked chocolate chip cookies are available.

As most other airlines do, they have their own frequent-flyer program which is a free ticket for every ten trips flown. But bargain hunters are not likely to look to MGM Grand Air for 21-day advance discounts, standbys, Q-fares, excursion rates, etc. They don't exist on this carrier.

The front half of the aircraft is furnished with 13 comfy swivel seats. In the rear (not to be confused with coach on regular airlines), 20 passengers can sit two and two across. Would you believe that 16 of the seats comprise four staterooms?! Those seats can be stretched into double beds and have curtains which can be closed for privacy.

Movies are offered; however, not as they are on board a regular long-distance flight. There are several movies to be chosen from and each passenger votes for his choice of a film, and the top-two vote-getters are shown.

The "blue rooms" (which is the nickname that airline crews call lavatories) in no way resemble the broom closets found on most commercial airliners. Can you picture a toilet camouflaged beneath an upholstered loveseat, mirrored walls, brass sink fixtures, Liquid Neutrogena for soap, etc., etc? As one bemused traveler said, "It's almost too nice to use." Almost, that is.

The airline came into being two years ago, and although it has run into the red during most of its life so far, it has finally reached a break-even point of 73 percent. Company president Charles Demoney expects it will run as high as 80 percent by the end of this year. Mr. Demoney has even dropped some hints about plans for overseas routes and charter trips.

A lot of us remember the days when flying meant dressing up in your best, being served by gracious friendly flight attendants (called stewardesses and stewards back then), sparkling clean planes -- both inside and out, meals served on real china (in coach, too!), pleasant fellow passengers (well, most of the time), and have other fond memories of what flying used to be like before deregulation made a mess of things.

MGM Grand Air's fares are, of course, steeper now than the other airlines' were even prior to deregulation because they have a lot more perks and amenities. It still brings back good memories of the way an airline trip was back then: pleasurable, comfortable -- and fun.

Flight Level 35,000 Feet

Welcome Addition to "Plane Talk"

The following material was contributed by Bill Battles (New Hampshire). Bill is an expert on HF/UHF military aero happenings and information. Now, let's hear from Bill:

> Recently, Canadian Military Forces Base Radio at Trenton (Ontario) was called by a commercial airlines flight, "Crown Air 315," on 11233, one of Trenton's daytime primary freqs. They were advised to change to 18012 where a phone patch to Crown Air's company operations in Toronto was set up. Trenton had also set up a phone patch for a WardAir flight not too long ago. It seems that Canadian military bases occasionally do phone patches for commercial airliners, but I don't think that US bases do.

HIGH FREQUENCY

11055 SPAR 67 (Diplomatic flight) working Andrews Air Force Base

11466 SAM 27000 working SAM 26000 advising "we're moving out -- you're released." SAM 27000 uses the SAM tail number on radio unless the President is aboard -- then changes call sign to Air Force One.

5696 Coast Guard Rescue 1472 (HH-3F Helo) was monitored working COMSTA Portsmouth, Virginia, while landing at LaGuardia Airport for search and rescue operations after the USAIR 5050 disaster.

11246 MAC 40611 (C-141) working MacDill AFB in Florida with wx from Africa. Their position was 1939N/1800W.

VHF/UHF LOGGINGS

120.950 AIREVAC 111 (C-9) working Pease AFB (NH) Ground Ops

133.050 MARINE 1 (Presidential helicopter) working Pease approach. When the President is not on board, the call sign changes to Nighthawk 01.

349.7 MAC 60013 calling Shark Ops (believe that Shark Ops is Bradley Field, Massachusetts)

Bill reports that the September 9, 1989, open house, air show held at Pease Air Force Base in New Hampshire will probably be their last one as they are due to close in 1991.

Some of the transmissions from the participating exhibition teams he monitored included the following.

291.0 Blue Angel 9 (C-130) working Pease Tower for flyby permission
255.9 Blue Angel 1 (FA-18) requested farewell Tower flyby for flight of five Blue Angels
141.85 Thunderbird 1 with air show commands to team
255.9 Navy Alpha Delta 101 (flight of two F-14s) requesting Tower flyby

Russell Wright (Houston, TX) has also sent us some interesting aero frequencies:

129.800 Hobby Airport Airline ground crews
123.400 Confederate Air Force (Incidentally, this is also the freq that they use in many areas of the US for airshow communications.-JB)
129.425, 467.850: UPS at Ellington Field
157.425 Fish Spotters

Many thanks to Bill and Russ for their contributions!

Squawk Codes Defined

One *Monitoring Times* subscriber has asked what aviation "Squawk Codes" are and why they are used.

First of all, a squawk code can only be assigned to an aircraft if it is equipped with a transponder. When the pilot dials his assigned code into his transponder, the blip his aircraft will make on the controllers' radar scope becomes much larger and more definable than it would have been if the aircraft wasn't transponder equipped. If you hear a controller tell a pilot to squawk, he means "turn the transponder on with the appropriate code dialed in its windows."

The transponder sends out a signal announcing that plane's presence to ground radar, which, in turn, sends back a reply to the transponder as if to say, "Yes, I see you."

This type of transponder is called a 4096 transponder because there are 4,096 possible codes that can be programmed into the four small windows on the transponder. Most of these codes simply serve as an aircraft's name tag for the computerized radarscopes. However, there are a few codes that are standard and have special meanings as shown in Table I.

The rest of the 4,096 codes assigned by Air Traffic Control are on an individual basis to aircraft and are called "discrete codes." When one of those codes is assigned to an aircraft, only that aircraft will be using that particular code on that day or that flight, but there are exceptions.

Here's an example: As already discussed, there are 4,096 subsets of codes. Some are delegated for tower usage and some to Air Route Traffic Control Centers. If an air traffic control tower's computer is down (or vice versa), then an Air Traffic Control Center which is about to hand off an aircraft to that particular tower may switch codes for them.

Since these codes are computer-stored, and a code which has been assigned to one aircraft is then accidentally assigned to another flight, the computer will refuse to accept the new assignment and the controller will have to give another code not already in use.

Many planes -- business and pleasure aircraft (in addition to commercial airliners who have to have transponders, etc. with all of the state-of-the-art additions and equipment) now have transponders with MODE C, which reports altitude. If an aircraft is so equipped, then its altimeter has been hooked up to the transponder.

Now, not only can the controller see the aircraft on his scope, but when he tells the pilot to "squawk/ident," he will also know its altitude within 100 feet of accuracy.

Table I
Standard squawk codes used in specific situations

1200: I am VFR (using Visual Flight Rules).
7700: MAYDAY, I'm in BIG trouble.
7600: I have lost radio contact.
4000: I am a military pilot flying in a restricted or warning area.
0000: Military interception operations, should NEVER be used by civilians (general aviation).

Troubled Aero Communications

Solar flares, eruptions on the surface of the sun, have been playing havoc with shortwave reception. Nonetheless, in some areas of the world, reception conditions have actually improved. In other cases, there have been big problems for some aero enroute stations' air/ground transmissions reception, such as those from flights over the Northern Pacific area.

ARINC Closes San Juan Station

This writer has just received the news that ARINC (Aeronautical Radio, Inc.) has permanently shut down their San Juan Ground Station. Hopefully, I will have the whys and wherefores about this in the next installation of "Plane Talk."

That wraps it up for this month. Next time we will look at a variety of subjects, including how air traffic is handled at congested airports in other parts of the world, a look at the largest charter airline in the US, and other goodies. Also, watch this space for something very special coming up in a few months!

73 and out

Ike Kerschner, N3IK

Is there a computer in the shack?

Computers can copy CW, RTTY, FAX, SSTV and do many other tasks of interest to the amateur. Packet radio has been growing by leaps and bounds and new packet bulletin board stations are coming on the air each week. Log keeping, dupe checking, antenna design, antenna aiming, propagation forecasting, circuit analysis and design are also being routinely done by computers. So why don't you have one?

If you're like most of us, putting a computer in the shack and using it in the shack is a difficult decision for many amateurs largely because of the confusing number and types of computers and peripheral devices on the market. In addition, a large number of amateurs are reluctant to spend what seems to be large sums of money for what they consider an adequate machine.

This month I will talk about computers for the shack and try to aim you in the right direction. This is not intended to be a tutorial on how computers work or how to run one. It is simply a guide as to what to look for when purchasing a machine. I shall try to explain most of the jargon we run up against, but space is limited. If there is enough interest in computer use, we will make that the topic of another column. Write and let me know.

WHICH MACHINE?

The two most popular computers being used in the ham shack are the IBM (or compatible) and the Commodore. The reason for this is quite simple; both machines have a great variety of software (software refers to the programs to perform specific tasks) available and are easily adapted to amateur radio use.

A few years ago the Commodore C-64 was the mainstay and quite a bit of software was written for that particular machine -- and it is still a good choice. In addition, a lot of hardware (peripheral devices such as modems and terminal node controllers) were especially designed for the C-64.

While the basic C-64 is an inexpensive machine, the various add on devices like disk drives and printers were quite expensive. Once the C-64 is purchased you are locked into that particular system.

So when IBM compatible machines began to hit the market there was a mass exodus to this style of computer simply because inexpensive peripherals were available. In fact it is possible to assemble an IBM type of machine with disk drive and monitor for about $300.00 simply by ordering one of the many assembly kits available from computer magazines. Normal assembly time should be under three hours for the average amateur.

Yes, there are many other computers available on today's market; however, for the most part there is simply not enough software or hardware available to make these machines attractive to the amateur.

It boils down to this - to get the most for your bucks buy an IBM compatible machine!

WHICH COMPATIBLE?

You will find dozens of IBM type machines on the market. Which you purchase depends on several things. First of all, how much support do you need? If you buy a IBM look alike from "Fong Woo Fireworks LTD" based in Macao; chances are service will be strictly up to you.

On the other hand most of the big computer advertisers in the various magazines will offer you some support. Should you feel that you require a place to take the machine to if something goes flukey then consider "Radio Shack" and their excellent line of "Tandy 1000" machines and local service centers.

BASIC REQUIREMENTS

From this point on, we assume you are purchasing an IBM compatible machine. The machine you buy should have at least one disk drive. Two drives would be better, but one is adequate for our purposes. The disk drive is the device that allows us to read and write data to a floppy disk (a floppy disk is a round piece of magnetic media on which programs to be run on the machine and data that must be saved for later use are written).

Floppy disks come in two sizes: 5-1/4 inches and 3-1/2 inches, either size is ok. In spite of their smaller size the 3-1/2 inch disk can store up to four times the amount of data than can be stored on the 5-1/4 inch disk! Either size will be satisfactory for average ham station use.

There is a device called a Hard Drive that will let you store up to 80 megabytes and is great if you can afford it. Cost for a Hard Drive will begin at about $250 for a 20 megabyte unit and go up from there.

You will need at least 256K of RAM (Random Access Memory) on the board (built into the machine). This is adequate for much software the amateur will want to use. Adding RAM is not expensive and if possible, go for at least 640K as soon as you purchase the machine. 640K will run about 99% of the software on the market; consequently the machine will now be able to do anything you want.

The third item required will be a monitor. A monitor is simply a video output device (much like a TV) that allows the operator to see what the machine is doing. If at all possible, purchase a high resolution color monitor and Enhanced Graphics Adapter card (EGA card). A good monochrome (green, yellow or white) is quite satisfactory for the normal things a ham will do, but color makes things nicer and in many cases easier.

If you are going to use the machine for sending/receiving any of the digital modes you will need a serial or RS-232 port. These are simply cards that plug into the main board of the computer and allow the computer to use a modem to convert the incoming/outgoing signals to the correct format. A serial port is standard on many machines, but do check to be sure you have one.

One last item you will need to go with your computer is a printer. While there are many things a printer is not required for, you will eventually want one. For example, packet being sent at 1200 baud simply cannot be read fast enough by the average human to make sense as it flies by on the screen; you will want a hard copy.

Printers cost from about $125.00 up. My choice is a 9 pin dot matrix printer with NLQ (Near Letter Quality print). The ability to do graphics is also good to have, as this will allow you to draw diagrams of circuits, antennas and use the many CAD (Computer Aided Drawing) programs that are on the market.

The only other thing you need is Software (programs) to do the tasks you want the machine to do. Software is available from one dollar (for many public domain programs) up to several thousand dollars for the more exotic. Talk to the local ham computer guru and discuss what you want to do. In any case figure spending a hundred bucks or so for ham software initially.

What is all of this going to cost? Count on spending in the neighborhood of 450 bucks for a decent system. For a thousand bucks you should be able to assemble a very good system that will do most of the tasks you would ever want. To be sure, you can continue to add and modify to your heart's content as any good ham should!

This is far from the entire story of computer buying, but it is a place to start. You can opt for an Apple, or other type of machine. However, the problems involved getting hardware and software for other types can be very discouraging to the beginner, and that is why I urge you to stick to the IBM format.

The average ham should be able to learn to do basic operations with a computer in a few hours with the help of a decent manual. If you have a friend who is skilled in computer use, by all means enlist his assistance to learn. Other places to learn how to get the most out of your machine is adult education classes or your nearby Radio Shack. It's not hard, in fact using a computer is easy - try it!

Ike Gets Mail

I get many letters from would-be hams who complain about how difficult it is to learn the code or the theory. Or complain about the unfriendliness of the local ham club and unwillingness of local hams to teach them. Some time ago one such letter arrived telling me that the writer tried for 20 years to learn the code and could not. Last week the same writer wrote again to tell me the following.

> Two weeks before the local ham club gave exams I purchased Gorden West's Radio Shack novice course. I passed the exam!
>
> In three weeks this course took me from nothing to Technician class.
>
> Without using my name, I hope you can tell others how good the Gorden West course is! [OK!]
>
> I listen to W1AW twice a day and can copy 15wpm pretty good. And although I missed the 13 wpm code test, I did pass the General and Advanced written exams!

The writer did include his call sign and copies of his certificates of completion to prove that he did indeed pass everything. My hat is off to the writer and Gordon West!

Invitation to Join

The Goddard Amateur Radio Club (WA3NAN): (well-known for their rebroadcasts of space shuttle communications) extends an invitation to all amateurs to join their ranks as associate members. All members receive the club newsletter and are invited to club events and social functions.

The dues are $12.00 per year and go toward the support of the club station. For an application and more information write to: WA3NAN Goddard Amateur Radio Club, PO Box 86, Greenbelt, MD 20770.

Six meters has been extremely hot during November/December with more expected to come. DX from all over the world has been worked in large quantities.

Free

NASA is offering free Space Shuttle mission charts. The charts contain groundtrack data and locations and ranges of Shuttle tracking stations and can be used with "SPARK" kits to make visibility predictions of the Shuttle. For your charts write to SPARK, AP4, NASA, Johnson Space Center, Houston, Texas 77058

Real DX on 21 MHz

KC2WZ reports that a recent issue of *Sky and Telescope* magazine has an article on receiving Jupiter's "decameter" radio emissions. The emissions are easily heard with a simple wire loop antenna, and appear to be strongest around 21 MHz. To hear the emissions tune your receiver to 21 MHz after sunset when Jupiter is visible in the night sky.

DX

Mongolia - JT2AB is active near 14010 between 1100 and 1200Z, QSL to Box 119, Chojbalsan, Mongolia.

Mozambique, C9 will be activated by several amateurs this month - look for this one!

Laos, XW8KPL is active daily, look for him on 14155, 14165, 21265, 21295, and 21335 SSB. No QSL info yet.

Burkina Faso, XT2KG is active on CW and SSB on 40 through 10 meters. Check lower 25kHz of CW bands and watch 21335 or 28510 for SSB. QSL via YASME.

Once more we come to the end of another column of "On the Ham Bands." Keep on writing, gang. 73 es see ya.

the qsl report

Gayle Van Horn

BRAZIL

Radio Guaiba, 11785 kHz. No data station logo card, stickers and info booklet. Verification signer, C.A. Ribeiro. Received in 35 days for a Portuguese report, mint stamps, and one IRC. Station address: Rua Caldas Junior 219, 90000 Porto Alegre RS, Brazil. (Sam Wright, Biloxi, MS)

BULGARIA

Radio Sofia. Full data scenery card and bronze diploma for six reception reports. Also received books and magazines on Bulgaria. Received for an English report. Station address: 4 Dragan Tsankov Blvd., Sofia, Bulgaria. (Carl Smith, Fresno, CA)

CANADA

LW Station-Pointe Des Monts, Quebec-300 kHz-"TG." Full data prepared card. Illegible verification signer. Received for an English utility report and return postage. Station address: Transport Canada, P.O. Box 5000, Montreal Int'l Airport, Dorval, Quebec H4Y 1B9. (Hank Holbrook, Dunkirk, MD)

LW Station-Schefferville, Quebec-203 kHz-"KL." Full data prepared card. Verification signer, G.T. Gunther. Received for an English utility report and return postage. Original report direct to beacon, with follow-up sent to Transport Canada, P.O. Box 5000 Montreal Int'l Airport, Dorval, PQ-H4Y 1B9 Canada. (Hank Holbrook, Dunkirk, MD)

LW Station-Smith Falls, Ontario-334 kHz-"YSH." Full data letter. Verification signer, S.J. Jefferson, Regional Supt., Engineering Flying Services. Received for an English utility report and return postage. Station address: Technical Services, 4900 Yonge Street, Suite 300, 4th Floor, Willowdale, Ont. M2N 6A5, Canada. (Hank Holbrook, Dunkirk, MD)

CHAD

Radiodiffusion Nationale Tchadienne, 4904.5 kHz. Partial data combination QSL/schedule, with illegible signature. Received in 55 days for a registered French report and three IRCs. Station address: Boite Postal 892, N'djamena, Chad, Afrique. (Robert Landau, Secaucus, NJ)

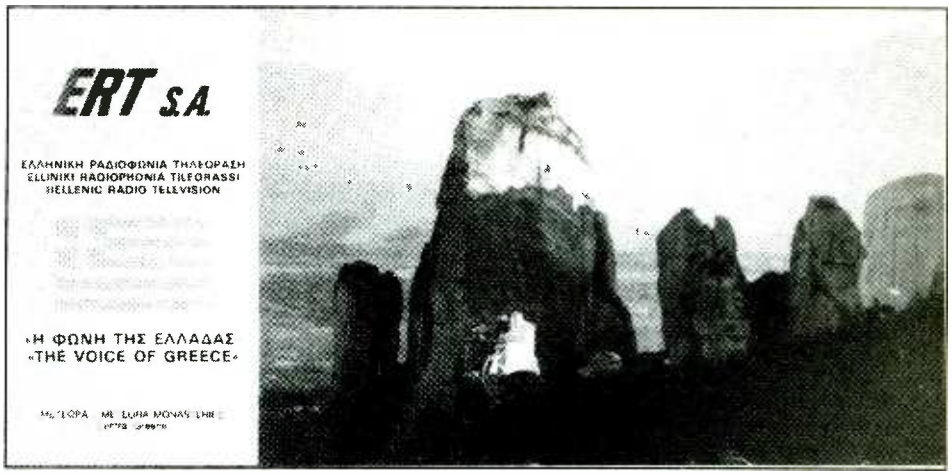
ECUADOR

Radio Catolica Nacional, 5055 kHz. No data station form letter, and information data sheet. Verification signer, P. Antonio Arregui, Director General. Received in 95 days for a Spanish report and one U.S. dollar. Station address: Casilla 540-A, Quito, Pichincha, Ecuador. (Sam Wright, Biloxi, MS)

Radio Nacional Espejo, 4680 kHz. Partial data station letter and souvenir postcard. Verification signer, Marco Caicedo. Received in 55 days for a Spanish report and mint stamps. Station address: Casilla 352, Quito, Pichincha, Ecuador. (Sam Wright, Biloxi, MS)

GERMAN DEMOCRATIC REPUBLIC

Radio Berlin Int'l, 11785 kHz. Full data city scenery card, without verification signer. Received in 100 days for an English report. Station address: Berlin 1160. German Democratic Republic (Ben Simpelo, Chula Vista, CA)



The Voice of Greece Monasteries series -- this one collected by Paul Garland of El Paso, Texas.

GERMAN FEDERAL REPUBLIC

Deutsche Welle, 9505 kHz. No data QSL card of Sri Lanka relay site, with no verification signer. Received in 98 days for an English report. Station address: Postfach 10 04 44, D-5000 Koln 1, German Federal Republic (Robert Landau, Secaucus, NJ)

GREECE

The Voice of Greece, 7430 kHz. Partial data "Meteora Monasteries" card with program schedule and form letter. Verification signer, Kostas Valetas, Director of English Programme. Received in 31 days for an English report and one IRC. Station address: ERT S.A., Director of Technical Services, P.O. Box 60019, 153 10 Aghia Paraskevi Attikis, Athens, Greece (Tom Maslanka, Cleveland, OH)

HONG KONG

BBC Relay Station, 17875/17815 kHz. Full data station letter. Verification signer, Ron Patterson, Asst. Company Manager. Received in 40 days for an English report and mint stamps. Station address: BBC East Asia Relay Co., Ltd., Tsang Tsui Broadcasting Station, Nim Wan, Yuen Long, New Territories, Hong Kong. (Sam Wright, Biloxi, MS)

PAKISTAN

Radio Pakistan, 21740 kHz. Partial data scenery QSL card, complimentary copy of Pakistan Calling magazine. Verification signer, Anwar Inayat Khan, Senior Broadcast Engineer. Received in 113 days for an English report. Station address: National Broadcasting House, Constitution Avenue, Islamabad. (Robert Landau, Secaucus, NJ)

PERU

Radio Cutervo, 6691 kHz. Full data prepared card with station stickers. Verification signer, Norman Lozada Diaz. Received in 60 days for a Spanish report and mint stamps. Station address: Jr. Comercio, 725 Cutervo, Cajamarca, Peru. --ed.

ROMANIA

Radio Bucharest, 11940 kHz. Partial data color card of "Romanian Folk Costumes," station stickers, and program schedule, without verification signer. Received in 60 days for an English report. Station address: Str. Nuferilor 60-62, 79756 Bucuresti, Socialist Republic of Romania. (Sam Wright, Biloxi, MS)

SHIP TRAFFIC

SEALAND INTEGRITY-WPVD-500 kHz. (Container vessel.) Full data prepared card, without verification signer. Received for a utility report and return postage. Ship address: Sea-Land Services, Inc., P.O. Box 800, Iselin, NJ 08830. (Hank Holbrook, Dunkirk, MD)

SOUTH AFRICA

Radio Orion, 4810 kHz. Full data SABC QSL card and partial verification letter. Verification signer, Helena Boshoff, Public Relations Officer. Received in 64 days for an English report. Station address: P.O. Box 91312, Auckland Park, 2006, Republic of South Africa. (Robert Landau, Secaucus, NJ)

SWITZERLAND

Swiss Radio Int'l., 6135 kHz. Full data scenery card, program/frequency schedule, and station info sheet, without verification signer. Received in 22 days for an English report and two IRCs. Station address: CH-3000 Berne 15, Switzerland (Norman Wittschen, Columbus, OH)

UNITED STATES

LW Station-Thomas Point Light Station, Maryland, 293-"F3." full data prepared card. Verification signer, Commanding Officer. Received for a utility report and return postage. Station address: Thomas Point Light Station, 3425 Thomas Point Road, Annapolis, MD. (Hank Holbrook, Dunkirk, MD) *Hank notes that this beacon is seldom on, but was on for several days when he heard it. Also mentioned it is now off again. --ed.*

LW-Station-Fredericksburg, Virginia, 237 kHz-"EZF." Full data prepared card. Verification signer, Billie S. Toombs. Received for a utility report and return postage. Station address: Shannon Airport, Fredericksburg, VA. (Hank Holbrook, Dunkirk, MD)

VHF Station-Shady Side, Maryland, 156.8/156.725-"WQJ." Full data letter. Received for a utility report and return postage. Station address: The John Hopkins University/Shady Side Campus, Chesapeake Bay Institute, 4800 Atwell Road, Shady Side, MD 20764-0037. (Hank Holbrook, Dunkirk, MD) *Hank notes that this station operates on 2182/2096.6/41250/6218.6/ 8291.1/12432.3 and 16590.2 plus VHF 156.8/156.45 and 156.55 MHz. --ed.*

VHF Station-Heathsville, Virginia, 162.4 MHz-WXM-57. Full data prepared card. Received for a utility report and return postage. Station address: U.S. Dept. of Commerce, NOAA, National Weather Service, Norfolk Int'l Airport, Norfolk, VA (Hank Holbrook, Dunkirk, MD)

PC Software

The 1980s, as far as amateur radio is concerned, was the computer age. Just about every ham shack had one. If you couldn't see it, it was probably inside the transceiver. The Commodore C64 held its popularity for a long time, but it looks as if the IBM compatible will take over in the nineties. The main cause of this is due to low prices because of the high competition in the PC market. Fortunately, when it comes to software, most of it is IBM PC compatible and a good percentage of that can be used with RTTY or packet.

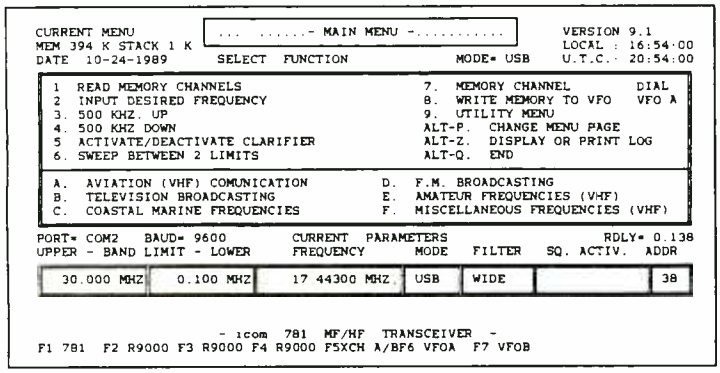
In spite of the PC's popularity, however, there just isn't much to choose from when it comes to purchasing shortwave logging or radio interface software. What little is available costs an arm and a leg, and if you own a UHF radio, you may have to double the cost because the software is only made for one radio. What's even worse is finding software that will control both your radio and an RTTY unit.

If you have several radios and com 1 on your PC is devoted to packet radio, the Datacom software just might fit the bill. Datacom offers so much that I don't think anyone would have problems upgrading their listening post. Computer control is the way to go! Especially if you own an ICOM R71A and an R-7000. An interface that is called the CI-V bus allows any ICOM radio (if you are not sure your radio has it, check the manual) to be connected or daisy chained on a single shielded cable. The Datacom software is also available for Kenwood and Yaesu as well.

The Datacom software communicates on the ICOM CI-V bus via a special serial communications port card that plugs into an IBM compatible expansion slot. The card is optional in the basic package, but you better have the know-how to modify your existing serial port if you decide to purchase the software only.

Datacom isn't just a radio interface program. It also gives you the ability to create your own database and log frequencies, time, date, and comments. If you are not familiar with the term "database," it simply means that you have a collection of files which contains frequencies which the software can use. When you run the Datacom software, it calls up the information in the database and displays it on the screen.

The database and radio log should not be confused. They really aren't the same; in fact, if you use the DOS (type) command to display a data file on the screen, it would be difficult to read the information. That's why Datacom includes a way to generate a log which can contain different information. The log file can be changed by using a word processor like Sidekick or PC Write.



There is even a "Menu Maker" program that lets you set up the Datacom screen, which allows the selection of a single letter command to call up the frequencies that are in your custom made databases. Datacom can also support comm 3 and 4 on a PC so that you won't have to buy a "T" switch in order to select other modem equipment.

The review software package that I received was somewhat preliminary because the M-7000 control section wasn't finished yet, but will probably be released by the time this issue reaches your door. What I did receive was the software to control the ICOM radios, the serial port card and an ICOM UX14 interface, which is needed for the R71A.

These days, a well-equipped listening post will include a computer.

The disk was easy to use because it automatically installed the software on your hard disk. Datacom creates the necessary directory and loads the files. You don't need a hard drive. A minimum of one floppy disk will do, but I think the hard drive makes computing much easier.

The next thing you have to do is run the INSTALDC program. You tell it which serial port, ICOM model, time zone, and other information the software needs to fit your system. It's quite tedious, but if you follow the manual, it'll only take a few minutes. You only have to do it once.

Speaking of the manual, it comes in a "three-ring" loose-leaf binder and contains type-written instructions, which is okay; but it does need improvement. However, Datacom informed me that they are forever improving the manual, but they need feedback from their customers. So if you already own a Datacom product and you have a problem, give them a call; they'll be glad to help.

One other thing, before you run the main program there is a diagnostic utility (optional) which can check the communications between the computer and the radio. This is handy, because if something goes wrong you can troubleshoot the problem. I used it more than once, because sometimes I disconnect the radios whenever a lightning storm is in the area and I get a plug or two mixed up.

To run the main program, just type "ICOM" and it automatically boots. A colorful "initial" screen pops up and you select which radio you want. Then you enter the main program and it also displays a colorful screen. To scan, just hit the "A" key, and then the "S" key and the software will scan the aviation frequencies.

There are so many features available in the software, I can't fit them in this column; you'll just have to see it for yourself. The basic package is $129.95, and the dual serial port is $129.95. You can also purchase ICOM products such as the UX14 interface for the R71A receiver. Contact Datacom at 305-987-9505. The address is P.O. Box 5205, Hollywood, FL 33083.

A New Piccolo System

Last year we cracked and copied the British Piccolo. This year we're looking at a new system which is used by the French, possibly for embassy communications. They have been running tests on 20,170 kHz during the day with voice and Piccolo on LSB (the other end of the link was 18,184 kHz LSB).

The system sounds like Piccolo, but the tones are spaced 30 Hz apart, and an eight by four tone scheme is used to get 32 combinations. Again, two tones (one from the eight tone group and one from the four tone group) are used to equal one ITU character. We'll keep you posted on further developments. NNN

Zenith Video Teletext

For many years we've all read the news items about the latest developments in teletext. We've been told that in just a few years our newspapers and magazines would be delivered not by the kid on a bike but by the cable on your TV. And yet, years go by and we're still getting a newspaper tossed on the lawn each morning. What happened?

Well, actually it is here. In fact, World System Teletext (WST), a British development, has been with us for more than thirteen years. Simply put: teletext is the best kept secret in all of the cable and satellite television industry.

In the Beginning

There were several types of teletext throughout the eighties as manufacturers spent millions in research and development of a product which could be easily transmitted either via cable, over-the-air TV, or satellite and decoded by stand-alone or built-in units.

This was not a fight for the faint hearted. Several big league players such as Time, Inc. and CBS took multi-million dollar baths in the fledgling industry before pulling their own plug and going quietly down the drain.

The winner, by default, appears to be World System Teletext -- essentially the same thing we started out with over ten years ago.

The fact is that there are other videotext systems in use now but these are either unavailable to cable and satellite customers or involve expensive hardware and monthly subscription fees. For purposes of this column, I will focus on the WST teletext standard.

Check It Out

When you go to your local TV dealer and ask to see a Zenith TV with teletext decoder, you're likely to befuddle the salesman. So well kept is this secret that many Zenith dealers don't know such a product exists or, if they have heard of it, are without a clue as to how to operate the set.

I took the time to coach my local dealer and within minutes we were enjoying paging through the top news stories, market indices, and sports trivia questions. He loved it.

How Do They Do That?

Where's the info coming from? It's pretty clever. If you are on a cable system or have a satellite dish, turn to the channel which carries Superstation TBS (G1, 18). Now find the horizontal hold on your TV set and roll the screen slightly so that the black band at the bottom of the screen is in the center of the picture.

Look at the band closely. It is called the Vertical Blanking Interval (VBI) and on the VBI of this particular channel there will be present little dancing white dots. This is digital information which can be "read" by the circuitry of a TV set equipped with a WST teletext decoder.

Electra Teletext

The accompanying photo shows the Electra service of Taft Broadcasting of Cincinnati. This is the service on the VBI of TBS. In the photo, you can see the basic page format. On the top line is the page number, current time (down to the second), and date. Notice that the layout directs you to the top news stories, various standard departments, weather and sports, all with the appropriate page reference.

The stories, scores, and market information are continuously updated so that you'll have the information of your teletext screen just moments after it appears on the news wires. What's more, the service is free. All you need is a Zenith TV set with the built-in teletext decoder or one of the old American Teletext stand-alone decoders which are no longer marketed but occasionally show up in used equipment sales.

My sources tell me there may be another WST stand-alone decoder available in the near future. You may be sure that I'll pass that information on when it becomes available.

For now, if you're in the market for a new TV or a second set, whether you have a satellite system or are on cable, I urge you to consider the Zenith Teletext line and get in on one of America's greatest broadcasting secrets. Available sizes range from 20 inches to 35 inches in picture tube sets to 46 inches to eight foot projection systems. They are the only sets available with the WST built-in decoder.

But Wait, There's More!

These units also display Closed Captions which are transmitted in the same VBI on programs that show the CC symbol. These sets do double duty for the hearing impaired. In addition, Zenith also makes an optional add-on thermal printer which makes a print out of whatever teletext page is on the screen.

Technical Glitches

For cable customers there shouldn't be any technical obstacles for perfect WST teletext reception. This may not be the case for satellite customers. The big enemy of all data reception via satellite is Terrestrial Interference (TI). TI is the interference of satellite delivered microwaves by point-to-point delivered microwaves in the same frequency band. When TI is present on a channel which carries WST the error rate may climb to a point at which the displayed text will be garbled. The whole subject of TI is one which will be covered in a future column.

Next month is part two of our glimpse into data transmissions where we'll examine X-press Exchange Information Services: Public Access Data via C-SAT and AP Information Services.

Electra Teletext via VBI on TBS Superstation G1,18. Produced by Taft Broadcasting of Cincinnati and received on Zenith TVs with built-in World System Teletext decoders.

TRANSPONDER NOTES

First Run Disappears

The first TVRO-only Impulse Pay Per View service has left its location on G2 channel 4 amid rumors that it may return. The service presented "first run" Hollywood movies (hence its name) to home dish owners months before their release to the premium movie channels. To watch the movies, dishowners would call an authorization number, pay by credit card and have their VideoCipher II (VC II) turned on for the duration of the movie.

The service, which aired only at night and offered an abbreviated list of movies for any given month, may have fallen victim to the latest fad from General Instrument (GI), manufacturer of VC II. The new device is called the VideoPal and it's essentially a unit which links your VC II and your touchtone phone allowing you to dial up authorization for any one of a number of Impulse Pay Per View services with the charge automatically added to your bill.

Should we line up for crying towels on the loss of First Run? Not a bit. Unlike other movie services such as Select TV (late of S2, 11) which were subscription services, there were no abandoned subscribers when the channel went belly up. On the contrary, First Run still holds access to two valuable VC II tier bits (the authorization bits necessary to a channel wishing to join the ranks of the VC II encrypted) and an agreement with major Hollywood studios to market their wares directly to dish owners. That could be worth a lot of money to new media moguls trying to find the door to the satellite TV/Cable gold mine.

BBC in B & W

For years many of us have enjoyed the BBC Six O'clock News live at 1:00 p.m. ET on W5,15. This is the studio feed from BBC London to

Australia's TV5 and until last summer the broadcasts were made in NTSC (American standard 525 lines resolution). Then, without consulting any of us, the BBC began sending the transmission via the European PAL standard. The two are incompatible and the result is a loss of color and a screen which rolls violently with the audio unaffected.

There are three ways to recover the lost video. The optimal way is to purchase a set which has switchable NTSC-PAL-SECAM circuitry which allows the entire picture, color and all, to be displayed. Sony makes a line of these sets in various sizes. Contact your local TV dealer for details.

The second method is using the Image Translator VCRs which can convert the various international signals to NTSC standard. Further information on these units may be had from Instant Replay, Inc., 2951 S. Bayshore Dr., Miami, FL 33133 or call 304-854-8777.

The final method is the poor man's conversion and it requires you to simply adjust the vertical hold on your set until the picture locks in. This will leave you with excellent pictures and sound but it will be in black and white. But the point is that it works and it won't cost a thing.

British DBS Update

C-SPAN (G3, 24) presented an interesting program of interviews with Edward Bicham of British Satellite Broadcasting (BSB) whose services should be on the air by this spring and Jonathan Miller of Sky television whose services have been up since last summer. How popular is Sky TV? If Mr. Miller is to be believed, systems are being installed at the rate of 122,000 per month. This compares with an average of 20,000 systems per month in this country.

MAILBAG

Remembering the Old News

Talk of Viacom's All News Channel (ANC) F3, 7, led *Monitoring Times* reader David Shelby of Arkansas to remember the Satellite News Channel which he placed at sometime between 1983 and '85.

Well, David, that's one I don't remember, but I do remember The Independent News Network (INN) late of Westar 3, 21, which was in that same time period. They featured live news feeds to independent (non-network affiliated) TV stations in metro markets across the country with the network anchor in New York City.

At one point they had 25 network member stations each of which would contribute news stories for the nightly news program. Anyone else remember SCN or INN? Let me know.

Say, that reminds me of Cable Sports Network (CSN) which resided on F4 channel 4 some five years ago. For a while it looked as if it would give ESPN a run for its money. Unhappily, though, its money seemed to run short and it disappeared.

My thanks to Loren Cox Jr. of *Review of International Broadcasting* and a long time *MT* reader for a great letter. Loren laments the loss of NHK using G2, 11 for European to Japan newsfeeds and "would like to see you, sometimes, give some publicity to Bill Bragg's Yesterday USA Superstation (f4/15 & 21, 6.2). For me almost reason enough in itself for having a 'dish.'"

Good points all, Loren. And thanks too, for the tip on the Instimation Audiotext Network. Dishowners who tune in on S3 Channel 5 6.30 MHz will discover that monitoring FM subcarriers on satellite can be just as rewarding as shortwave utility DX!

At 5:30 PM ET I heard quite a few audio feeds including market reports, news items, detailed weather summaries for various locations and a soap opera summary.

Final Notes

Tune in NASA Select on F2-13 Thursdays at 11:30 a.m. ET for "NASA Update," a video presentation of recent happenings and current projects at NASA.

Also an article in the December 1989 issue of *Satellite Retailer* magazine warns of possible signal reception problems relating to the Faraday effect in which polarization of signals may be reversed as they pass through the supercharged environment of the ionosphere. February 1990 is said to be the peak of the current solar cycle.

Have microphone, will travel!

Sacramento, California, is the home of the world's biggest radio studio! We're not talking about KRAK Country 1140 AM and 105 FM's beautiful studio complex on Auburn Boulevard. No, despite the allure of this state-of-the-art complex, chief engineer Jay Lemmons is almost never there! In fact, some 45 times a month -- that's more than once every day -- Jay takes KRAK out of that beautiful studio and onto the streets. That's when the excitement begins!

Here is a station that doesn't just talk about what's going on in California's capital city. With three mobile broadcast studios and three news cars, KRAK is a part of Sacramento. When the now imfamous Loma Prieta quake hit San Francisco last fall, KRAK provided almost instantaneous, on-the-scene coverage. When Sacramento's new Lightrail commuter train system was inaugurated, KRAK didn't just report the event -- it was *on* the train.

Jay Lemmons and his assistant, Gary Nixon, have broadcast from some very unusual places. There was the time that Jay and Gary participated in the largest remote broadcast in history. It was just after the big 'quake and remote broadcast vehicles from 19 area radio stations gathered in the Country Club Centre Mall's parking lot to raise funds for The American Red Cross. There were rock music shows and country shows and even shows in Spanish. A classical station provided a string quartet and their personalities were all dressed in tuxedos.

How big was it? Says Country 105 personality Lisa Kay: "I've been in radio across the country, and in 14 years I've never seen anything like this!" Each station's morning show broadcast from the same place, drawing big crowds and big donations. in the end, "Sacramento Radio Relief" collected nearly $150,000.

To see Jay and Gary in action, you would think that you were watching an episode of Batman and Robin. The KRAK mobile studio trucks would make great Batmobiles: Start with a typical AM/FM radio. Add a cellular phone or two and a VHF business band transceiver to coordinate the broadcasts and to keep in touch with the main studios.

When you get to the scene, press a button and watch the 35 foot tower rise from the truck. Scala yagi antennae can be rotated on top of the tower to beam the remote broadcasts back to the studio or to a repeater, all on the 450 and 455 MHz band. This provides them with full quality broadcast capability from anywhere in the Sacramento area. A vehicle like this would even impress Kim Basinger!

To make things more exciting, Jay has four energetic daughters who often come along for the ride: Kathy, Melissa, Sarah, and Jennifer. They form the KRAK future engineering department, ranging in age from six to fourteen, and are Jay's pride and joy. Gary can also really be a ham. Catch him on two meters as WA6HZT.

Jay and Gary are really smiling about KRAK's new "AM Fun Bus." This latest addition cost over six figures and includes a plush fully-equipped studio in the rear, with a big bay window allowing passers-by a look at KRAK's air personalities in action. One side of the bus opens up into a giant television projection screen. And don't forget the telescoping transmitting tower and kitchen facil-

Jay Lemmons (chief engineer), Joey Mitchell (morning DJ), and Matt Green broadcast live from almost anywhere (Here, on Sacramento's new Lightrail). The new KRAK fun bus is as luxurious and well-equipped as the deluxe newsroom back at the studio.

ities. Not only could you live in it, you could have a great time, too.

Although both KRAK AM and FM play country music, each has a distinctive approach and sound. KRAK AM features a personality oriented "Top Country Hits" format, combining standards and current hit songs with news and information.

"We have to put much more money into the AM station, otherwise AM will be dead," says Jay. "Our best morning jock, Joey Mitchell, is on AM, and most of our remotes are on AM. We're the only full-format AM in our market. All the others combine a form of music with a talk network, for example."

Country 105 FM plays contemporary Country hits, with less talk. Together, the AM/FM combination now books almost a million dollars a month in advertising. The "AM Fun Bus" paid for itself in just a few months, and Country 105 is ranked number two in their market.

There might be a more exciting place for Jay Lemmons and Gary Nixon to work, but the possibility is very remote!

If you would like a colorful KRAK bumpersticker, send a self-addressed stamped envelope to: American Bandscan, MT, P.O. Box 98, Brasstown, NC 28902. We'll be happy to send you one!

Bits and Pieces

If you always wanted to be a disk jockey, you now have a way of judging your competition. The New York Producers' Audition Hotline allows you to listen to a variety of professional voices used in commercials and on-the-air work nationwide.

By using a Touch-Tone phone, you can page through this interactive service sampling everything from serious classical music announcers to people who lend their voices to bananas. The vocal performers pay for the service to promote their skills for future work. Join in the fun by dialing 212-593-4327.

Amazing reception conditions continue to occur throughout the country. Several months ago Gordon Simkin in New Mexico received test patterns and audio from a New Zealand TV station. DXers in Hawaii are reporting hearing FM stations from Southern California up to 2500 miles away. Turn on your radio. You never know what you might hear.

Mailbag

W. Earle Doan of Collingswood, New Jersey, sent in an article about POP Radio. Point Of Purchase, that is! POP Radio broadcasts custom programs for drug stores, supermarkets, and other businesses, via satellite from New York City. There are almost 75 disk jockeys working for them as the voices of A&P, People's Drugs, or Toys 'R' Us, to name a few. You'll hear announcements for sale items and household tips, along with soft music.

POP Radio is very successful because they are number one in their market, and you can't turn it off until you leave the market it's playing in. The service is catching on all over the country, replacing music-only services like Muzak.

Be an American BandScan Reporter. *See any stories about radio in the local paper? Send them to Monitoring Times, P.O. Box 98, Brasstown, NC 28902.*

Station Grants

Here are the new stations that will be filling in the gaps on your dial: Marianna, AR, 106.9; Fresno, CA, 99.3; Lewes, DE, 105.9; Englewood, Fl, 105.9; Caldwell, ID, 89.5; Wabasha, MN, 102.5; Cape Vincent, NY, 94.7; Southern Pines, NC, 102.5; Pamplico, SC, 102.1; Bloomer, WI, 95.1; Brookfield, WI, 106.9. Courtesy of *The M Street Journal*.

For Sale

In northwest Indiana, a 250 watt daytime only station is available, operating on 1080 kHz. WNWI is on a clear channel with a 50 mile radius and a 300 foot tower. All equipment is included. The station also covers parts of Michigan and Illinois. Make a deal with Bill Pauley at 219-465-1594.

Here's a station that's really peachy! Coastal Georgia is the home of this 10,000 watt AM daytimer serving Brunswick, the St. Simons Islands, and the Kings Bay area. The real estate is available for $35,000 in addition to the station price of $310,000. Please call 912-638-1176.

A 5,000 watt day, 500 watt night AM outlet is for sale in Central Michigan. It is situated between two major population centers assuring good growth in the future. Call Walter Swain at 317-932-3964.

International Bandscan

American radio goes to the USSR! The Public Service Satellite Consortium of the United States and Gostelradio of the Soviet Union have agreed to distribute National Public Radio and other American programs in Russia starting early in 1990. Radio Moscow has been heard on American stations since 1958.

The King of Bhutan has ordered all TV antennas to be dismantled, and has banned watching across-the-border TV. He believes this will prevent the population from being influenced by outside cultures and events. To counteract propaganda, Bhutan has no television stations of its own.

The CBC can no longer be heard on CBH, 860 AM, in Halifax, Nova Scotia. CBHA-FM, on 90.5, still carries the CBC in this area.

Powerful Radio Taino, Tourist Radio, is beaming its 300 kW signal into the United States. Look for it on 830, 1040, 1100, and 1160 kHz for Cuban music and cultural programs. The signals are strong enough to hear on a hand-held portable radio in midtown Manhattan.

Sud radio has closed its transmitter in Seron et Arveyres, France, on 819 kHz, and now only uses its 20 kW transmitter from Gaure, near Toulouse, from 0300-1830 UTC. They are concentrating on developing their FM network.

Ireland's Century radio is on the air on 1143 kHz, relaying its FM broadcasts.

The BBC will start generating its own time pips this spring. The Royal Greenwich Observatory has decided to end the service they have provided to the broadcaster on the quarter hour for many years. The BBC will maintain the accuracy of their new time signal by links with two satellites and by a reference from MSF, the British standard frequency reference transmitted from Rugby.

Credits: Many thanks to our readers: Ron Carruthers of Edinburgh, Scotland; W. Earl Doan, Ruth Hesch, David Doan, and Jeff Harvey. Additional information was obtained from *Broadcasting Magazine, Radio World, The M Street Journal, The British DX Club, The Worldwide TV-FM DX Association*, and Jay Lemmons and Gary Nixon at KRAK. Until next month, happy trails!

Dr. John Santosuosso

P.O. Box 1116
Highland City, FL 33846

El Salvador

As the civil war in that unhappy country continues to heat up, so does the broadcasting activity. Rebel-run Radio Venceremos was logged on both 6340v and 6850v kHz with graphic reports on the fighting and attacks on the Bush administration for its support of the government.

Although there is little evidence of a response on the part of the citizenry, Radio Venceremos made numerous calls for a popular uprising. It claimed the leftist FMLN is making history. Of note is the fact that signal strength on both frequencies was quite strong. Frequency shifts were very minor, unlike many past Venceremos transmissions.

Nicaragua showed its sympathy for the rebels. La Voz de Nicaragua, now on 5999 kHz, carried extensive accounts of the offensive, with many including excerpts from Radio Venceremos. As these were sandwiched in between Spanish pop music and numerous special effects IDs, the whole conflict at times took on a kind of surrealist appearance.

Meanwhile, Frank McGuire, publisher of the *Counter-Terrorism* newsletter, sends along this item from the CIA's Foreign Broadcast Information Service. El Salvador's Treasury Police uncovered a plot to establish a Radio Venceremos repeater at the National University's Faculty of Science and Humanities. The equipment had already been installed at the Faculty of Medicine and Law and had been paid for by the Swedish Workers Union.

So that monitors could hear both sides in the El Salvador struggle, it is too bad that the shortwave service of government-controlled Radio El Salvador is not currently active. Several years ago it did make occasional appearances on 9555 or 9585. With some effort, and perhaps a bit of luck, you might pick up the mediumwave transmitter on 655 kHz.

Dominican Republic

Radio Clarin is back on shortwave and easily heard on 9950 kHz. In addition to carrying its own programs, in the past this one has frequently broadcast those produced by anti-Castro groups. It has been monitored here in Central Florida from 0100 to 0200 with an anti-Castro transmission. Further clarification is needed, but this appears to be a program of the Cuban American Association, which reportedly was interested in buying time on Radio Clarin.

Radio Venceremos is the chief station of El Salvador's leftist guerillas.

New York City Update

Recently we published a report allegedly sent to us by "Steve from Manhattan" on the pirate situation in the New York metropolitan area. While we believe the report was essentially correct, it did not originate with the person to whom it was attributed.

We heard from the real Steve from Manhattan, who is a regular on a call-in show. He advised us that there is a dispute involving a number of the area's pirates, and that it was this situation which resulted in the letter being sent under his name.

All we can say is we regret any inconvenience to Steve, and we hope peace soon returns. If the New York broadcasting situation begins to resemble that of El Salvador, nobody wins.

Further information on New York was received in an FCC press release. The FCC seized the broadcasting equipment of Brooklyn FM pirate WJPL. What is particularly significant about this closing is that the FCC was armed with a search warrant and made the raid on a night when the station was not broadcasting. This appears to be similar to what happened when another Brooklyn pirate, WHOT, was closed several months earlier.

In the past, many pirates have tended to believe they were reasonably safe unless the FCC came calling at or very close to the actual time of a transmission. This obviously is not the case.

Meanwhile we have an unconfirmed report, from a very reliable source, that a third station may have recently been shut down. Although the situation is far from clear at this time, WENJ may have been the latest station to have attracted the FCC's undivided attention. In the past it has been widely reported on shortwave.

Sudan

At around 0400 UTC, or a little before, you can find something interesting on 11625 kHz, if it is not blocked by a utility station sometimes found there. It was being reported as an anti-Sudanese clandestine, probably run by or sympathetic to one of the rebel groups in the south, which are locked in a long nasty struggle with the dominant Arabs in the north, who control the government.

However, the station is in fact run by the Sudanese government and is a relay of the Home Service. Listen for the music which is similar to that from Somalia. It is quite distinctive and makes for a unique sound. There will also be news and readings from the Koran.

Armenia

Catch the last five minutes of Radio Yerevan's 0330 to 0400 broadcast to Armenians in North America. That segment is in English, and it will startle you with the bluntness of the hostility expressed towards neighboring Azerbaijan. The frequency is 7400 kHz. This conflict has the potential to

confront the Soviets with a genuine civil war between the two nationality groups.

And Pirates Everywhere

From California, Norman Alexander writes to report he got a QSL from West Coast pirate Zodiac Radio. The address (which has replaced the old Hilo drop) is P.O. Box 452, Wellsville, NY 14895. Another Californian, Bill Wolverton, logged Radio Garbanzo on 7422.6. The transmission was immediately followed by one from Zodiac Radio.

"Richard Cranniume" sends us news about WTNU, The Nation's Underground Radio. He says look for them weekends between 7400 and 7500 kHz. Weekdays you may find them on 25, 29.71, and 30 MHz. He says, "WTNU brings the news and music of our nation's murder capital, Washington, to your radio." The address is Richard Cranniume, Suite 196, 4431 Lehigh Road, College Park, MD 20740.

North of the border, up in Ontario, Michael Cook logged the controversial pirate Voice of Tomorrow on 6240 at 0503. He also got a QSL certificate and other information from another pirate with an openly political message, Free Radio One. This was for a log on 7415.

Ohio's Fraser Bonnett and this writer both found a new one, WHBH Hillbilly Heaven. The station was found on 0325 in USB on 7400 with bluegrass music. Anybody have an address?

Connecticut's Jim Kalach has had some good success. He found Yukon Jack's Voice of the Abnormal on 7412 kHz at 0236. He also got a QSL and "media kit" from WKND Weekend Radio. The address for this is Box 628, Slanesville, WV 25444.

Virginia's Garry Morgan heard a Voice of Stench relay by East Coast Pirate Radio on 7485 at 2220 UTC. East Coast's address is Box 6527, Baltimore, MD 21219. VOS uses the Slanesville one preceding this.

From way out in Idaho we received two letters from Frank Arden. Frank heard a rare one in Radio Free Willy, which is something of an "anti-establishment broadcaster." It transmits infrequently. Frank heard it on 7405 at 0500 with depression-era folk music and satirical "advertisements." He also logged Jolly Roger International on 7445 at 0510.

In Texas D.R. Media found what may have been an unauthorized relay on 26294 kHz at 1900. The station being relayed played urban contemporary pop music and IDed only as "FM 104." However, there was a reference to the Carolinas. D.R. says to watch for the return of KDIL.

A Europirate?

Florida's Terry Krueger may have been fortunate enough to hear, if briefly, the test to North America by England's Radio Gemini. From 0457 to 0500 on 6230 he had a man with an English accent and a very weak signal on 6230 kHz, the advertised frequency. HCJB's 0500 sign-on killed any further possibilities. Radio Gemini could not have made a worse choice of frequencies.

For those who like "underground sounds" even by conventional media, you might want to take Chris Kissel's suggestion to consider a compact disc entitled "The Golden Age of Underground Radio." It features the late Tom Donahue of the San Francisco Bay area and the music he loved to play on KSAN. It's good, almost never heard, rock and roll from the late 60s and early 70s.

That's it for another month. Good DX to everybody!

Jim Kalach received this poster from pirate WKNO.

Don't judge a band by its scan

I regularly hear from readers who are sampling low frequency beacon DXing for the first time. All too frequently, I detect a feeling that after one has heard several beacons, the novice "lowfer" feels that the band has been exhausted. Not so! Not so!

Beacon spacing is three kHz at maximum and there are plenty of beacons filling many of those in-between frequencies. Also, there is more than one beacon to be heard on the majority of these frequencies. A total of 100 or more at any given time is not unreasonable. The numbers increase substantially over a full season with different conditions.

Two years ago, I personally logged more than 800 beacons during the year on a band that is effectively less than 250 kHz wide. (The frequencies between 435 and 512 kHz contain virtually no beacons. There are some calibration beacons on 480 and a scattering of foreign beacons on some other frequencies.)

The Aero/Marine Beacon Guide includes the western hemisphere plus the Pacific and Asia. It lists over 7,000 beacons. That is an average of almost 30 per frequency. Compare that with the world-wide total (including Europe and Africa) for any other band and you will see why there is so much to listen for on low frequencies.

Incidentally, the reason that the *Guide* does not include Europe and Africa is that neither can be heard in the United States, even on the east coast. The nearest I know of is Hank Holbrook's logging of a beacon in the Azores.

If you are interested in *The Aero/Marine Beacon Guide*, the 1990 edition is now available. As I mentioned, the *Guide* contains a listing of over 7,000 beacons in the western hemisphere, the Pacific areas and Asia. This includes all of the low frequency beacons in these areas plus those beacons still remaining in the 1600-1800 kHz range.

Divided between North American and Foreign, and arranged in frequency order, each listing shows the frequency, ID, modulation shift, location by name and coordinates, elevation of transmitter site, power and miscellaneous additional information (where pertinent). There is a cross index by ID to make locating that "new catch" much easier.

There are also articles by well-known DXers on propagation, listening techniques, and sending for QSLs. The *Guide* is edited by Ken Stryker, Unidentified Beacons Editor of the Longwave Club of America, and compiled by myself. To order the *Guide*, send $15.00 to:

Ken Stryker
2856-G W. Touhy Avenue
Chicago, IL 60645

Looking Back

The famous baseball pitcher, Satchell Paige, used to have a saying "Never look back; somebody may be gaining on you." In some ways that is probably good advice, but not when it concerns additional information about items in previous columns. So here goes:

✓ The December issue talked about CBC, a new beacon on 415. It turns out that this wasn't really a new beacon after all. The beacon at Cayman Brac in the Cayman Islands had moved from 217 to 415. It has a power of 100 watts. Oh, yes -- it has now been heard in the middle west.

Incidentally, another new beacon popped up from that general area. This one is ZLS/320. It is located at Stella Maris on Long Island in the Bahamas. ZLS has a power of 1000 watts and is almost a daily visitor at my QTH near Chicago.

✓ In November I listed some beacons that used to have voice broadcasts of weather but now send only CW. Many of these were heard greater distances after they discontinued the voice transmissions. It was mentioned that some of these beacons were 400 watts when they had voice and apparently continued at the same power with just the CW portion.

Now it appears that some may be reducing their power on CW. Both Knoxville (SGK/281) and Nashville (BN/304) are heard less frequently and are becoming DX catches in areas where they used to be almost pests. There has been no official change in power; this is only based on observations.

Ken Stryker spent about a week in Tennessee early in the fall and noted that neither beacon was particularly strong even at that close distance. Keep trying for the ex-voice beacons that were listed. You may still catch several of them.

✓ Back a few months ago, reader Terry Kray asked why NSS occasionally sent reasonably slow CW when the normal form is highly encrypted RTTY. Now Tom Adams of Madison, Wisconsin, provides the answer.

He heard them back in 1985 and, thinking they had accidentally put the wrong tape on the wrong transmitter, sent in a QSL report. His report wound up in the hands of a chief radioman who was also a ham operator, like Tom. He explained why the transmissions were being sent and even sent him an old NSS QSL card from the days when NSS had a radio club.

The reason for the CW transmission is CW practice for the fleet. Every Tuesday, NSS broadcasts machine code at 18 to 22 words per minute as an exercise. The transmission is on 21.4 kHz from 2100Z to 2155Z, and the ships are required to submit their copy of the message to the fleet commander. The day or time may be different now, but you might give it a try.

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program guide

Sunday

Feb 4th, 11th, 18th, 25th

0011 Radio Moscow (World Service): Inside Report. A look at the present-day issues and events in the Soviet Union.
0030 BBC: Composer of the Month. Profiles of great composers and selections from their works.
0032 Radio Moscow (World Service): Audio Book Club. The best of Russian classics and contemporary Soviet literature.
0035 Radio Kiev: Open Studio. Discussion on Kiev's cultural exchanges with the world.
0039 Radio Kiev: Dialogue. Listener letters provide topics for conversation.
0101 BBC: Play of the Week. Hour-long drama selections.
0130 Radio Austria Int'l: Report from Austria. A magazine program, covering all aspects of Austrian life and events in the news.
0132 Radio Moscow (World Service): Newmarket. A look at commercial products and opportunities in the USSR.
0208 Radio Bucharest: Reports/Commentaries/Features. News, analysis, and opinion, plus features on life in Romania.
0209 BBC: British Press Review. Survey of editorial opinion in the British press.
0211 Radio Moscow (World Service): Music and Musicians. Music from world-famous performers and composers.
0215 BBC: Feature. Programming on various subjects.
0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
0305 Radio Kiev: Open Studio. See S 0035.
0309 Radio Kiev: Dialogue. See S 0039.
0311 Radio Moscow (World Service): Top Priority. A discussion and analysis program.
0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
0330 BBC: Quiz. A quiz show of a topical nature.
0332 Radio Moscow (World Service): Russian by Radio. Lessons in Russian for English speakers.
0408 Radio Bucharest: Reports/Commentaries/Features. See S 0208.
0411 Radio Moscow (World Service): News and Views. Soviet views on news developments.
0430 BBC: The Story Lives On. A look at the traditions of British ballads.
0432 Radio Moscow (World Service): Your Top Tune. A quiz show featuring popular music.
0445 BBC: Personal View. A personal opinion on topical issues in British life.
0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
0511 Radio Moscow (World Service): Update. Comments on and in-depth analysis of the latest developments in the world.
0530 BBC: Financial Review. A look back at the financial week.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0532 Radio Moscow (World Service): Vasily's Weekend. Details unavailable at press time.
0538 Radio Bucharest: Reports/Commentaries/Features. See S 0208.
0540 BBC: Words of Faith. People share how their scripture gives meaning to their lives.
0545 BBC: Letter from America. Alistair Cooke's distinctly British view of America.
0600 Radio Norway Int'l: Norway Today. A magazine program on issues and people affecting modern-day Norway.
0611 Radio Moscow (World Service): Culture and the Arts. A look at the varied arts and cultures of the Soviet Union.
0630 BBC: Jazz for the Asking. A jazz music request show.
0632 Radio Moscow (World Service): Audio Book Club. See S 0032.
0640 Radio Polonia: What We Said or Music. Commentaries from the week past or a variety of music.
0653 Radio Bucharest: Reports/Commentaries/Features. See S 0208.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Mailbag. Answers to listener questions.
0730 BBC: From Our Own Correspondent. See S 0315.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0732 Radio Moscow (World Service): Your Top Tune. See S 0432.
0745 BBC: Book Choice. Short reviews of current or future best-sellers.
0750 BBC: Waveguide. How to hear the BBC better.
1111 Radio Moscow (World Service): Culture and the Arts. See S 0611.
1115 BBC: From Our Own Correspondent. See S 0315.
1130 BBC: Composer of the Month. See S 0030.
1130 Radio Austria Int'l: Shortwave Panorama. Developments in communications and shortwave radio news.
1132 Radio Moscow (World Service): Audio Book Club. See S 0032.
1200 Radio Norway Int'l: Norway Today. See S 0600.
1201 BBC: Play of the Week. See S 0101.

Einar Lee prepares a news bulletin for broadcast on Radio Norway International.

MT Program Team

Kannon Shanmugam, Program Manager
4412 Turnberry Circle
Lawrence, KS 66047

Jim Frimmel
Willow Park, Texas

Dale Vanderpoel
Ft. Lauderdale, Florida

LEGEND

* The first four digits of an entry are the program start time in UTC.
* The time is followed by the station name, program name, and a brief summary of the program's content.
* Some listings may be followed by "See X 0000." The letter stands for a day of the week:

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

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

* All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
* All days are in UTC. Remember that if you are listening in North American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 7:01 pm [EST] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

program guide

1208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0411.
1232 Radio Moscow (World Service): Vasily's Weekend. See S 0532.
1300 Radio Norway Int'l: Norway Today. See S 0600.
1308 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Newmarket. See S 0132.
1330 BBC: Sports Roundup. The day's sports news.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1332 Radio Moscow (World Service): Your Top Tune. See S 0432.
1345 BBC: Personal View. See S 0445.
1400 Radio Norway Int'l: Norway Today. See S 0600.
1401 BBC: Feature. Programming on various subjects.
1406 Radio Peace and Progress: Commentary and Reports. News dispatches and analysis.
1411 Radio Moscow (World Service): Top Priority. See S 0311.
1425 Radio Peace and Progress: Music. Selections from various tunes.
1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
1430 Radio Austria Int'l: Shortwave Panorama. See S 1130.
1432 Radio Moscow (World Service): Russian by Radio. See S 0332.
1508 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1511 Radio Moscow (World Service): News and Views. See S 0411.
1515 BBC: International Recital. A series of concerts from the BBC Concert Hall in London.
1532 Radio Moscow (World Service): Music at Your Request. Music as requested by listeners.
1532 Radio Moscow (World Service): Science and Engineering. Developments in Soviet science and technology.
1600 Radio Norway Int'l: Norway Today. See S 0600.
1610 Radio Polonia: Request Concert. A musical request program playing listeners' musical favorites.
1611 Radio Moscow (World Service): News and Views. See S 0411.
1615 BBC: Feature. Programming on various subjects.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1636 Radio Peace and Progress: Commentary and Reports. See S 1406.
1645 BBC: Letter from America. See S 0545.

John Peel appropriately presents "John Peel," a program of progressive rock music on the BBC World Service. It airs at 0330 UTC on Tuesdays, repeated at 1330 UTC on Fridays.

1655 Radio Peace and Progress: Music. See S 1425.
2300 Radio Norway Int'l: Norway Today. See S 0600.
2305 BBC: Words of Faith. See S 0540.
2310 BBC: Book Choice. See S 0745.
2311 Radio Moscow (World Service): Music and Musicians. See S 0211.
2315 BBC: Letter from America. See S 0545.
2315 Radio Polonia: Request Concert. See S 1610.
2330 BBC: Feature. See S 1401.

Monday

Feb 5th, 12th, 19th, 26th

0000 Radio Norway Int'l: Norway Today. See S 1300.
0011 Radio Moscow (World Service): Inside Report. See S 0011.
0030 BBC: In Praise of God. A half-hour program of worship.
0032 Radio Moscow (World Service): Russian by Radio. See S 0332.
0035 Radio Kiev: Sunday with Radio Kiev. A look at the Ukranian music scene with music, interviews and backgrounds of the performers.
0101 BBC: Feature. Programming on various subjects.
0111 Radio Moscow (World Service): Science and Engineering. See S 1532.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Moscow (World Service): Inside Report. See S 0011.
0145 BBC: Sounding Brass. An exploration of the world of brass bands.
0208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Mailbag. See S 0711.
0215 BBC: Andy Kershaw's World of Music. Exotic and innovative music from the world over.
0230 BBC: Science in Action. The latest in scientific developments.
0232 Radio Moscow (World Service): Audio Book Club. See S 0032.
0305 Radio Kiev: Sunday with Radio Kiev. See M 0035.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: Good Books. A recommendation of a book to read.
0330 BBC: Anything Goes. See S 1430.
0332 Radio Moscow (World Service): Russian by Radio. See S 0332.
0408 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0411 Radio Moscow (World Service): News and Views. See S 0411.
0430 BBC: Off the Shelf. A reading selected from the best of world literature.
0432 Radio Moscow (World Service): Jazz Show. A jazz music program.
0445 BBC: Talks. Short talks on various subjects.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Newmarket. See S 0132.
0530 BBC: Waveguide. See S 0750.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0532 Radio Moscow (World Service): Music. Music selections played by Radio Moscow staff.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

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

We invite listeners and stations to send program information to the program manager.

0000 BBC: Newsdesk
0000 Christian Science Monitor: News
0000 Kol Israel: News
0000 KVOH: UPI Radio News
0000 Radio Australia: International Report
0000 Radio Beijing: News
0000 Radio Canada Int'l: News [S-M]; The World at Six [T-A]
0000 Radio Havana Cuba: Int'l News [M-A]
0000 Radio Moscow: News
0000 Radio New Zealand Int'l: News
0000 Radio Yugoslavia: News
0000 Spanish National Radio: News
0000 Voice of America: News
0000 WWCR: News [M-F]
0010 Radio Beijing: News About China
0030 Christian Science Monitor: News [T-F]
0030 KVOH: UPI Headline News
0030 Radio Budapest: News
0030 Radio Canada Int'l: News [S-M]
0030 Radio Havana Cuba: Newsbreak [M-A]
0030 Radio Moscow (World Service): News in Brief
0030 Radio Netherlands: News [T-S]
0030 Voice of America (Americas, East Asia): News (Special English) [T-S]
0030 Voice of America (East Asia): News (Special English) [M]
0045 Radio Berlin Int'l: News
0051 Spanish National Radio: News Summary [S]
0055 KUSW: News [T-S]
0055 WRNO: ABC News [W-H, A]
0100 BBC: News Summary
0100 Belize Radio One: Network News
0100 Christian Science Monitor: News
0100 Deutsche Welle: World News
0100 Kol Israel: News
0100 KVOH: UPI Radio News [T-A]
0100 Radio Australia: World and Australian News
0100 Radio Canada Int'l: News [S-M]
0100 Radio Havana Cuba: Int'l News [M-A]
0100 Radio Japan: News
0100 Radio Moscow: News
0100 Radio New Zealand Int'l: News
0100 Radio Prague: News
0100 Radiotelevisione Italiana: News
0100 Spanish National Radio: News
0100 Voice of America: News
0100 Voice of Indonesia: News
0115 Radio Havana Cuba: Cuban Nat'l News [M-A]
0130 Christian Science Monitor: News [T-F]

program guide

The monthly show "Two Cheers" on the BBC might be the only program where writers get paid by the minute! Presenters of the satirical show are (clockwise from top) David Tate, Bill Wallis, Jon Glover, and Sally Grace.

0538 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Feature. See S 1401.
0632 Radio Moscow (World Service): Audio Book Club. See S 0032.
0640 Radio Polonia: Request Concert. See S 1610.
0653 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Top Priority. See S 0311.
0730 BBC: Feature. See S 1615.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0732 Radio Moscow (World Service): Music. See M 0532.
1111 Radio Moscow (World Service): Mailbag. See S 0711.
1115 BBC: Health Matters. New developments in the world of medical science and fitness.
1130 BBC: The Ken Bruce Show. See S 0230.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1132 Radio Moscow (World Service): Music. See M 0532.
1208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0411.
1215 BBC: Screenplay. A film quiz show hosted by Iain Johnstone.
1232 Radio Moscow (World Service): Newmarket. See S 0132.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1309 BBC: Twenty-Four Hours. See S 0509.
1330 BBC: Feature. See S 1615.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1332 Radio Moscow (World Service): Music. See M 0532.
1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
1406 Radio Peace and Progress: Commentary and Reports. See S 1406.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1425 Radio Peace and Progress: Music. See S 1425.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1432 Radio Moscow (World Service): Music. See M 0532.
1445 BBC: Feature. See S 0215.
1508 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1511 Radio Moscow (World Service): Inside Report. See S 0011.
1515 BBC: The Good Book. See M 0101.
1532 Radio Moscow (World Service): Folk Box. A program for lovers of folk music.
1545 BBC: Readings from the Good Book. See M 0130.
1610 Radio Polonia: Postbag. A listener response program.
1611 Radio Moscow (World Service): Culture and the Arts. See S 0611.
1615 BBC: Good Books. See M 0315.
1630 BBC: Health Matters. See M 1115.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1632 Radio Moscow (World Service): Audio Book Club. See S 0032.
1636 Radio Peace and Progress: Commentary and Reports. See S 1406.
1645 BBC: The World Today. News analysis on a selected location or event in the news.
1655 Radio Peace and Progress: Music. See S 1425.
2305 BBC: Commentary. Background to the news from a wide range of specialists.
2310 BBC: Financial News. News of commodity prices and significant moves in currency and stock markets.
2311 Radio Moscow (World Service): Update. See S 0511.
2315 BBC: The Literary North. A look at great English writers from Northern England.
2315 Radio Polonia: Postbag. See M 1610.
2330 BBC: Multitrack 1: Top 20. Tim Smith presents what's hot on the British pop music charts.
2332 Radio Moscow (World Service): Focus on Asia and the Pacific. News and commenls on events in the region.

Tuesday

Feb 6th, 13th, 20th, 27th

0011 Radio Moscow (World Service): Inside Report. See S 0011.
0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
0032 Radio Moscow (World Service): Update. See S 0511.
0035 Radio Kiev: Commentary. Comment on news affecting the people of the Soviet Union.
0039 Radio Kiev: Ukraine Today. Ukranian news and weather, human interest stories, and a look at the day's sports.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0125 BBC: Financial News. See M 2310.
0130 BBC: Short Story. Brief tales written by BBC listeners.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Moscow (World Service): Inside Report. See S 0011.
0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with

news guide cont'd from p.57

0130 KVOH: UPI Headline News [T-A]
0130 Radio Budapest: News
0130 Radio Havana Cuba: News [M-A]
0130 Radio Moscow (World Service): News in Brief
0150 HCJB: News [T-A]
0151 Radio Veritas Asia: World News [M-F]
0151 Spanish National Radio: News Summary [S]
0153 Radio Prague: News Wrap-Up
0155 HCJB: News [S]
0155 KUSW: News [T-S]
0155 Radio Veritas Asia: World News [A]
0155 Voice of Indonesia: News in Brief
0200 BBC: World News
0200 Christian Science Monitor: News
0200 Deutsche Welle: World News
0200 HCJB: News [M]
0200 Kol Israel: News
0200 KVOH: UPI Radio News [T-A]
0200 Radio Australia: International Report
0200 Radio Berlin Int'l: News
0200 Radio Bras, Brasilia: News
0200 Radio Bucharest: News
0200 Radio Havana Cuba: Int'l News [M-A]
0200 Radio Kiev: News
0200 Radio Moscow: News
0200 Radio New Zealand Int'l: News [A-S]
0200 Radio RSA: News
0200 RAE, Buenos Aires: News
0200 Swiss Radio Int'l: News
0200 Voice of America: News
0200 Voice of Free China: News and Commentary
0200 WWCR: News [M-F]
0215 Radio Cairo: News
0230 Christian Science Monitor(E.Africa):News [M]
0230 Christian Science Monitor: News [T-F]
0230 KVOH: UPI Headline News [T-A]
0230 Radio Finland: Northern Report [T-A]
0230 Radio Havana Cuba: Newsbreak [M-A]
0230 Radio Moscow (World Service): News in Brief
0230 Radio Pakistan: News (Special English)
0230 Radio Portugal: News [T-A]
0230 Radio Tirana, Aibania: News
0245 Radio Berlin Int'l: News
0255 KUSW: News [T-S]
0300 BBC: World News
0300 Belize Radio One: News
0300 Christian Science Monitor: News
0300 Deutsche Welle: World News
0300 HCJB: News [T-A]
0300 KVOH: UPI Radio News [T-A]
0300 Radio Australia: World and Australian News
0300 Radio Beijing: News
0300 Radio Canada Int'l: News [M-F]
0300 Radio for Peace Int'l: News [T,A]
0300 Radio Havana Cuba: Int'l News [M-A]
0300 Radio Japan: News
0300 Radio Moscow: News
0300 Radio New Zealand Int'l: News [A-S]
0300 Radio Prague: News
0300 Voice of America: News
0300 Voice of Free China: News and Commentary
0300 WRNO: ABC News [F]
0309 BBC: News About Britain
0310 Radio Beijing: News About China
0315 Radio Cairo: News
0315 Radio France International: News
0315 Radio Havana Cuba: Cuban Nat'l News [M-A]
0330 Christian Science Monitor(E.Africa):News [M]
0330 Christian Science Monitor: News [T-F]
0330 KVOH: UPI Headline News [T-A]
0330 Radio Berlin Int'l: News
0330 Radio Havana Cuba: News [M-A]
0330 Radio Moscow (World Service): News in Brief

program guide

BULLETIN BOARD

DOGS OF THE AIR: Need a chuckle? Check out some of the programs emanating from the far left. From Radio Tirana, there's "Leafing through the Marxist-Leninist Press," "Marxism-Leninism - An Ever Young and Scientific Doctrine," and "Outstanding Figures of World Progressive Art." And the 1990 schedule from Radio Jamahiriya, Libya, features such gems as "U.S. Intervention in Central America," "The Scourge of Imperialism," "The Human Rights Lie," "U.S. Terrorism around the World," "Dollars for War, Not for Food," "Under the Shadow of the CIA," and "Imperialism - The Root of Global Problems." Makes you want to move to Tripoli, right?

MOSCOW ENTERS THE '90S - KIND OF: The program schedule for Radio Moscow's World Service has finally noted something which listeners have known for years - namely, that the Muscovites have news briefs every hour on the half-hour.

In addition, Radio Moscow has taken to a rather strange habit: sandwiching programs around news bulletins. Thus, if you wish to hear "Audio Book Club" on the World Service, you can tune in on Sundays at 0032 UTC, then rush off to the kitchen to make popcorn at 0100 UTC, and hurry back for the last segment at 0111 UTC. What's next on Moscow - pro football?

Incidentally, the revamped World Service schedule is in this month's listings.

NOT JUST FOR KIDS: The BBC has taken great pains to ensure that "Megamix," their program for teenagers, is anything but just that. While it is occasionally obvious that segments are directed toward younger audiences, the program generally tends to be a string of whimsical, human interest-like features for fans of pop culture. The only problem is that the program is rather self-congratulatory toward Britain, painting the UK as a sort of benevolent father of the world. But that's hardly new for the BBC!

If you're interested in pop culture, check out "Megamix." The program airs at 0030 UTC and 1130 UTC on Tuesdays.

other parts of the world.
0208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Update. See S 0511.
0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
0232 Radio Moscow (World Service): Mailbag. See S 0711.
0305 Radio Kiev: Commentary. See T 0035.
0309 Radio Kiev: Ukraine Today. See T 0039.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: The World Today. See M 1645.
0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
0332 Radio Moscow (World Service): Update. See S 0511.
0408 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0411 Radio Moscow (World Service): News and Views. See S 0411.
0430 BBC: Off the Shelf. See M 0430.
0432 Radio Moscow (World Service): Yours for the Asking. Music as requested by listeners.
0445 BBC: New Ideas. A radio shop window for new products and inventions.
0455 BBC: Book Choice. See S 0745.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Update. See S 0511.
0530 BBC: Financial News. See M 2310.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0532 Radio Moscow (World Service): Music. See M 0532.
0538 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: It's Not Only Rock 'n' Roll. A look at the cutting edge of rock music over the last 30 years (except February 27th: Musical Feature, programming on various musical subjects).
0632 Radio Moscow (World Service): Update. See S 0511.
0640 Radio Polonia: Postbag. See M 1610.
0653 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0730 BBC: Europe's World. See T 0145.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0732 Radio Moscow (World Service): Perestroika. Insight on where the Soviet Union is going.
0745 BBC: Network UK. See T 0215.
1111 Radio Moscow (World Service): Update. See S 0511.
1115 BBC: Waveguide. See S 0750.
1125 BBC: Book Choice. See S 0745.
1130 BBC: Megamix. See T 0030.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1132 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0411.
1215 BBC: Multitrack 1: Top 20. See M 2330.
1232 Radio Moscow (World Service): Folk Box. See M 1532.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1330 BBC: Network UK. See T 0215.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1332 Radio Moscow (World Service): Audio Book Club. See S 0032.
1345 BBC: The Story Lives On. See S 0430.

0330 Radio Netherlands: News [T-S]
0330 Radio Tirana, Albania: News
0330 UAE Radio, Dubai: News
0350 Radio Yerevan: News
0350 Radiotelevisione Italiana: News
0353 Radio Prague: News Wrap-up
0355 KUSW: News [T-S]
0400 BBC: Newsdesk
0400 Christian Science Monitor: News
0400 Deutsche Welle: World News
0400 HCJB: News [M-A]
0400 Radio Australia: International Report
0400 Radio Beijing: News
0400 Radio Berlin Int'l: News
0400 Radio Bucharest: News
0400 Radio Canada Int'l: News [M-F]
0400 Radio Havana Cuba: Int'l News [M-A]
0400 Radio Moscow: News
0400 Radio New Zealand Int'l: News
0400 Radio RSA: News
0400 Radio Tanzania: News
0400 RAE, Buenos Aires: News
0400 Swiss Radio Int'l: News
0400 Voice of America: News
0410 Radio Beijing: News About China
0425 Radiotelevisione Italiana: News
0430 Christian Science Monitor(E.Africa):News [M]
0430 Christian Science Monitor: News [T-F]
0430 Radio Havana Cuba: Newsbreak [M-A]
0430 Radio Moscow (World Service): News in Brief
0430 Radio Netherlands: News [M-A]
0430 Radio Tirana, Albania: News
0445 Radio Berlin Int'l: News
0455 KUSW: News [S, T-F]
0455 Radio Tanzania: News
0500 BBC: World News
0500 Christian Science Monitor: News
0500 Deutsche Welle: World News
0500 HCJB: News [S-M]; Latin American [T-A]
0500 Kol Israel: News
0500 Radio Australia: World and Australian News
0500 Radio Havana Cuba: Int'l News [M-A]
0500 Radio Japan: News
0500 Radio Moscow: News
0500 Radio New Zealand Int'l: News
0500 Spanish National Radio: News
0500 Voice of America: News
0515 Radio Havana Cuba: Cuban Nat'l News [M-A]
0530 Christian Science Monitor(E.Africa):News [M]
0530 Christian Science Monitor: News [T-F]
0530 Radio Bucharest: News
0530 Radio Havana Cuba: News [M-A]
0530 Radio Moscow (World Service): News in Brief
0530 UAE Radio, Dubai: News
0550 HCJB: News [T-A]
0551 Spanish National Radio: News Summary [S]
0555 HCJB: News [S]
0555 KUSW: News [S, T-F]
0600 BBC: Newsdesk
0600 Christian Science Monitor: News
0600 Deutsche Welle: World News
0600 HCJB: News [M]
0600 Radio Australia: International Report
0600 Radio Berlin Int'l: News
0600 Radio Havana Cuba: Int'l News [M-A]
0600 Radio Korea: News
0600 Radio Moscow: News
0600 Radio New Zealand Int'l: News
0600 Voice of America: News
0615 Radio Berlin Int'l: News
0615 Radio Canada Int'l: News [M-F]
0630 Christian Science Monitor: News [M-F]
0630 Radio Finland: Northern Report [T-A]
0630 Radio Havana Cuba: Newsbreak [M-A]
0630 Radio Moscow (World Service): News in Brief

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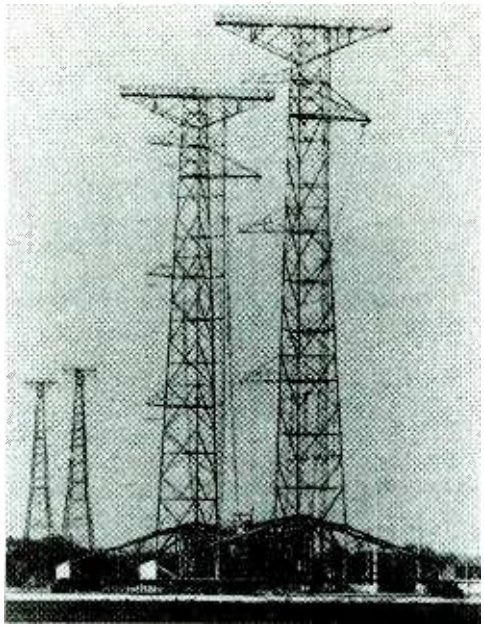
1405 BBC: Outlook. See M 1405.
1406 Radio Peace and Progress: Commentary and Reports. See S 1406.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1425 Radio Peace and Progress: Music. See S 1425.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1432 Radio Moscow (World Service): Update. See S 0511.
1445 BBC: Sounding Brass. See M 0145.
1508 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1511 Radio Moscow (World Service): News and Views. See S 0411.
1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener record requests and dedications, and the UK's top ten albums.
1532 Radio Moscow (World Service): Music. See M 0532.
1610 Radio Polonia: DX Program. Shortwave radio news and information.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1615 BBC: Omnibus. A half-hour program on practically any topic.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1632 Radio Moscow (World Service): Newmarket. See S 0132.
1636 Radio Peace and Progress: Commentary and Reports. See S 1406.
1645 BBC: The World Today. See M 1645.
1655 Radio Peace and Progress: Music. See S 1425.
2305 BBC: Commentary. See M 2305.
2310 BBC: Financial News. See M 2310.
2311 Radio Moscow (World Service): Update. See S 0511.
2315 BBC: International Recital. See S 1515.
2315 Radio Polonia: DX Program. See T 1610.
2332 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.

Wednesday

Feb 7th, 14th, 21st, 28th

0011 Radio Moscow (World Service): Inside Report. See S 0011.
0030 BBC: Omnibus. See T 1615.
0032 Radio Moscow (World Service): Update. See S 0511.
0035 Radio Kiev: Commentary. See T 0035.



Radio Austria's rotatable curtain antenna at the transmitting center in Moosbrunn.

0039 Radio Kiev: Ukraine Today. See T 0039.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0125 BBC: Financial News. See M 2310.
0130 BBC: Feature. Programming on various subjects.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Moscow (World Service): Inside Report. See S 0011.
0145 BBC: Country Style. David Allan presents British country music.
0208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Update. See S 0511.
0215 BBC: Health Matters. See M 1115.
0230 BBC: The Atlantic Story. The history of Atlantic Records, the popular music label.
0232 Radio Moscow (World Service): Perestroika. See T 0732.
0305 Radio Kiev: Commentary. See T 0035.
0309 Radio Kiev: Ukraine Today. See T 0039.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: The World Today. See M 1645.
0330 BBC: Discovery. An in-depth look at scientific research.
0332 Radio Moscow (World Service): Update. See S 0511.
0408 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0411 Radio Moscow (World Service): News and Views. See S 0411.
0430 BBC: Off the Shelf. See M 0430.
0432 Radio Moscow (World Service): Music at Your Request. See S 1532.
0445 BBC: Country Style. See W 0145.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Update. See S 0511.
0530 BBC: Financial News. See M 2310.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0532 Radio Moscow (World Service): Music. See M 0532.
0538 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Meridian. The world of the arts, including music, drama, and books.
0632 Radio Moscow (World Service): Update. See S 0511.
0640 Radio Polonia: DX Program. See T 1610.
0653 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0730 BBC: Development '90. Aid and development issues.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0732 Radio Moscow (World Service): Press Review. A look at events as covered in the Soviet press.
1111 Radio Moscow (World Service): Update. See S 0511.
1115 BBC: Country Style. See W 0145.
1130 BBC: Meridian. See W 0630.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1132 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.

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0630 Radio Polonia: News
0630 Swiss Radio Int'l: News
0645 Radio Bucharest: News
0645 Radio Canada Int'l: News [M-F]
0655 HCJB: News [M-A]
0655 KUSW: News [S]
0700 BBC: World News
0700 BRT, Brussels: News [M-F]
0700 Christian Science Monitor: News
0700 Radio Australia: World and Australian News
0700 Radio Havana Cuba: Int'l News [M-A]
0700 Radio Japan: News
0700 Radio Moscow: News
0700 Radio New Zealand Int'l: News [A-S]
0700 Voice of Free China: News and Commentary
0715 Radio Havana Cuba: Cuban Nat'l News [M-A]
0730 Christian Science Monitor: News [M-F]
0730 Radio Havana Cuba: News [M-A]
0730 Radio Moscow (World Service): News in Brief
0730 Radio Netherlands: News [M-A]
0755 KUSW: News [S]
0800 BBC: World News
0800 Christian Science Monitor: News
0800 Radio Australia: International Report
0800 Radio Finland: Northern Report [T-S]
0800 Radio Korea: News
0800 Radio Moscow (World Service): News
0800 Radio Tirana, Albania: News
0800 Voice of Indonesia: News
0830 Christian Science Monitor: News [M-F]
0830 Radio Finland: Northern Report [T-S]
0830 Radio Moscow (World Service): News in Brief
0830 Radio Netherlands: News [M-A]
0830 Swiss Radio Int'l: News
0845 Radio Berlin Int'l: News
0855 KUSW: News [S]
0855 Voice of Indonesia: News in Brief
0900 BBC: World News
0900 BRT, Brussels: News [M-F]
0900 Christian Science Monitor: News
0900 Deutsche Welle: World News
0900 Radio Australia: World and Australian News
0900 Radio Japan: News
0900 Radio Moscow (World Service): News
0900 Radio New Zealand Int'l: News
0930 Christian Science Monitor: News [M-F]
0930 Radio Moscow (World Service): News in Brief
0955 KUSW: News [S]
1000 BBC: News Summary
1000 Christian Science Monitor: News
1000 Radio Australia: International Report
1000 Radio Berlin Int'l: News
1000 Radio Moscow (World Service): News
1000 Radio New Zealand Int'l: News
1000 Radio Tanzania: News
1000 Swiss Radio Int'l: News
1000 Voice of America: News
1030 Radio Moscow (World Service): News in Brief
1030 Radio Netherlands: News [M-A]
1030 UAE Radio, Dubai: News
1045 Radio Berlin Int'l: News
1055 KUSW: News [S]
1100 BBC: World News
1100 Christian Science Monitor: News [M-F]
1100 Deutsche Welle: World News
1100 Kol Israel: News
1100 Radio Australia: World and Australian News
1100 Radio Beijing: News
1100 Radio Finland: Northern Report [T-F]
1100 Radio Japan: News
1100 Radio Korea: News
1100 Radio Moscow (World Service): News
1100 Radio New Zealand Int'l: News

program guide

1211 Radio Moscow (World Service): News and Views. See S 0411.
1215 BBC: Musical Feature. Programming on various musical subjects.
1225 BBC: The Farming World. Issues in agriculture.
1232 Radio Moscow (World Service): Music. See M 0532.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1330 BBC: Development '89. See W 0730.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1332 Radio Moscow (World Service): Newmarket. See S 0132.
1405 BBC: Outlook. See M 1405.
1406 Radio Peace and Progress: Commentary and Reports. See S 1406.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1425 Radio Peace and Progress: Music. See S 1425.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1432 Radio Moscow (World Service): Update. See S 0511.
1445 BBC: Business Matters. See W 0430.
1508 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1511 Radio Moscow (World Service): News and Views. See S 0411.
1515 BBC: The Literary North. See M 2315.
1530 BBC: You Asked For It. A story-telling game (except February 28th: Two Cheers for February, a satirical look back at the month just past).
1532 Radio Moscow (World Service): Jazz Show. See M 0432.
1610 Radio Polonia: Panorama. A current affairs feature covering a wide spectrum of topics.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1615 BBC: It's Not Only Rock 'n' Roll (except February 28th: Musical Feature). See T 0630.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1632 Radio Moscow (World Service): Russian by Radio. See S 0332.
1636 Radio Peace and Progress: Commentary and Reports. See S 1406.
1645 BBC: The World Today. See M 1645.
1655 Radio Peace and Progress: Music. See S 1425.
2305 BBC: Commentary. See M 2305.
2310 BBC: Financial News. See M 2310.
2311 Radio Moscow (World Service): Update. See S 0511.
2315 BBC: Good Books. See M 0315.
2315 Radio Polonia: Panorama. See W 1610.
2330 BBC: Multitrack 2. Graham Bannerman presents new pop music records, interviews, news, and competitions.
2332 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.

Thursday

Feb 1st, 8th, 15th, 22nd

0011 Radio Moscow (World Service): Inside Report. See S 0011.
0032 Radio Moscow (World Service): Update. See S 0511.
0035 Radio Kiev: Commentary. See T 0035.
0039 Radio Kiev: Ukraine Today. See T 0039.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0125 BBC: Financial News. See M 2310.
0130 BBC: Waveguide. See S 0750.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Moscow (World Service): Inside Report. See S 0011.
0140 BBC: Book Choice. See S 0745.
0145 BBC: Society Today. A weekly look at the changes in Britain.
0208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Update. See S 0511.
0215 BBC: Network UK. See T 0215.
0230 BBC: Assignment. Examinations of current topical issues.
0232 Radio Moscow (World Service): Press Review. See W 0732.
0305 Radio Kiev: Commentary. See T 0035.
0309 Radio Kiev: Ukraine Today. See T 0039.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: The World Today. See M 1645.
0330 BBC: Screenplay. See M 1215.
0332 Radio Moscow (World Service): Update. See S 0511.
0408 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0411 Radio Moscow (World Service): News and Views. See S 0411.
0430 BBC: Off the Shelf. See M 0430.
0432 Radio Moscow (World Service): Folk Box. See M 1532.
0445 BBC: Andy Kershaw's World of Music. See M 0215.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Update. See S 0511.
0530 BBC: Financial News. See M 2310.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0532 Radio Moscow (World Service): Music. See M 0532.

Part of the staff of Radio Norway International (left to right): Oystein Rakkenes, Tone Sorstronen, Olav Kjorven, Torbjen Horn, Sverre Fredheim, Einar Lee, Anne Lie Nymoen, Unni Westlund, and Hans Petter Reppe.

1100 Radio RSA: News
1100 Swiss Radio Int'l: News
1100 Trans World Radio, Bonaire: News [M-F]
1100 Voice of America: News
1105 Radio Pakistan: News (Special English)
1109 BBC: News About Britain
1110 Belize Radio One: News Summary [T-F]
1110 Radio Beijing: News About China
1120 Belize Radio One: News Summary [A]
1125 Belize Radio One: News Summary [M]
1130 Christian Science Monitor: News
1130 Radio Moscow (World Service): News in Brief
1130 Radio Netherlands: News [M-A]
1130 Radio Tirana, Albania: News
1152 Radio RSA: News in Brief
1155 KUSW: News [S]
1200 BBC: News Summary [S]; Newsreel [M-A]
1200 Christian Science Monitor: News [M-F]
1200 Radio Australia: International Report
1200 Radio Beijing: News
1200 Radio Berlin Int'l: News
1200 Radio Bucharest: News
1200 Radio Canada Int'l: News
1200 Radio Finland: Northern Report [T-F]
1200 Radio Moscow (World Service): News
1200 Radio New Zealand Int'l: News
1200 Radio Polonia: News
1200 Radio Yugoslavia: News
1200 Swiss Radio Int'l: News
1200 Voice of America: News
1210 Radio Beijing: News About China
1230 BRT, Brussels: News [M-S]
1230 Christian Science Monitor: News
1230 Radio Berlin Int'l: News
1230 Radio Moscow (World Service): News in Brief
1230 Radio Polonia: News
1230 Trans World Radio, Bonaire: News [M-A]
1245 Radio France International: News
1300 BBC: World News
1300 Belize Radio One: News
1300 Christian Science Monitor: News
1300 Christian Science Monitor: News [M-F]
1300 Radio Australia: World and Australian News
1300 Radio Bucharest: News
1300 Radio Canada Int'l: World Report [M-F]
1300 Radio Finland: Northern Report [T-A]
1300 Radio Moscow (World Service): News
1300 Radio RSA: News
1300 Radio Tanzania: News [A-S]
1300 Trans World Radio, Bonaire: News [S]
1300 Voice of America: News
1315 Radio Berlin Int'l: News
1325 HCJB: News [M-F]
1330 Christian Science Monitor: News [M-F]
1330 Radio Moscow (World Service): News in Brief
1330 Swiss Radio Int'l: News
1330 UAE Radio, Dubai: News
1330 Voice of America: News (Special English)
1345 Radio Berlin Int'l: News
1352 Radio RSA: News in Brief
1400 BBC: Summary [A-S]; Five-Minute News [M-F]
1400 Christian Science Monitor: News
1400 Radio Australia: International Report
1400 Radio Beijing: News
1400 Radio Berlin Int'l: News
1400 Radio Canada Int'l: News [S]
1400 Radio France International: News
1400 Radio Japan: News
1400 Radio Korea: News
1400 Radio Moscow (World Service): News
1400 Radio Peace and Progress: News
1400 Radio RSA: News
1400 Radio Tirana, Albania: News
1400 Voice of America: News
1400 WWCR: News [M-F]

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0538 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Musical Feature. See W 1215.
0632 Radio Moscow (World Service): Update. See S 0511.
0640 BBC: The Farming World. See W 1225.
0640 Radio Polonia: Panorama. See W 1610.
0653 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.

This QSL from Radio Moscow features a drawing by American student Sherry Biedrzycki.

0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0730 BBC: Mediawatch. Keith Hindell monitors developments in communications.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0732 Radio Moscow (World Service): Audio Book Club. See S 0032.
0745 BBC: Network UK. See T 0215.
1111 Radio Moscow (World Service): Update. See S 0511.
1115 BBC: New Ideas. See T 0445.
1125 BBC: Book Choice. See S 0745.
1130 BBC: So Much Blood. A serial version of Simon Brett's thriller.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1132 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0411.
1215 BBC: Multitrack 2. See W 1830.
1232 Radio Moscow (World Service): Jazz Show. See M 0432.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1330 BBC: Network UK. See T 0215.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1332 Radio Moscow (World Service): Russian by Radio. See S 0332.
1345 BBC: Folk in Britain/Jazz Scene UK. A look at folk or jazz music on the British Isles.
1405 BBC: Outlook. See M 1405.
1406 Radio Peace and Progress: Commentary and Reports. See S 1406.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1425 Radio Peace and Progress: Music. See S 1425.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1432 Radio Moscow (World Service): Update. See S 0511.
1445 BBC: Mediawatch. See H 0730.
1508 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1511 Radio Moscow (World Service): News and Views. See S 0411.
1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
1532 Radio Moscow (World Service): Yours for the Asking. See T 0432.
1610 Radio Polonia: Focus Cultural Magazine. Reports on the latest developments in Polish music, theater, film, and literature.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1615 BBC: Assignment. See H 0230.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1632 Radio Moscow (World Service): Mailbag. See S 0711.
1636 Radio Peace and Progress: Commentary and Reports. See S 1406.
1645 BBC: The World Today. See M 1645.
1655 Radio Peace and Progress: Music. See S 1425.
2305 BBC: Commentary. See M 2305.
2310 BBC: Financial News. See M 2310.
2311 Radio Moscow (World Service): Update. See S 0511.
2315 BBC: Music Review. Classical music events and developments from around the world.
2315 Radio Polonia: Focus Cultural Magazine. See H 1610.0030 BBC: You Asked For It. See W 1530.
2332 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.

Friday

Feb 2nd, 9th, 16th, 23rd

0011 Radio Moscow (World Service): Inside Report. See S 0011.
0032 Radio Moscow (World Service): Update. See S 0511.
0035 Radio Kiev: Commentary. See T 0035.
0039 Radio Kiev: Ukraine Today. See T 0039.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0125 BBC: Financial News. See M 2310.
0130 BBC: Folk in Britain/Jazz Scene UK. See H 1345.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Moscow (World Service): Inside Report. See S 0011.
0145 BBC: The Learning World. A look at news,

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1405 Radio Finland: Northern Report [T-A]
1410 Radio Beijing: News About China
1425 HCJB: News [M-F]
1430 Christian Science Monitor: News [M-F]
1430 Radio Moscow (World Service): News in Brief
1430 Radio Netherlands: News [M-A]
1430 Radio Polonia: News
1445 Radio Berlin Int'l: News
1500 BBC: Newsreel
1500 Belize Radio One: News [M-A]
1500 Christian Science Monitor: News
1500 Deutsche Welle: World News
1500 Radio Australia: World and Australian News
1500 Radio Beijing: News
1500 Radio Bucharest: News
1500 Radio Japan: News
1500 Radio Moscow (World Service): News
1500 Radio RSA: News
1500 Voice of America: News
1500 WHRI: News [M-A]
1510 Radio Beijing: News About China
1525 HCJB: News [M-F]
1526 Radio Veritas Asia: World News [M-A]
1530 BRT, Brussels: News [M-S]
1530 Christian Science Monitor: News [M-F]
1530 Deutsche Welle: African News [M-F]
1530 Radio Moscow (World Service): News in Brief
1530 Radio Tirana, Albania: News
1530 Swiss Radio Int'l: News
1545 Radio Berlin Int'l: News
1545 Radio Canada Int'l: News
1552 Radio RSA: News in Brief
1600 BBC: World News
1600 Christian Science Monitor: News
1600 Deutsche Welle: World News
1600 Radio Australia: International Report
1600 Radio France International: News
1600 Radio Korea: News
1600 Radio Moscow (World Service): News
1600 Radio Polonia: News
1600 Radio Portugal: News [M-F]
1600 Radio Tanzania: News
1600 Voice of America: News
1609 BBC: News About Britain
1625 HCJB: News [M-F]
1630 Christian Science Monitor: News [M-F]
1630 Radio Moscow (World Service): News in Brief
1630 Radio Netherlands: News [M-A]
1630 Radio Peace and Progress: News
1630 Radio Polonia: News
1630 UAE Radio, Dubai: News
1630 Voice of America (except Africa): News (Special English)
1645 Radio Berlin Int'l: News
1645 Radio Berlin Int'l: News
1655 KUSW: News [M-F]
1700 BBC: World News [S-F]; News Summary [A]
1700 Belize Radio One: News [M-F]
1700 Christian Science Monitor: News
1700 Radio Australia: World and Australian News
1700 Radio Japan: News
1700 Radio Moscow (World Service): News
1700 Voice of America: News
1715 Radio Canada Int'l: News
1730 BRT, Brussels: News
1730 Christian Science Monitor: News [M-F]
1730 Radio Bucharest: News
1730 Radio Moscow (World Service): News in Brief
1730 RAE, Buenos Aires: News
1730 Swiss Radio Int'l: News
1755 KUSW: News [M-A]
1800 BBC: Newsdesk
1800 Belize Radio One: Headline News [M-A]

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views, and ideas of those involved with education.
0208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Update. See S 0511.
0215 BBC: Seven Seas. A weekly program about ships and the sea.
0230 BBC: So Much Blood. See H 1130.
0232 Radio Moscow (World Service): Russian by Radio. See S 0332.
0305 Radio Kiev: Commentary. See T 0035.
0309 Radio Kiev: Ukraine Today. See T 0039.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: The World Today. See M 1645.
0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
0332 Radio Moscow (World Service): Update. See S 0511.
0408 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0411 Radio Moscow (World Service): News and Views. See S 0411.
0430 BBC: Off the Shelf. See M 0430.
0432 Radio Moscow (World Service): Music. See M 0532.
0445 BBC: Folk in Britain/Jazz Scene UK. See H 1345.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Update. See S 0511.
0530 BBC: Financial News. See T 0125.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0532 Radio Moscow (World Service): Music. See M 0532.
0538 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Meridian. See W 0630.
0632 Radio Moscow (World Service): Update. See S 0511.
0640 Radio Polonia: Focus Cultural Magazine. See H 1610.
0653 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0730 BBC: Eastern Europe: The Flight from Communism. The recent growth of democracy behind the Iron Curtain.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0732 Radio Moscow (World Service): Science and Engineering. See S 1532.
1111 Radio Moscow (World Service): Update. See S 0511.
1115 BBC: The Learning World. See F 0145.
1130 BBC: Meridian. See W 0630.
1130 Radio Austria Int'l: Report from Austria. See S 0130.
1132 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0411.
1215 BBC: Eastern Europe: The Flight from Communism. See F 0730.
1232 Radio Moscow (World Service): Yours for the Asking. See T 0432.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1330 BBC: John Peel. See T 0330.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1332 Radio Moscow (World Service): Press Review. See W 0732.
1405 BBC: Outlook. See M 1405.
1406 Radio Peace and Progress: Commentary and Reports. See S 1406.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1425 Radio Peace and Progress: Music. See S 1425.
1430 BBC: Off the Shelf. See M 0430.
1430 Radio Austria Int'l: Report from Austria. See S 0130.
1432 Radio Moscow (World Service): Update. See S 0511.
1445 BBC: Talks. See M 0445.
1508 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1511 Radio Moscow (World Service): News and Views. See S 0411.
1515 BBC: Music Review. See H 2315.
1532 Radio Moscow (World Service): Vasily's Weekend. See S 0532.
1610 Radio Polonia: Postbag. See M 1610.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1615 BBC: Science in Action. See M 0230.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1632 Radio Moscow (World Service): Science and Engineering. See S 1532.
1636 Radio Peace and Progress: Commentary and Reports. See S 1406.
1645 BBC: The World Today. See M 1645.
1655 Radio Peace and Progress: Music. See S 1425.
2305 BBC: Commentary. See M 2305.
2310 BBC: Financial News. See M 2310.
2311 Radio Moscow (World Service): Update. See S 0511.
2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
2315 Radio Polonia: Postbag. See M 1610.0030 BBC: Musical Feature. Programming on various musical subjects.
2330 BBC: Multitrack 3. Sarah Ward surveys the British contemporary music scene.

Ken Bruce (right) talks to '70s pop music star Lulu for "The Ken Bruce Show," a musical potpourri on the BBC World Service.

1800 Christian Science Monitor: News
1800 Kol Israel: News
1800 Radio Australia: International Report
1800 Radio Bras, Brasilia: News
1800 Radio Canada Int'l: News
1800 Radio Kiev: News
1800 Radio Korea: News
1800 Radio Moscow (World Service): News
1800 Radio RSA: News
1800 Radio Tanzania: News
1800 Voice of America: News
1800 WWCR: News [M-A]
1815 Radio Berlin Int'l: News
1830 Belize Radio One: Network News
1830 Christian Science Monitor: News [M-F]
1830 Radio Finland: Northern Report [M-F]
1830 Radio Kuwait: News
1830 Radio Moscow (World Service): News In Brief
1830 Radio Netherlands: News [M-A]
1830 Radio Polonia: News
1830 Radio Yugoslavia: News
1830 Swiss Radio Int'l: News
1830 Voice of America: News (Special English)
1852 Radio RSA: News in Brief
1855 KUSW: News [M-F]
1900 BBC: News Summary
1900 Christian Science Monitor: News
1900 Deutsche Welle: World News
1900 HCJB: Latin American News [M-F]
1900 Radio Australia: World and Australian News
1900 Radio Canada Int'l: News [M-F]
1900 Radio Havana Cuba: Int'l News [M-A]
1900 Radio Japan: News
1900 Radio Moscow (World Service): News
1900 Radio New Zealand Int'l: News
1900 Radio Portugal: News [M-F]
1900 Radio RSA: News
1900 Radio Tanzania: News
1900 Spanish National Radio: News
1900 Voice of America: News
1903 Radio Jamahiriya, Libya: Headlines
1930 Christian Science Monitor: News [M-F]
1930 Radio Berlin Int'l: News
1930 Radio Bucharest: News
1930 Radio Budapest: News
1930 Radio Canada Int'l: News [M-F]
1930 Radio Havana Cuba: Cuban Nat'l News [M-T]; Newsbreak [W-A]
1930 Radio Moscow (World Service): News In Brief
1935 Radiotelevisione Italiana: News
1947 Radio Jamahiriya, Libya: News
1950 HCJB: News [M-F]
1955 KUSW: News [M-A]
2000 BBC: World News
2000 Christian Science Monitor: News
2000 Kol Israel: News
2000 Radio Australia: International Report
2000 Radio Havana Cuba: Int'l News [M-A]
2000 Radio Jordan: News
2000 Radio Moscow (World Service): News
2000 Radio New Zealand Int'l: News
2000 Radio Polonia: News
2000 Radio RSA: News
2000 Voice of America: News
2000 Voice of Indonesia: News
2015 Radio Berlin Int'l: News
2025 Radio Havana Cuba: Cuban Nat'l News [M-A]
2025 Radiotelevisione Italiana: News
2030 Christian Science Monitor: News [M-F]
2030 Radio Havana Cuba: News [M-A]
2030 Radio Korea: News
2030 Radio Moscow (World Service): News In Brief
2030 Radio Netherlands: News [M-A]
2030 Radio Tirana, Albania: News
2045 Radio Berlin Int'l: News

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2332 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.

Saturday

Feb 3rd, 10th, 17th, 24th

0011 Radio Moscow (World Service): Inside Report. See S 0011.
0030 BBC: From the Weeklies. A review of the weekly British press.
0032 Radio Moscow (World Service): Update. See S 0511.
0035 Radio Kiev: Commentary. See T 0035.
0039 Radio Kiev: Ukraine Today. See T 0039.
0045 BBC: Recording of the Week. See M 0545.
0101 BBC: Outlook. See M 1405.
0111 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0125 BBC: Financial News. See M 2310.
0130 BBC: Feature. Programming on various subjects.
0130 Radio Austria Int'l: Report from Austria. See S 0130.
0132 Radio Moscow (World Service): Inside Report. See S 0011.
0145 BBC: Book Choice. See S 0745.
0150 BBC: New Ideas. See T 0445.
0208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0209 BBC: British Press Review. See S 0209.
0211 Radio Moscow (World Service): Update. See S 0511.
0215 BBC: Network UK. See T 0215.
0230 BBC: People and Politics. Background to the British political scene.
0232 Radio Moscow (World Service): Audio Book Club. See S 0032.
0305 Radio Kiev: Commentary. See T 0035.
0309 Radio Kiev: Ukraine Today. See T 0039.
0311 Radio Moscow (World Service): Inside Report. See S 0011.
0315 BBC: The World Today. See M 1645.
0330 BBC: The Vintage Chart Show. Paul Burnett presents top ten hits from the music charts of yesteryear.
0332 Radio Moscow (World Service): Update. See S 0511.
0408 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0411 Radio Moscow (World Service): News and Views. See S 0411.
0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
0432 Radio Moscow (World Service): Vasily's Weekend. See S 0532.
0445 BBC: Personal View. See A 0030.
0509 BBC: Twenty-Four Hours. See S 0509.
0511 Radio Moscow (World Service): Update. See S 0511.
0530 BBC: Financial News. See M 2310.
0530 Radio Austria Int'l: Report from Austria. See S 0130.
0532 Radio Moscow (World Service): Music. See M 0532.
0538 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0540 BBC: Words of Faith. See S 0540.
0545 BBC: The World Today. See M 1645.
0611 Radio Moscow (World Service): Inside Report. See S 0011.
0630 BBC: Meridian. See W 0630.
0632 Radio Moscow (World Service): Update. See S 0511.
0640 Radio Polonia: Postbag. See M 1610.
0653 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
0709 BBC: Twenty-Four Hours. See S 0509.
0711 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
0730 BBC: From the Weeklies. See F 2315.
0730 Radio Austria Int'l: Report from Austria. See S 0130.
0732 Radio Moscow (World Service): Newmarket. See S 0132.
0745 BBC: Network UK. See T 0215.
1111 Radio Moscow (World Service): Update. See S 0511.
1115 BBC: Feature. See A 0130.
1130 BBC: Meridian. See W 0630.
1130 Radio Austria Int'l: Austrian Coffeetable. A look at the arts, especially music.
1132 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1208 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1211 Radio Moscow (World Service): News and Views. See S 0411.
1215 BBC: Multitrack 3. See F 2330.
1232 Radio Moscow (World Service): Music at Your Request. See S 1532.
1245 BBC: Sports Roundup. See S 1330.
1308 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1309 BBC: Twenty-Four Hours. See S 0509.
1311 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1330 BBC: Network UK. See T 0215.
1330 Radio Austria Int'l: Report from Austria. See S 0130.
1332 Radio Moscow (World Service): Science and Engineering. See S 1532.
1345 BBC: Short Story. See T 0130.

SUGGESTIONS? SOMETHING MISSING?

Let us know your corrections, additions, and suggestions of what you'd like to see to Program Manager Kannon Shanmugam at 4412 Turnberry Circle, Lawrence, Kansas 66047.

1401 BBC: The Ken Bruce Show. See S 0230.
1406 Radio Peace and Progress: Commentary and Reports. See S 1406.
1411 Radio Moscow (World Service): Inside Report. See S 0011.
1425 Radio Peace and Progress: Music. See S 1425.
1430 BBC: Sportsworld. Saturday sports, including a preview of English and Scottish soccer matches.
1430 Radio Austria Int'l: Austrian Coffeetable. See A 1130.
1432 Radio Moscow (World Service): Update. See S 0511.
1508 Radio Bucharest: Reports/Commentaries/ Features. See S 0208.
1511 Radio Moscow (World Service): Music and Musicians. See S 0211.
1515 BBC: Sportsworld. Saturday sports, including direct reports from more than a dozen key soccer contests.
1610 Radio Polonia: What We Said or Music. See S 0640.
1611 Radio Moscow (World Service): Focus on Asia and the Pacific. See M 2332.
1615 BBC: Sportsworld. Commentary on an English or Scottish soccer match.
1630 Radio Austria Int'l: Report from Austria. See S 0130.
1632 Radio Moscow (World Service): Newmarket. See S 0132.
1636 Radio Peace and Progress: Commentary and Reports. See S 1406.
1655 Radio Peace and Progress: Music. See S 1425.
2305 BBC: Words of Faith. See S 0540.
2310 BBC: Book Choice. See S 0745.
2311 Radio Moscow (World Service): Top Priority. See S 0311.
2315 BBC: A Jolly Good Show. See T 1515.
2315 Radio Polonia: What We Said or Music. See S 0640.
2332 Radio Moscow (World Service): Russian by Radio. See S 0332.

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2052 Radio RSA: News in Brief
2055 KUSW: News [M-A]
2055 Voice of Indonesia: News in Brief
2100 BBC: News Summary
2100 Belize Radio One: News [M-F]
2100 BRT, Brussels: News
2100 Christian Science Monitor: News
2100 Deutsche Welle: World News
2100 KVOH: UPI Radio News
2100 Radio Australia: World and Australian News
2100 Radio Bucharest: News
2100 Radio Finland: Northern Report [M-F]
2100 Radio Japan: News
2100 Radio Moscow (World Service): News
2100 Radio New Zealand Int'l: News
2100 Radio Peace and Progress: News
2100 Radio Yugoslavia: News
2100 Spanish National Radio: News
2100 Swiss Radio Int'l: News
2100 Voice of America: News
2130 Christian Science Monitor: News [M-F]
2130 KVOH: UPI Headline News
2130 Radio Budapest: News
2130 Radio Canada Int'l: News
2130 Radio Moscow (World Service): News in Brief
2130 Swiss Radio Int'l: News
2155 KUSW: News [M-F]
2200 BBC: Newshour
2200 Christian Science Monitor: News
2200 KVOH: UPI Radio News
2200 Radio Australia: International Report
2200 Radio Berlin Int'l: News
2200 Radio Canada Int'l (Asia): News
2200 Radio Canada Int'l (Western Europe): News [A-S]; The World at Six [M-F]
2200 Radio Havana Cuba: Int'l News [M-A]
2200 Radio Moscow (World Service): News
2200 Radiotelevisione Italiana: News
2200 RAE, Buenos Aires: News
2200 Voice of America: News
2200 Voice of Free China: News and Commentary
2230 Christian Science Monitor: News [M-F]
2230 Kol Israel: News
2230 KVOH: UPI Headline News
2230 Radio Havana Cuba: Cuban Nat'l News [M-A]
2230 Radio Moscow (World Service): News in Brief
2230 Radio Polonia: News
2230 Voice of America: News (Special English)
2245 Radio Berlin Int'l: News
2255 KUSW: News [M-A]
2300 BBC: World [A-S]; Five-Minute News [M-F]
2300 Belize Radio One: News [M-F]
2300 Christian Science Monitor: News
2300 KVOH: UPI Radio News
2300 Radio Australia: World and Australian News
2300 Radio Canada Int'l: News
2300 Radio for Peace Int'l: News [F]
2300 Radio Japan: News
2300 Radio Moscow: News
2300 Voice of America: News
2300 Voice of Turkey: News
2305 Radio Polonia: News
2330 BRT, Brussels: News
2330 Christian Science Monitor: News [M-F]
2330 KVOH: UPI Headline News
2330 Radio for Peace Int'l: News [M]
2330 Radio Kiev: News
2330 Radio Korea: News
2330 Radio Moscow (World Service): News in Brief
2330 Radio Tirana, Albania: News
2335 Voice of Greece: News [S]
2355 KUSW: News [M-A]
2355 WRNO: ABC News [F]

frequency section

MT Monitoring Team

Greg Jordan, Frequency Manager
1855-I Franciscan Terrace
Winston-Salem, NC 27127

Richard A. Keen
Golden, Colorado

Colin Miller
Ontario, Canada

Larry Miller
Wagontown, Pennsylvania

0000 UTC [7:00 PM EST/4:00 PM PST]

0000-0025		Radio Finland, Helsinki	9645	11755		
0000-0030	M	Radio Norway International, Oslo	15165			
0000-0030		BBC World Service, London, England	5965	5975	6005	6175
			6195	7145	7325	9580
			9590	9915	11750	11945
			11955	15260	15360	17875
0000-0030		Kol Israel, Jerusalem	9930	9435	11605	
0000-0030		Radio Moscow N. American Service	6000	6045	7115	7150
			9685	9720	12050	15425
			17605	17700	17720	21470
0000-0050		Radio Pyongyang, North Korea	15115	15160		
0000-0055		Radio Beijing, China	9665	9770	11715	
0000-0100		Adventist World Radio, Costa Rica	9725	11870		
0000-0100		Adventist World Radio-Asia, Guam	15125	15225		
0000-0100		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0000-0100		CBC Northern Quebec Service, Can	9625	(ML)		
0000-0100		CBN, St. John's, Newfoundland, Can	6160			
0000-0100		CBU, Vancouver, British Colombia	6160			
0000-0100		CFCF, Montreal, Quebec, Canada	6005			
0000-0100		CFCN, Calgary, Alberta, Canada	6030			
0000-0100		CHNS, Halifax, Nova Scotia, Canada	6130			
0000-0100		Christian Science World Svc, Boston	7400	9850	13760	
0000-0100		CKWX, Vancouver, British Colombia	6080			
0000-0100		CFRB, Toronto, Ontario, Canada	6070			
0000-0100		FEBC Radio Int'l, Philippines	15480			
0000-0100		KUSW, Salt Lake City, Utah	15580			
0000-0100		KVOH, Rancho Simi, California	17775			
0000-0100		Radio Australia, Melbourne	15140	15160	15240	15320
			15395	17750	17795	
0000-0100		Radio Beijing, Beijing, China	15130	17715	17855	
0000-0100		Radio Canada International, Montreal	5960	9755		
0000-0100		Radio Havana Cuba	11820			
0000-0100		Radio Luxembourg, Junglinster	6090			
0000-0100		Radio Moscow World Service, USSR	7135	7370	9510	9790
			9815	12005	11800	15170
			15295	15420	17570	17610
			17655	17775	21690	21790
0000-0100		Radio New Zealand, Wellington	15485	17705		
0000-0100		Radio Sofia, Bulgaria	9700	11680		
0000-0100		Radio Tonga, Kingdom of Tonga	5025			
0000-0100		Spanish National Radio, Madrid	9630	11880		
0000-0100		Voice of America-Americas Service	5995	9775	9815	11580
			11740	15205		
0000-0100		Voice of America-Caribbean Service	6130	9455	11695	
0000-0100		Voice of America-East Asia Service	7120	9770	11760	15185
			15290	17735	17820	
0000-0100		WHRI, Noblesville, Indiana	7315	9495		
0000-0100		WINB, Red Lion, Pennsylvania	15145			
0000-0100		WRNO Worldwide, Louisiana	7355			
0000-0100	IRR	WWCR, Nashville, Tennessee	15690			
0000-0100		WYFR, Oakland, California	5985	9505	15440	
0004-0015	S	Radio Nacional, Venezuela	5020	9540	11695	11850
0030-0045		BBC English by Radio, London, Eng	6195	7145	11945	15280
			17875			
0030-0055		BRT, Brussels, Belgium	9925			
0030-0100		BBC World Service, London, England	5965	5975	6005	6175
			7325	9580	9590	9915
			11750	11955	15260	15360
0030-0100		HCJB, Quito, Ecuador	15230			
0030-0100		Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0030-0100		Radio Kiev, Ukrainian SSR	7400	9765	9800	15180
			15455	17665	17690	
0030-0100		Radio Moscow N. American Service	6000	6045	7115	7150
			7310	9685	9720	12050
			15425	17605	17700	17720
			21470			
0030-0100		Radio Netherlands Int'l, Hilversum	6020	6165	15315	
0030-0100		Radio for Peace Int'l, Costa Rica	7375	13660		
0035-0100		HCJB, Quito, Ecuador	9745	11775	15155	
0045-0100		Radio Berlin Int'l, East Germany	6080	11890	13690	
0045-0100		Radio Korea, Seoul, South Korea	15575			
0050-0100		Vatican Radio, Vatican City	6150	9605	11780	

LEGEND

* The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
* In the space between the end time and the station name is the broadcast schedule.

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

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

The last entry on a line is the frequency. Several codes may be found after a frequency as follows:

* SSB indicates Single Sideband transmission.
* 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.
* [ML] after a frequency indicates a multi-lingual transmission containing English-language programs. All other frequencies may be assumed to be English language programs directed to various parts of the world.
* 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 (they are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

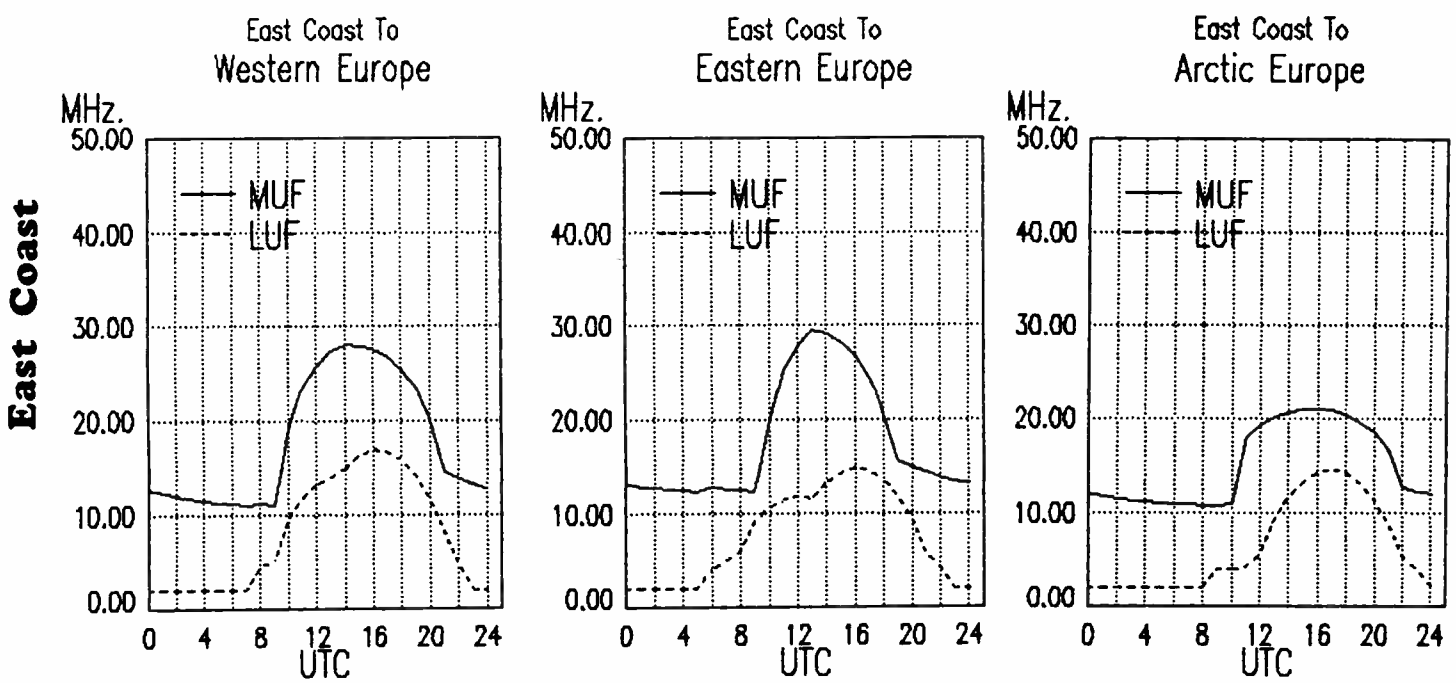
Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

frequency section

0100 UTC [8:00 PM EST/5:00 PM PST]

0100-0105		Vatican Radio, Vatican City	6150	9605	11780	
0100-0115		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0100-0125		RAI, Rome, Italy	9575	11800		
0100-0125		Kol Israel, Jerusalem	9930	9435	11605	
0100-0125		Radio Netherlands Int'l, Hilversum	6020	6165	15315	
0100-0130		CBC Northern Quebec Service, Can	9625	(ML)		
0100-0130		Lao National Radio, Vientiane	7113v			
0100-0130		Radio Berlin Int'l, East Germany	6080	11890	13690	
0100-0130		Radio Canada International, Montreal	5960	9755		
0100-0130		Radio Moscow N. American Service	6000	6045	7115	7150
			7310	9685	9720	12050
			15425	17605	17700	17720
			21470			
0100-0130		Radio Sweden, Stockholm	7225	9640		
0100-0145		BBC World Service, London, England	5965	5975	6005	6175
			7135	7325	9580	9590
			9915	11750	11955	15260
			15360			
0100-0145		Radio Yugoslavia, Belgrade	6005	5980	11735	
0100-0150		Deutsche Welle, Koln, West Germany	6040	6085	6145	9565
			9735	11865		
0100-0157		Radio Prague, Czechoslovakia	5930	7345	9540	11680
			11990	13715		
0100-0200	M-F	BBC (For China, Mongolia, Japan)	15280	21715		
0100-0200		CBN, St. John's, Newfoundland, Can	6160			
0100-0200		CBU, Vancouver, British Colombia	6160			
0100-0200		CFCF, Montreal, Quebec, Canada	6005			
0100-0200		CFCN, Calgary, Alberta, Canada	6030			
0100-0200		CHNS, Halifax, Nova Scotia, Canada	6130			
0100-0200		Christian Science World Svc, Boston	7400	9850	13760	
0100-0200		CKWX, Vancouver, British Colombia	6080			
0100-0200		CFRB, Toronto, Ontario, Canada	6070			
0100-0200		FEBC Radio Int'l, Philippines	15480			
0100-0200		HCJB, Quito, Ecuador	9745	11775	15155	15230
0100-0200		KUSW, Salt Lake City, Utah	11695			
0100-0200	T-A	KVOH, Rancho Simi, California	17775	(ML)		
0100-0200	T-A	RAE, Buenos Aires, Argentina	9690	11710		
0100-0200		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17750	17795
			21740			
0100-0200	S,M	Radio Canada International, Montreal	5960	9535	9755	11845
			11940			
0100-0200		Radio Havana Cuba	11820			
0100-0200		Radio Japan, Tokyo	17755	17810	17845	
0100-0200		Radio Luxembourg, Junglinster	6090			
0100-0200		Radio Moscow World Service, USSR	7135	9790	9815	11800
			15140	15170	15295	15420
			17570	17610	17655	17675
			17775	17825	17890	21635
			21690	21790		
0100-0200		Radio New Zealand	15485	17705		
0100-0200		Radio for Peace Int'l, Costa Rica	7375	13660		
0100-0200		Radio Tonga, Kingom of Tonga	5025			
0100-0200		Spanish National Radio, Madrid	9630	11880		
0100-0200		Voice of America-Americas Service	5995	9775	9815	11580
			11740	15205		
0100-0200		Voice of America-Caribbean Service	6130	9455		
0100-0200		Voice of America-East Asia Service	7115	7205	9740	11705
			15250	21525		
0100-0200		Voice of Indonesia, Jakarta	11744	11788		
0100-0200		WHRI, Noblesville, Indiana	7315	9495		
0100-0200		WINB, Red Lion, Pennsylvania	15145			
0100-0200		WRNO Worldwide, Louisiana	7355			
0100-0200	IRR	WWCR, Nashville, Tennessee	15690			
0100-0200		WYFR, Oakland, California	5985	9505	9680	15440
0130-0140	M-A	Voice of Greece, Athens	7430	9395	9420	
0130-0200		Radio Austria International, Vienna	9870	9875	13730	
0130-0200		Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0130-0200		Radio Moscow N. American Service	6000	6045	7115	7150
			7310	9685	9700	9720
			12050	15425	17605	17700
			17720	21470		
0130-0200		Radio Veritas-Asia, Philippines	15220	15360		
0130-0200	TEN	Voice of the Democratic Alliance of Burma (clandestine: Thai/Burmese border)	7135	(ML)		
0145-0200		BBC Alternative Programming,London	5965	9580	11955	15380
0145-0200		BBC World Service, London, England	5975	6005	6175	7135
			7325	9590	9915	11750
			15260	15360		
0155-0200		Vatican Radio, Vatican City	7125	9650	11750	

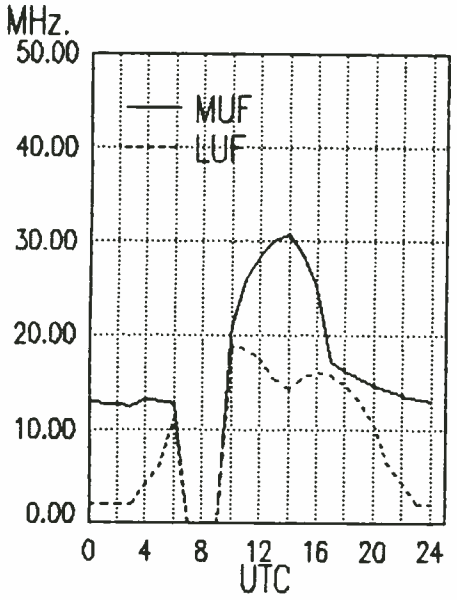


frequency section

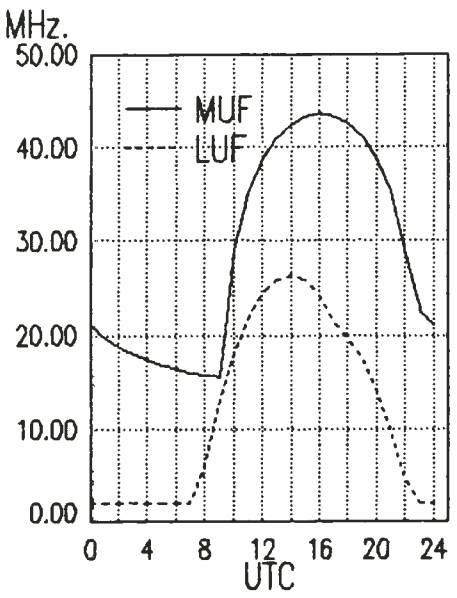
0200 UTC [9:00 PM EST/6:00 PM PST]

0200-0215		Vatican Radio, Vatican City	7125	9650	11750	
0200-0220		Radio Veritas-Asia, Philippines	15220	15360		
0200-0225		Kol Israel, Jerusalem	9435	9930	11605	15615
0200-0230		BBC Alternative Programming,London	9580	11955	15380	
0200-0230		BBC World Service, London, England	5975	6005	6050	6110
			6175	7135	7325	9590
			9915	11750	12095	15260
			15360	15390	21715	
0200-0230	M-F	FEBC Radio Int'l, Philippines	15480			
0200-0230	W,A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0200-0230		Swiss Radio International, Berne	6095	6135	9725	9885
			12035	17730		
0200-0230		Voice of America-Americas Service	5995	9775	9815	11580
			15205			
0200-0245		Radio Berlin Int'l, East Germany	6080	11890	13690	
0200-0250		Deutsche Welle, Koln, West Germany	6035	7285	9615	9690
			11835	11945	15235	
0200-0250		Radio Bras, Brasilia, Brasil	11745			
0200-0300		Adventist World Radio-Asia, Guam	13720			
0200-0300		CBC Northern Quebec Service, Can	9625	(ML)		
0200-0300		CBN, St. John's, Newfoundland, Can	6160			
0200-0300		CBU, Vancouver, British Colombia	6160			
0200-0300		CFCF, Montreal, Quebec, Canada	6005			
0200-0300		CFCN, Calgary, Alberta, Canada	6030			
0200-0300		CHNS, Halifax, Nova Scotia, Canada	6130			
0200-0300		Christian Science World Svc, Boston	9455	9850	13760	
0200-0300		CKWX, Vancouver, British Colombia	6080			
0200-0300		CFRB, Toronto, Ontario, Canada	6070			
0200-0300		HCJB, Quito, Ecuador	9745	11775	15155	
0200-0300		KUSW, Salt Lake City, Utah	11695			
0200-0300		Radio Australia, Melbourne	15180	15240	17715	17750
			17795	21740		
0200-0300		Radio Bucharest, Romania	5990	9510	9570	11830
			11940	15380		
0200-0300		Radio Cairo, Egypt	9475	9675		
0200-0300	M-F	Radio Canada International, Montreal	9535	9755	11845	11940
0200-0300		Radio Havana Cuba	9710	11820		
0200-0300		Radio Luxembourg, Junglinster	6090			
0200-0300		Radio Moscow N. American Service	6000	6045	7115	7150
			7310	9685	9700	9720
			12050	15425	17700	17720

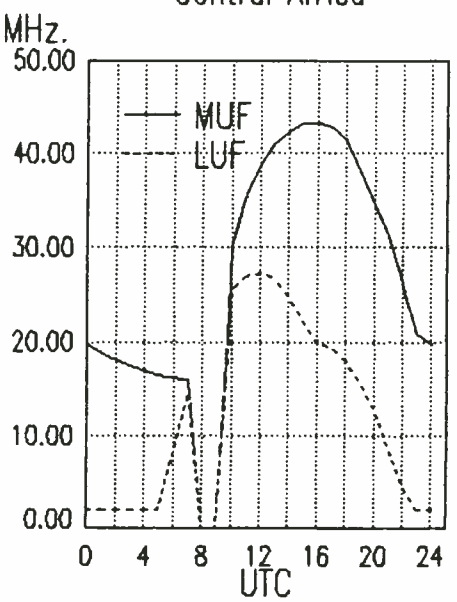
East Coast To Middle East



East Coast To West Africa



East Coast To Central Africa



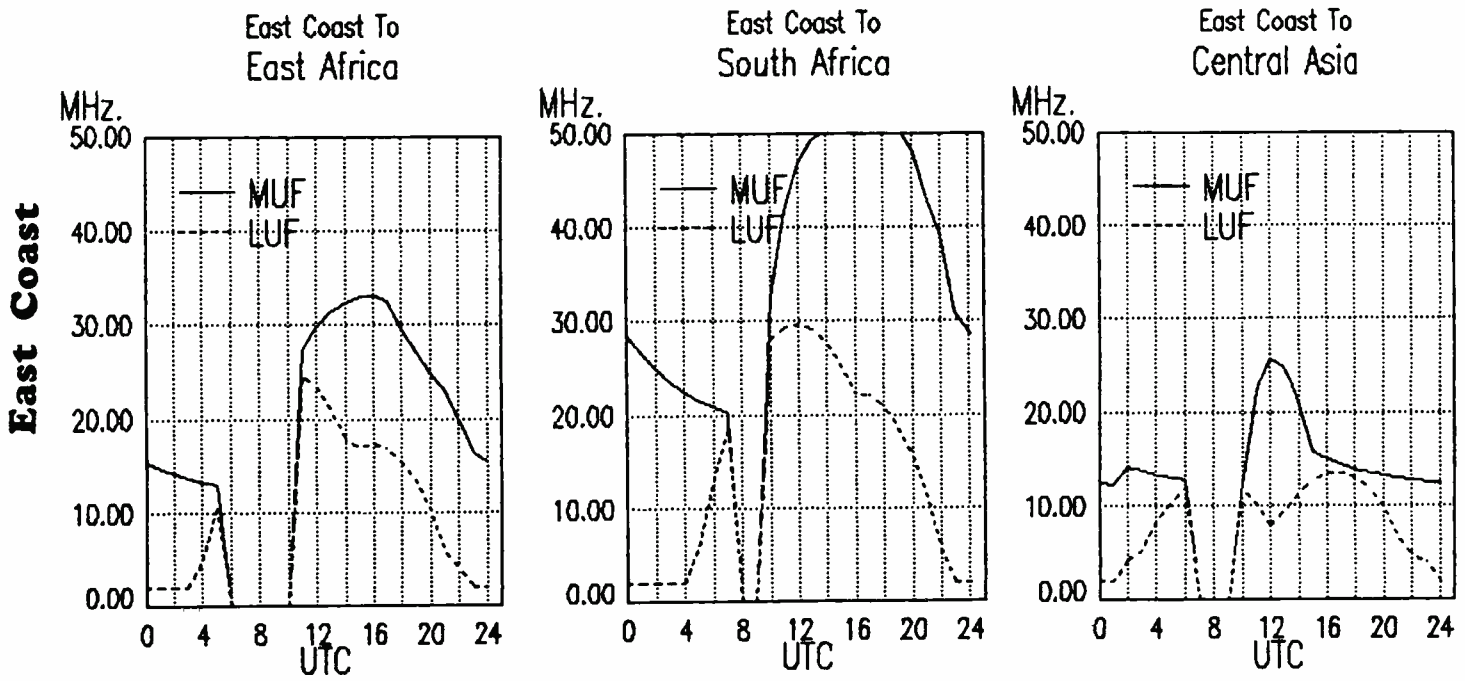
East Coast

frequency section

0200-0300	Radio Moscow World Service, USSR	7135	7370	9780	12045
		15140	15170	15295	15420
		17570	17590	17610	17655
		17675	17775	17825	17890
		21635	21690	21790	
0200-0300	Radio New Zealand, Wellington	15485	17705		
0200-0300	Radio RSA, Johannesburg, S. Africa	9580	9615	11935	15120
0200-0300	Radio Tonga, Kingdom of Tonga	5025			
0200-0300	RAE, Buenos Aires, Argentina	9690	11710	+++	Check
		this one. +++			
0200-0300	Voice of America-South Asia Service	7115	7205	9740	11705
		15250	21525		
0200-0300 TEN	Voice of the Democratic Alliance of Burma				
	(clandestine: Thai/Burmese border)	7135	(ML)		
0200-0300	Voice of Free China, Taiwan	5950	7445	9680	11740
		11860	15345		
0200-0300	WHRI, Noblesville, Indiana	7315	9495		
0200-0300	WRNO Worldwide, Louisiana	7355			
0200-0300 IRR	WWCR, Nashville, Tennessee	7520			
0200-0300	WYFR, Oakland, California	5985	9505	15440	
0230-0245 M-A	Radio Budapest, Hungary	6110	9520	9585	9835
		11910	15160		
0230-0300	BBC World Service, London, England	5975	6005	6050	6175
		7135	7325	9915	11750
		11955	12095	15260	15360
0230-0300 T-A	Radio Portugal, Lisbon	9600	9680	9705	11840
0230-0300	Radio Sweden, Stockholm	9695	11705		
0230-0300	Radio Tirana, Albania	9762			
0245-0300	Radio Berlin Int'l, East Germany	6080	11785	11890	15125
0255-0300	Trans World Radio, Bonaire	11930			

0300 UTC [10:00 PM EST/7:00 PM PST]

0300-0315	BBC English by Radio, London	11730	11740	15420	
0300-0315	BBC World Service, London, England	3255	5975	6005	6050
		6175	6190	6195	7135
		7325	9410	9600	9670
		9915	11750	11760	11845
		11955	12095	15220	15260
		15310	15420	17705	
0300-0330	Radio Berlin Int'l, East Germany	6080	11785	11890	15125
0300-0330	Radio Cairo, Egypt	9475	9675		
0300-0330	Radio Canada International, Montreal	9645			
0300-0330	Radio Japan, Tokyo	9645	17825		
0300-0330	Radio Kiev, Ukrainian SSR	7400	9765	9800	15180
		15455	17665		
0300-0330	Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
0300-0330 TEN	Voice of the Democratic Alliance of Burma				
	(clandestine: Thai/Burmese border)	7135	(ML)		
0300-0350	Deutsche Welle, Koln, West Germany	6085	6130	9545	9605
0300-0355	Radio Beijing, China	9690	9770	11715	17855
0300-0357	Radio Prague, Czechoslovakia	5930	7345	9540	11680
		11990	13715		
0300-0400	CBC, Northern Quebec Service, Can	9625	(ML)		
0300-0400	CBN, St. John's, Newfoundland, Can	6160			
0300-0400	CBU, Vancouver, British Colombia	6160			
0300-0400	CFCF, Montreal, Quebec, Canada	6005			
0300-0400	CFCN, Calgary, Alberta, Canada	6030			
0300-0400	CHNS, Halifax, Nova Scotia, Canada	6130			
0300-0400	Christian Science World Svc, Boston	9455	9850	13760	
0300-0400	CKWX, Vancouver, British Colombia	6080			
0300-0400	CFRB, Toronto, Ontario, Canada	6070			
0300-0400	Faro del Caribe,San Jose,Costa Rica	5055			
0300-0400	HCJB, Quito, Ecuador	11775	15155		
0300-0400	KUSW, Salt Lake City, Utah	9815			
0300-0400	Radio 5, Johannesburg, South Africa	4880			
0300-0400	Radio Australia, Melbourne	11945	15160	15240	15320
		17715	17750	17795	21740
0300-0400	Radio Cultural, Guatemala	3300			
0300-0400	Radio Havana Cuba	9710	11820		
0300-0400	Radio Japan, Tokyo	5960	11870	15325	17810
		17825			
0300-0400	Radio Moscow N. American Service	6000	6045	7115	7150
		7310	9685	9700	12010
		12050	15425	17700	
0300-0400	Radio Moscow World Service, USSR	7135	9815	11710	11765
		11800	11995	13715	15140
		15170	15295	15420	17570
		17590	17610	17655	17675
		17775	17825	17855	17890
		21635	21690	21790	
0300-0400	Radio New Zealand, Wellington	15485	17705		
0300-0400	Radio Oranje, South Africa	3215			
0300-0400	RAE, Buenos Aires, Argentina	11710	15345		
0300-0400	Trans World Radio, Bonaire	9535	11930		
0300-0400	Voice of America-Africa Service	6035	7280	9525	9575
		11835			
0300-0400	Voice of Free China, Taiwan	5950	7445	9680	9765
		11745	15345		

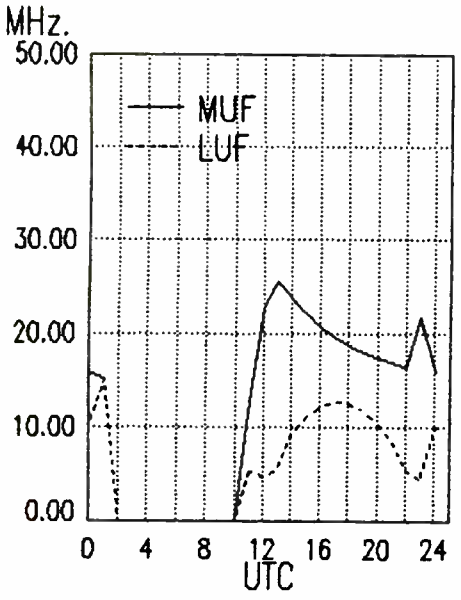


0300-0400		WHRI, Noblesville, Indiana	7315	9495		
0300-0400		WRNO Worldwide, Louisiana	7355			
0300-0400	IRR	WWCR, Nashville, Tennessee	7520			
0300-0400		WYFR, Oakland, California	5985	9505	15566	
0310-0325		Vatican Radio, Vatican City	11725			
0310-0327		Red Cross Bcasting, Switzerland	6135	9725	9885	12035
		Tuesday and Friday after last Sunday of the month.				
0315-0330		BBC World Service, London, England	3255	5975	6005	6050
			6175	6190	6195	7135
			7325	9410	9600	9670
			9915	11750	11760	11845
			11955	12095	15220	15260
			15310	17705		
0315-0345		Radio France International, Paris	3965	6045	7135	7175
			7280	9550	9745	9790
			9800	11705	11995	
0330-0400		BBC Alternative Programming,London	3255	6005	6190	9600
			11730	11845	15420	
0330-0400		BBC World Service, London, England	5975	6175	6195	9410
			9670	9915	11760	11955
			12095	15310		
0330-0400		Radio Berlin Int'l, East Germany	9730	13610	15240	
0330-0400	A,S	Radio Canada International, Montreal	9645			
0330-0400		Radio Netherlands Int'l, Hilversum	9590	11720		
0330-0400		Radio Tirana, Albania	9760			
0330-0400		United Arab Emirate Radio, Dubai	11940	15400	15435	17890
0330-0340		All India Radio, New Delhi	3905	4860	9610	11830
			11870	11890	15305	
0340-0350	M-A	Voice of Greece, Athens	7430	9395	9420	
0350-0400		RAI, Rome, Italy	11905	15330	17795	
0352-0357v		Radio Yerevan, Armenian SSR	7400	9765	9800	15180
			15455	17665		

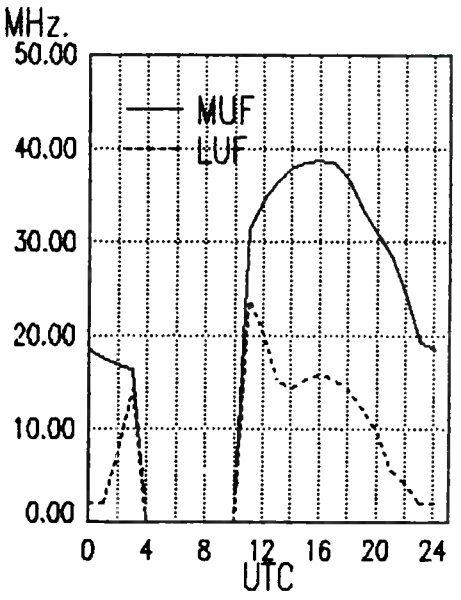
0400 UTC [11:00 PM EST/8:00 PM PST]

0400-0410	M-F	Radio Zambia, Lusaka	4910			
0400-0410		RAI, Rome, Italy	11905	15330	17795	
0400-0415		Radio Berlin Int'l, East Germany	9730	13610	15240	
0400-0425		Radio Cultural, Guatemala	3300			
0400-0425		Radio Netherlands Int'l, Hilversum	9590	11720		
0400-0430		BBC World Service, London, England	3255	3955	5975	6005
			6175	6180	6190	6195
			7105	9410	9600	9610
			9670	9915	11760	11955
			12095	15070	15245	15280
			15310	15420	17885	21715
0400-0430		Radio Bucharest, Romania	5990	9510	9570	11830
			11940	15380		
0400-0430		Radio Canada International, Montreal	11790			
0400-0430		Radio Moscow N. American Service	9825	9895	11790	12050
			15180			
0400-0430		Swiss Radio International, Berne	6135	9725	9885	12035
0400-0430		Trans World Radio, Bonaire	9535	11930		
0400-0430		Voice of America-Africa Service	6035	7280	9525	9575
			11835			
0400-0445		Radio Berlin Int'l, East Germany	11785	15125		
0400-0450		Deutsche Welle, Koln, West Germany	7225	7150	9765	9565
			11765			
0400-0450		Radio Pyongyang, North Korea	15160	15180	17765	
0400-0455		Radio Beijing, China	11695			
0400-0500		CBC, Northern Quebec Service	9625	(ML)		
0400-0500		CBN, St. John's, Newfoundland, Can	6160			
0400-0500		CBU, Vancouver, British Colombia	6160			
0400-0500		CFCF, Montreal, Quebec, Canada	6005			
0400-0500		CFCN, Calgary, Alberta, Canada	6030			
0400-0500		CHNS, Halifax, Nova Scotia, Canada	6130			
0400-0500		Christian Science World Svc, Boston	9455	9840	13760	17780
0400-0500		CKWX, Vancouver, British Colombia	6080			
0400-0500		CFRB, Toronto, Ontario, Canada	6070			
0400-0500		HCJB, Quito, Ecuador	11775	15155		
0400-0500		KUSW, Salt Lake City, Utah	9815			
0400-0500		Radio 5, Johannesburg, South Africa	4880			
0400-0500		Radio Australia, Melbourne	11910	11945	15160	15240
			15320	17715	17795	
0400-0500		Radio Beijing, China	11695	11840	15195	
0400-0500		Radio Havana Cuba	5965	9710	11760	11820
0400-0500		Radio Moscow World Service, USSR	6000	7135	7150	7310
			7150	7390	9530	9765
			9795	11765	11955	11995
			12055	15140	15170	15295
			15420	15455	15480	17570
			17590	17600	17610	17625
			17655	17676	17775	17825
			17855	21635	21680	21690
			21790			
0400-0500		Radio New Zealand, Wellington	15485	17705		
0400-0500		Radio Oranje, South Africa	3215			
0400-0500		Radio Sofia, Bulgaria	7115	9700	11720	11765
0400-0500		Radio Tonga, Kingdom of Tonga	5025			

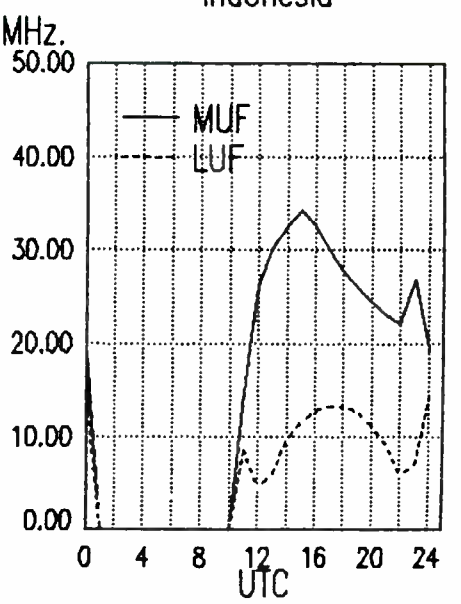
East Coast To
South East Asia



East Coast To
Indian Ocean



East Coast To
Indonesia



East Coast

frequency section

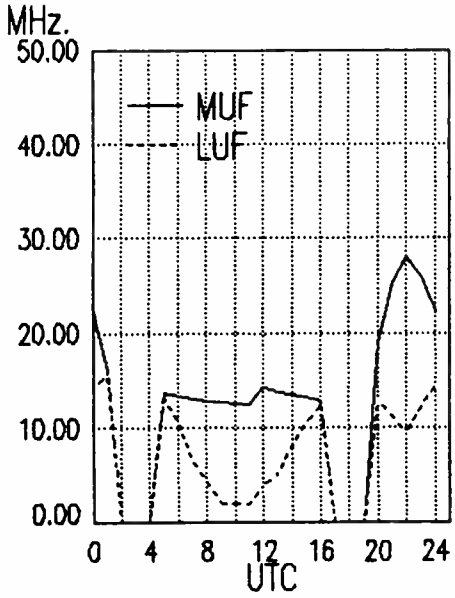
0400-0500		Voice of America-Middle East Service	3980	5995	6040	6140
			7170	7200	11785	15205
0400-0500	TP	Voice of Hope via KFBS, Guam	15225			
0400-0500		Voice of Turkey, Ankara, Turkey	9445	17760		
0400-0500		WHRI, Noblesville, Indiana	7315	9495		
0400-0500		WRNO Worldwide, Louisiana	6185			
0400-0500	IRR	WWCR, Nashville, Tennessee	7520			
0400-0500		WYFR, Oakland, California	5985	9505		
0425-0440		RAI, Rome, Italy	5990	7275		
0430-0455		Radio Netherlands Int'l, Hilversum	9895	13700		
0430-0500		BBC Alternative Programming,London	6005	6190	9600	11940
			15400			
0430-0500		BBC World Service, London, England	3955	5975	6180	6195
			9410	9915	12095	15070
			15245	15280	15310	21715
0430-0500		Radio Moscow N. American Service	7230	9505	9825	9895
			11790	12050	15180	
0430-0500		Radio for Peace, Costa Rica	7375	13660		
0430-0500		Radio Tirana, Albania	9480	11835		
0430-0500	S,M	Trans World Radio, Bonaire	9535	11930		
0430-0500		Voice of America-Africa Service	6035	7280	9525	9575
0445-0500		Radio Berlin Int'l, East Germany	11785	13690	15125	
0455-0500		Voice of Nigeria, Lagos	7255			

0500 UTC [12:00 AM EST/9:00 PM PST]

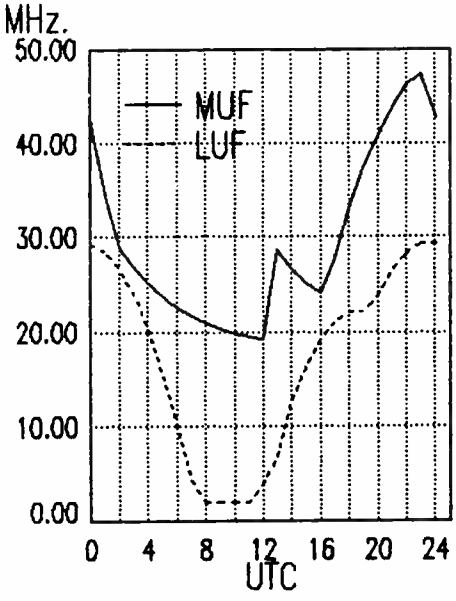
0500-0505		Radio Oranje, South Africa	3215			
0500-0515		Kol Israel, Jerusalem	7460	9435	11588	11605
			11665	15485	17630	17685
0500-0515		Vatican Radio, Vatican City	15190	17730		
0500-0520		Radio 5, Johannesburg, South Africa	4880			
0500-0530		Radio Berlin Int'l, East Germany	11785	13690	15125	
0500-0600		Radio Jordan, Amman	13655			
0500-0530		Radio Moscow N. American Service	7230	9505	11790	17770
0500-0530	S,M	Trans World Radio, Bonaire	9535	11930		
0500-0530		Voice of America-Middle East Service	5995	6060	6140	7170
			7200	9670	9700	9740
			11925	15205		
0500-0545		BBC World Service, London, England	3955	5975	6005	6180
			6190	6195	7120	7230
			9410	9580	9600	9640
			11760	11940	12095	15070
			15245	15280	15310	15400
			15420	17885	21470	21715
0500-0550		Deutsche Welle, Koln, West Germany	5960	6120	6130	9670
			9700			
0500-0555		Radio Beijing, China	11840			
0500-0600		CBU, Vancouver, British Colombia	6160			
0500-0600		CFCF, Montreal, Quebec, Canada	6005			
0500-0600		CFCN, Calgary, Alberta, Canada	6030			
0500-0600		CHNS, Halifax, Nova Scotia, Canada	6130			
0500-0600		Christian Science World Svc, Boston	9455	9840	13760	17780
0500-0600		CKWX, Vancouver, British Colombia	6080			
0500-0600		CFRB, Toronto, Ontario, Canada	6070			
0500-0600		HCJB, Quito, Ecuador	6230	9745	11775	
0500-0600		KUSW, Salt Lake City, Utah	6175			
0500-0600		Radio Australia, Melbourne	11910	15160	15240	15395
			17715	17750	17795	
0500-0600		Radio Havana Cuba	5965	11760	11820	
0500-0600		Radio Japan, Tokyo	11870	17810	17825	17890
0500-0600		Radio Moscow World Service, USSR	7130	7135	7150	7310
			7390	9765	9795	11765
			11785	11800	11995	12055
			13715	15140	15280	15295
			15320	15420	15455	15480
			17570	17590	17600	17610
			17625	17635	17655	17665
			17675	17725	17775	17825
			17855	17890	21450	21635
			21680	21690	21790	
0500-0600		Radio New Zealand, Wellington	15485	17705		
0500-0600		Radio Tonga, Kingdom of Tonga	5025			
0500-0600		Spanish National Radio, Madrid	9630			
0500-0600		Voice of America-Africa Service	3990	6035	7280	9540
			9575			
0500-0600		Voice of America-Middle East Service	3980	5995	6040	6060
			7170	7200	11785	15205
0500-0600		Voice of Hope via KFBS, Guam	15225			
0500-0600	TP	Voice of Nigeria, Lagos	7255			
0500-0600		WHRI, Noblesville, Indiana	7315	9495		
0500-0600		WRNO Worldwide, Louisiana	6185			
0500-0600		WWCR, Nashville, Tennessee	7520			
0500-0600		WYFR, Oakland, California	5985	11580	13695	15566
0510-0600		Radio Oranje, South Africa	7285			
0525-0600		Radio 5, Johannesburg, South Africa	11885			
0530-0545		BBC English by Radio, London	6050	6150	7210	9750
0530-0600		Radio Austria International, Vienna	6015	6155	13730	15410
			21490			

East Coast

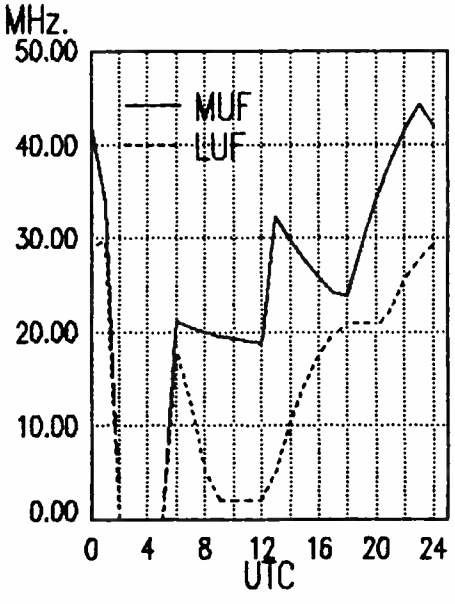
East Coast To Far East



East Coast To Pacific



East Coast To Australia

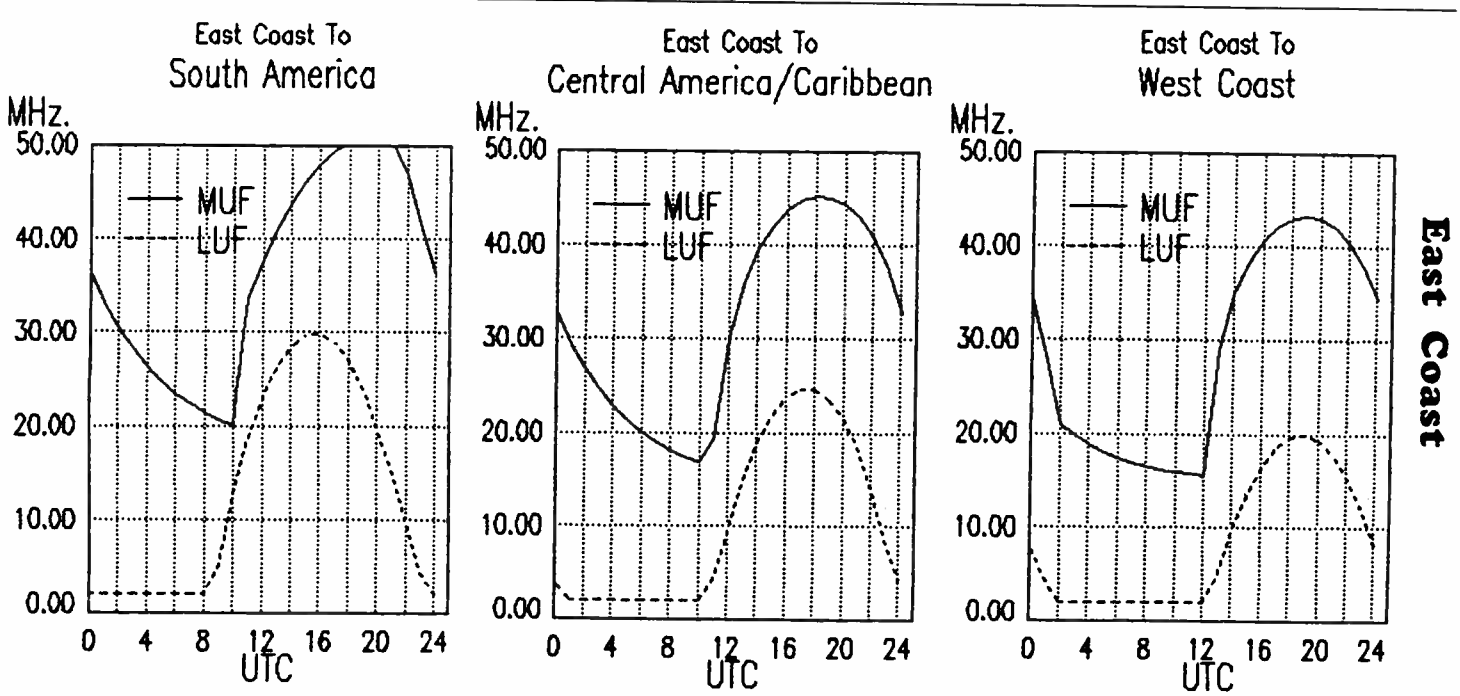


frequency section

0530-0600	Radio Bucharest, Romania	15340	15380	17720	17745
		21665			
0530-0600	UAE Radio Dubai	15435	17830	21700	
0530-0600	Radio Moscow N. American Service	7175	7185	7230	7270
		9895	11790	17770	
0545-0600	BBC World Service, London, England	3955	5975	6180	6190
		6195	7120	7230	9410
		9580	9600	9640	11760
		11940	12095	15070	15245
		15280	15310	15400	15420
		17885	21470	21715	
0555-0600	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	

0600 UTC [1:00 AM EST/10:00 PM PST]

0600-0615	Vatican Radio, Vatican City	6185	9645		
0600-0630	BBC World Service, London, England	3955	5975	6180	6190
		6195	7120	7150	7230
		9410	9580	9600	9640
		11760	11940	11955	12095
		15070	15245	15280	15310
		15360	15400	15420	17640
		17710	17740	17790	17885
		21470	21715		
0600-0700	CBU, Vancouver, British Colombia	6160			
0600-0700	CFCF, Montreal, Quebec, Canada	6005			
0600-0700	CFCN, Calgary, Alberta, Canada	6030			
0600-0700	CHNS, Halifax, Nova Scotia, Canada	6130			
0600-0700	Christian Science World Svc, Boston	9455	9850	11980	
0600-0700	CKWX, Vancouver, British Colombia	6080			
0600-0700	CFRB, Toronto, Ontario, Canada	6070			
0600-0630 S	Radio Norway International, Oslo	5980	15165		
0600-0645	Radio Berlin Int'l, East Germany	5965	6115	9645	13610
0600-0650	Deutsche Welle, Koln, West Germany	11765	13790	15185	17875
0600-0700	HCJB, Quito, Ecuador	6230	9745	11775	
0600-0700	KUSW, Salt Lake City, Utah	6175			
0600-0700	Radio Australia, Melbourne	11910	11945	15160	15240
		15315	15395	17715	17750
		17795			
0600-0700	Radio Jordan, Amman	13655			
0600-0700	Radio Moscow N. American Serivce	7175	7185	7230	9505
		9825	11790		
0600-0700	Radio Moscow World Service, USSR	6175	7130	7135	7310
		9450	9515	9765	9795
		11765	11775	11800	11880
		11995	11995	12010	12055
		13650	13715	15140	15150
		15170	15280	15295	15320
		15420	15435	15465	15455
		15465	15480	15500	17570
		17590	17600	17610	17625
		17655	17665	17675	17700
		17735	17775	17825	17890
		21635	21690	21680	
0600-0700	Radio Tonga, Kingdom of Tonga	5025			
0600-0700	Voice of America-Africa Service	3990	6035	6080	6125
		7280	9530	9540	9575
		11915			
0600-0700	Voice of America-Middle East Service	3980	5965	5995	6060
		6095	6140	7170	7200
		7325	9715	11785	11805
		11925	15195		
0600-0700 TP	Voice of Hope via KFBS, Guam	15225			
0600-0700	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0600-0700 S	WRNO Worldwide, Louisiana	6185			
0615-0630 M-F	Radio Canada International, Montreal	6050	6150	7155	9740
		9760	11840		
0615-0630	Vatican Radio, Vatican City	15190	17730		
0615-0700	Radio Berlin Int'l, East Germany	15240	17880		
0630-0700	BBC Alternative Programming, London	9600	11940	15400	17740
0630-0700	BBC World Service, London, England	3955	5975	6180	6190
		6195	7120	7150	7230
		9410	9580	9640	11760
		11955	12095	15070	15245
		15280	15310	15360	15420
		17640	17710	17885	17790
		21470	21715		
0630-0700	Radio Polonia, Warsaw, Poland	6135	7270	15120	
0630-0700	Swiss Radio International, Berne	12030	15430	17570	21520
0645-0700	BBC English by Radio, London	5875	7260	11945	
0645-0700	GBC Radio, Accra, Ghana	6130			
0645-0700	HCJB, Quito, Ecuador	9610	11835		
0645-0700	Radio Bucharest, Romania	11810	11940	15335	17720
		17805	21665		
0645-0700 M-F	Radio Canada International, Montreal	6050	6150	7155	9740
		9760	11840		



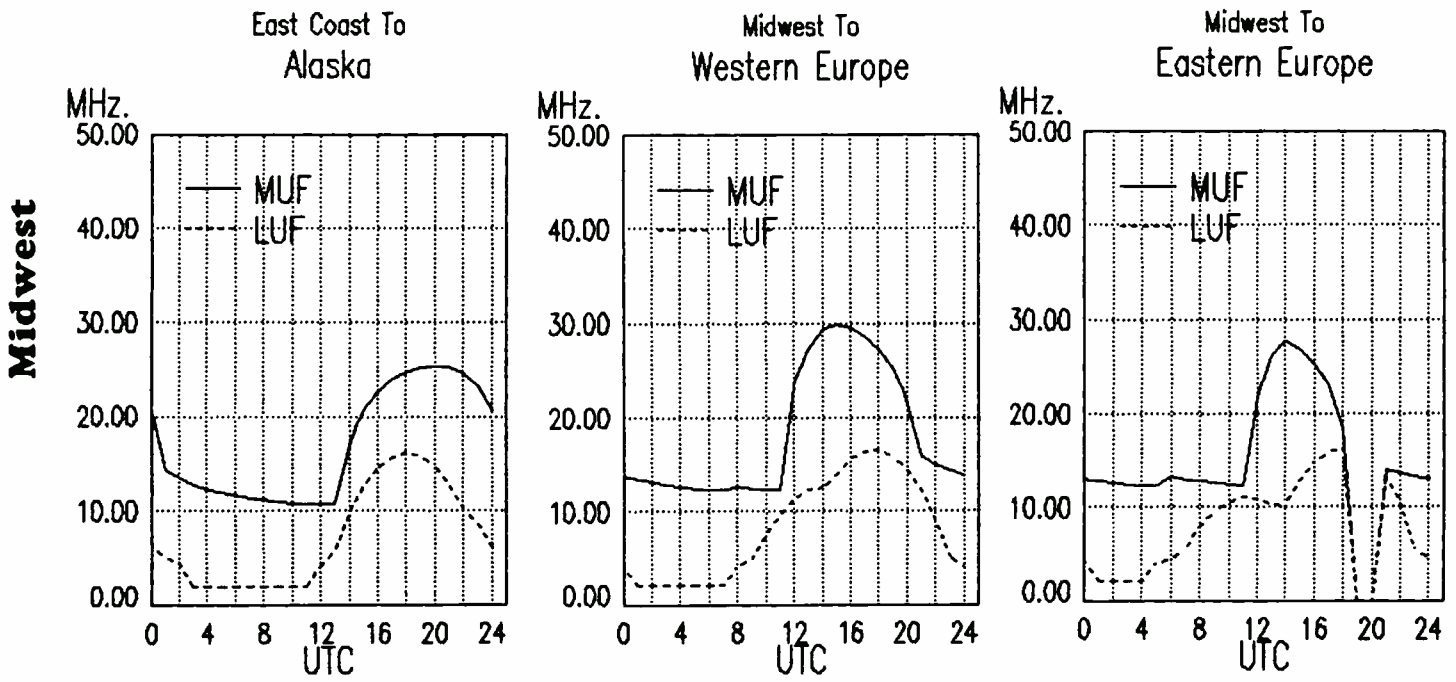
frequency section

0700 UTC [7:00 PM EST/9:00 AM PST]

0700-0715	Radio Bucharest, Romania	11810 11940 15335 17720 17805 21665
0700-0730	BBC World Service, London,England	3955 5975 6180 6190 6195 7120 7150 7230 7325 9410 9580 9600 9640 11760 11940 11955 12095 15070 15245 15280 15310 15360 15420 17640 17710 17740 17885 17790 21470 21660 21715
0700-0730	Radio for Peace Int'l, Costa Rica	7375 13660 21565 25945
0700-0800	CBU, Vancouver, British Colombia	6160
0700-0800	CFCF, Montreal, Quebec, Canada	6005
0700-0800	CFCN, Calgary, Alberta, Canada	6030
0700-0800	CHNS, Halifax, Nova Scotia, Canada	6130
0700-0800	Christian Science World Svc, Boston	9455 9840 11980
0700-0800	CKWX, Vancouver, British Colombia	6080
0700-0800	CFRB, Toronto, Ontario, Canada	6070
0700-0800	GBC Radio, Accra, Ghana	6130
0700-0800	HCJB, Quito, Ecuador	9610 11835
0700-0800	KNLS, Anchor Point, Alaska	9785
0700-0800	KUSW, Salt Lake City, Utah	6135
0700-0800	Radio Australia, Melbourne	5995 9655 11720 15160 15395 17715 17750
0700-0800	Radio Japan, Tokyo	15325 17765 17810 17890 21690
0700-0800	Radio Jordan, Amman	13655
0700-0800	Radio Moscow N. American Serivce	7175 7185 7230 9505 9825
0700-0800	Radio Moscow World Service, USSR	7130 7135 7310 9450 9515 9795 11705 11745 11765 11800 11995 12010 12055 13715 15140 15150 15170 15260 15280 15295 15320 15420 15465 15435 15455 15465 15500 15560 17570 17590 17600 17610 17625 17655 17665 17675 17700 17735 17765 17775 17810 17825 17840 17855 17890 21635 21680 21690 21790
0700-0800	Radio Tonga, Kingdom of Tonga	5025
0700-0800	Voice of Free China, Taiwan	6130 9745 11925
0700-0800 TP	Voice of Hope via KFBS, Guam	15225
0700-0800	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0700-0800 S	WRNO Worldwide, Louisiana	6185
0710-0800	HCJB, Quito, Ecuador	6130 9745 11925
0715-0730	BBC English by Radio, London	11860 15105
0715-0730	Vatican Radio, Vatican City	15190 17730
0715-0800 S	FEBA, Mahe, Seychelles	15275 17820
0730-0745	BBC English by Radio, London	3975 6010 7210 9825
0730-0800	ABC, Alice Springs, Australia	2310 (ML)
0730-0800	ABC, Katherine, Australia	2485
0730-0800	ABC, Tennant Creek, Australia	2325 (ML)
0730-0800	BBC Alternative Prgramming, London	9600 11860 15105
0730-0800	BBC World Service, London, England	5975 6190 7150 7325 9410 9640 11760 11940 11955 12095 15070 15280 15310 15360 15420 17640 17710 17740 17790 21660 21715
0730-0800 M-F	BBC World Service, London, England	6180 17885 21470 15245
0730-0755	Radio Finland, Helsinki	6120 9560 11755
0730-0800	Radio Netherlands Int'l, Helsinki	9630 15560
0730-0800	Swiss Radio Int'l European Service	3985 6165 9535

0800 UTC [3:00 AM EST/12:00 AM PST]

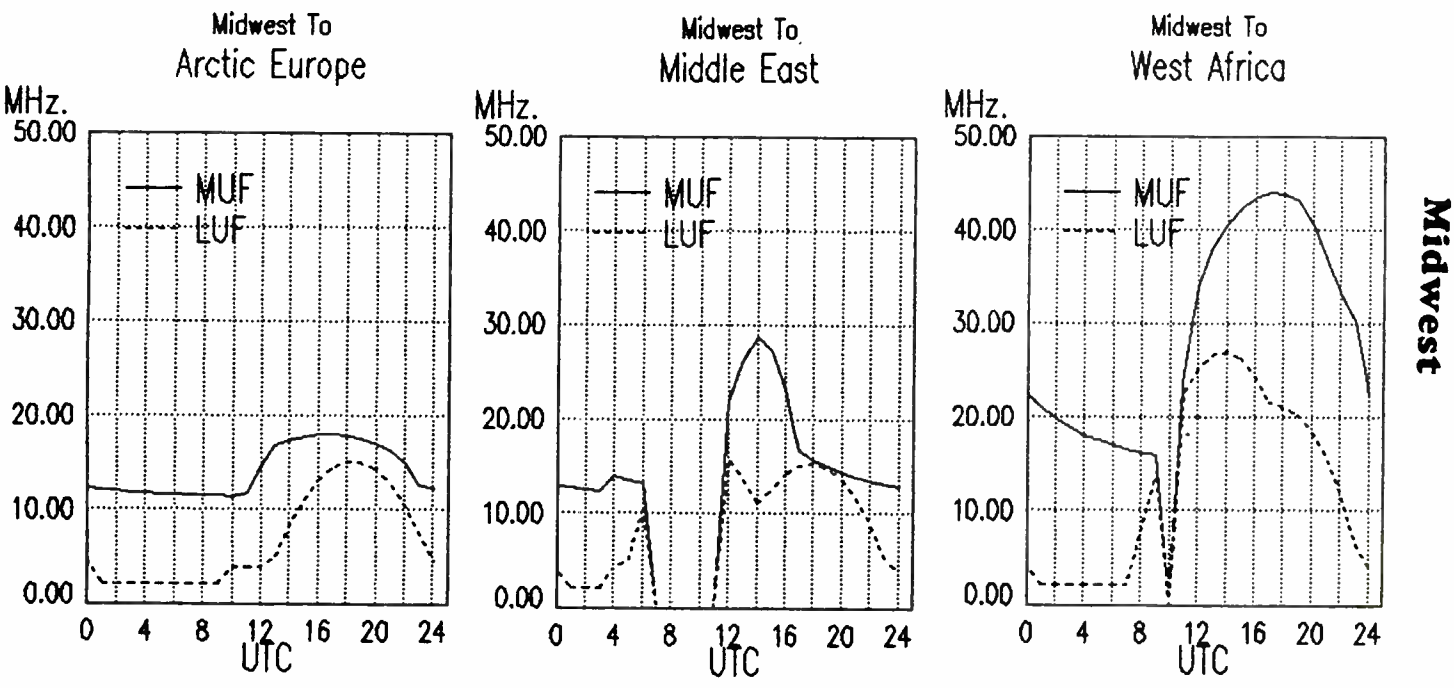
0800-0825 M-F	BRT, Brussels, Belgium	6035 11695 21815
0800-0825	Radio Netherlands Int'l, Helsinki	9630 15560
0800-0825	Voice of Malaysia, Kuala Lumpur	6175 9750 15295
0800-0830 S	Radio Norway International, Oslo	15165
0800-0830	Voice of Islam, Dhaka, Bangladesh	15195 17855
0800-0900	ABC, Alice Springs, Australia	2310 (ML)
0800-0900	ABC, Katherine, Australia	2485
0800-0900	ABC, Perth, Australia	15425
0800-0900	ABC, Tennant Creek, Australia	2325 (ML)
0800-0900	CBN, St. John's, Newfoundland, Can	6160
0800-0900	CBU, Vancouver, British Colombia	6160
0800-0900	CFCF, Montreal, Quebec, Canada	6005
0800-0900	CFCN, Calgary, Alberta, Canada	6030
0800-0900	CHNS, Halifax, Nova Scotia, Canada	6130
0800-0900	Christian Science World Svc, Boston	9455 17855
0800-0900	CKWX, Vancouver, British Colombia	6080
0800-0900	CFRB, Toronto, Ontario, Canada	6070



0800-0900		HCJB, Quito, Ecuador	6130			
0800-0900		HCJB, Quito, Ecuador	9745	11925		
0800-0900		KNLS, Anchor Point, Alaska	7365			
0800-0900		KTWR, Agana, Guam	15210			
0800-0900		KUSW, Salt Lake City, Utah	6135			
0800-0900		Radio Australia, Melbourne	9580	9655	11720	15395
			17715	17750		
0800-0900		Radio Jordan, Amman	13655			
0800-0900		Radio Moscow World Service, USSR	7130	7135	7310	9450
			9795	11625	11705	11745
			11765	11800	12010	12055
			15140	15150	15170	15260
			15280	15295	15320	15345
			15420	15455	15465	15500
			15530	17570	17580	17600
			17605	17610	17620	17625
			17635	17655	17665	17700
			17735	17765	17776	17810
			17840	17855	17890	21450
			21635	21680	21690	21725
			21790			
0800-0900		Radio New Zealand, Wellington	6100	9850	11780	
0800-0900		Radio Tonga, Kingdom of Tonga	5025			
0800-0900		Voice of Indonesia, Jakarta	11744	11788		
0800-0900		Voice of Nigeria, Lagos	7255			
0800-0900	S	WRNO Worldwide, Louisiana	6185			
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	M-A	Radio Netherlands Int'l, Hilversum	9770			
0830-0900		Radio Austria International, Vienna	6155	13730	15450	21490
0830-0900		Radio Beijing, China	11775	15440	17710	
0830-0900		Radio Netherlands Int'l, Hilversum	17575	21485		
0830-0900		Swiss Radio International, Berne	9560	13685	17670	21695
0845-0900		KTWR, Agana, Guam	15210			
0845-0900		Radio Berlin Int'l, East Germany	6040	6115	7185	9730
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 [4:00 AM EST/1:00 AM PST]

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
0900-0920		ABC, Perth, Australia	15425			
0900-0925		BRT, Brussels, Belgium	9925			
0900-0925		Radio Finland, Helsinki	17800	21550		
0900-0925		Radio Netherlands Int'l, Hilversum	17575	21485		
0900-0930		KTWR, Agana, Guam	15210			
0900-0930		Radio Beijing, China	11775	15440	17710	
0900-0930	S	Radio Norway International, Oslo	17740			
0900-0950		Deutsche Welle, Koln, West Germany	6160	9650	11785	11945
			17780	17800	21600	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		BBC World Service, London, England	5975	6045	6180	6190
			6195	7325	9410	9660
			9740	9750	9760	11750
			11760	11940	12095	15070
			15245	15285	15310	15360
			15400	15420	17640	17705
			17790	17885	21470	21660
			21710	21715		
0900-1000		CFCF, Montreal, Quebec, Canada	6005			
0900-1000		CFCN, Calgary, Alberta, Canada	6030			
0900-1000		CHNS, Halifax, Nova Scotia, Canada	6130			
0900-1000		Christian Science World Svc, Boston	9455	17855		
0900-1000		CKWX, Vancouver, British Colombia	6080			
0900-1000		CFRB, Toronto, Ontario, Canada	6070			
0900-1000		FEBC Radio Int'l, Philippines	11850			
0900-1000		HCJB, Quito, Ecuador	6130			
0900-1000		HCJB, Quito, Ecuador	9745	11925		
0900-1000		KNLS, Anchor Point, Alaska	9785			
0900-1000		KUSW, Salt Lake City, Utah	6135			
0900-1000		Radio Afghanistan, Kabul	17655	21600		
0900-1000		Radio Australia, Melbourne	9580	9655	9760	11720
			15415			
0900-1000		Radio Japan, Tokyo	17810			

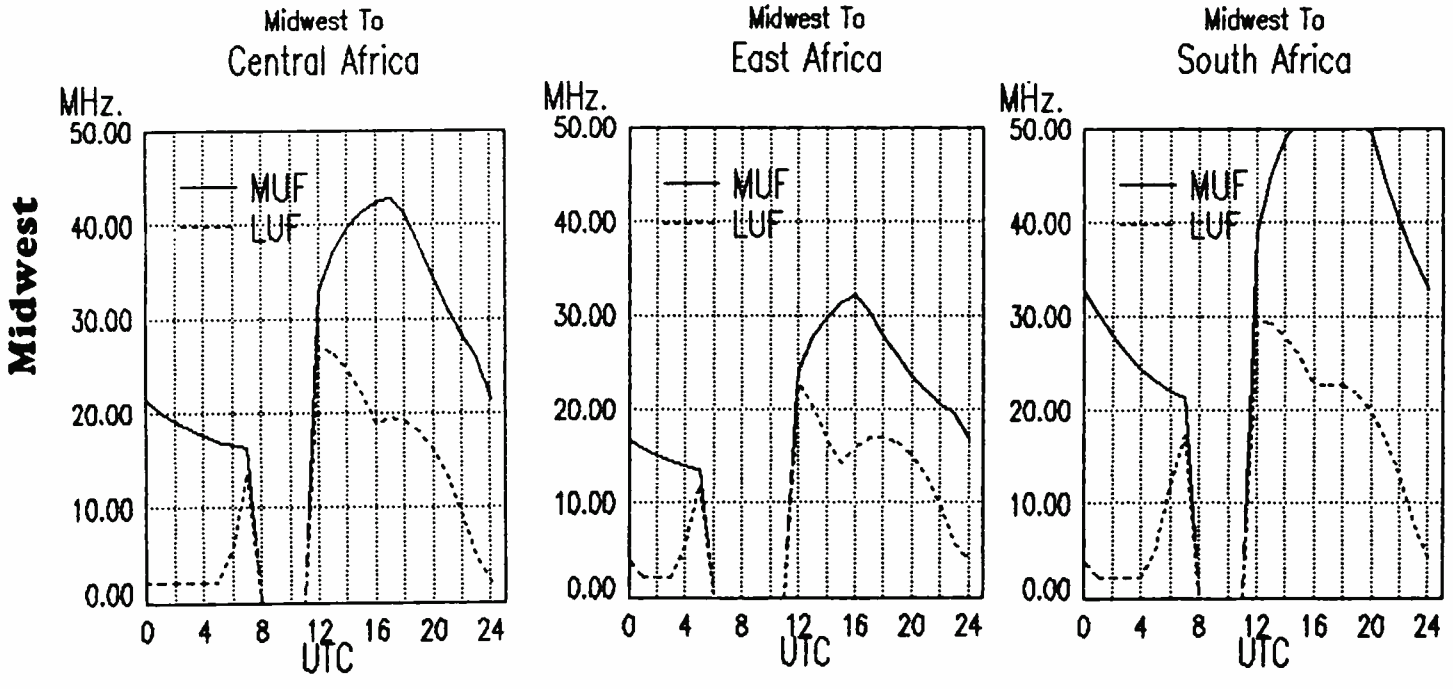


frequency section

0900-1000		Radio Jordan, Amman	13655			
0900-1000		Radio Metro, Johannesburg,S.Africa	11805			
0900-1000		Radio Moscow World Service, USSR	7130	7305	9450	9780
			9875	11800	12010	12055
			11705	11765	12055	15140
			15150	15260	15260	15666
			15320	15345	15405	15435
			15455	15460	15465	15490
			15500	15520	15530	15560
			15580	15595	17570	17580
			17600	17605	17610	17625
			17645	17655	17665	17675
			17700	17735	17765	17775
			17810	17840	17890	21450
			21635	21660	21680	21690
			21725	21800		
0900-1000		Radio New Zealand, Wellington	6100	9850	11780	
0900-1000	UN	Radio Tanpa, Nagara, Japan	3925			
0900-1000		Radio Tonga, Kingdom of Tonga	5025			
0900-1000		Voice of Nigeria, Lagos	7255			
0900-1000		WHRI, Noblesville, Indiana	7355	9495		
0900-1000	S	WRNO Worldwide, Louisiana	6185			
0920-1000		ABC, Perth, Australia	6140			
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	
0930-0955		Radio Finland, Helsinki	15245	17800		
0930-0955		RRI Surabaya, Jawa Timur, Indonesia	2377			
0930-1000		BBC English by Radio, London	7180	11955	15280	17830
0930-1000		CBN, St. John's, New Foundland	6160			
0930-1000		KTWR, Agana, Guam	11805			
0930-1000		Radio Beijing, China	11775	15440	17710	

1000 UTC [5:00 AM EST/2:00 AM PST]

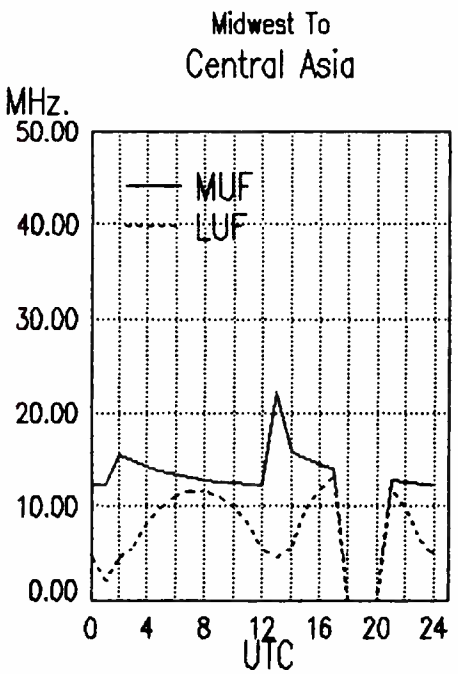
1000-1015		KTWR, Agana, Guam	11805			
1000-1015		Radio Budapest, Hungary	6110	9585	9835	11925
			15160	15220		
1000-1025	M-F	BRT, Brussels, Belgium	21810	26050		
1000-1030		Radio Afghanistan, Kabul	17655	21600		
1000-1030		Radio Beijing, China	11775	15440	17710	
1000-1030		Swiss Radio International, Berne	9560	13685	17670	21695
1000-1045		Radio Berlin Int'l, East Germany	11890			
1000-1100		ABC, Alice Springs, Australia	2310	(ML)		
1000-1100		ABC, Katherine, Australia	2485			
1000-1100		ABC, Perth, Australia	9610			
1000-1100		ABC, Tennant Creek, Australia	2325	(ML)		
1000-1100		Adventist World Radio-Asia, Guam	13720			
1000-1100		All India Radio, New Delhi	11860	11915	15050	15335
			17665	21735		
1000-1100		BBC World Service, London, England	5975	6045	6180	6190
			6195	7325	9410	9660
			9740	9750	9760	11750
			11760	11940	12095	15070
			15285	15310	15360	15400
			15420	17640	17705	17790
			17885	21470	21660	21710
1000-1100		CBN, St. John's, Newfoundland, Can	6160			
1000-1100		CFCF, Montreal, Quebec, Canada	6005			
1000-1100		CFCN, Calgary, Alberta, Canada	6030			
1000-1100		CHNS, Halifax, Nova Scotia, Canada	6130			
1000-1100		Christian Science World Svc, Boston	9455	9495		
1000-1100		CKWX, Vancouver, British Colombia	6080			
1000-1100		CFRB, Toronto, Ontario, Canada	6070			
1000-1100		FEBC Radio Int'l, Philippines	11850			
1000-1100		HCJB, Quito, Ecuador	9745	11925		
1000-1100		KTWR, Agana, Guam	11805			
1000-1100		KUSW, Salt Lake City, Utah	6135			
1000-1100		Radio Australia, Melbourne	9580	9655	15415	
1000-1100		Radio Jordan, Guam	13655			
1000-1100		Radio Metro, Johannesburg,S.Africa	11805			
1000-1100		Radio Moscow World Service, USSR	7130	7300	9780	9875
			11705	11765	11800	12055
			15140	15150	15260	15280
			15320	15405	15435	15460
			15465	15500	15520	15530
			15590	17565	17570	17605
			17610	17625	17645	17665
			17700	17735	17765	17810
			17820	17840	17890	21660
			21680	21725	21800	
1000-1100		Radio New Zealand, Wellington	6100	9850	11780	
1000-1100		Voice of America-Caribbean Service	9590	11915		
1000-1100		Voice of America-Pacific Service	5985	11720	15425	
1000-1100		Voice of Nigeria, Lagos	7255			
1000-1100	S	WRNO Worldwide, Louisiana	6185			

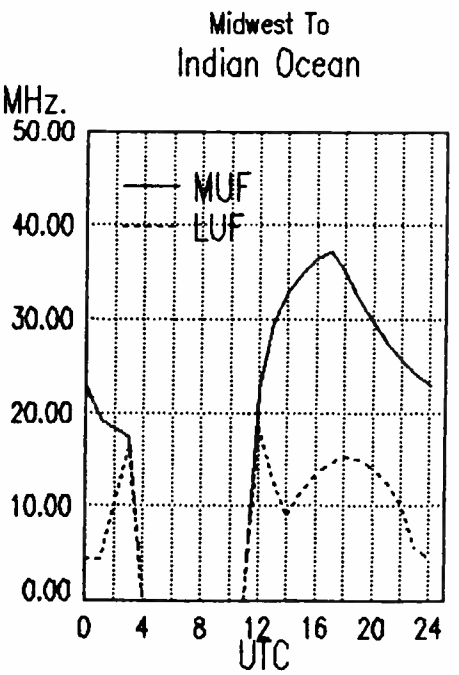


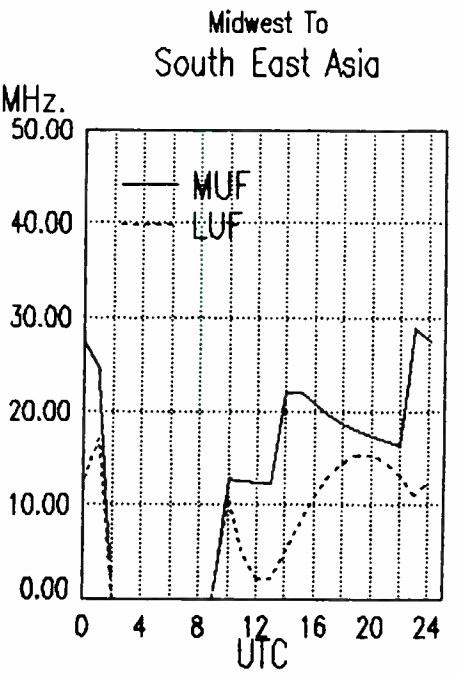
1030-1045	Radio Budapest, Hungary	6110	9585	9835	11925
		15160	15220		
1030-1100	Adventist World Radio, Forli, Italy	7230			
1030-1100	Radio Netherlands Int'l, Hilversum	6020	9505		
1045-1100	Radio Berlin Int'l, East Germany	6115			
1045-1000	Radio Budapest, Hungary	7220	9585	9835	11910
		11925	15160	15220	

1100 UTC [6:00 AM EST/3:00 AM PST]

1100-1105	Radio New Zealand, Wellington	6100	9850	11780	
1100-1115	BBC World Service, London, England	5965	5975	6045	6180
		6190	6195	7325	9410
		9660	9740	9750	9760
		11750	11760	11775	11940
		12095	15070	15140	15310
		15420	17640	17705	17790
		17885	21470	21660	
		15285	15360	15400	
1100-1125	Radio Netherlands Int'l, Hilversum	6020	9505		
1100-1130	Adventist World Radio, Forli, Italy	7230			
1100-1130	Kol Israel, Jerusalem	11585	15485	15650	17575
		17590	17685		
1100-1130	Radio Berlin Int'l, East Germany	6115			
1100-1130	Swiss Radio International, Berne	13635	15570	17830	21770
1100-1150	Deutsche Welle, Koln, West Germany	15410	17765	17800	21600
1100-1155	Radio Beijing, China	9665			
1100-1200	ABC, Alice Springs, Australia	2310	(ML)		
1100-1200	ABC, Brisbane, Australia	9660			
1100-1200	ABC, Katherine, Australia	2485			
1100-1200	ABC, Perth, Australia	9610			
1100-1200	ABC, Tennant Creek, Australia	2325	(ML)		
1100-1200	CBN, St. John's, Newfoundland, Can	6160			
1100-1200	CFCF, Montreal, Quebec, Canada	6005			
1100-1200	CFCN, Calgary, Alberta, Canada	6030			
1100-1200	CHNS, Halifax, Nova Scotia, Canada	6130			
1100-1200	Christian Science World Svc, Boston	9455	9495		
1100-1200	CKWX, Vancouver, British Colombia	6080			
1100-1200	CFRB, Toronto, Ontario, Canada	6070			
1100-1200	KUSW, Salt Lake City, Utah	9850			
1100-1200	Radio Australia, Melbourne	5995	6060	6080	7215
		9580	9645	9710	9770
		11705	11800		
1100-1200	Radio Beijing, China	17855			
1100-1200	Radio Japan, Tokyo	6120	11815	11840	
1100-1200	Radio Jordan, Amman	13655			
1100-1200	Radio Moscow World Service, USSR	6000	7130	7305	9705
		9780	9875	11705	11765
		12055	15140	15150	15260
		15280	15320	15345	15460
		15465	15490	15500	15520
		15530	15560	17565	17645
		17665	17570	17605	17645
		17700	17735	17810	17840
		17890	21660	21680	21725
		21800			
1100-1200	Radio South Africa, Johannesburg	11805			
1100-1200	Voice of America-Caribbean Service	9590	11915		
1100-1200	Voice of America-East Asia Service	5985	6110	9760	11720
		15155	15425		
1100-1200 S	WRNO Worldwide, Louisiana	6185			
1115-1130	BBC World Service, London, England	5965	5975	6045	6180
		6190	6195	7325	9410
		9660	9740	9750	9760
		11760	11775	11940	12095
		15070	15140	15285	15310
		15420	15360	15400	17640
		17705	17790	17885	21470
		21660	21710	25750	
1115-1130	Vatican Radio, Vatican City	17840	21485		
1130-1140	Trans World Radio, Bonaire	9535	11930		
1130-1145	BBC English by Radio, London	17810	21490		
1130-1145	Radio Budapest, Hungary	7220	9585	9835	11910
		11925	15160	15220	
1130-1145	RRI Yogyakarta,Yogyakarta,Indonesia	5046			
1130-1200	BBC World Service, London, England	5965	5975	6045	6190
		6195	7325	9410	9660
		9740	9750	9760	11760
		11775	11940	12095	15070
		15140	15310	15420	17640
		17705	17790	17885	21470
		21660	21710	25750	
1130-1200	HCJB, Quito, Ecuador	11740	15115	17890	
1130-1200	Radio Austria International, Vienna	6155	13730	15430	21475
1130-1200	Radio Netherlands Int'l, Hilversum	5955	9715	17575	21480
		21615			
1130-1200	Voice of the Islamic Republic of Iran	7190	7230	9695	
1135-1140	All India Radio, New Delhi	6065	7110	9610	9675
		11620	11850	15320	







Midwest

frequency section

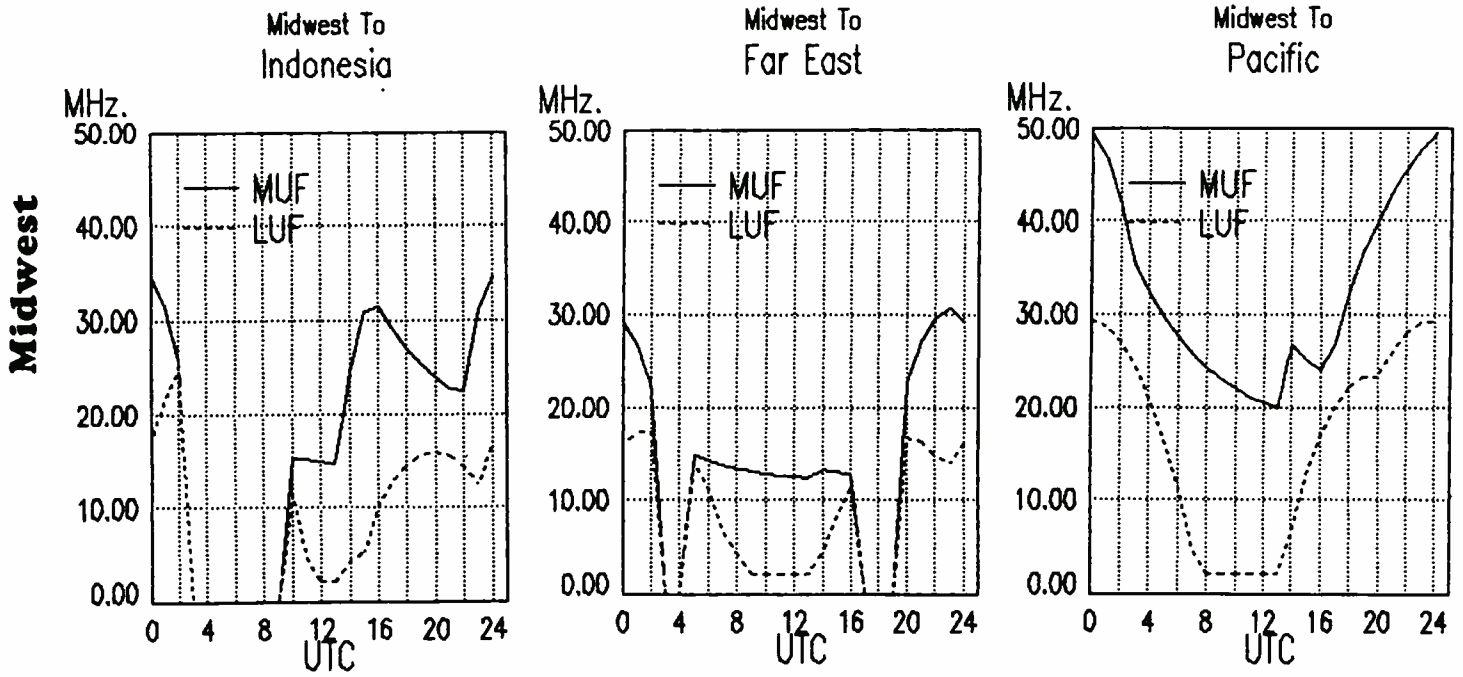
1145-1200	A-H	BBC English by Radio, London	7180	15280		
1150-1200	M-F	Radio Finland, Helsinki	15400	21550		
			17700	17720	21470	

1200 UTC [7:00 AM EST/4:00 AM PST]

1200-1215		BBC English by Radio, London	6065	9680	11920	
1200-1215	M-F	Radio Finland, Helsinki	15400	21550		
1200-1215		Vatican Radio, Vatican City	17840	17865	21485	21515
1200-1225		All India Radio, New Delhi	11620			
1200-1225		Radio Netherlands Int'l, Hilversum	5955	9715	17575	21480
			21615			
1200-1225		Voice of Islamic Republic of Iran	7190	7215	7230	9695
1200-1230		Radio East Africa,	9585			
1200-1230	S	Radio Norway International, Oslo	15165			
1200-1230		Radio Tashkent, Uzbekistan, SSR	5945	9540	9600	11785
			15470			
1200-1245		Radio Berlin Int'l, East Germany	6115	9665	13690	17780
1200-1300		ABC, Alice Springs, Australia	2310	(ML)		
1200-1300		ABC, Brisbane, Australia	9660			
1200-1300		ABC, Katherine, Australia	2485			
1200-1300		ABC, Perth, Australia	9610			
1200-1300		ABC, Tennant Creek, Australia	2325	(ML)		
1200-1300		Adventist world Radio, Costa Rica	9725	11870		
1200-1300		BBC World Service, London, England	5965	5975	6045	6190
			6195	7325	9410	9660
			9740	9750	9760	11750
			11760	11775	11940	12095
			15070	15140	15310	17640
			17705	17790	17885	21470
			21660	21710	25750	
1200-1300		CBU, Vancouver, British Colombia	6160			
1200-1300		CFCF, Montreal, Quebec, Canada	6005			
1200-1300		CFCN, Calgary, Alberta, Canada	6030			
1200-1300		CHNS, Halifax, Nova Scotia, Canada	6130			
1200-1300		Christian Science World Service	6150	9465	11930	15285
1200-1300		CKWX, Vancouver, British Colombia	6080			
1200-1300		CFRB, Toronto, Ontario	6070			
1200-1300		HCJB, Quito, Ecuador	11740	15115	17890	
1200-1300		KNLS, Anchor Pointe, Alaska	6095			
1200-1300		KUSW, Salt Lake City, Utah	9850			
1200-1300		Radio Australia, Melbourne	5995	6060	6080	7205
			7215	9580	9710	9770
			11800			
1200-1300		Radio Bangladesh, Dhaka	15195	17850		
1200-1300		Radio Beijing, China	9530	9665	11600	15450
1200-1300		Radio Bucharest, Romania	15380	17720		
1200-1300		Radio Jordan, Amman	13655			
1200-1300		Radio Moscow World Service, USSR	6000	7130	7305	9705
			9765	9780	9875	11705
			11765	12055	11745	15150
			15260	15305	15320	15345
			15465	15490	15500	15520
			15530	15560	17565	17570
			17605	17625	17645	17665
			17700	17735	17810	17820
			17840	17860	21660	21680
			21725	21800		
1200-1300		Radio RSA, Johannesburg	17730	21535	21590	
1200-1300		Voice of America-East Asia Service	6110	9760	11715	15155
			15425			
1200-1300		WHRI, Noblesville, Indiana	11790			
1200-1300	S	WRNO Worldwide, Louisiana	9715			
1200-1300		WYFR, Oakland, California	5950	7355	11830	17640
1215-1230	S	BBC English by Radio, London	6125			
1230-1300		BBC English by Radio, London	6125	9515	9560	9600
			9635	11710	11780	11845
			12040	15115	15390	15435
			17695	17880	17795	21695
1230-1300		Radio Bangladesh, Dhaka	15195	17853v		
1230-1300		Radio Berlin Int'l, East Germany	11970	15440	17880	21465
1230-1300		Radio France International, Paris	9805	11670	15155	15195
			17650	21635	21645	
1230-1300		Radio Sweden, Stockholm	15190	21570	17740	

1300 UTC [8:00 AM EST/5:00 AM PST]

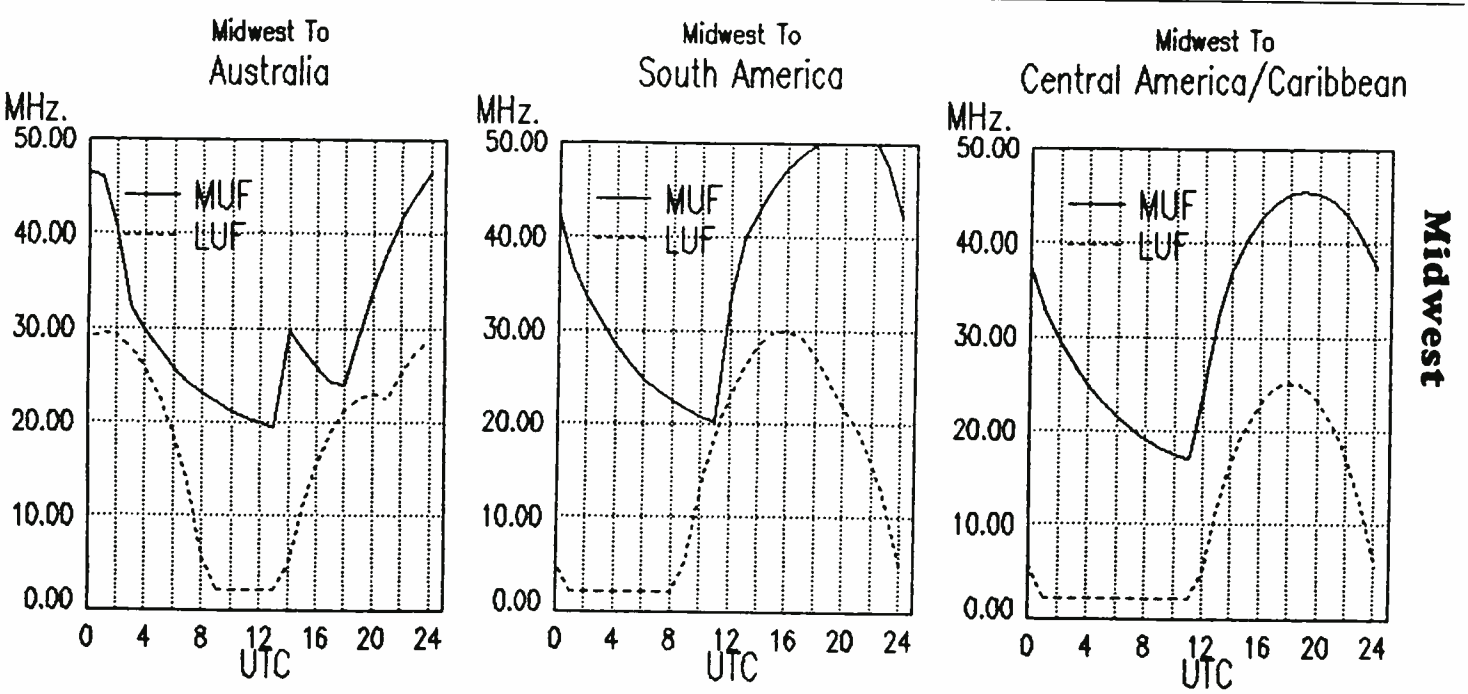
1300-1315		Radio Berlin Int'l, East Germany	11970	15440	17880	21465
1300-1325	M-F	Radio Finland, Helsinki	15400	21550		
1300-1330	S	Radio Norway International, Oslo	9590			
1300-1330		Radio Yugoslavia, Belgrade	11735	15165	15325	
1300-1330		Swiss Radio Int'l European Service	3985	6165	9535	
1300-1345		BBC World Service, London, England	5965	5975	5995	6045
			6190	6195	7180	7325
			9410	9660	9740	9750
			9760	11750	11775	11940
			12095	15070	15105	15140
			15310	15420	17640	17705



		17790	17885	21470	21660	
		21710	25750			
1300-1350	Radio Pyongyang, North Korea	9325	9345	9600	11335	
		11735				
1300-1400	ABC, Alice Springs, Australia	2310				
1300-1400	ABC, Brisbane, Australia	9660				
1300-1400	ABC, Katherine, Australia	2485				
1300-1400	ABC, Perth, Australia	9610				
1300-1400	ABC, Tennant Creek, Australia	2325	(ML)			
1300-1400	Adventist World Radio, Costa Rica	9725	11870			
1300-1400	CBC Northern Quebec Service, Can	9625				
1300-1400	CBN, St. John's, Newfoundland	6160				
1300-1400	CBU, Vancouver, British Colombia	6160				
1300-1400	CFCF, Montreal, Quebec, Canada	6005				
1300-1400	CFCN, Calgary, Alberta, Canada	6030				
1300-1400	CHNS, Halifax, Nova Scotia, Canada	6130				
1300-1400	Christian Science World Service	6150	9465	11930	15285	
1300-1400	CKWX, Vancouver, British Colombia	6080				
1300-1400	CFRB, Toronto, Ontario, Canada	6070				
1300-1400	FEBC Radio Int'l, Philippines	11850				
1300-1400	HCJB, Quito, Ecuador	11740	15115	17890		
1300-1400	KUSW, Salt Lake City, Utah	9850				
1300-1400	Radio Australia, Melbourne	5995	6060	6080	7135	
		7205	9580	21525		
1300-1400	Radio Beijing, China	9530	11600			
1300-1400	Radio Bucharest, Romania	11940	15365	17850		
1300-1400 M-F	Radio Canada International, Montreal	9635	11855	17820		
1300-1400	Radio Jordan, Amman	13655				
1300-1400	Radio Moscow World Service, USSR	7130	7305	7370	9705	
		9765	9875	11705	11745	
		11765	11840	15150	15305	
		15320	15345	15475	15560	
		17625	17645	17665	17700	
		17735	17570	17700	17810	
		17820	17840	21660	21680	
		21725				
1300-1400	Radio RSA, Johannesburg	17730	21535	21590	25790	
1300-1400	Radio Station Peace & Progress, USSR	7195	7330	7380	9675	
		11775	15520	15535	17635	
		17840				
1300-1400	Voice of America-East Asia Service	6110	9760	11715	15155	
		15425				
1300-1400	WHRI, Noblesville, Indiana	9465	11790			
1300-1400 S	WRNO Worldwide, Louisiana	9715				
1300-1400	WWCR, Nashville, Tennessee	15690				
1300-1400	WYFR, Oakland, California	5950	9705	11580	11830	
		13695	15215	17640		
1315-1400	Radio Berlin Int'l, East Germany	11705	15240			
1330-1355 M-F	BRT, Brussels, Belgium (Asia Serv.)	21815				
1330-1355 M-S	BRT, Brussels, Belgium	21810				
1330-1400	All India Radio, New Delhi	10330	15335			
1330-1400	Radio Austria International, Vienna	15430				
1330-1400	Radio Tashkent, Uzbekistan, SSR	5945	9540	9600	11785	
		15470				
1330-1400	Swiss Radio International, Berne	9620	11695	13635	15570	
		17830	21695			
1330-1400	UAE Radio, Dubai	15320	17775	21605		
1330-1400	Voice of Turkey, Ankara, Turkey	17785				
1330-1400	Voice of Vietnam, Hanoi	9840	15010			
1345-1400	BBC World Service, London, England	5975	5995	6045	6190	
		6195	7180	7325	9410	
		9660	9740	9750	9760	
		11750	11940	12095	15070	
		15140	15310	15420	17640	
		17705	17790	17885	21470	
		21660	21710	25750		
1345-1400	Radio Berlin Int'l, East Germany	11970	15440	17880	21465	

1400 UTC [9:00 AM EST/6:00 AM PST]

1400-1420	Radio Jordan, Amman	13655				
1400-1430	ABC, Alice Springs, Australia	2310	(ML)			
1400-1430	ABC, Tennant Creek, Australia	2325	(ML)			
1400-1430	BBC English by Radio, London	11860	15420	17740		
1400-1430	Radio Berlin Int'l, East Germany	11980	15440	17880	21465	
1400-1430	Radio France International, Paris	11925	21780			
1400-1430 S	Radio Norway International, Oslo	21710				
1400-1430	Radio Polonia, Warsaw, Poland	6095	7285			
1400-1430	Radio Sweden, Stockholm	11905	17740			
1400-1430	Radio Tirana, Albania	9500	11895			
1400-1445	Radio Berlin Int'l, East Germany	6115				
1400-1455	Radio Beijing, China	7405				
1400-1500	ABC, Brisbane, Australia	9660				
1400-1500	ABC, Katherine, Australia	2485				
1400-1500	ABC, Perth, Australia	9610				
1400-1500	BBC World Service, London, England	5975	6045	6190	6195	
		7325	9410	9660	9740	
		9750	9760	11750	11940	
		12095	15070	15140	15310	

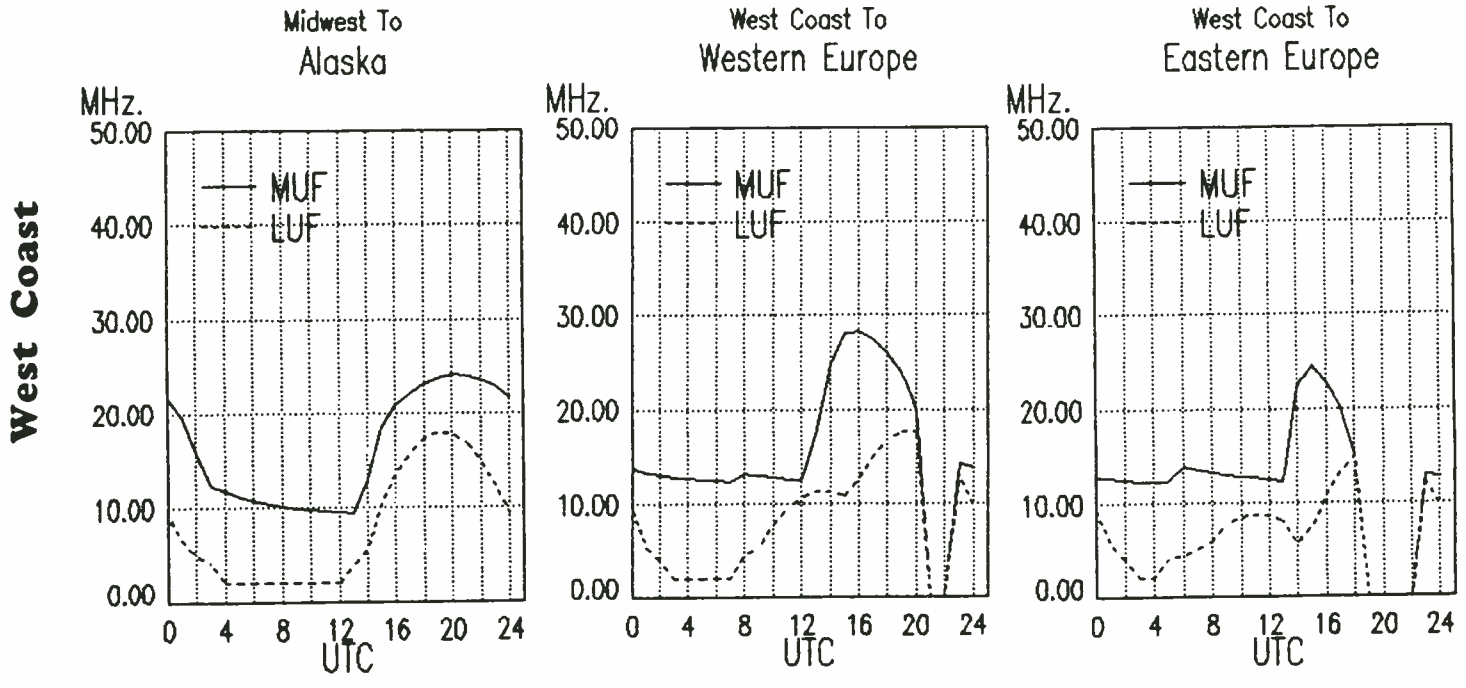


frequency section

			17640	17705	17790	17880
			21470	21660	21710	25750
1400-1500		CBC Northern Quebec Service, Can	9625			
1400-1500		CBN, St. John's, Newfoundland	6160			
1400-1500	M-A	CBU, Vancouver, British Colombia	6160			
1400-1500		CFCF, Montreal, Quebec, Canada	6005			
1400-1500		CFCN, Calgary, Alberta, Canada	6030			
1400-1500		CHNS, Halifax, Nova Scotia, Canada	6130			
1400-1500		Christian Science World Service	9530	13760	15385	17555
			21780			
1400-1500		CKWX, Vancouver, British Colombia	6080			
1400-1500		CFRB, Toronto, Ontario	6070			
1400-1500		FEBC Radio Int'l, Philippines	11850			
1400-1500		HCJB, Quito, Ecuador	11740	15115	17890	
1400-1500		KUSW, Salt Lake City, Utah	9850			
1400-1500		Radio Australia, Melbourne	5995	6035	6060	6080
			7135	7205	9580	
1400-1500	S	Radio Canada International, Montreal	9625	11720	11955	17820
1400-1500		Radio Japan, Tokyo	9505	11815		
1400-1500		Radio Korea, Seoul, South Korea	9570	9750	15575	
1400-1500		Radio Moscow World Service, USSR	5980	7105	7170	7315
			7260	7345	9705	9755
			9795	9895	11705	11745
			11765	11850	15305	15320
			15345	15465	15560	17570
			17625	17665	17700	17735
			17810	17820	17840	17860
			21660	21680	2172	
1400-1500		Radio RSA, Johannesburg	11925	21535	21590	25790
1400-1500		Voice of America-East Asia Service	6110	9760	15155	15425
1400-1500		Voice of America-South Asia Service	7125	9645	9760	15205
			15395			
1400-1500		Voice of Nigeria, Lagos	7255			
1400-1500		WHRI, Noblesville, Indiana	9465	15105		
1400-1500	S	WRNO Worldwide, Louisiana	11965			
1400-1500		WWCR, Nashville, Tennessee	15690			
1400-1500		WYFR, Oakland, California	5950	9705	11830	13695
			17640			
1405-1500		WYFR, Taiwan	11540			
1420-1500		Radio Jordan, Amman	9560			
1430-1500	F	ABC, Alice Springs, Australia	2310	(ML)		
1430-1500	F	ABC, Tennant Creek, Australia	2325	(ML)		
1430-1500		Radio Austria International, Vienna	6155	11780	13730	21490
1430-1500	S	Radio Finland, Helsinki	21550			
1430-1500		Radio Netherlands Int'l, Hilversum	5955	13770	15150	17575
			17605			
1430-1500		Radio Prague, Czechoslovakia	11685	13715	15110	15155
			17840	21505		
1445-1500		Radio Berlin Int'l, East Germany	9730			
1445-1500		Vatican Radio, Vatican City	6248	7250	9645	11740

1500 UTC [10:00 AM EST/7:00 AM PST]

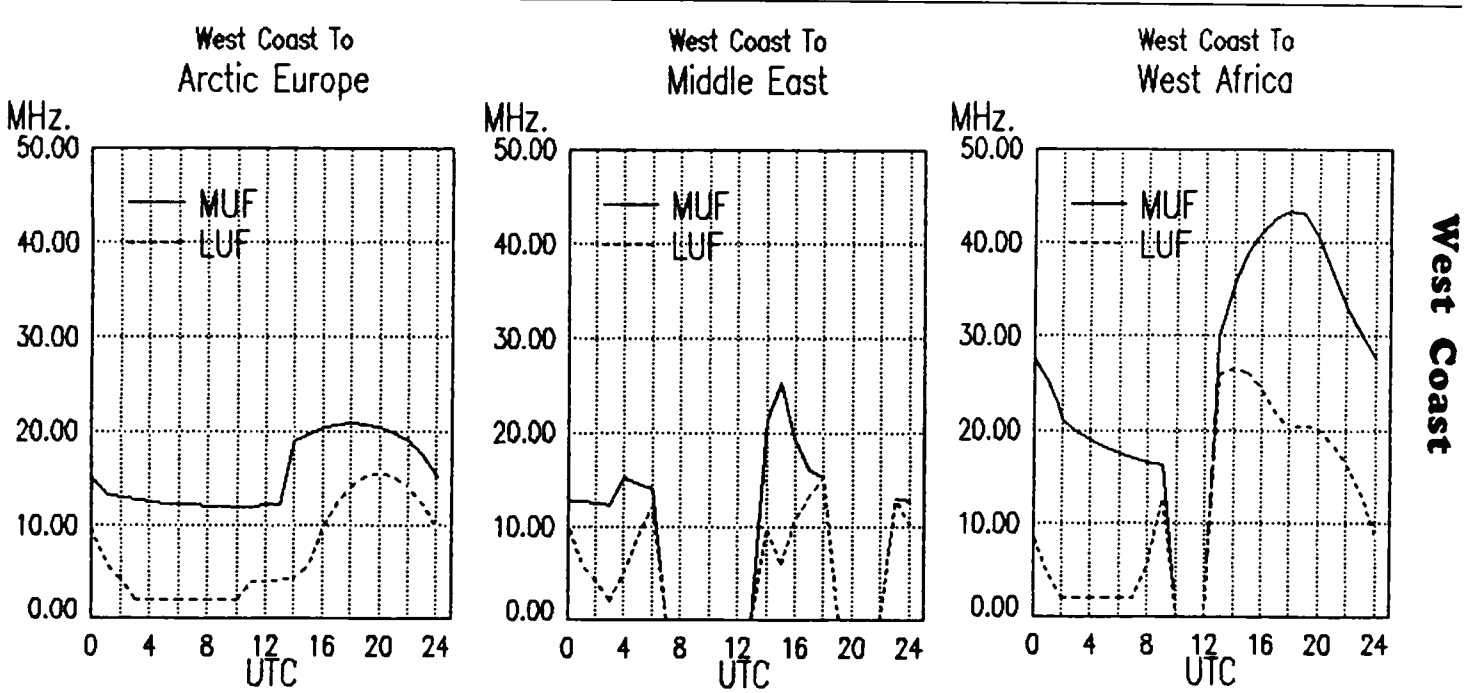
1500-1515		Vatican Radio, Vatican City	11955	15090	17870	
1500-1515		WYFR, Taiwan	11550			
1500-1525		Radio Netherlands Int'l, Hilversum	5955	13770	15150	17575
			17605			
1500-1530		Radio Berlin Int'l, East Germany	9730			
1500-1530		Radio Bucharest, Romania	11775	11940	15250	17720
			17745			
1500-1530		Radio Veritas Asia, Philippines	9525	15445		
1500-1600		Radio Jordan, Amman	9560			
1500-1550		Deutsche Welle, Koln, West Germany	9735	11965	17765	21600
1500-1555		Radio Beijing, China	7405	11795	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		BBC World Service, London, England	3915	5995	6180	6190
			6195	7180	7325	9410
			9515	9740	9750	9760
			11750	11940	12095	15070
			15260	15310	15400	17640
			17705	17880	21470	21660
			21710	25750		
1500-1600		CBC Northern Quebec Service, Can	9625	11720		
1500-1600		CBN, St. John's, Newfoundland	6160			
1500-1600		CBU, Vancouver, British Colombia	6160			
1500-1600		CFCF, Montreal, Quebec, Canada	6005			
1500-1600		CFCN, Calgary, Alberta, Canada	6030			
1500-1600		CHNS, Halifax, Nova Scotia, Canada	6130			
1500-1600		Christian Science World Service	9530	13760	15385	17555
			21780			
1500-1600		CKWX, Vancouver, British Colombia	6080			
1500-1600		CFRB, Toronto, Ontario	6070			
1500-1600		FEBA, Mahe, Seychelles	11865	15325		
1500-1600		FEBC Radio Int'l, Philippines	11850			
1500-1600		HCJB, Quito, Ecuador	15115	17890		
1500-1600	T-S	KNLS, Anchor Point, Alaska	7355			



1500-1600		KTWR, Agana, Guam	11650			
1500-1600		KUSW, Salt Lake City, Utah	15650			
1500-1600		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	
1500-1600	S	Radio Canada International, Montreal	9625	11720	11955	17820
1500-1600	M-F	Radiodiffusion Nationale du Burundi	6140			
1500-1600		Radio Japan, Tokyo	9505	11815	21700	
1500-1600		Radio Moscow World Service, USSR	5980	7260	7345	9565
			9705	9755	9795	9830
			9895	11705	11745	11765
			11805	11840	11850	12015
			15305	15560	17665	17735
			17810	17840	21725	
1500-1600		Radio RSA, Johannesburg S. Africa	11925	21535	21590	25790
1500-1600		Voice of America-Middle East Service	9700	15205	15260	
1500-1600		Voice of America-South Asia Service	6110	7125	9645	9700
			9760	15205	15260	15395
1500-1600		Voice of Indonesia, Jakarta	11744			
1500-1600		Voice of Nigeria, Lagos	7255			
1500-1600		WHRI, Noblesville, Indiana	15105	21840		
1500-1600	S	WRNO Worldwide, Louisiana	11965			
1500-1600		WWCR, Nashville, Tennessee	15690			
1500-1600		WYFR, Oakland, California	5950	11830	13695	15215
			17640			
1505-1530		Radio Finland, Helsinki	9640	15185		
1515-1530		KTWR, Agana, Guam	11650			
1530-1540	M-A	Voice of Greece, Athens	11645	15630	17535	
1530-1600	IRR	Radio Omdurman, Sudan	9550	9540	11625	
1530-1600		Radio Prague, Czechoslovakia	11990	13715	17840	21505
1530-1600		Radio Sofia, Bulgaria	11735	11840	15370	
1530-1600		Radio Sweden, Stockholm	17880	21610	21655	
1530-1600		Swiss Radio International, Berne	3985	13685	17830	21630
1545-1600		BBC English by Radio, London	9635	11945		
1545-1600		Radio Berlin int'l, East Germany	11970	17880		
1545-1600		Radio Canada International, Montreal	9555	11915	11935	13650
			15315	15325	17820	21545
1545-1600		Vatican Radio, Vatican City	15120	17730	21650	

1600 UTC [11:00 AM EST/8:00 AM PST]

1600-1610		FEBA, Mahe, Seychelles	11865	15325		
1600-1610		Vatican Radio, Vatican City	6248	7250	9645	11740
1600-1615		BBC World Service, London, England	3915	5975	5995	6180
			6190	6195	7180	7325
			9410	9515	9740	9750
			9760	11750	11940	12095
			15070	15260	15310	15400
			17640	17705	17860	17880
			21470	21660	21710	25750
1600-1625	M-F	Radio Finland, Helsinki	15400	21550		
1600-1630		Radio Berlin int'l, East Germany	11970	17880		
1600-1630	S	Radio Norway International, Oslo	17765	21705		
1600-1630		Radio Polonia, Warsaw, Poland	6135	9540		
1600-1630		Radio Portugal, Lisbon	15210			
1600-1630		Radio Sofia, Bulgaria	11735	11840	15370	
1600-1630		Voice of Vietnam, Hanoi	9840	15010		
1600-1645		UAE Radio, Dubai	11790	15320	21605	
1600-1650		Radio Pyongyang, North Korea	9325	11760		
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		Adventist World Radio-Asia, Guam	11980	13720		
1600-1700		CBC Northern Quebec Service, Can	9625			
1600-1700		CBN, St. John's, Newfoundland	6160			
1600-1700		CBU, Vancouver, British Colombia	6160			
1600-1700		CFCF, Montreal, Quebec, Canada	6005			
1600-1700		CFCN, Calgary, Alberta, Canada	6030			
1600-1700		CHNS, Halifax, Nova Scotia, Canada	6130			
1600-1700		Christian Science World Service	15385	21640		
1600-1700		CKWX, Vancouver, British Colombia	6080			
1600-1700		CFRB, Toronto, Ontario	6070			
1600-1700		HCJB, Quito, Ecuador	15115	17890		
1600-1700		KNLS, Anchor Point, Alaska	9815			
1600-1700		KTWR, Agana, Guam	11650	11910	13720	
1600-1700		KUSW, Salt Lake City, Utah	15650			
1600-1700		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	15245
1600-1700		Radio Beijing, China	9570	15110	15130	
1600-1700	S	Radio Canada International, Montreal	9625	11720	11955	17820
1600-1700		Radio France International, Paris	6175	11705	12015	15360
			17620	17795	17850	
1600-1700		Radio Jordan, Amman	9560			
1600-1700		Radio Korea, Seoul, South Korea	5975			
1600-1700		Radio Moscow World Service, USSR	5980	6165	7105	7170
			7220	7260	7315	7345
			9510	9705	9755	9795
			9830	9885	9895	11765
			11840	15475	17810	17840
1600-1700		Trans World Radio via Nairobi,Kenya	11910			

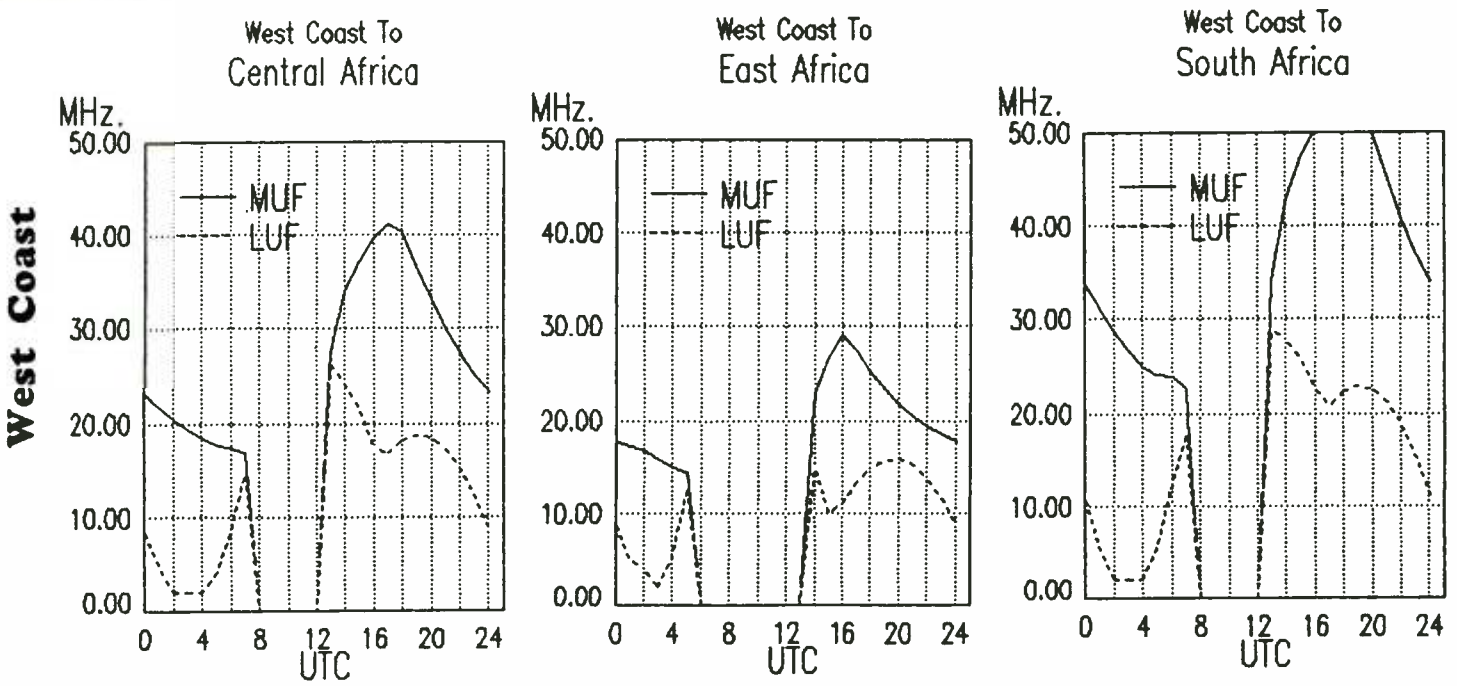


frequency section

1600-1700		Trans World Radio-Swaziland	15210			
1600-1700		Voice of America-Africa Service	7195	9575	11920	15410
			15445	15580	15600	17785
			17800	17870		
1600-1700		Voice of America-Middle East Service	3980	9700	15205	15260
1600-1700		Voice of America-Asia Service	7125	9645	9700	9760
			15205	15260	15395	
1600-1700		Voice of Nigeria, Lagos	7255			
1600-1700		WHRI, Noblesville, Indiana	15105	21840		
1600-1700		WINB, Red Lion, Pennsylvania	15295			
1600-1700		WRNO New Orleans, Louisiana	15420			
1600-1700		WWCR, Nashville, Tennessee	15690			
1600-1700		WYFR, Oakland, California	11830	13695	15215	15566
			17612	21525	21615	17640
1600-1650		Deutsche Welle, Koln, West Germany	6170	7225	15105	15595
			17825	21680		
1615-1620		Vatican Radio, Vatican City	9645	11740		
1615-1630		BBC Africa Service, London	6005	6190	9595	11940
			15400	17880		
1615-1630		BBC English by Radio, London	3975	6125	9750	
1615-1630		Radio Budapest, Hungary	7220	9585	9835	11910
			11925	15160	15220	
1615-1700		BBC World Service, London, England	3915	5975	6180	6195
			7325	9410	9740	11775
			12095	15070	15260	15310
			17640	17695	17860	21470
			21660	21710		
1625-1645	A,S	Radio Finland, Helsinki	15400	21550		
1630-1655	M-A	BRT, Brussels, Belgium	17580	21810		
1630-1700		Radio Station Peace & Progress, USSR	6005	7325	9490	9715
			11745	11850	15320	
1630-1700		Radio Netherlands Int'l, Hilversum	15375	15570		
1630-1700		RAE, Buenos Aires, Argentina	11710	15345		
1645-1700		Radio Berlin Int'l, East Germany	7295	9730	15350	17780
1645-1700	S	Radio Finland, Helsinki	15400	21550		

1700 UTC [12:00 PM EST/9:00 AM PST]

1700-1705		KTWR, Agana, Guam	11650			
1700-1715		BBC English by Radio, London	6065	7105	9605	11750
1700-1715		Swiss Radio Intl Europe Service(MO)	3985	6165	9535	
1700-1725		Radio Budapest, Hungary	6110	9585	9835	11910
			15160			
1700-1725		Radio Netherlands Int'l, Hilversum	15375	15570		
1700-1730		BBC English by Radio, London	3975	6125	7155	
1700-1730		Radio Berlin Int'l, East Germany	7295	9730	15350	17780
1700-1730	S	Radio Norway International, Oslo	15305	21705		
1700-1730		RAE, Buenos Aires, Argentina	11710	15345		
1700-1745		BBC World Service, London, England	3915	5975	6180	6195
			7160	7325	9410	9515
			9740	12095	15070	15260
			15310	17640	17695	21470
			21660	21710		
1700-1750		Radio Pyongyang, North Korea	9325	11760		
1700-1800	F	ABC, Alice Springs, Australia	2310	(ML)		
1700-1800		ABC, Tennant Creek, Australia	2325	(ML)		
1700-1800		CBN, St. John's, Newfoundland	6160			
1700-1800		CBU, Vancouver, British Colombia	6160			
1700-1800		CFCF, Montreal, Quebec, Canada	6005			
1700-1800		CFCN, Calgary, Alberta, Canada	6030			
1700-1800		CHNS, Halifax, Nova Scotia, Canada	6130			
1700-1800		Christian Science World Service	15385	21640		
1700-1800		CKWX, Vancouver, British Colombia	6080			
1700-1800		CFRB, Toronto, Ontario	6070			
1700-1800		KUSW, Salt Lake City, Utah	15650			
1700-1800		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	15245
1700-1800		Radio Beijing, China	9500	9570	11575	
1700-1800		Radio Japan, Tokyo	7140	9505	9535	11815
1700-1800		Radio Jordan, Amman	9560			
1700-1800		Radio Moscow World Service, USSR	5980	7105	7170	7220
			7260	7265	7315	7345
			9510	9565	9755	9685
			9795	9875	9885	11730
			11765	11840	15405	15475
			17840			
1700-1800		Voice of America-Africa Service	7195	9575	11920	15410
			15445	15580	15600	17785
			17800	17870		
1700-1800		Voice of America-Middle East Service	3980	6040	9700	9760
			11760	15205	15260	
1700-1800		Voice of America-South Asia Service	7125	9645	9700	15395
1700-1800		WHRI, Noblesville, Indiana	13760	15105		
1700-1800		WINB, Red Lion, Pennsylvania	15295			
1700-1800		WRNO, New Orleans, Louisiana	15420			
1700-1800		WWCR, Nashville, Tennessee	15690			
1700-1800		WYFR, Oakland, California	11830	13695	15215	17612
			17750	17885		

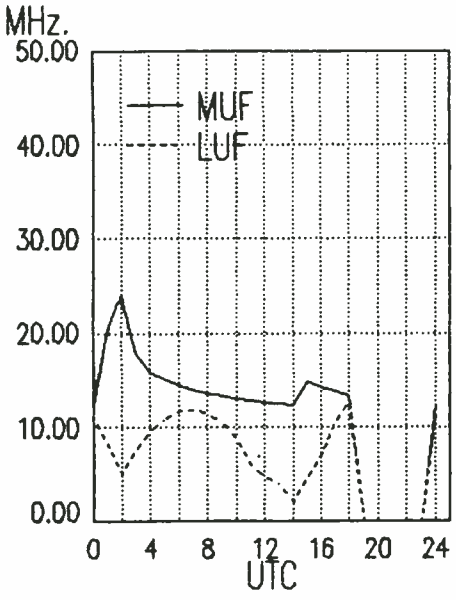


1709-1730		BBC Africa Service, London, England	6005	6190	9595	11940
			15400	17880		
1730-1755		BRT, Brussels, Belgium	5910	11695		
1730-1800		Radio Austria International, Vienna	5945	6155	12010	13730
1730-1800		Radio Bucharest, Romania	15340	15365	17805	17860
1730-1800		Radio New Zealand, Wellington	11780	15485		
1730-1800		Radio Prague, Czechoslovakia	9605	11685	11990	13715
			15110	17840	21505	
1745-1800		BBC World Service, London, England	5975	6180	6195	7160
			7325	9410	9740	12095
			15070	15310	15400	17640
			17695	17880		

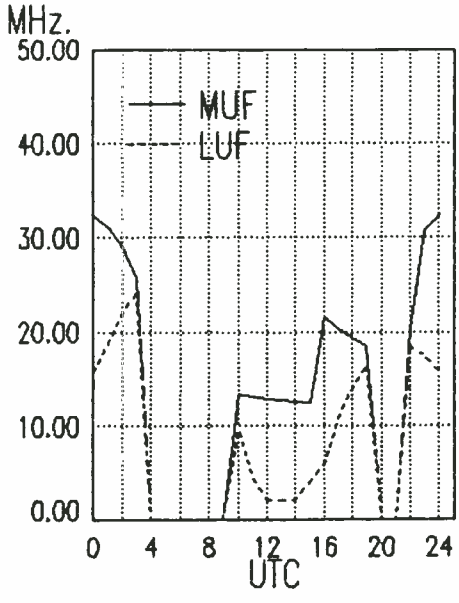
1800 UTC [1:00 PM EST/10:00 AM PST]

1800-1815		Kol Israel, Jerusalem	11585	11655		
1800-1830		BBC World Service, London, England	3255	3955	5975	6180
			6190	6195	7160	7325
			9410	9740	11750	12095
			15070	15310	15400	17640
			17695	17880		
1800-1830	S	Radio Norway International, Oslo	15265			
1800-1830		Radio Sweden, Stockholm	6065	7265		
1800-1830		Voice of Vietnam, Hanoi	12020	15010		
1800-1845		Trans world Radio, Swaziland	15210			
1800-1850		Radio Bras, Brasilia, Brasil	15265			
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		CBN, St. John's, Newfoundland	6160			
1800-1900		CBU, Vancouver, British Colombia	6160			
1800-1900		CFCF, Montreal, Quebec, Canada	6005			
1800-1900		CFCN, Calgary, Alberta, Canada	6030			
1800-1900		CHNS, Halifax, Nova Scotia, Canada	6130			
1800-1900		Christian Science World Service	9455	17770	21640	
1800-1900		CKWX, Vancouver, British Colombia	6080			
1800-1900		CFRB, Toronto, Ontario	6070			
1800-1900		KNLS, Anchor Point, Alaska	7355			
1800-1900		KUSW, Salt Lake City, Utah	15650			
1800-1900		Radio Australia, Melbourne	5995	6035	6060	6080
			7205	7215	9580	15245
1800-1900	A,S	Radio Canada Int'l, Montreal	13670	17820	15260	
1800-1900		Radio Jordan, Amman	9560			
1800-1900		Radio Korea, Seoul, South Korea	15575			
1800-1900		Radio Kuwait, Safat, Kuwait	13610			
1800-1900		Radio Moscow World Service, USSR	5980	7105	7170	7260
			7345	9575	9685	9755
			9795	9830	9860	9875
			11765	11840	15405	15425
			15450	17570	21740	
1800-1900		Radio New Zealand, Wellington	11780	15485		
1800-1900	R	Radio RSA, Johannesburg, S. Africa	21535			
1800-1900		Radio for Peace Int'l, Costa Rica	25945v,	21565v		
1800-1900		Voice of America-Africa Service	7195	9575	11920	15410
			15445	15580	15600	17785
			17800	17870	21585	
1800-1900		Voice of America-Middle East Service	6040	9700	9760	11760
			15205			
1800-1900		WHRI, Noblesville, Indiana	13760	17830		
1800-1900		WINB, Red Lion, Pennsylvania	15295			
1800-1900		WRNO, New Orleans, Louisiana	15420			
1800-1900	IRR	WWCR, Nashville, Tennessee	15690			
1800-1900		WYFR, Oakland, California	11830	13695	15215	17750
			17885			
1815-1900		Radio Bangladesh, Dhaka	15255	17805		
1815-1900		Radio Berlin Int'l, East Germany	7260	7295	9730	
1830-1855		BRT, Brussels, Belgium	5910	11695		
1830-1855		Radio Polonia, Warsaw, Poland	5995	6135	7125	7285
			9525	11840		
1830-1900		Radio Riyadh, Saudi Arabia	9705	9720		
1830-1900		Radio Sofia, Bulgaria	11735	11840	15370	
1830-1900		Radio Tirana, Albania	7120	9480		
1830-1900		BBC Africa Service, London	3255	6005	6190	9630
			15400	17880		
1830-1900		BBC World Service, London, England	3955	6180	6195	7325
			9410	11750	12095	15070
1830-1900		Radio Berlin Int'l, East Germany	9665	13610	15145	15350
			17755			
1830-1900		Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1830-1900		Swiss Radio International, Berne	9885	11955		
1830-1900		Swiss Radio Int'l European Service	3985	6165	9535	
1840-1850	M-A	Voice of Greece, Athens	11645	12105	15630	
1845-1855	IRR	RTV Guineenne, Conakry, Guinea	4702	7125v		
1845-1900		GBC Radio, Accra, Ghana	6130			
1850-1855		Africa No. 1, Gabon	15475			

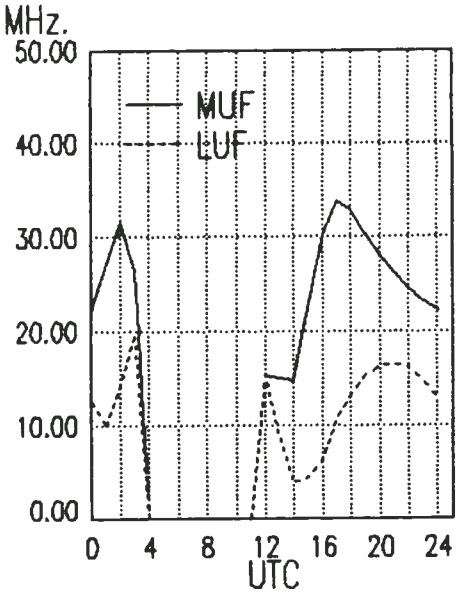
West Coast To
Central Asia



West Coast To
South East Asia



West Coast To
Indian Ocean



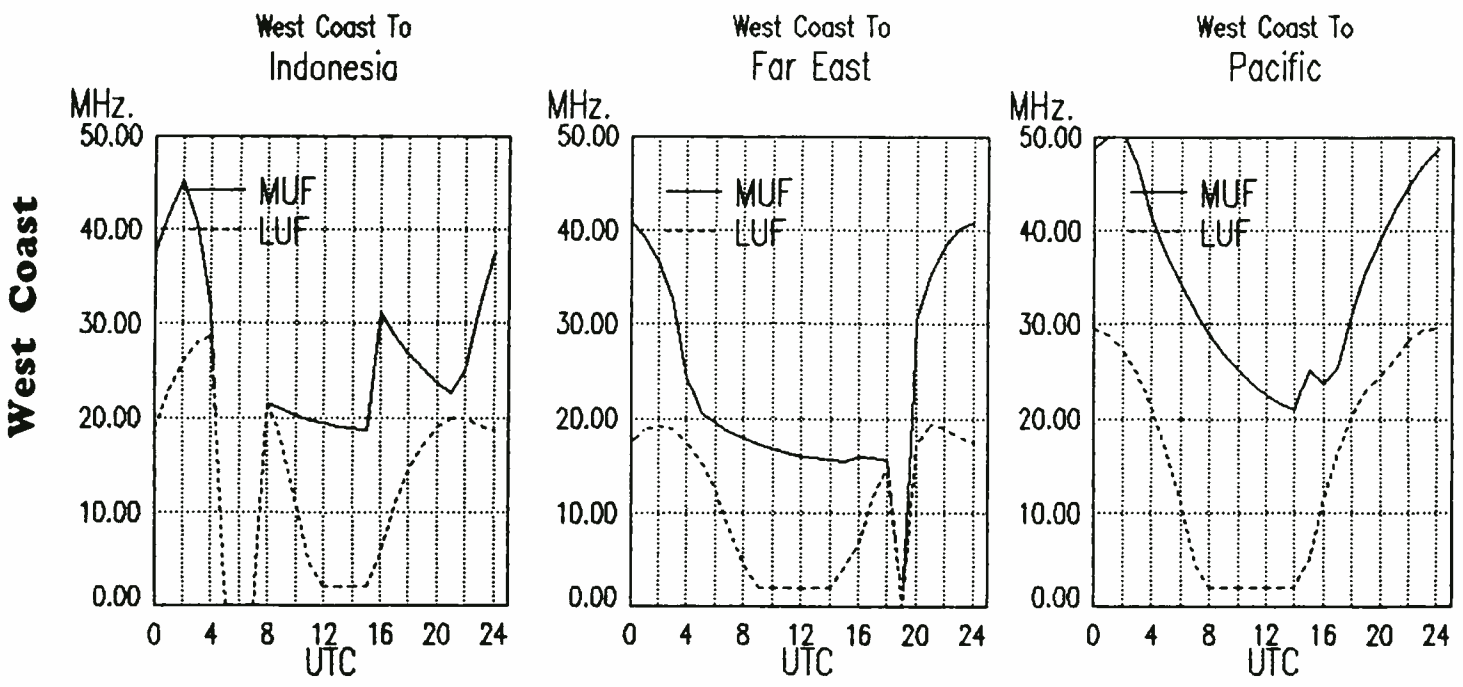
West Coast

frequency section

1900-1915		Radio Berlin Int'l, East Germany	9665	13610	15145	15350
			17755			
1900-1925		Radio Netherlands Int'l, Hilversum	6020	15560	17605	21685
1900-1930	M-F	Radio Canada Int'l, Montreal	13670	15260	17820	
1900-1930		Radio Japan, Tokyo	9505	11850	15270	
1900-1930		Radio Kiev, Ukrainian SSR	6010	6090	6165	7115
1900-1930	S	Radio Norway International, Oslo	15220			
1900-1930	M-F	Radio Portugal, Lisbon	11740	15250	21530	
1900-1930		Radio Sofia, Bulgaria	11735	11840	15370	
1900-1930		Voice of Vietnam, Hanoi	9840	15010		
1900-1950		Deutsche Welle, Koln, West Germany	11785	11810	13790	15390
			17810			
1900-2000		All India Radio, New Delhi	7412	11620	11935	15360
1900-2000		BBC World Service, London, England	3255	3955	6005	6180
			6190	6195	7160	7325
			9410	9630	11750	12095
			15070	15140	15400	17880
1900-2000		CBN, St. John's, Newfoundland	6160			
1900-2000		CBU, Vancouver, British Colombia	6160			
1900-2000		CFCF, Montreal, Quebec, Canada	6005			
1900-2000		CFCN, Calgary, Alberta, Canada	6030			
1900-2000		CHNS, Halifax, Nova Scotia, Canada	6130			
1900-2000		Christian Science World Service	9455	17770	21640	
1900-2000		CKWX, Vancouver, British Colombia	6080			
1900-2000		CFRB, Toronto, Ontario	6070			
1900-2000		GBC Radio, Accra, Ghana	6130			
1900-2000		HCJB, Quito, Ecuador	15270	17790	21470	
1900-2000		HJCB European Service, Ecuador	17790	15270	21470	
1900-2000		KUSW, Salt Lake City, Utah	15650			
1900-2000		Radio Algiers, Alger	9535	15215		
1900-2000		Radio Australia, Melbourne	6035	6060	6080	7205
			7215	9580		
1900-2000		Radio Beijing, China	6955	9440		
1900-2000		Radio Havana Cuba	11800			
1900-2000		Radio Jordan, Amman	9560			
1900-2000		Radio Kuwait, Safat, Kuwait	13610			
1900-2000		Radio Moscow World Service, USSR	6905	6030	7105	7170
			9575	9685	9755	9795
			9820	9830	9860	9875
			9895	11765	11840	12010
			12050	15405	15425	15450
			17570	17840		
1900-2000		Radio New Zealand, Wellington	11780	15485		
1900-2000		Radio for Peace Int'l, Costa Rica	7375	13660	21565	25945
1900-2000		Radio RSA, Johannesburg, S. Africa	5960	7295	15125	21535
1900-2000		Spanish National Radio, Madrid	15280	15375	15395	
1900-2000		Voice of America-Africa Service	7195	15410	15445	15580
			15600	17785	17800	17870
			21485			
1900-2000		Voice of America-Middle East Service	6040	9700	9760	11760
			15205			
1900-2000		Voice of America-Pacific Service	9525	11870	15180	
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	IRR	WWCR, Nashville, Tennessee	15690			
1900-2000		WYFR, Oakland, California	11830	13695	15215	15566
			17885			
1920-1930	M-A	Voice of Greece, Athens	7430	9395		
1930-1945		Radio Finland, Helsinki	6120	9530	11755	
1930-2000		Radio Austria International, Vienna	5945	6155	12010	13730
1930-2000		Radio Bucharest, Romania	9690	9750	11810	11940
1930-2000		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
1930-200		Radio Sofia, Bulgaria	6070	7155	9700	
1930-2000		Radio Yugoslavia, Belgrade	5980	7215	11735	
1930-2000		Voice of the Islamic Republic Iran	9022	11895		
1935-1955		RAI, Rome, Italy	7275	9710	11800	
1945-2000		All India Radio, New Delhi	9755	11860		

2000 UTC [3:00 PM EST/12:00 PM PST]

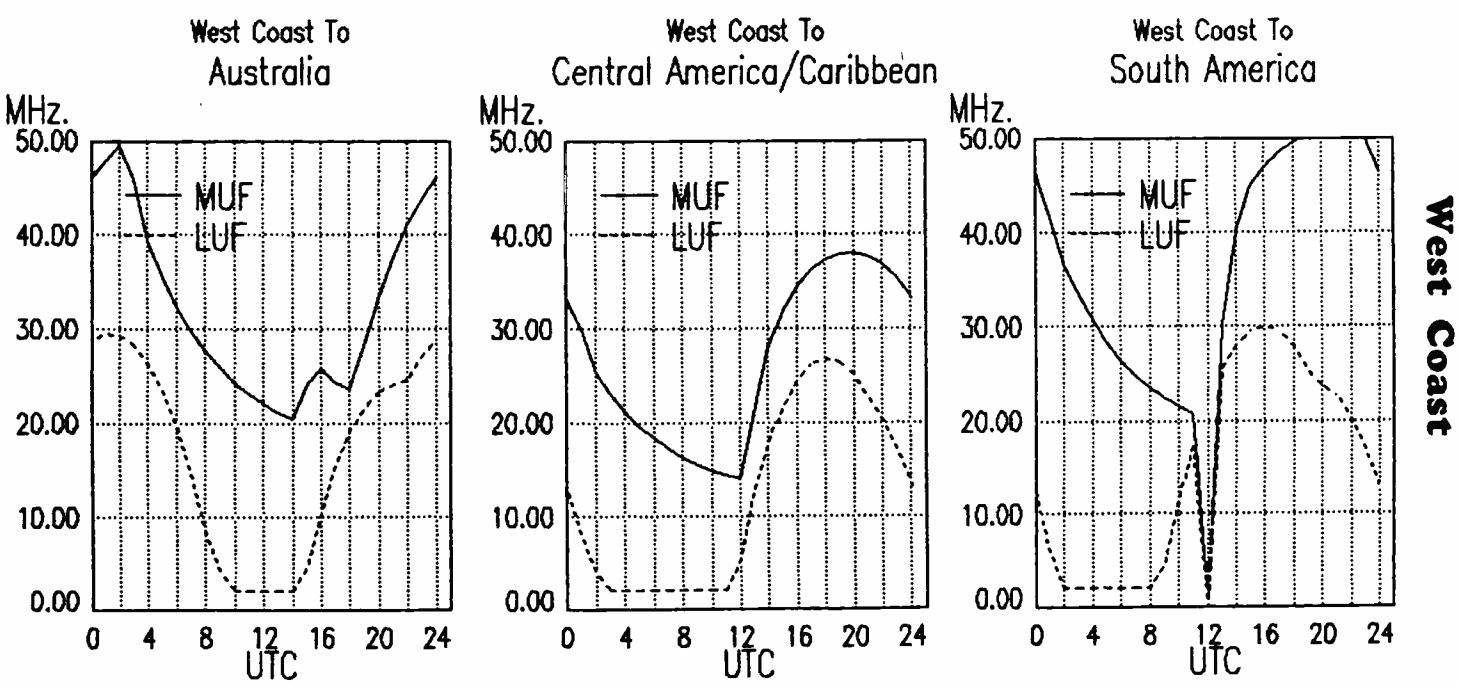
2000-2005		Radio New Zealand, Wellington	11780	15485		
2000-2005		Vatican Radio, Vatican City	7250	9645		
2000-2030		BBC World Service, London, England	3255	3955	5975	6005
			6180	6190	6195	7160
			7180	7325	9410	9630
			11715	11750	12095	15070
			15140	15260	15400	17760
			17880			
2000-2030		Kol Israel, Jerusalem	9435	11605	15485	15640
			13750			
2000-2030		Radio Bucharest, Romania	9690	9750	11810	11940
2000-2030		Voice of the Islamic Republic Iran	9022	11895		
2000-2050		Radio Pyongyang, North Korea	6576	9345		



2000-2100		Radio for Peace Int'l, Costa Rica	21565v	25945v		
2000-2100		All India Radio, New Delhi	7412	9755	9910	11620
			11860			
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		CBN, St. John's, Newfoundland	6160			
2000-2100		CBU, Vancouver, British Colombia	6160			
2000-2100		CFCF, Montreal, Quebec, Canada	6005			
2000-2100		CFCN, Calgary, Alberta, Canada	6030			
2000-2100		CHNS, Halifax, Nova Scotia, Canada	6130			
2000-2100		Christian Science World Service	9455	13770	15610	17555
			17770			
2000-2100		CKWX, Vancouver, British Colombia	6080			
2000-2100		CFRB, Toronto, Ontario	6070			
2000-2100		KUSW, Salt Lake City, Utah	15650			
2000-2100		KVOH, Rancho Simi, California	17775			
2000-2100		Radio Australia, Melbourne	6035	7205	7215	9580
			9620			
2000-2100		Radio Beijing, China	6920	9440	9920	11715
			15110			
2000-2100		Radio Havana Cuba	11800			
2000-2100		Radio Kuwait, Safat, Kuwait	13610			
2000-2100		Radio Jordan, Amman	9560			
2000-2100		Radio Moscow World Service, USSR	5905	7290	9685	9755
			9795	9860	9895	11685
			11840	12050	15405	15425
			17570			
2000-2100		Voice of America-Africa Service	7195	15410	15445	15580
			15600	17785	17800	17870
			21485			
2000-2100		Voice of America-Middle East Service	6040	9700	9760	11760
			15205			
2000-2100		WHRI, Noblesville, Indiana	13760	17830		
2000-2100		WINB, Red Lion, Pennsylvania	15185			
2000-2100		WRNO, New Orleans, Louisiana	15420			
2000-2100		WWCR, Nashville, Tennessee	15690			
2000-2100		WYFR, Oakland, California	9455	11830	13695	15215
			15566	17612.5	17845	
			17885	21525		
2005-2100		Radio Damascus, Syria	9950	12085		
2015-2100		Radio Berlin Int'l, East Germany	9665	13610	15350	
2025-2045		RAI, Rome, Italy	7235	9575	11800	
2030-2100		BBC World Service, London, England	3955	5975	6005	6180
			6195	7180	7325	9410
			11715	11750	12095	15070
			15140	15260	15400	17760
			17880			
2030-2100		Radio Africa ?	7190			
2030-2100		Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100		Radio Netherlands Int'l, Hilversum	9860	13700	15560	
2030-2100	M	Radio Tallin, Estonian SSR	5925			
2030-2100		Voice of Vietnam, Hanoi	12020	15010		
2045-2100		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2045-2100		IBRA Radio, Malta	7110	7225		
2045-2100		Radio Berlin Int'l, East Germany	6115			
2045-2100		Vatican Radio, Vatican City	9625	11700	11760	15120
2050-2100		Vatican Radio, Vatican City	6190	7250	9645	

2100 UTC [4:00 PM EST/1:00 PM PST]

2100-2105		Radio Damascus, Syria	9950	12085		
2100-2110		Vatican Radio, Vatican City	6190	7250	9645	
2100-2115		BBC World Service, London, England	3955	5975	6005	6180
			6195	7325	9410	11750
			12095	15070	15140	15260
			15400	17715	17760	17880
2100-2115		IBRA Radio, Malta	7225			
2100-2130		Radio Beijing, China	11715	15110		
2100-2125		Radio Netherlands Int'l, Hilversum	9860	13700	15560	
2100-2130		Radio Berlin Int'l, East Germany	6115			
2100-2130		Radio Bucharest, Romania	9690	9750	11940	15250
2100-2130		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
2100-2130		Radio Japan, Tokyo	7140	11815	11835	15230
			15270	17890		
2100-2130		Radio Korea, Seoul, South Korea	6480	7550	15575	
2100-2130		Radio Peace & Progress, USSR	4795	5905	6145	7140
			7215	7340	7360	7420
			7440			
2100-2130		Radio Berlin Int'l, East Germany	9665	13610	15340	
2100-2130	M	Radio Ljublijana, Yugoslavia	5980	7240	9620	
2100-2130		Radio Sweden, Stockholm	9655	11705		
2100-2130		Swiss Radio International, Berne	9885	13635	15525	21705
2100-2150		Deutsche Welle, Koln, West Germany	9670	9670	9765	11780
			15435			
2100-2200		CBN, St. John's, Newfoundland	6160			
2100-2200		CBU, Vancouver, British Colombia	6160			

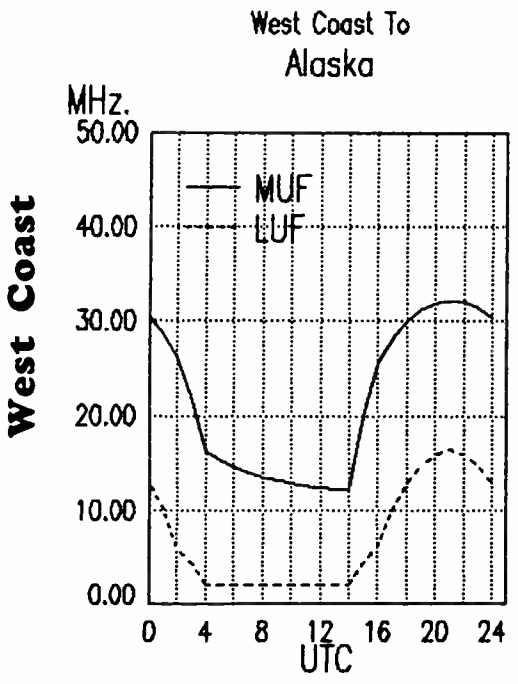


frequency section

2100-2200		CFCF, Montreal, Quebec, Canada	6005			
2100-2200		CFCN, Calgary, Alberta, Canada	6030			
2100-2200		CHNS, Halifax, Nova Scotia, Canada	6130			
2100-2200		Christian Science World Service	9455	13770	15610	17555
			17770			
2100-2200		CKWX, Vancouver, British Colombia	6080			
2100-2200		CFRB, Toronto, Ontario	6070			
2100-2200		KUSW, Salt Lake City, Utah	15650			
2100-2200		Radio Australia, Melbourne	9580	9620	15160	15240
			15395			
2100-2200		Radio Baghdad, Iraq	7290			
2100-2200		Radio Beijing, China	6920	9920	11500	11715
2100-2200		Radio Jordan, Amman	9560			
2100-2200		Radio Moscow World Service, USSR	4060	5905	5950	6030
			7170	7290	7350	9450
			9620	9685	9730	9755
			9780	9790	9795	9800
			9820	9860	9870	9895
			11685	11840	11850	17720
			12050	15130	15405	15425
2100-2200		Radio for Peace, Costa Rica	21566	25944		
2100-2200		RAE, Buenos Aires, Argentina	11710	15345		
2100-2200		Voice of America-Africa Service	7195	15410	15445	15580
			15600	17785	17800	17870
			21485			
2100-2200		Voice of America-Middle East Service	6040	9700	9760	11760
			15205			
2100-2200		Voice of America-Pacific Service	11870	15185	17735	
2100-2200		Voice of Turkey, Ankara, Turkey	9825			
2100-2200		WHRI, Noblesville, Indiana	13760	17830		
2100-2200		WINB, Red Lion, Pennsylvania	15185			
2100-2200	IRR	WRNO Worldwide, Louisiana	15420			
2100-2200		WWCR, Nashville, Tennessee	15690			
2100-2200		WYFR, Oakland, California	9455	11830	13695	15215
			15566	17612.5	17845	
			21525			
2110-2200		Radio Damascus, Syria	9950	12085		
2115-2130	M-F	BBC Caribbean Service, London	5975	15400	17715	
2115-2130		BBC World Service, London, England	3955	6005	6195	7180
			7325	9410	11715	11750
			12095	15140	15260	
2130-2200		BBC World Service, London, England	3955	5975	6005	6195
			7325	9410	11750	12095
			15140	15260		
2130-2145		BBC English by Radio, London	11945	15280		
2130-2200		BBC English by Radio, London	6125	7125	9635	
2130-2200	T-F	BBC falkland Islands Service, London	9915			
2130-2200		HCJB, Quito, Ecuador	15270	17790		
2130-2200		Radio Canada Int'l, Montreal	11880	113670	15150	17820
2130-2200		Radio Sofia, Bulgaria	6070	7155	9700	
2145-2200		Radio Berlin Int'l, East Germany	6115			

2200 UTC [5:00 PM EST/2:00 PM PST]

2200-2205		Radio Damascus, Syria	9950	12085		
2200-2215	M-A	ABC, Alice springs, Australia	2310	(ML)		
2200-2215		ABC, Tennant Creek, Australia	2325	(ML)		
2200-2215		BBC English by Radio, London	11945	15280		
2200-2215	M-F	Voice of America-Caribbean Service	9640	11880	15225	
2200-2225		BRT, Brussels, Belgium	5910	9925		
2200-2225		Radio Finland, Helsinki	6120			
2200-2225		RAI, Rome, Italy	5990	7235	9710	
2200-2230		ABC, Katherine, Australia	2485			
2200-2300		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2200-2230	S	KGEI, San Francisco, California	15280			
2200-2230	S	Radio Norway International, Oslo	15225			
2200-2245		Radio Berlin Int'l, East Germany	9730			
2200-2245		Radio Yugoslavia, Belgrade	7215	9620	9660	11735
2200-2250		Radio Baghdad, Iraq	7290			
2200-2300		BBC World Service, London, England	3915	3955	5975	6005
			6175	6195	7325	9410
			9570	9590	9595	9915
			11750	11955	12095	15140
			15260	15400		
2200-2300		CBC Northern Quebec Service, Can	9625			
2200-2300		CBN, St. John's, Newfoundland	6160			
2200-2300		CBU, Vancouver, British Colombia	6160			
2200-2300		CFCF, Montreal, Quebec, Canada	6005			
2200-2300		CFCN, Calgary, Alberta, Canada	6030			
2200-2300		CHNS, Halifax, Nova Scotia, Canada	6130			
2200-2300		Christian Science World Service	9465	15275	15300	15405
			17555			
2200-2300		CKWX, Vancouver, British Colombia	6080			
2200-2300		CFRB, Toronto, Ontario	6070			
2200-2300		KUSW, Salt Lake City, Utah	15580			
2200-2300		OH, Rancho Simi, California	17775			
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		



This QSL of VNG, Australia, comes to us from Christopher Merchant of Concord, New Hampshire.

If you wish to share your treasures with other readers, send us your QSLs (or good photocopies). We'll have them reproduced and return them as soon as possible. Please address to QSL, Monitoring Times, P.O. Box 98, Brasstown, NC 28902.

frequency section

2200-2300		Radio Beijing, China	3985			
2200-2300		Radio Canada Int'l Montreal	9760	11705	11945	15440
2200-2300		Radio Havana Cuba	7140			
2200-2300		Radio Moscow World Service, USSR	4060	5905	5950	6000
			6030	6045	6055	7150
			7170	7280	9450	9620
			9685	9755	9790	9820
			9860	9870	11840	11850
			12050	15130	15405	15425
			17570	17655	17700	17720
2200-2300		Radio for Peace Int'l, Costa Rica	21565	25945		
2200-2300		Radio Peace & Progress, USSR	4795	6145	7205	7360
			9580			
2200-2300		Radio Tonga, Kingdom of Tonga	5025			
2200-2300		Voice of America-East Asia Service	7120	9770	11760	15185
			15290	15305	17735	17820
2200-2300		Voice of America-Eur/Pac. Service	9852	11805	15345	15370
			17610			
2200-2300		Voice of Free China, Taiwan	9850	11805		
2200-2300		Voice of U.A.E., Abu Dhabi, United Arab Emirates	9595	11985	13605	
2200-2300		WHRI, Noblesville, Indiana	13760	17830		
2200-2300		WINB, Red Lion, Pennsylvania	15185			
2200-2300	IRR	WRNO Worldwide, Louisiana	15420			
2200-2300		WWCR, Nashville, Tennessee	15690			
2200-2300		WYFR, Oakland, California	11830	13695	15215	17612.5
			17845	21525		
2205-2220		Vatican Radio, Vatican City	9615	11830	15105	
2230-2300		Kol Israel, Jerusalem	9435	11605	13750	15615
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300		Radio Sofia, Bulgaria	9700	11680		
2230-2300		Radio Tirana, Albania	7215	9480		
2230-2300		Swiss Radio Int'l, European Service	6190			
2245-2300		BBC English by Radio, London	7180	11945		
2245-2300		Radio Berlin Int'l, East Germany	5965	9730	13690	
2245-2300		Radio New Zealand, Wellington	15485	17705		

2300 UTC [6:00 PM EST/3:00 PM PST]

2300-2315		BBC World Service, London, England	3915	5975	6175	6195
			7325	9570	9590	9915
			11750	11945	11955	15260
			17875			
2300-2315		FEBC, Manila, Philippines	6030			

Radio Nacional do Brasil was monitored by Ray Labrie of Portsmouth, New Hampshire.

2300-2330		BBC English by Radio, London	6110	9825	11765	11820
			15390			
2300-2330		Radio Berlin Int'l, East Germany	5965	9730	13690	
2300-2330		Radio Norway International, Oslo	9605			
2300-2330		Radio Sofia, Bulgaria	9700	11680		
2300-2330		Radio Vilnius, Lithuanian SSR	7400	9800	9765	15180
			15455	17665	17690	
2300-2345		WYFR, Oakland, California	5985	9505	15440	
2300-0000	A,S	Adventist World Radio-Asia, Guam	15125			
2300-0000		AWR, Costa Rica	9725	11870		
2300-0000		BBC World Service, London, England	5975	6175	6195	7325
			9570	9590	9915	11750
			11945	11955	15260	17875
2300-0000		CBN, St. John's, Newfoundland	6160			
2300-0000		CBU, Vancouver, British Colombia	6160			
2300-0000		CFCF, Montreal, Quebec, Canada	6005			
2300-0000		CFCN, Calgary, Alberta, Canada	6030			
2300-0000		CHNS, Halifax, Nova Scotia, Canada	6130	15405		
2300-0000		Christian Science World Service	9465	15275	15300	17555
2300-0000		CKWX, Vancouver, British Colombia	6080			
2300-0000		CFRB, Toronto, Ontario	6070			
2300-0000		KUSW, Salt Lake City, Utah	15580			
2300-0000		KVOH, Rancho Simi, California	17775			
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395
			17795	21740		
2300-0000		Radio Japan, Tokyo	11835	15195	17810	21610
2300-0000		Radio Korea, Seoul, South Korea	15575			
2300-0000		Radio Luxembourg	6090			
2300-0000		Radio Moscow N. American Service	6045	7115	7150	9685
			9720	12050	15425	17605
			17700	17720	21470	
2300-0000		Radio Moscow World Service, USSR	7135	7370	9510	9790
			11800	11985	12045	15130
			15140	15295	15420	17570
			17610	17655	17775	21690
			21790			
2300-0000		Radio New Zealand, Wellington	15485	17705		
2300-0000		Radio for Peace, Costa Rica	21566	25946		
2300-0000		Radio Pyongyang, North Korea	11735	13650		
2300-0000		Radio Tonga, Kingdom of Tonga	5025			
2300-0000		Voice of America-East Asia Service	7120	9770	11760	15185
			15290	15305	17735	17820
2300-0000		Voice of Turkey, Ankara, Turkey	9445	9665	9685	17760
2300-0000		Voice of U.A.E., Abu Dhabi, United Arab Emirates	9595	11985	13605	
2300-0000		WHRI, Noblesville, Indiana	13760	17830		
2300-0000		WINB, Red Lion, Pennsylvania	15145			
2300-0000	IRR	WRNO, New Orleans, Louisiana	15420			
2300-0000	IRR	WWCR, Nashville, Tennessee	15690			
2300-2330		Radio Canada Int'l, Montreal	9755	11730		
2305-2355		Radio Polonia, Warsaw, Poland	5995	6135	7125	7145
			7270			
2315-2330		BBC World Service, London, England	5975	6110	6175	6195
			7145	7325	9570	9590
			9825	9915	11750	11765
			11820	11945	11955	15260
			15390	17875		
2330-2345		BBC English by Radio, London	3915	6080	7180	11865
2330-0000		BBC World Service, London, England	5975	6110	6175	6195
			7325	9570	9590	9825
			9915	11750	11765	11820
			11945	15260	15390	17875
2330-0000		Radio Tirana, Albania	6120	9760	11825	
2330-0000		Swiss Radio International, Berne	6190			
2335-2345	M-A	Voice of Greece, Athens	9395	11645		

Lawrence Magne

Editor-in-Chief
Passport to World Band Radio

The Panasonic RF-B40 Compact Portable

When Panasonic decided to get back into the production of high-quality world band radios, the result was the RF-B60. This model, subsequently upgraded to the RF-B65, was and is an excellent compact portable. It succeeds in the marketplace not because of what it does but, rather, how it does it. And how it does it is "easy."

The 'B65, advanced-technology and all, is a world band radio to gladden the heart of anyone who abhors complex controls. Not only that, it sounds good, too. There is a price for all of this wonderfulness and that price is $280. So Panasonic came up with a smaller and less costly version, the RF-B40.

The 'B40 shares many of the 'B65's basic characteristics. Its tuning is fully synthesized, and includes a keypad, programmable channel memories and up/down slewing buttons -- the kind of things you use to select channels on TV remote controls. However, unlike the 'B65, the 'B40 lacks a tuning knob.

Too, the 'B40 tunes only in relatively coarse 5 kHz increments. Sony's ICF-2003 does, too, but the '2003 has a separate control to allow it to tune between 5 kHz points. The 'B40 doesn't.

This leaves the receiver designer with two choices. First, he can incorporate a normal tight bandwidth and limit reception of stations to those that are more or less at 5 kHz increments on the airwaves. A set designed thus would have trouble receiving, say, All India Radio on 7412 kHz, as the closest it would be able to tune would be either 7410 or 7415 kHz.

Alternatively, the radio can incorporate a bandwidth so wide that even off-channel stations can be heard when the receiver is off-tuned. In our India example, you could tune the radio to 7410 kHz, yet hear 7412 kHz perfectly well.

Panasonic, alas, chose the second approach, and it is the 'B40's Achilles' heel. So, yes, the 'B40 can receive the odd station that is off channel. But for the vast majority of stations that are *on* channel, the bandwidth is so wide that adjacent-channel interference tends to be unnecessarily annoying.

The 'B40 would have profited from a truly selective bandwidth for shortwave, even if meant foregoing reception of the relatively tiny number of stations operating outside the established 5 kHz channel-spacing norm for world band broadcasts. The way the 'B40 is now, the tail wags the dog.

Panasonic's RF-B40 is priced at $229.95 -- only $50 less than the much-better sibling, the RF-B65. That's too little bang for too much buck. It's just not worth it.

There's more to this story, though. If you are looking for a worthy compact portable in the price class of the Panasonic RF-B40, here's some good news.

Sony's popular ICF-2003, sold outside North America as the ICF-7600DS, is to be replaced this April by an upgraded version -- the ICF-SW7600. The '2003, as you may already know, is a synthesizer-tuned, digital-readout compact portable with full coverage of the shortwave spectrum.

Sony says that the new model's shortwave circuitry will be pretty much the same as that of the existing '2003, reviewed on page 148 of the 1990 *Passport to World Band Radio*. But the new 'SW7600 will incorporate FM stereo, lacking on the '2003, and will also include a set of FM stereo headphones that can second for shortwave listening in private.

Too, the 'SW7600 will have a larger liquid-crystal display than does the '2003.

Aging yuppies will thus be able to forego bifocals when reading frequencies and the like. The cabinet will look different, too, as will the price.

So, how much will the price go up?

This should make your day: The suggested retail price is to *drop* from the current $299.95-$319.95 for the '2003, to $249.95 for the new 'SW7600. This means that the new model, after discounting, will be priced to compete head-to-head with the Sangean ATS-803A and Radio Shack's Realistic DX-440.

It could also all but kill off the market for Sangean's forthcoming new ATS-808, which -- surprise! -- is also due to appear in stores around April. The compact '808 is to list at $299.95 and is to be equipped, like the 'SW7600, with FM stereo and stereo headphones. However, Sangean's '808 reportedly won't receive single-sideband signals, whereas Sony's 'SW7600 will.

With Sony, the world band market leader, moving prices down instead of up, this may possibly signal the end of the recent and tiresome round of price increases by nearly all manufacturers of shortwave radios.

What a grand way to start off the decade!

mt

You can hear Larry Magne's equipment reviews the first Saturday of each month, plus PASSPORT editors Don Jensen and Tony Jones the third Saturday, over Radio Canada's "SWL Digest." For North America, "SWL Digest" is heard at 8:10 PM ET on 5960 and 9535 kHz, with a repeat Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

PASSPORT'S "RDI White Paper" equipment reports contain everything found during its exhaustive tests of communications receivers and advanced portables. These reports are now available in the U.S. from Universal Shortwave and EEB; in Canada from PIF, C.P. 232, L.d.R., Laval PQ H7N 4Z9; and in Europe from Interbooks, 8 Abbot Street, Perth PH2 0EB, Scotland.

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Please address your letter to the author c/o Monitoring Times P.O. Box 98 Brasstown, NC 28902.

If you request a personal reply, you should always enclose a self-addressed, stamped envelope.

Bob Grove, WA4PYQ

The Uniden Bearcat BC-1

Tiny like a compact mobile CB, the new Bearcat BC-1 from Uniden is targeted toward truckers and other listeners who spend a lot of time on interstate driving. Its memory is factory preprogrammed for law enforcement, weather and CB channels only; no user programming is possible.

Simple to operate, the BC-1 comes with a mobile mounting bracket and hardware, DC cord (without cigarette lighter adaptor -- it is intended to be wired to the vehicle's electrical system) and a plug-in whip antenna.

No AC wall adaptor is included, nor are there rubber feet on the bottom of the cabinet or a tilt bracket -- this radio is intended for mobile-only installation. Since the speaker is on the bottom, the radio can't sit on the floor or seat; it is difficult to envision how the attachable whip was intended to be used.

It is possible to use the BC-1 as a desktop radio with the mobile bracked suspended under the cabinet to lift the radio from a surface and powered by a general-purpose AC adaptor like the Grove ACC-20. Then the attachable whip would make more sense, but the radio's frequency restrictions would not make a fixed installation very useful.

But how well does it work?

The BC-1 is cute and performs well. The driver simply presses a button to choose the two-letter prefix for the state in which he is presently driving (TX, CA, NY, etc.); the callouts scroll by quickly in alphabetical order on the illuminated liquid crystal display. You may step one state at a time; if you miss your state, you can't go back -- you'll have to go through all fifty again!

After you have selected your state, press the SCAN button and listen for law enforcement transmissions; the BC-1 is pre-programmed for local, county and state police differently for every state, and looks through low, high and UHF bands (but not 800 MHz).

The microprocessor is a late-model "turbo" version which zips along at speeds of up to 90 channels per second; thus, its several hundred pre-programmed police channels can be sampled in just a few seconds. There is no frequency or channel readout.

If you find some frequencies uninteresting, press a lockout key; those exclusions may be restored just as simply. Pressing a weather key activates an automatic search of the seven NOAA weather frequencies to find forecasts active in your listening range.

You say you would like to hear the local truckers giving "smokey reports"? Press the CB button and step up or down through all 40 citizens band channels.

The BC-1 is specialized. If you do a lot of driving, don't like to program a scanner and want only to hear police, weather and CB, it may be for you. Typically $130-$140 from *MT* advertisers.

In forthcoming issues, *MT* will be reviewing the new Uniden Informant scanners.

There's good news and bad news. First the good news. Someone has finally developed a wideband handheld. Now for the bad news. It's not available in the U.S. (Yet!)

The JupiterII MVT-5000

A guest review by
Rickey Stein

For years we have been told that it could not be made -- a hand held scanner radio with wide frequency coverage. With all of the components so closely packed into a small case, internally generated signals would cause havoc in any receiver. Even those with the poorest sensitivity would suffer.

Often, rumors of a "hand held Bearcat-250" and more recently a "hand held PRO-2004" would surface, but the radios never materialized. Now, armed with the latest in computer technology, the engineers have achieved what was believed to be impossible. The result is the JupiterII MVT-5000 and it is a dandy.

The Jupiteru (or JupiterII as it is called in English) is billed as a wideband scanning receiver. It is built in Japan by Jupiteru Export Company, Ltd. for import into the United Kingdom. Unfortunately, because of patent restrictions by the Uniden organization, there's a good chance that this radio will never see the light of American store shelves.

The manual specifically states that the JupiterII is NOT an American import! We are presenting information about this receiver for our readers to keep you abreast of what the current technologies are offering and where the trend in modern radios is going.

The Specs

Let's take a closer look at this radio. Frequency coverage is 25-550 MHz and 800-1300 MHz. There is continuous coverage within those ranges and mode can be set to either AM or FM between 25 and 500 MHz. Above 800 MHz, reception is FM only. There is no choice for narrow-band FM or wide-band FM. The unit is set for NBFM and so commercial FM stations are received distorted.

The radio is in an impact-resistant plastic case measuring only 67 x 175 x 40 mm (2- 7/8 x 6-7/8 x 1-1/2 inches) and weighs a scant 360 grams (12.5 ounces). It comes with a telescoping whip antenna with BNC connector and an optional carrying case and belt clip is available.

The radio uses four AA batteries. An optional 12 volt power source can be used to run the radio or charge NiCads. Battery consumption is listed at 160 ma/100 ma squelched.

The receiver has 100 memory channels in five banks of 20. Each bank can be individually selected or locked out in the scan mode. Individual channels can also be locked out.

Scan rate is adjustable to 20 or 8 channels per second. The time the radio pauses after a signal is also variable. With nothing set, there is no delay. Using the DELAY button allows the radio to pause for three seconds after a transmission. If you want a very long pause, the SKIP button will provide a stop of seven seconds. There is an audio locking feature which causes the set to stop for only one second if a blank carrier is encountered. If audio is present, normal pause/delay time is used.

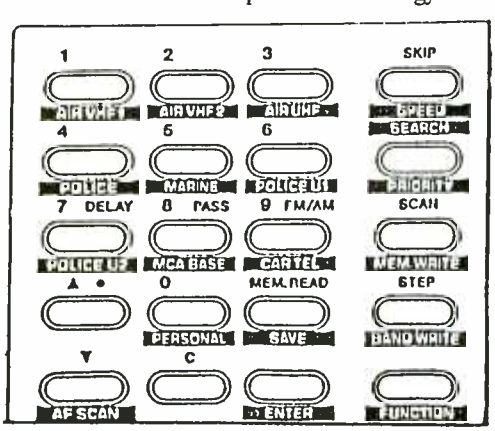
Reported sensitivity is: FM 0.5uV SINAD 12dB Min./AM 1.5uV (S/N 10dB Min.) (25-550 MHz) and FM 0.8uV SINAD 12 dB Min. (800-1300 MHz).

There are also ten programmable scanning banks. This means that ten separate upper and low limits can be set and entered into the computer memory of the radio. These banks can then be scanned (that is, frequencies can be searched between the set limits) at any time by accessing the SCAN button and the appropriate button for the bank you want. The buttons are labeled Police/Marine/Air, etc. and the radio comes preprogrammed with limits set, but it is easy enough to change any or all of these preset numbers.

Any frequency can be designated as the priority channel. The unit can be set for steps of 5, 10, 12.5, 25, or 30 kHz. The radio comes with a telescoping metal antenna similar to the Grove antenna. This antenna does provide better reception than a rubber duckie.

Performance

Those are the specifications. Here are the actual pros and cons, as I found them. The unit uses microcomputer technology to control all of the functions and is as much a computer as it is a radio. Because of this, the operation and programming of this unit is not quite the same as we have become used to with such radios as the Bearcats and Radio Shacks. You can't simply punch in a frequency and then hit ENTER to save the frequency in a memory channel. Most operations require two or more steps and are thus a bit more time consuming than with other hand helds.



The small user's manual is written in good but not very explicit English. It took me several hours of use to "learn the language" of the radio in order to program the memory channels and the various search bands. I'm still adjusting to the locations of the various buttons and controls and I still can't quite operate the radio in the dark or without looking at the keyboard.

There are 20 buttons on the face of the unit and 16 of them have two functions. Only the CLEAR, ENTER, and FUNCTION buttons have a single action. The FUNCTION button switches the other buttons to the second action. Turning the radio on puts you at the top level of control. From this point you can enter a frequency, hit the ENTER button, and the frequency is in memory and will be received. To save it in channel 01 you have to write this data to memory and then enter the channel number.

There isn't a MANUAL button as you may be used to. The SCAN button both starts and stops the scan in any mode. The radio will scan up or down from any frequency in any mode, a handy feature when trying to pinpoint a frequency or avoid a birdie. The manual warns to expect some birdies but none have been found to date.

The volume knob is on the top of the set, but the squelch control is a ring knob under the volume knob. This makes it a bit difficult to adjust the squelch. A larger or winged knob would be easier to use but a separate control would be better.

The LCD display shows all of the parameters (channel, frequency, step, band, etc.) and also has a backlight. I found the LCD not as bright or easy to read as on either the Bearcats or the Radio Shack sets and the backlight was so dim that it didn't help at all in poorly lit situations. Audio level was adequate but a lapel speaker unit does improve the sound and makes listening easier.

The radio can be operated or charged from an external 12 volt DC source but there is no indication on either the radio or in the manual as to the polarity of the input. A call to a friend who brought the radio from the United Kingdom indicated that the center pole was positive.

Radio memory is volatile but a lithium battery is used to maintain memory. There is no additional information about the battery, its location, replacement, or expected lifespan.

Photo by Robyn Stein

Lastly -- perhaps the most important features -- The frequency coverage is as indicated. You will have to imagine for yourselves how good it is to have a hand held unit which can tune all of this spectrum. This is especially true for the previously unreachable 225-400 MHz AM military band. And sensitivity is superb. This unit out-performed both the Bearcat 200 and several Radio Shacks on *all* bands.

The major disadvantage is battery consumption. An initial test scanning about 20 channels showed that the four nicads lasted four hours. Allowing the unit to scan the full 100 channels decreased battery time to only 2-1/2 hours -- a very heavy toll on these batteries. Perhaps if the designers had used six batteries, playing time could have been significantly increased.

There is a "battery save" feature on the radio which, when invoked, puts the radio to "sleep" (the display actually says SLEEP). It can only be used when monitoring a single frequency. The radio is turned off for a period of 2-3 seconds and is briefly switched to operational status to check for signals.

The price is 300 pounds Sterling -- a bit more than $500. In spite of the battery drain and the relatively high price, and only 100 memory channels, the radio is still a gem. Remember, it is presently the only hand held unit with this coverage and the sensitivity is great.

It is a shame that monitors in this country may never have the opportunity to see and use this radio; however, it may just give Uniden some ideas of what we would like in a radio and what can actually be done with modern radio technology.

catalogs

BBC Pay TV

Let's face it. Listening to the BBC World Service is enough to make Anglophiles out of even the most red-necked, flag-waving Americans. And if merely listening to Manchester United soccer matches, Trooping the Colour Ceremonies, and BBC dramatic presentations doesn't do the trick, the British Broadcasting Corporation has got one more card to play: BBC Video World.

BBC Video World is a twice-monthly video periodical, a three-hour cassette chock full of the best BBC plays, news features, documentaries, comedies, sports, and nature programs of the past two weeks. In addition, there is *BBC Video World* magazine, which comes gratis with your paid subscription to the video cassettes. It's a cross between *TV Guide* and *The Economist* and contains articles on the video programs as well as reflections on events within and without Britain.

So. How much would you be willing to pay for this delightful slice of Britain? How does US$10.00 a year sound? Too good? Well it is too good because an annual subscription is US$475.00. Get your credit cards ready, ladies and gentleman, and dial 1-800-247-8979 (1-800-363-4128 in Canada).

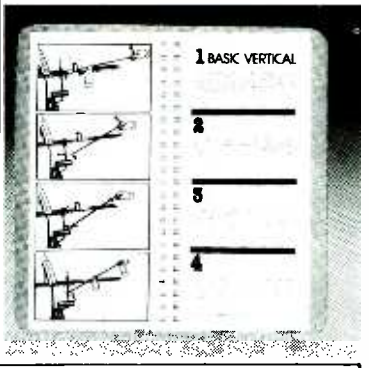
Locked Out

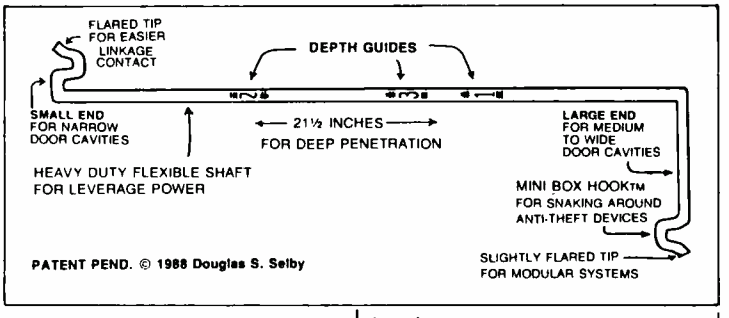
"Unit 201, respond to Holiday Inn parking lot. Motorist has locked his keys inside the car." Probably everyone who has owned a vehicle has suffered this indignity.

According to Bob Grove, beleaguered police aren't the only ones who need to break into locked cars. So do fire fighters, wrecker services, auto repair shops, car dealerships, fleet owners and leasing companies.

The answer this vexing problem is a tool called "The Z-Tool." Designed by Doug Selby, it makes opening standard doors a snap, quickly defeating anti-theft devices as well. An illustrated manual offers step-by-step (and model by model) instructions on how to open any locked auto, truck or van -- domestic or foreign -- manufactured between 1950 and the present. A scratch-proof wedge is included with the kit to spread the window felt for easier control of the Z-tool.

One lingering question remains. Is the Z-tool legal to own? The answer is "yes," provided that the opening of the door has been authorized by the owner.





If you'd like your very own Z-Tool, send $36.00 to The Slide Lock Tool Company, P.O. Box 386, Louisville, TN 37777. Oh. One other thought. Don't carry the Z-Tool in your trunk.

The 9 Pound Boomerang

Now that you've gotten into the car, you may want to sweep it for bugs. So along with your Z-Tool, be sure to pick up a "Boomerang." Also known as the NJD-1, this handy gismo detects wireless transmitters, tape recorders, amplified microphones, and other electronic devices, even when they're not operating.

Emitting a low-power microwave beam, the Boomerang detects energy reflected from the object if there is a transmitter, diode, or integrated circuit present.

You can use the Boomerang by "brushing" walls or other objects with an extendable boom-mounted antenna. Or you can screen packages or personnel entering sensitive areas. No physical contact is necessary. And because it's self-powered by internal, rechargeable batteries, no bulky power supply or AC extension cord is needed.

Protect yourself and your listening post with the 9 pound Boomerang. For more information, call 203-357-8051. Ask for Sam.

Cranky Radios

One of the biggest problems with radio listening in the Third World is the cost of batteries -- sometimes prohibitive. A small FM-AM radio with built-in flashlight is seen as solving the problem of communications in these impoverished parts of the world. You know, places where people can't afford BBC videos.

One such radio already exists. Plug it in for 12 hours and the resulting charge will allow the radio to play on batteries for 72 hours. That's nice. But what makes it really neat is that it can be hand cranked with a built-in generator. Spend 10 minutes of cranking at 120 revolutions a minute and you'll store up enough juice to allow the radio to play for two hours. "The longer and faster you crank, the longer the radio will operates. Retail price is $45.00 in the U.S. from B-N-Genius, 22121 Crystal Creek Blvd, Bothell, Washington 98021.

Personalizing the Hobby

Ed Cushing of Greenwood (County), South Carolina, has some "Catalogues" suggestions for radio monitors. New England Business forms (500 Main Street,

Groton, MA 01471 1-800-225-6380) offers Press N' Print Rubber Stamps. You get four lines of your choosing -- Ed says that the example showed 27 letters/characters on one line -- for $14.95. The image area is 2 $^1/_4$ wide by $^1/_2$ deep.

There are a million different uses for rubber stamps around and listening post, from simple return addresses for your letters to QSL requests to, well, who knows what else.

Ed also suggests that you display your ham call letters proudly on a Land's End shirt. Actually, Land's End will monogram your call letters (or even "MT"!) on turtlenecks, sweaters and sports shirt for just $5.00 additional. Indeed Ed had his calls monogrammed on and he says it "looks excellent!" They'll do up to 6 letters/numerals for the $5.00. Better get a copy of their catalogue. Call 1-800-356-4444 or write to Land's End, Dodgeville, Wisconsin 53595.

The Future is Now

For years, *Monitoring Times* shortwave equipment reviewer Larry Magne has been pointing to the future with some excitement. Some day, he says, you'll be able to get printouts of the programs you listen to, perhaps even slow-scan TV pictures that would illustrate a news story.

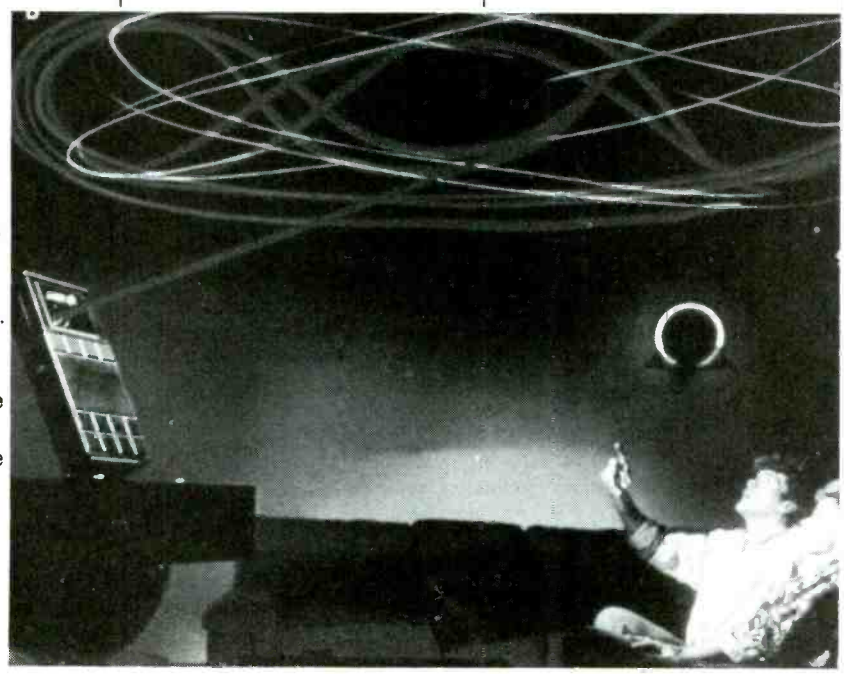
Those developments are beginning to come true in some of the more expensive receivers, like the new $10,000.00 Sony CRF-V21 receiver. Unfortunately, few of us are willing ore able to spend that kind of money in order to add a visual element of excitement to our monitoring. So what is the shortwave or scanner listener to do? The answer is found in the latest Fingerhut catalogue.

For just $159.99, you can get the next best thing -- the Laser FX Laser Show. Hook this 14" x 5" x 2$^1/_2$" unit into the external speaker jack of your radio and it projects "huge multiple color images" on nearby walls or ceiling in response to the audio coming out of your radio.

Imagine. Swirls of red light in response to the saucy music of Radio Nacional Venezuela. Twirls of red light accompany the drama of an ambulance call on the scanner. Yes, now you can "see" radio. To get your Laser FX Laser Show, send a check or money order to .O. Box 200, St. Cloud, MN 56395.

Thanks to Ed Cushing, Dr. Bruce Elving (*FMedia!*) Bob Grove, Kannon Shanmugam and the regular cast of characters who make this column possible.

If you've seen a neat gizmo and would like to share your finding with a million other Monitoring Times readers, drop us a note at "Catalogues" c/o Monitoring Times, P.O. Box 98, Brasstown, NC 28902. And by the way. We lied about the million readers.



Broadcast band interference

Has your shortwave reception been spoiled when a nearby AM broadcast-band radio station caused your receiver to overload? Are you plagued by unwanted musical blurps and bleeps when you tune across your favorite shortwave band?

If your answer to these questions is "yes," this article will be of interest. Simple solutions to this problem are easy to achieve, and at minimum expense.

The Nature of the Problem

Some shortwave or all-wave receivers lack the ability to reject strong signals, and this causes the receiver to become desensed (an apparent weakening of the signal you are listening to). These interfering signals need not be on or even near the frequency to which your receiver is tuned. You might be listening to WWV on 10 MHz while having overload problems from a nearby AM station on 1240 kHz, for example.

Overloading takes place in the front end or early circuits of a receiver. This involves the RF amplifier and mixer stages of the receiver. The *dynamic range* of a receiver is a measure of its ability to accommodate strong signals without an impairment of performance. The higher the dynamic range in dB (decibels) the better the receiver will be in a hostile environment of strong signals.

Most low- and medium-cost shortwave receivers have insufficient dynamic range to "ignore" strong signals. In this situation we can cure part of the problem by using a trap or filter between the antenna and the receiver input terminal.

The Anatomy of Filters and Traps

A trap is a high-Q tuned circuit that is resonant at the frequency of the interfering signal. It may be placed in series with the antenna lead (parallel-tuned trap), or it may be connected from the antenna lead to ground (series trap). These configurations are shown in Figure 1.

A trap is tunable by varying the capacitance or the inductance of the circuit. It is adjusted until the interfering signal vanishes or is greatly reduced in amplitude.

A filter, on the other hand, rejects unwanted frequencies while allowing all desired frequencies to pass from the antenna to the receiver. A filter that is designed to reject all of the signals in the 550-1600 kHz range is called a "band-reject" filter. It allows the passage of signals below and above the standard broadcast band.

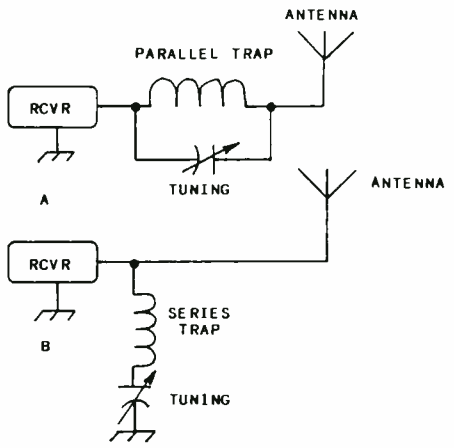


Figure 1 -- Examples of tuned traps. A parallel-tuned trap is shown at A. Example B is a series-tuned trap. Use the configuration that provides the greatest attenuation of the unwanted signal.

Traps and filters may be designed to eliminate strong signals in the shortwave spectrum also. The *ARRL Handbook* contains extensive information about the design of low-pass, high-pass, and band-pass filters for any MF or HF part of the radio spectrum.

How to Build a Trap

We learned earlier that the Q (quality factor) of a trap must be high if the trap is to perform effectively. Therefore, if the trap coil has a slug or toroid core, the core material needs to be designed for the best Q it can provide at the selected trap frequency.

Not all core materials are the same. The wrong core can destroy the Q of a tuned circuit. Air-wound coils, such as commercial Miniductor stock (made by the B & W Corp.), are excellent for ensuring high Q. In a like manner, hand-wound, single-layer coils that are wound on low-loss coil forms can exhibit a high Q. The larger the wire diameter, the better the Q.

Coil forms made from tubular stock, such as ceramic, phenolic, acrylic, and Lexan are good. PVC tubing is suitable for use below, say, 10 MHz.

The trap leads should be kept short and direct in the interest of preserving the trap Q. Likewise with filters. Traps and filters work best if they are enclosed in a metal box.

Maintain a spacing between the trap coil and the box walls that is at least the width of one coil diameter. This helps prevent the metal box from degrading the tuned-circuit Q. If a trap or filter is not shielded in this manner, it can pick up the interfering signal along its length, and this greatly reduces the effectiveness of the trap or filter.

An earth ground should be connected to the filter or trap case. The objective is to minimize the leakage of energy from the input of the trap or filter to its output terminal. The greater the leakage the lower the attenuation of unwanted frequencies.

Coils that are wound on toroid cores may not need to be shielded. Toroidal inductors and transformers have a self-shielding property. The connecting leads on the capacitors and coils, if long enough, may pick up energy from the interfering signal, and this can negate the self-shielding traits of the toroid. Keep the leads short!

Build a BC-Band Trap

Figure 2 contains circuits for series and parallel traps for the standard broadcast band. It does not matter what impedance your antenna or feed line is when you install a trap of this type. In other words, it may be used with a single-wire-fed antenna, or with a system that has a coaxial feed line.

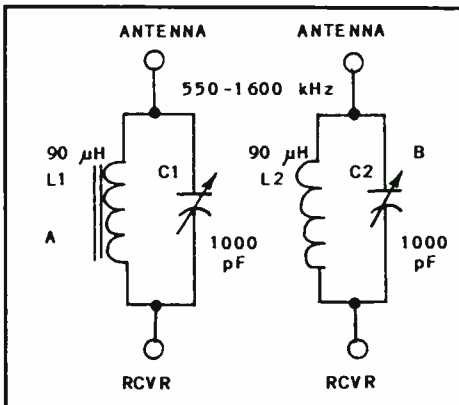


Figure 2 -- Toroidal (A) and solenoidal, air core (B) trap coils. C1 and C2 are ARCO no. 4611 mica compression trimmers for use from 550 to 900 kHz (300-1000 pF). For operation from 800 to 1600 kHz use an ARCO no. 466 (105 - 480 pF) trimmer. L1 has 35 turns of no. 26 enam. wire on an Amidon Assoc.[1] FT-82-61 ferrite core. L2 contains 52 turns of no. 20 enam. wire, close wound on a two inch OD coil form that is three inches long.

This is not true when you use a filter, since all filters are designed for a particular impedance -- generally 50 ohms. If a filter is not terminated in its characteristic impedance, it will not function as a filter, and it will cause the SWR (standing-wave ratio) in your antenna system to increase. This can cause signal losses.

BC-Band Filters

Figure 3A details the circuit for a high-pass filter that rejects the AM broadcast band and those frequencies that lie below the BC band. All signals above 1700 kHz will pass through the filter without being attenuated. The filter impedance is 50 ohms.

Figure 3B contains the circuit for a band-reject filter. This circuit was designed by Ed Wetherhold, W3NQN, who is a filter designer for Honeywell Corp. It was first presented in *QST* for February 1978. The filter rejects the frequencies from 550-1600 kHz, but allows signal energy above and below that range to pass. The filter impedance is 50 ohms. You will need to switch the filter out of the antenna circuit when listening to the AM broadcast band.

Tag Ends

I have presented only basic information about filters and traps. I have avoided the use of filter-design equations in order to keep things simple and to the point. Since filter design is a fine art, we'll leave it up to the experts!

The practical information provided here will enable you to cope with your overloading problem effectively. The interference malady is a common one for those who live in urban areas where many AM broadcast-band stations may operate around the clock.

I once lived two blocks from a 50-kW AM station (WXYZ) in Detroit. It severely disrupted my ham radio and shortwave reception. A similar problem existed when I lived one block from a 5-kW AM transmitter in Meriden, Connecticut. I was able in both instances to resolve my overloading problem by installing tuned traps in the antenna line.

It is vital that you place your trap or filter as close to the receiver antenna jack as practicable. If not, the lead between the trap and the receiver can pick up unwanted signal energy and degrade the trap performance.

Don't be afraid to heat a soldering iron and build a trap or filter. It is not a difficult task, even for those of you who lack electronics experience. mt

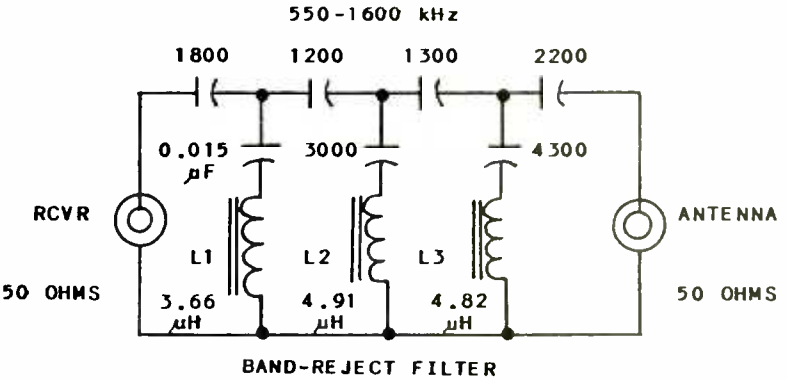


Figure 3 -- Circuit for the Wetherhold band-reject filter. Capacitors are polystyrene or silver mica and are in pF unless otherwise noted. L1 has 26 turns of no. 22 enam. wire on an Amidon T50-2 toroid. L2 uses 30 turns of 24 enam. wire on a T50-2 core. L3 has 29 turns of no. 24 enam. wire on a T50-2 core.

[1] Amidon Assoc., Inc., 12033 Otsego St., N. Hollywood, CA 91607. Toroids and other ferromagnectic forms are available by mail. Catalog available. 818-760-4429.

OOPS!

An error in pasteup in last month's Dip Meter article repeated the Fig 1 illustration. Below is the correct illustration and caption for Fig 3.

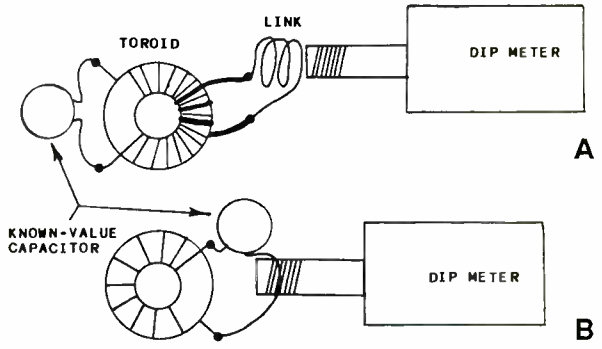


Figure 3 (Jan) -- Example A shows how to check a tuned circuit that uses a toroid coil (see text). A small link is wound over the toroid winding (heavy lines) and it is connected to a small external link. The dipper coil is placed near the external link. Illustration B shows how to couple to a toroidal tuned circuit by placing the dipper coil inside the loop formed by the pigtails of the fixed-value capacitor.

Rich Arland, K7YHA

RF Interference

This month we are going to delve into the wonderful world of RF Interference (RFI). The shortwave listener, DXer, scanner buff, or radio amateur who doesn't suffer from RFI in some form is indeed a lucky radio hobbyist.

Unfortunately, with the onslaught of hi-tech devices available for the modern household, RFI has risen drastically. And it doesn't seem as if electric/electronic manufacturers consult radio hobbyists when they design (or attempt to design) creature comforts like light dimmers, auto ignition systems, and so forth.

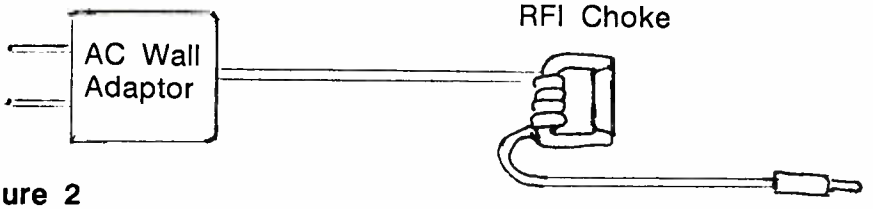


Figure 2

Those touchy lamps

Lighting controls are prime examples of common RFI producers around the household. Sir Robert of Grove provides us with a fix for touch lamp controls. Since many variable lighting controls are very similar in principle and construction, the fixes contained in Bob's advice should be equally applicable to other devices.

Bob's fix of the model 74003 Touch-On® Light Control (manufactured by Southwest Laboratories, Inc.) centers on bypassing the AC power leads of the touch module. Bob uses two .01 μF @ 600 V disc capacitors, one across each pair of power cords coming into and leaving the module. One such capacitor is shown at the top of figure one; the second capacitor is soldered to its right.

This direct approach could be used on other lighting devices with success. In addition, RF chokes made from ferrite beads could be slipped over the AC power leads.

That irritating hum

Bob also comes through with a cure for common mode AC hum which is experienced when various listening accessories are powered from AC wall adaptors. I have noticed AC common mode hum when using my Datong FL-3 filter, RS PRO 4 hand-held scanner, various active antennas on wall adaptors. Since it wasn't extremely disruptive to my listening, I didn't pursue a cure.

How can you tell if you are the victim of AC common mode hum? Well, it manifests itself as a background "buzz" on some (not all) stations when listening to the higher shortwave frequencies in the AM mode.

To confirm this, select a strong station that has the buzzing noise on it, and disconnect the wall adaptor powered device. If the hum is gone but the signal is still there, the buzzing was caused by AC common mode hum.

Alternating current, because of its characteristic switching of positive and negative polarity several times a second, often produces unbalanced voltages on appliances which come in contact with it. Battery operated devices have no such problem.

These unbalanced AC voltages often mix with desired signals in radio receiving installations, producing the characteristic hum interference. By removing the AC, you remove the source of the interference.

Grounding will often (but not always) help the situation. Battery power can be used but that means you either have to have a way to recharge the battery or continue to buy new batteries as the old ones run down. An AC adaptor is far more practical for fixed installations.

The fix is very simple. Remove the AC component from the DC power cord coming to the accessory. The use of an RF choke in the form of ferrite rings (toroid cores) on the DC power cord is one method (see Figure 2). Take the end of the DC power cord that plugs into the

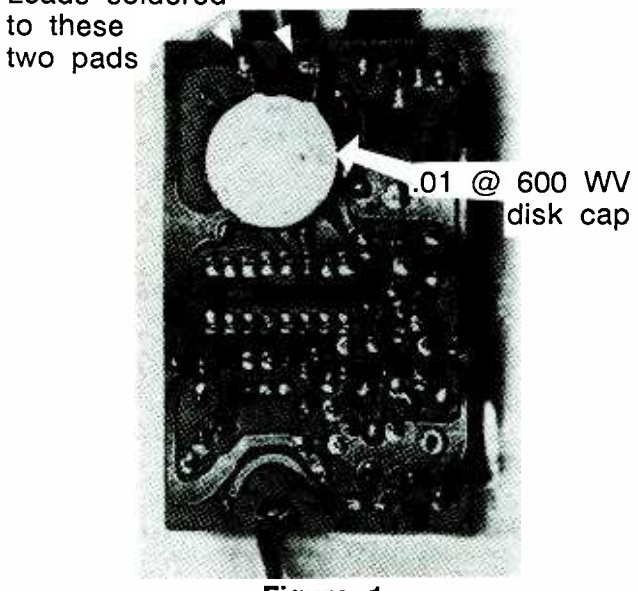


Figure 1

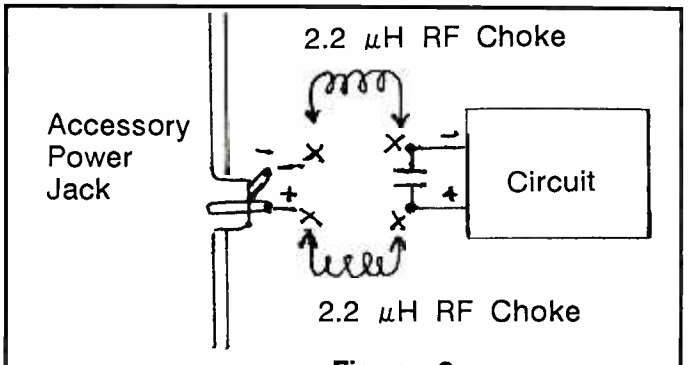


Figure 3

Update from January: Parts for performing the turbo speed modification for the PRO 2004/5 described last month are no longer available from Grove Enterprises. Instead they can be purchased from Digi-Key, 701 Brooks Avenue South, P.O. Box 677, Thief River Falls, MN 56701-0677; phone 1-800-344-4539. Order Parts No: PX800 ceramic resonator - $.97, 1N4933 diode - $.20, plus a $3 service charge for minimum order.

accessory and wrap as many turns of the cord as practical around the core as close to the DC plug as possible. This will greatly reduce or eliminate the AC hum.

Ferrite RF chokes are available from *MT* advertisers including EEB, Radio Shack (part # 273-104), Grove Enterprises (part # ACC-91), and Universal Shortwave at a cost of about $4.00.

An even more sure-fire method of removing common-mode hum is to place RF chokes in series with both the positive and negative leads in the accessory. Any convenient capacitor such as .001 or .1 μF is connected across the output of the choke as shown in figure 3.

Radio Shack also offers small 100 microhenry RFCs which can be soldered to the DC connections inside the accessory. The RFCs are installed right on the connector, taking the place of the positive and negative wires which previously connected the jack to the circuitry. DC will now travel down the power cord to the internal circuitry and the AC component will be filtered out by the RFCs.

Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, c/o MT, P.O. Box 98, Brasstown, NC 28902

Going mobile

Our final interference topic deals with mobile installations. Bill Battles of East Kingston, New Hampshire, writes to tell of his on-going quest to rid his GM station wagon of ignition noise. Bill tried several RS noise suppressor kits with no success at all. Finally, in desperation, he contacted a friend who is a mechanic for help.

Since Bill's wagon has a distributor with built-in coil in close proximity to the positive battery lead, re-routing of the power lead was considered. The mechanic also installed a high-performance rotor which allowed a much smaller gap for the spark at the top contacts. This reduced the ignition noise.

Experimenting further, Bill fashioned a shield for the distributor cap out of heavy aluminum foil. Grounding the shield after it was in place completely eliminated the ignition noise. Bill is now searching for a Corvette type distributor shield cap for his wagon.

The old ARRL *Mobile Manual* had several timeless fixes like this. If you can find a copy at a hamfest, by all means lock onto it, as these RFI problems are not common to newer cars.

FRG-7700 revisited:

Bob Leary of Galaxy Electronics in Akron, Ohio, and Bill Cheek of San Diego, California, wrote to tell me of the display problems with the 7700.

In both instances, the problem was traceable to a VCO alignment and possible electro-mechanical connections. Bob also said that 7700s don't like to be left idle for any length of time, and this problem is very common in radios that have been left sitting in closets for months or years.

Barry Wadler provided me with a mint FRT-7700. Many thanks, Barry. All I need now is an FRA-7700 to complete the set. Anyone have one they want to part with? If so, contact me at the Brasstown, North Carolina, address, please.

DX-150 mods:

Martin Bell of Glen Ellyn, Illinois, and Paul Kemp of Independence, Missouri, both wrote expressing their delight in the DX-150 mods. Yes, it is true, there is a way to add digital readout to this receiver. More on that in a later column.

Anyone having information on the Torrestronics digital display units, please contact me via the Brasstown address. This is a good unit to use with the DX-150, but I'm not sure that they are still being manufactured. Any info on this unit would be a help.

Chris Hethorn, from the small-parts center in Lansing, Michigan, called to say that he has had a lot of orders for the ceramic resonators featured in that model. If that is any indication, it looks like a lot of DX-150 owners will be finding new uses for their receivers.

Note: If you want to attend the third annual SWL Winterfest in Culpsville, Pennsylvania, on February 23-25, drop a line to Bob Brown KW3F, PO Box 591, Colmar, PA 18915. This is a BIGGIE, boys and girls. Over 200 listeners and amateur radio operators have pre-registered so far. ANARCON look out!

That's a wrap for this month. Hope you find the RFI tips helpful. Anyone who has more hints/tips to rid the shack or mobile installation of dreaded RFI, please pass them along so we can get them into print. Please use the *Monitroing Times* address for all submissions to this column and for any correspondence. Tnx es Gud DX.

mt

W. Clem Small, KR6A, CET

Some Like It Hot:

An Antenna for the Action

With the maximum usable frequency gradually creeping upward over the past months, you have probably noted that activity in the upper regions of the shortwave band has picked up considerably.

Amidst talk of a peak in the 11-year sunspot cycle, and improved shortwave propagation, we often find that action on bands such as the 10-meter ham band and the CB band can get very hot. Often stations, even those running on low power, come booming in from all over the map.

These conditions provide some exciting DX monitoring and, if you are a ham, some exciting two-way communications. So, why not build this month's antenna and be prepared to get your slice of this action on those frequent occasions when the band opens up.

If ten-meters isn't your bag, there are simple instructions on how to construct the antenna for your favorite shortwave, VHF, or UHF bands.

THE GROUNDPLANE: A good antenna -- good for local work and for DX roo!

When the well-known radio pioneer George Brown and his coworkers invented the groundplane antenna, they produced a real legend. It is probably the only design to rival the grand old halfwave dipole as the most popular antenna of all time.

Most of the groundplanes which you have seen, no doubt, had three or four radials extending around the base of the antenna. But George and the boys designed the groundplane antenna to use only two radials in its groundplane, not three or four. The increased number of radials was due to pressure from their sales department for cosmetic reasons!

George claimed that his tests showed that the antenna works as well with two radials as with four. So, we are going to save time and money and build our groundplane as its inventors designed it: with two radials.

In this design we have an antenna known both for its low-angle radiation, which will cover your local-area activity with excellent results, and for its top-rate performance on the "hot" DX activity which the sunspot cycle frequently brings to us these days.

What you need to build one:

a. One 10-foot section 1/2 inch metal electrical conduit pipe for the vertical element. This will be cut down to 8 feet 1 inch.

b. Two 10-foot lengths of 1/2 inch plastic PVC water pipe to hold the radial wires. These will be cut to 9 feet or so.

c. 16.5 feet of copper wire, #16 or heavier (insulated or uninsulated, stranded or solid), for the radials.

d. 3 feet of 1 inch x 3 inch softwood. You may want to use hardwood if you live in an area where wind is strong.

e. Varnish to coat the wood.

f. Six 2 inch stove bolts with nuts, 6 ordinary washers, 6 oversize washers. These hold the pipe elements to the wood. The oversize washers go on the end of the bolts opposite the pipes.

g. Two 2 inch stove bolts with nuts and ordinary washers to bolt the wood pieces together.

h. One 1-1/2 inch #6 stove bolt with nut and 2 washers for attaching the coax center-connector to the vertical element.

i. Coax-type sealer and a coaxial cable lead-in with plug attached.

j. Solder or a small bolt-nut type wire connector for connecting the coax braid to the radials.

Here's how:

1. Make sure the wood is sound with no cracks or knots in it. Cut the wood into two lengths: one piece 24 inch long, one 12 inch long.

2. Next mark a line down the exact center of the wood pieces to serve as guides to where you will drill for bolt holes.

3. Now, drill the holes for joining the wood pieces together as shown in Figure 1.

4. Drill the holes at the bottom of the long wood piece for attaching to whatever mast you will use. A 10 foot 2 x 4 timber guyed with ropes will serve as a mast if you have nothing better.

5. Sanding the wood isn't really necessary, but it is necessary to varnish the wood well two times. This is important so that the antenna will last, and so that the wood won't absorb water and become conductive, making the antenna inefficient. When varnish is dry, bolt the pieces together.

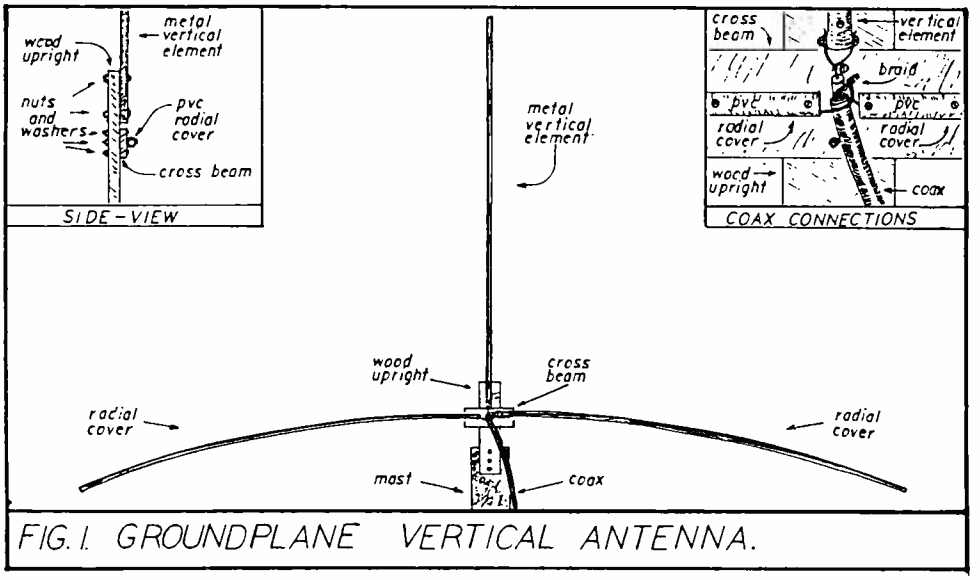


FIG. 1. GROUNDPLANE VERTICAL ANTENNA.

6. If you want a ten-meter antenna, cut the metal pipe (vertical element) to 8 feet 1 inch. Otherwise use the formula: length = 234/frequency. Here length is in feet and frequency is in megahertz (use 71.3/frequency if you want your length measured in meters).

   For instance, for the CB band, a good center frequency would be 27 MHz, so 234/27 would give a length of 8.67 feet (8 feet 8 inches) for the antenna.

7. Now, for a ten-meter antenna, cut the radial wires to 8 feet 3 inches. To determine the length of the radials for frequencies other than ten-meters, use the formula: length = 239/frequency. Here length is in feet and frequency is in megahertz (use 72.8/frequency if you want your length measured in meters).

   For instance, if your antenna is to operate on the 27 MHz band, length = 239/27 which gives 8.85 feet (8 feet 10 inches) for the length of each radial. Make each radial wire this long, and then cut the PVC pipes one inch longer than that.

8. Using the holes in the wood antenna base as a guide, mark and drill the necessary holes in the PVC and metal pipes. Also drill one hole right at the base end of the metal pipe to be used for attaching the center connection from the coaxial cable, as shown in Figure 1.

9. If the radial wire you use is insulated, trim about two inches of insulation off the ends which will attach to the lead-in. Insert the radial wires into the PVC pipes, leaving an inch or two sticking out of the pipe end.

10. Bolt on the pipe elements.

11. Connect the center conductor of the coax to the vertical element as shown. Also connect the braid of the coax to the two bare ends of the radial wires. This can be done by soldering, or with the very small bolt-nut, or wire clamps available in hardware stores. Soldering would make more durable connections for the antenna, but many of us don't have soldering irons heavy enough for this application.

Cover all connections with a coaxial-cable sealer type weather resistant sealer. Make sure you seal the cable-end thoroughly so that no moisture can enter and degrade the cable.

12. If you live in lightning country, add your choice of lightning protection. Grounding the antenna when it is not in use, and never using the antenna during a storm is the minimum protection you should consider.

13. Mount the antenna as high and in the clear as is practical. You will notice that the radials droop. This makes the antenna match the coax impedance better. Hook up the antenna to a receiver or transceiver, and you are ready to go!

For best results:

Remember that the higher shortwave frequencies are pretty much "daylight" frequencies. Also, remember that on some days the band is dead anyhow. But catch it on a good day, and you've got some real monitoring fun on your hands.

RADIO RIDDLES

Last Month: Remember, we discussed the inverted-vee antenna and I asked you if there were any other "vee" antennas?

Yes, some "noninverted" V-antennas are known as "V beams." They are high-gain wide-band wire antennas which are quite useful for shortwave work. It was the V-beam design which led to the invention of the legendary rhombic antenna: a rhombic is said to be two V-beams attached "mouth-to-mouth"! What? Romantic antennas?

This Month: The V-beam antenna is not an inverted-V; it is more like a letter V fallen flat on its face and lying horizontally a distance above the ground. There are several antennas which resemble objects or letters which are lying down. And there is a special adjective which we use to describe these antennas. What is it? Hints: it's not "tired" or "sleepy."

So, catch the answer to this month's riddle, and much more, in your March issue of *Monitoring Times*. Till then, Peace, DX, and 73.

mt

ask bob

Bob Grove, WA4PYQ

Q. *Can you tell me why my NRD525 will suddenly cut off in the middle of a program, then come on again? I don't use the timer. (George Snyder, Torrance, CA)*

A. This question often comes in from Kenwood users as well. Although it is remotely possible that the microprocessor or power supply is defective, it is more likely that the squelch control knob has been set above its fully-off position. Check that first.

If the condition persists, and AGC and RF gain controls are normal, you might have a problem. In the NRD525, there was a short period of time when an erratic line cord connection caused the entire receiver to shut down unpredictably. This was easily corrected by replacing a component under warranty repair.

Bob's Tip of the Month:

Uniden BC760XLT/BC950XLT Cellular Restoration

NOTE: This procedure, developed by Bob Grove, worked on an off-the-shelf BC760XLT, late version (with BNC antenna connector). Neither *Monitoring Times* nor Grove Enterprises assumes any liability resulting from attempts by others to duplicate this procedure. This modification will void the warranty on your BC760XLT.)

This procedure will restore 825-845 and 870-890 MHz cellular band coverage deleted by the factory in BC760XLT and BC950XLT models manufactured during 1989 (HI code date suffix) or later.

TOOLS NEEDED: fine-tip soldering iron and small-gauge rosin-core solder, small Phillips screwdriver, 1/2" length of hookup wire, and a sharp-pointed pick or sewing needle.

1. With the power cord disconnected, remove the four cover screws; remove the top cover only.
2. Locate the SANYO IC as shown in figure 1 (printed upside-down with the front of the radio facing you). A long row of solder pads just above the IC indentifies pins 1-32 of the microprocessor. Your modification will involve pins 19, 20, 26 and 27.
2. Using the sharp-pointed tool, cut the two traces leading to pin 26 as shown in figure 2 to isolate that pin.
3. Solder-bridge pins 26 and 27 together as shown in figure 2.
4. Solder-bridge one end of a 1/2" wire across the two vacant solder pads adjacent to pins 19 and 20 (effectively shorting the pins) as shown in figure 2; solder the other end where shown. Be sure the wire does not touch any other components or traces.
5. Insert the power cord, turn the unit on, press MANUAL, 845., E; if 845.000 appears, the modification has been successful. Reassemble. If ERROR appears, recount the pins you modified and check the cut traces and solder bridges.

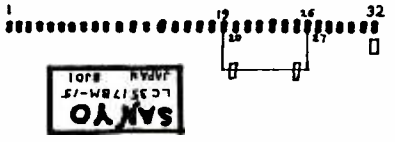
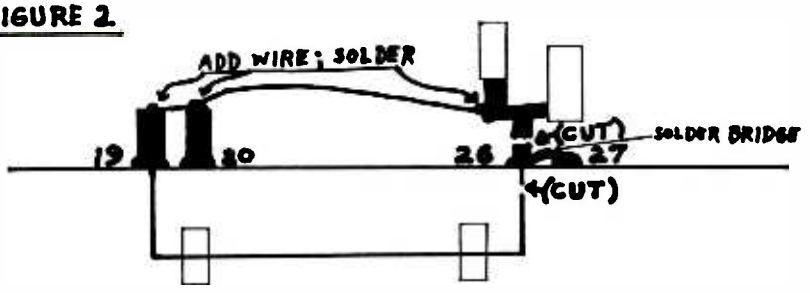


FIGURE 1

FIGURE 2



Q. *My Yaesu FRG9600 has 100 memory channels, but only 10 can be scanned at any one time. Is there any modification which will allow all 100 channel to be scanned? (Steve Pinto, Philadelphia, PA)*

A. None that we have ever heard of.

Q. *My R2000 receiver reads slightly high in the upper sideband (USB) mode; LSB and AM seem to be right on frequency. Why is this and what can be done? (John Richardson, Titusville, FL)*

A. Modern communications receivers have (at least) two oscillators: the local oscillator for main tuning and the product detector oscillator for SSB/CW modes.

Some manufacturers deliberately make the USB 1.5 kHz high and LSB 1.5 kHz low to match the offset of the audio energy of the sideband. Others let well enough alone and the display will read the original center carrier ("window") frequency, regardless of which sideband is chosen (preferred by most).

First, use a frequency counter to be sure that the local oscillator frequency is exact; then SSB alignment is simple. Tune in WWV at 10.000 or 15.000 MHz and select either USB or LSB mode. Locate the two trimmer capacitors in the product and carefully adjust each trimmer in the proper mode (USB or LSB) for zero-beat on WWV (whistle tone gets lower in pitch until it disappears and the signal sounds normal). Switch back and forth between AM, LSB and USB to be sure they all sound the same on the WWV tone.

Q. *My new scanner antenna hasn't helped reception; in fact, there is more noise and the radio hangs up on quiet channels. What gives? (Donnie Blackwell, Charlotte, NC)*

A. Scanners have a distinct range of signal levels they can endure without adverse effects; you have exceeded your scanner's dynamic range by using a better antenna!

The results of front-end overload include desensitization (signals appear weaker than before), image reception (the same signals are heard 21.4-21.6 MHz higher or lower), and intermodulation (mixed combinations of

Questions or suggestions sent to "Ask Bob," c/o MT, are printed in this column as space permits. If you prefer a reply by return mail, you must enclose a self-addressed, stamped envelope.

voices and services are heard on many frequencies).

Some of these signal products may not have modulation on them, or may have modulation different from what the scanner is set for (AM signals received when the scanner is set for FM mode and vice versa), accounting for the scanner's hanging up on "quiet" channels.

Q. *What is the best antenna to use for mobile shortwave listening with my portable shortwave radio? (Steve Eschner, Lima, OH)*

A. The farther from the engine compartment, and the longer, the better. Be sure to use a good grade of coax for shielding. The worst problem mobile SWLs encounter is electrical ignition noise, from their own cars as well as from others.

If the machine-gun rat-a-tat ignition noise persists, switch to resistor spark plugs; you will not suffer any reduction in engine performance. If resistor spark plugs don't solve the problem, more extensive shielding, filtering and bypassing, not within the scope of this column, will be required.

Q. *Is it true that the Sony ICF-2010 is very susceptible to front-end burnout when attaching an external antenna?*

A. It was true with early units, but Grove Enterprises reports no such failures among units they have sold in at least a year.

To be absolutely safe when using an external antenna, open the little plastic external antenna accessory plug and solder two small-signal diodes (1N914, 1N4148 or similar) in parallel, but with reversed polarities, across the contacts.

An external wire antenna may now be connected to the adaptor plug with better protection against voltage transients which could damage the receiver.

Q. *What frequencies are used by the Canadian flying team, the Snowbirds? (Paul Neary, St. John's, Newfoundland)*

A. The last set of frequencies sent in by a Canadian reader showed 20 channels (in order): 275.8, 295.6, 310.8, 227.6, 243.4, 240.5, 378.5, 266.3, 294.5, 322.8, 245.7, 316.5, 344.5, 356.6, 236.6, 283.9, 363.8, 289.4, 245.0 and 239.8 MHz AM.

Q. *My "Best of MT 1985" is getting rather dog-eared from use. Will there be another useful anthology of questions, answers and hints for the listener? (Jim Ellis, Vero Bch, FL)*

A. *Bob Grove's Scanner and Shortwave Answer Book*, a compilation of questions and answers from over six years of publishing, is now available from Grove Enterprises and other radio dealers.

Q. *Modern receivers have digital tuning -- pushbutton frequency entry. So why do they still have tuning knobs? (Joseph Johnson, Savannah, GA)*

A. Listeners like to command their radios manually for fine tuning or signal searching. It is both psychologically satisfying to know that you are still in charge of your radio in these days of automation, as well as good engineering.

LETTERS

continued from page 3

Wouldn't it be great if there was a local radio get-together in your area? If there isn't, why not start one? *Monitoring Times* loves clubs and would be more than happy to give you the publicity needed to get started. So why not get one going! Drop us a note in care of "Letters" and we'll see what happens. Who knows, someone from the *MT* staff might even drop in some evening -- especially if you spring for the burgers.

John Bosak, who is director of engineering at Harrisburg, Pennsylvania's WITF, passes along a clipping from the *Wall Street Journal*. Check out this one, scanner fans.

The case of Scott C. Tyler is cited: In 1984, Mr. Tyler was sentenced to 10 years for conspiracy and theft (serving only four months before being parolled) after the Scott County, Iowa, sheriffs obtained nine month's worth of monitoring of the Tyler family phone.

In a lawsuit brough some two years later, the Tylers have claimed that the eavesdropping by the sheriff's office violated their constitutional right of privacy. And they are seeking $53 million in damages from the sheriff's office *and a neighborhood couple that picked up and recorded the conversations*.

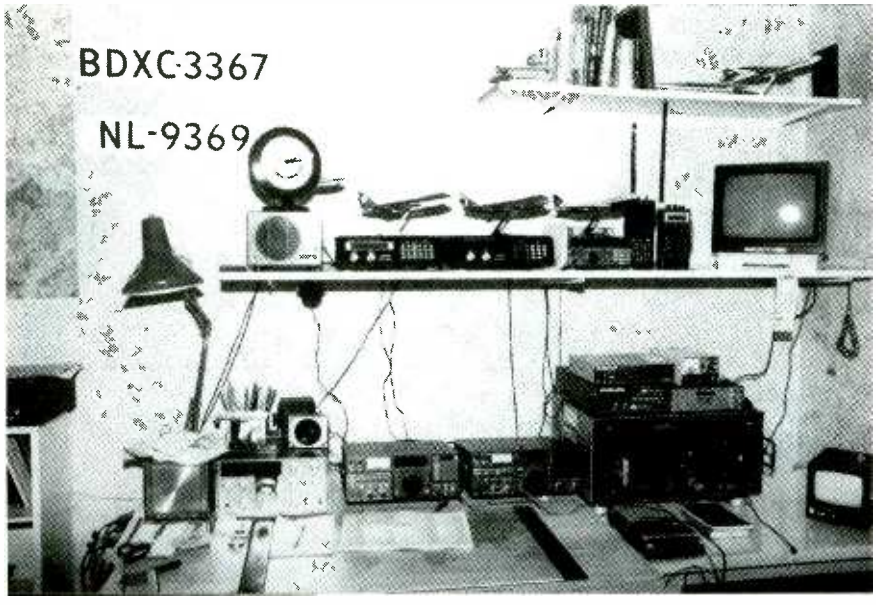
According to the article, legal precedents in the lower courts run against the Tylers. "Since the early 1980s," says reporter Dockser-Marcus, "the courts have ruled in at least a half-dozen cases that private citizen's talking on cordless phones don't have a reasonable expectation of privacy and therefore aren't covered by the Fourth Amendment." Cellular phones are specifically protected under a 1986 congressional amendment to the federal wiretap statute.

"I am a Venezuelan citizen who has recently discovered shortwave and I would very much want to hear stations from my country. I have tried to hear some on AM but can not. Can you help?"

Sure. While the keen AM broadcast band DXer can occasionally nab some signals in the 540 to 1600 kHz range, your best bet is on shortwave. *Sweden Calling DXers* recently listed Radio Tachira on 4830 kHz, Radio Valera on 4840, Radio Continental de Barina on 4940, Radio Rumbos on 4970 and 9660, Ecos del Torbes on 4980 and 9640 kHz, Radio Maturin on 5040, Radio Los Andes on 9540 and Radio Nacional de Venezuela on 9540 kHz.

Ecos del Torbes even has a program for people just like yourself -- Venezuelans abroad -- every day between 0300 and 0400. And one other thing. frequency manager Greg Jordan reminds me that Radio Nacional de Venezuela has a new, Sunday-only, English language broadcast from 0004 to 0015 UTC on 9540 kHz (It is also announced as being on 5020, 11695 and 11850 kHz.) Check it out.

MONITORING POST PIN-UP



John Snel, a Dutch Experimental SWL from Utrecht, Holland, sent us his monitoring post photo after receiving only his second issue of *MT*! John says he finds *MT "very good to read. Very much info also usable in Holland. Especially SW frequencies and the stories about equipment."*

Hopefully that is also what our other many foreign subscribers are also finding. Thanks, John.

How about you? We'd like to see a shot of your individual set-up -- everyone has their own unique approach to equipment layout; and we'd like to see you in it, for the personal touch!

A few years ago, virtually anyone who wrote to Radio Beijing got a response and a packet of goodies from a gentleman named Chen Yu. Mr. Chen is now in the United States, along with his wife and child. To them we say, welcome.

"Ken Reitz is doing a great job with the satellite TV column," says Frank Sonnek of Aberdeen, South Dakota. "Give him an ICOM R7000 and he'll be able to do even better."

C'mon, Ken put you up to that, right Frank? We agree with the first part, anyhow!

In any case, congratulations are in order for Ken and his daughter, Jensen. Both have upgraded their licenses to general. "It's been a lot of fun," says Ken, "especially working the 20 meter TVRO net." Got a ham license? Give Ken a shout. Like all *Monitoring Times* staff, he loves to talk to our readers.

"I just finished reading 'Reader's Choice' in the December issue of *Monitoring Times* and specifically the Sony ICF-2010 comments," says John Sheehy of Oshkosh, Wisconsin. "I have had a '2010 since 1985 and have experienced no difficulty other than temporary loss of memory during the winter due -- as learned in your article -- to static electricity."

John uses his '2010 for 540-1600 kHz broadcast band DXing "and I find it great for this purpose. Obviously, there are other

features I wish the receiver had, but for the price I paid, I am satisfied."

Oh, speaking of AM radio, listen to this. At a recent hearing, FCC chairman Al Sikes said that "AM is making extraordinary contributions to the diversity of broadcasting."

While observers were still rolling in the isles with laughter, Sikes followed the comment up with another blockbuster: "AM can be, in most circumstances, and to most ears, as good as FM." Our colleague Bruce Elving, editor of *FMedia!* calls the statements "incredible."

"I would like to say that I enjoyed your article on the United States Coast Guard. I would also like to mention," says Paul W. O'Toole of Pawtucket, Rhode Island, "one frequency that is very active, day and night. That frequency is 5696 kHz USB-AM. I am also able to receive Coast Guard units everywhere from the state of New Hampshire to Florida on both search and rescue and routine patrol." Paul uses a Radio Shack DX-440 with a discone 25-1300 MHz antenna.

Who says shortwave and scanner listeners have all the fun? *The C.B. News* is hosting their annual "National Top 20 CB Queen and King Contest" this June. Among the requirements are that the applicant must be at least 18 years of age, male or female, married or single.

If you fit the bill so far, have someone take a picture of you in "formal dress only, queen in evening gown, king in dress suit." A shoulder sash is to be worn with the name of your club on it. Send your photo *C.B. News*, 719 N. Grant Street, Bloomington, IN 47401. Deadline is May 1, 1990.

C'mon, folks. Let's start out the decade right and have a *Monitoring Times* reader as National Top 20 CB Queen and King. But for gosh sakes, get it right. *King* in dress suit and *queen* in evening gown.

Thanks to everyone who wrote. We look forward to hearing from you. Address your letters to "Letters," c/o Monitoring Times, P.O. Box 98, Brasstown, NC 28902.

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Feb 3-4	Miami, FL	Dade RC/ Evelyn Gauzens W4WYR 2780 NW 3 St, Miami, FL 33125
Feb 11	Mansfield, OH	Intercity ARC & ASE Rpt/ Pat Harris N8EBK 449 Parker St, Mansfield, OH 43551
Feb 17-18	Sarasota, FL	So Fla Convention/ Hadley Carrigan N4ODK 101 N Adamas Dr, Sarasota, FL 34236
Feb 23-25	Culpsville,PA	SWL Winterfest/ Bob Brown KW3F PO Box 591, Colmar, PA 18915
Feb 24	Charleston, SC	Charleston ARS/ John Price WB4LQD 778 Piccadilly Dr, Charleston, SC 29412
Feb 24-25	Cincinnati, OH	Great Lakes Div Conv/ Stanley Cohen WD8QDQ 2301 Royal Oak Court, Cincinnati, OH 45237
Feb 25	Davenport, IA	Davenport ARC/ David Johannsen WB0FBP 2131 Myrtle, Davenport, IA 52804 Talk-in 146.28/.88 W0BXR rptr
Feb 25	Dearborn, MI	Livonia ARC/ Neil Coffin WA8GWL 35681 Hees, Livonia, MI 48150
Mar 3	Cave City, KY	Mammoth Cave ARC/ Joe Taylor N4NAS P.O. Box 858, Glasgow, KY 42141
Mar 3-4	Brownsville,TX	Texas State Conv/ David Woolweaver K5RAV 22105 77th Sunshine Strip, Harlingen, TX 79550
Mar 4	Charlotte, NC	Mecklenbury ARS/ Mary Biggs KA4EXP 8435 Rustwood Place, Charlotte, NC 28227
Mar 17-18	Ft.Walton Bch,FL	Playground ARC/ Frank Butler W4RH 323 Elliott Rd SE, Ft Walton Bch, FL 32548
Mar 18	Maumee, OH	Toledo Mobile RA/ Ronald Morris WB8ZIM 28141 Glenwood Rd, Perrysburg, OH 43551
Mar 23-25	Orlando, FL	N. Fla. Section Conv/ John Lenkerd W4DNU 1046 Turner Rd, Winter Park, FL 32789
Mar 23-25	Kearney, NE	NE State Conv/ Tim Lowenstein WA0PH/IVW P.O. Box 998, Kearney, NE 68848
Mar 25	Trenton, NJ	Delaware Valley RA/ Edward Vickner K2SNK 21 Running Book Rd, Trenton, NJ 08638
Mar 31	Charleston, WV	Charleston Area Hamfest/ William Kibler K8WMX 182 Monterey Dr, St. Albans, WV 25177

Monitoring Times is happy to run brief announcements of radio events open to our readers. Send your announcements at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.

STOCK EXCHANGE

Ads for Stock Exchange must be received 45 days prior to the publication date.

NON-COMMERCIAL SUBSCRIBER RATES: $.25 per word - *Subscribers only.* All ads must be paid in advance to *Monitoring Times*. All merchandise must be personal and radio-related.

COMMERCIAL RATES: $1.00 per word payable with ad

1-3/4" SQUARE DISPLAY AD: $35 per issue, payable in advance. Send camera-ready copy or copy to be typeset (reverse type not available).

Monitoring Times assumes no responsibility for misrepresented merchandise.

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FREQUENCY DIRECTORY ON STANDARD 4X6 MICROFICHE, ENTIRE UNITED STATES FROM SHORTWAVE THROUGH MICROWAVE, LISTED BY CITY, STATE, IN ASCENDING FREQUENCY ORDER. ALL NON-FEDERAL GOVERNMENT LICENSEES BY FCC. COMPLETE SET $85.00. ALSO FEDERAL GOVERNMENT (9.75 KHZ TO 10,525.00 MHZ) FREQUENCY MICROFICHE SET $97.50. READERS AVAILABLE [803] 723-5061.

ICOM IC-R7000 with NOVEX FC7100B, CT-17, IC-SP3, RC-12, TV adaptor - $1500.00; Packratt PK-232 - $200.00; SONY ICF PRO80 - $350.00; SONY AIR-8 - $200.00; BEARCAT 800XLT - $150.00; all like new in original shipping cartons; contact or write Larry, 2200 9th Street, Tillamook, Oregon, 97141, [503] 842-7786.

AEA PK232 Multimode Data Controller including COMPAKRATT and COMFAX for C-64. Also C-64 Computer, 1541 drive, COMREX 13 in. color monitor, all manuals/cables, like new. Complete package copies Morse, RTTY, AMTOR, ASCII, Packet, FAX photos from your receiver. Buy complete package for $600 and get C-64 DX Edge free. Ed [803] 229-1133.

MERRIMACK VALLEY COMMUNICATIONS SCANNERS, SHORTWAVE RADIOS, HAM GEAR, ALL MAJOR BRANDS. WE WILL NOT BE UNDERSOLD. [603] 529-1957.

Wanted: NRD-515 or R-5000 or ICOM 71A. I will pay a fair price for a good clean unit in excellent condition. Call Shelly at 716-442-6338 or leave message.

DX-160 General Coverage receiver - $60; PRC-10 38-54 MHz new condition with accessories and books - $55, plus shipping. TOM [318] 269-7780 or [318] 984-2561.

UNIDEN HR2510 10 meter mobile transceiver - $215 or will trade for AR900 scanner. [617] 938-7033 ext.19 Frank

---

YAESU FRG-9600 Wanted. Call Keith, [407] 260-2937 or write 351 Ferdinand, Longwood, FL 32750.

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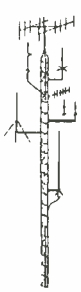

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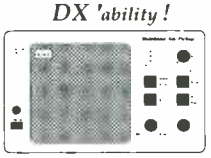

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Closing Comments

The Search for Extraterrestrial Intelligence

While some wags ask why we should look for E.T. when we haven't as yet found intelligent life on Earth, radio exploration for artificial signals from deep space has been going on for decades. Karl Jansky, a Bell Telephone engineer in Holmdel, New Jersey, concluded in 1932 that noises disrupting long-distance transatlantic radio circuits originated from deep space.

Although Jansky wanted to pursue the discovery, Bell's farsighted leadership decided that if the signals came from outer space, there wasn't much they could do about it. Jansky was reassigned.

Grote Reber, a young engineer, followed Jansky's trail a few years later and discovered that there were several areas of the sky that produced cosmic noise. While scientists privately discussed Reber's findings, it wasn't until 1960 that a serious search for extraterrestrial signals began, this time conducted by Frank Drake at the National Radio Astronomy Observatory at Green Bank, West Virginia.

Project Ozma, imaginatively named for the mythical Land of Oz, trained the observatory's 85-foot antenna on two nearby stars, Tau Ceti and Epsilon Eridani, but after several months they detected only one intelligent signal -- from a military earth satellite!

Not until 1973 did another major program begin: SETI, the Search for Extraterrestrial Intelligence, at Ohio State University in Columbus. NASA joined that listening game, reporting lots of noise since their entry in 1983, but no intelligent signals.

NASA's newest proposal from Ames Research Center, Moffett Field, California, would use a 15-million-channel spectrum analyzer with signal resolution (selectivity) of 1 Hz in a targeted search for continuous wave signals in the 1-3 GHz (1000-3000 MHz) range.

Scanning nearly 1000 sun-type stars within 80 light years (480 trillion miles) of Earth, their biggest technological problem is discriminating between legitimate signals from space and TI -- terrestrial interference.

Even more ambitious is the next phase of the program, a sky survey managed by Jet Propulsion Laboratory at Pasadena, California, which would scan the entire heavens looking for signals in the 1-10 GHZ range with a signal resolution of 30 Hz.

Many antenna sites are being considered for hooking up to the sensitive receivers including the world's largest, the giant 1000-foot dish at Arecibo, Puerto Rico, as well as alternative sites in Australia, Canada, Germany, France, Spain and the United States.

As inspirational as these research projects may be, congressional budget cuts sparked at least partially by Senator William Proxmire's notorious "Golden Fleece" award to NASA in 1982 for their proposed study, have seriously set back the program.

In spite of Congress's cynical budget slashing, motion picture director Steven Spielberg ("E.T.") has given a $100,000 grant to Carl Sagan's Planetary Society to continue their radio exploration of the heavens through META (Mega-Channel Extraterrestrial Assay), a scaled-down program which samples 8 million channels every 20 seconds, storing received data on disk for later retrieval and examination.

NASA is desperately struggling with reality. In the face of more politically profitable programs like the Space Shuttle, Space Station, Bush's proposed lunar base and the National Aerospace Plane, SETI followers are lobbying the best they can to keep their dream alive.

-- Bob Grove
Publisher

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