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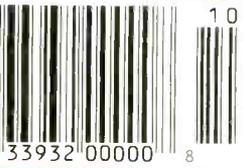
MONITORING TIMES

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- Radio Austria International
- The Lure of Exotic Beacons
- Alan Weiner: Notorious Radio Pirate
- "I monitored the crash of Flight 232"

Going Home!

Tuning in the Presidential Patrol



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MONITORING TIMES

The Presidential Patrol by E. Slosman

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Duties are pretty routine at the Portsmouth Harbor Coast Guard Station -- constant maintenance of rescue gear, the occasional tow of a pleasure boat in trouble -- routine, that is, except when the country's most famous citizen is in residence at his summer home! Then it's "All Hands" as the Presidential Security Detachment becomes active.



Everett Slosman paints a graphic picture of this hardworking detachment that's had such responsibility suddenly thrust upon them. He also tours the neighborhood radio waves for all other pertinent activity. Hang on to this article for a few years -- this New England tourist spot may someday find YOU there!



Radio Austria International by William Pell

12

This month William Pell provides us with a profile of the external service of government-funded ORF. RAI has always been a "listener-friendly" station. For example, to provide more understandable programs, program presenters in each section are native to that language; Slightly more music is played on RAI, as would be expected from the land of Strauss and Mozart; and reception reports are confirmed with an ever-changing variety of cards.



Beckoning Beacons by Joe Woodlock

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Exotic South Sea and South American beacons call to us from distant points as the low band DXing season opens.

Alan Weiner: Notorious Radio Pirate by Donald Kreis

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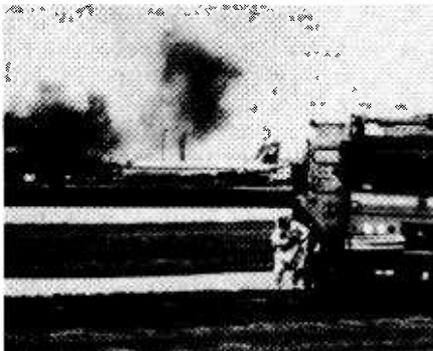
Allan Weiner is just the sort of person George Bush warned you about -- a trouble-maker, a liberal, and the chief perpetrator of Radio New York International. His story has been told from the *New York Post* to *The Village Voice* ... and now in *Monitoring Times*.

How did he get started on this path? Just exactly what happened, and where's he headed now? Says Kreis, he may have peace and understanding in his head, but Weiner's feet are firmly planted on the soil of capitalism. Whether in Appeals Court or on a new shortwave station, we'll be hearing from Weiner again!

ON THE COVER: President Bush departure, White House photo

Monitoring the Crash of Flight 232 by Dale Baity

22



Phila FD emergency drill

Dale Baity experienced the kind of event all scanner buffs both dread and anticipate: the opportunity to hear a major news event first-hand as it happens. In this case, it was the horrifying crash of Flight 232 in Sioux City, Iowa. Reading Dale's straightforward account of the unfolding drama, we live again those tense hours and experience the unexpected joy of "seeing" survivors stagger from the scene.

And More ...

Military communications are experiencing a renaissance in the shortwave bands, says Larry Van Horn, and there have been several shifts in frequencies and tactical designators. This and more utility news on page 28.

Bob Kay agrees, "The times they are a-changing." His scanner column reviews the rise -- and fall? -- of cellular communications on page 32.

MT reviews some new software for the ICOM R71A or R7000 on page 37; Bob Grove puts the new AR950 scanner through its paces on page 88, and Magne revisits the production model Grundig 500 on page 86. Uncle Skip tells you to forget it -- you can enter the SWL hobby on just a hundred dollars (page 38).

All this plus projects, program details, and best of all, the new, up-dated fall frequency schedules. What more could you want? (We're sure you'll tell us!)

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LETTERS

If you could use a helping hand with your Latin American QSLing, we want you to know that you've got "a friend in the business." Actually, you have two friends: Julian Anderson and Gabriel Ivan Barrera, and they've published a handy nine page booklet of advice "right from the horse's mouth," as it were.

Based in Argentina and possessing admirable DX records, they approach the subject from the perspective of the region's stations -- something often difficult for the *Yanqi* sitting behind his \$6,500 Sony CRF-V2 to imagine.

In any case, if Latin QSLing is your thing, spend five bucks and get the best. The address is Casilla 57, Sucursal 40, 1440 Buenos Aires, Argentina. Use registered mail and for goodness sake, don't send cash.

Although we opted not to participate in the (unquestionably) exciting world of cable TV, we hear from an unidentified reader that C-SPAN has inaugurated a new service for viewers.

According to the report, C-SPAN is providing a feed comprised of various international broadcasters for possible pick up by local cable companies. Included on one channel is a selection of stations and on the second, BBC World Service.

What's neat about the idea is that the sound quality will be first-class having been taken directly from the satellite and not via the short-wave.

It will be interesting. For pretty much the first time, the age-old argument that "the only thing holding back international radio is the sound quality" will be tested. Can a cover story in *People* be far behind?

By the way, we're still waiting to hear from readers who liked our experiment with fiction. Don't all write at once, folks. Might give the mailman here in Brasstown a hernia, 'ya know.

"Arctic is misspelled in your propagation charts," says Jim Miller

of Kinshasa, Zaire. Yes. We know. "Then how come you didn't fix it?" a letter will certainly ask next month. Well, we've ordered an extra "c" from Addis Ababa ...

Ed Cichorek has passed along a story from a newspaper called *The Home News*. Featured is a story about the Rev. Fahed Azar, pastor of St. Sharbel's Maronite Catholic church.

"The article caught my interest because his church is two blocks from my home," says Ed. "In light of the situation in Lebanon and his parishioner's thirst for news, short-wave listening is no doubt an important activity for him."

Azar, 36, left his parents, two brothers and two sisters in Lebanon in 1977, two years after the civil war began. He says that he visited the war-torn country annually but stays in touch by listening to reports on his shortwave radio. Thanks for passing that along, Ed.

While we're telling stories, here's one from *The Guardian*, passed along by an anonymous reader. Entitled, "Liberation Radio Shut Down," it tells the story of Dewayne Readus.

Readus, a blind and unemployed African-American, concluded that Springfield, Illinois needed a local source of information "favoring the interests of Black people." So in December of 1987, with an initial investment of under \$600, Readus launched WTRA-FM from his apartment in the John Hay Public Housing Project.

"Within months," says *The Guardian*, WTRA-FM was reaching "up to three-fourths of the local African-American community." Readus' programming, which also included Black music, criticized Housing Authority officials and discussed local cases of reported police brutality, often bringing alleged victims to the microphone.

Some listeners called the format "hard hitting." The Springfield Police Department called the FCC which demanded to see a valid radio

license. According to *The Guardian*, "Readus replied correctly that there was no U.S. law requiring the licensing of FM radio stations that have less than 100 watts of power."

The FCC agent was apparently not moved by the operator's knowledge of communications law and shut him down.

Clifford Legerton, who is spending some time at the Presbyterian Home of South Carolina, is chafing at the bit over ham radio's proposed no-code license. Why?

"Last year I personally made the highest *flunking* grade in my ham class because I could not get the code. Maybe *now* I can become a ham -- at the young age of 66!" Hang in there, Clifford. It's coming.

But are you really sure you want it? According to a number of readers, Fred Wolfink included, there was a "very harrowing three-part series of articles in *The New Yorker* magazine entitled 'Annals of Radiation.'"

No, this is not end-of-the-world stuff. Part 1 covered electromagnetic fields from power lines and transformers, part 2 featured microwave and radar and part 3 covered (gulp!) video display terminals.

[Continued on page 100]



We still don't know the full effects of radiation ...

Suspicion Falls on Ham Hobbyist

In 1968, Sam Martinez, his wife and three small children immigrated to the United States from Colombia. Intent on seizing his piece of the American dream, he studied electronics in New York and in 1974 became a U.S. citizen and a ham radio operator.

Martinez is particularly proud of his call letters. "I always told people that the best thing I've ever done in my life is to be a ham radio operator," he used to say. But recent events have made the 44 year old electronics technician wonder.

Two years ago, Martinez fired up his rig for his regular contact with his mother in Baranquilla. The conversation, he says, was nothing more than "chit chat."

The CIA and the FBI disagreed and last fall, the FBI agent confronted Martinez with a tape of the conversation followed by a buzzing noise. The buzzing noise, claims the government, was a computer-generated packet transmission.

Further, the FBI says that the Colombian government recently arrested a Cuban spy who was carrying a piece of paper with Martinez' name on it.

Martinez rejects the charges saying that he could not have sent a packet transmission since he doesn't own a computer. Further, he says, "over the past ten years I have sent out about 15,000 [QSL] cards all over the world."

Martinez has apparently not been charged with any crime but says that the knowledge that the FBI thinks he might be tied up in

spying or drug running has shattered his piece of mind.

"I used to see myself on the cover of *People* magazine as someone who came to this country with \$20 and a wife and kids and made it. I thought I was the perfect example of the American dream.

"Now I wake up at night and try to remember back to see if I ever did anything that would make them investigate me," he says. (*Macon Telegraph and News* via Sam Martinez)

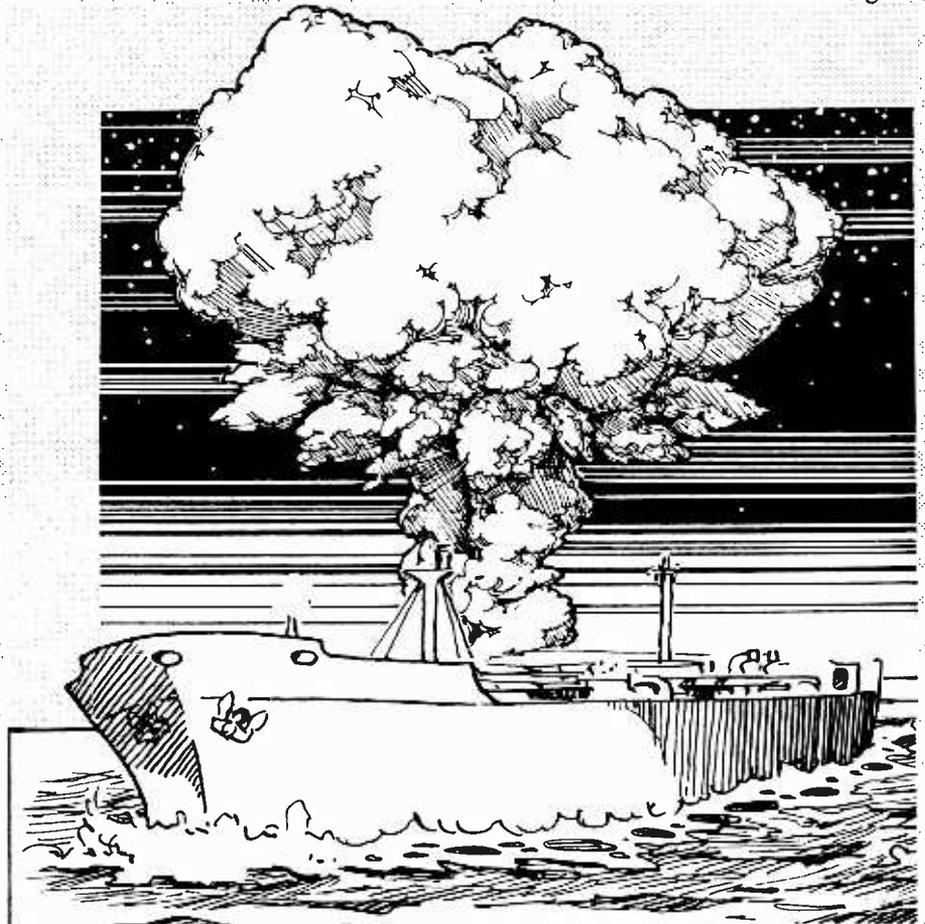
Running Off an Empress

The Empress II, a Navy-owned,

barge-mounted antenna designed to simulate the electromagnetic field that would be generated by a nuclear blast, is on the move again.

Originally anchored in the Chesapeake Bay, it was sent packing by Congress. Headed for North Carolina, it was hounded by environmentalists. Now it seems as if the barge will begin testing in the Gulf of Mexico.

The Empress II system generates an electromagnetic pulse (EMP) that lasts just ten billionths of a second, but measures 50,000 volts per meter at 100 meters from the barge in all directions. The EMP is fired at passing ships to test the effectiveness of measures designed



The barge nobody wants around.

COMMUNICATIONS

to protect communications and other electronic systems in time of nuclear war.

The new test range for Empress II is about 20 miles off the coast of Alabama and Mississippi in the Gulf of Mexico. The Navy is reportedly planning 60 days of Empress II tests in the gulf annually between October and April. (The *Sacramento Bee* via Torkel Clark)

Radio Rustlers Target Towers

Radio rustlers are ransacking rural communications base stations, stealing the equipment and selling it on Mexico's black market.

According to Texas lawmen, more than 30 two-way communica-

tions base stations or repeaters have been stolen from transmission towers in South Texas and from locations as far away as Houston and the Midland-Odessa area.

"We believe that whoever is doing this has to have some kind of technical expertise," said Texas Ranger Joe Peters. "It's not like they just walk in and start cutting cables. In a Baxar County theft, they went in and surgically removed a controller for an 800-megahertz trunk system," Peters said. (*Express-News* via Al Burzynski)

Was It Real or Was It Memorex?

The Air Line Pilots Association has backed off its threat to turn off

cockpit voice recorders after government assurances that a law will be sought to prevent the release of the audiotapes.

"No pilot wants to hear broadcast to the public the agonized screams of his colleagues the moment before they die in a fiery crash," pilots union President Henry A. Duffy told a news conference.

Both pilots and federal safety officials were angered by last month's court-ordered release of tapes of a Delta Air Lines crew joking around just before their jet crashed on take-off in Dallas last August. The tape ends with a scream and the sound of the plane breaking apart.

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And there's more! Monthly columns by: Joe Carr, K4IPV on the ins and outs of repairing and troubleshooting your radio; Bill Orr, W6SAI on antennas and antenna technology plus a lot more; noted HF/VHF operator and OX'er Joe Reisert, W1JR's world of VHF and UHF technology, and noted government propagation expert Garth Stonehocker, KØRYW on propagation.

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Tune in to

The Presidential Patrol

by Everett Slosman

It's business as usual at the Portsmouth Harbor Coast Guard Station -- until the President comes home to Kennebunkport.



Search and Rescue vessels testify to the primary responsibility of the Portsmouth Coast Guard - patrolling a 40-mile shore-line.



Sea Ledge, the First Family's summer home, is located on a small strip of land jutting into the Atlantic known as Walker Point.

Life at Portsmouth Harbor Coast Guard Station, New Hampshire, is fairly routine. Like most Search and Rescue (SAR) posts, the personnel go about the business of protecting boaters, enforcing maritime law, and running normal patrols without very much fanfare.

The station's responsibility for search and rescue covers the waters just north of the Merrimack River at Newburyport, Massachusetts, to Cape Porpoise, which is slightly above Kennebunkport, Maine. Their mission includes a 40 mile off-shore patrol area. From one day to the next duty is predictable and routine.

Occasionally, there are pleasure boats in need of a tow, rescue equipment requires maintenance and upkeep, and training drills must be scheduled. In short, Portsmouth Harbor is the typical Coast Guard station on the New England shoreline.

That is, until Air Force One touches down at Pease Air Force Base in Newington, New Hampshire, with President and Mrs. Bush on their way to Sea Ledge. Then it's "All Hands" as the Presidential Security Detachment (PSD) becomes active, guarding the First Family's Kennebunkport summer home.

President Bush usually arrives in Kennebunkport by helicopter, a 20-minute ride from the flightline. There is a helipad installed on Sea Ledge that is capable of handling the chopper in almost all kinds of seacoast weather.

The Sea Ledge compound is perched on a small strip of land jutting into the Atlantic known as Walker Point. George Herbert Walker, the President's uncle, built the home in 1902 as a family retreat. Once a community showplace, it now creates security problems for the Secret Service.

Three sides of Walker Point are open to the Atlantic while Ocean Road runs by the entrance. This is a narrow, winding road dotted with large estates and upscale resort hotels. It is a route heavily traveled by everything from sightseeing trolleys to campers.

During the summer, fitness buffs in running shorts increase the confusion, trotting along the sides of the road and not paying any attention to people trying to find a parking place near Walker Point.

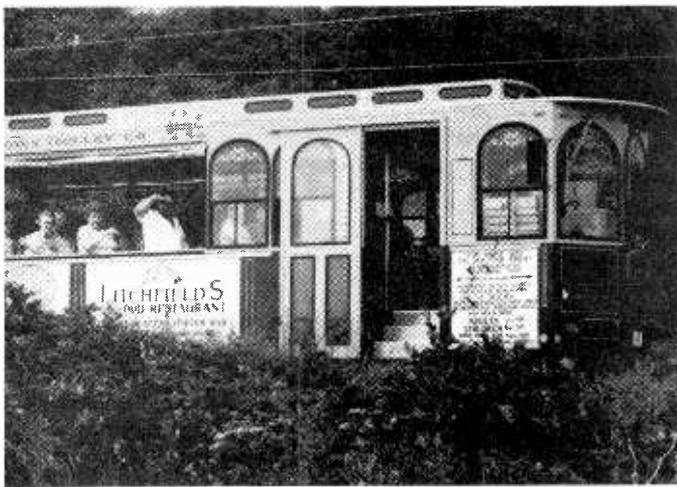
Bush family activities add to the problems. It's tennis on a private court quite visible from the road, swimming in Sandy Cove in front of the compound, and roaring away in a high-revving cigarette boat for an ocean run or a day of fishing.

Security is further compromised by the cove itself: a fertile lobster bed fished for generations by local lobstermen. With these crustaceans bringing \$2.00 a pound and up pierside, locals are filling every available spot with their traps.

Landward security is better, due in part, to a Navy construction detachment reworking the lane leading from the road to the compound. Large rocks, strategically placed, impede traffic, yet allow service trucks and the inevitable stretch limos to enter.

The entrance is controlled by a guard house where people in casual clothing have the rather uncasual habit of saluting others similarly dressed.

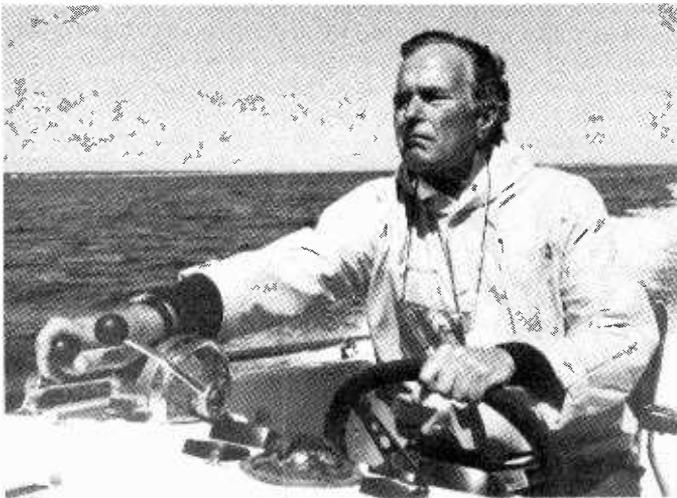
Signs posted along the beach mark the off-limits lines. Security



The confusion wrought by sightseeing trolleys, physical fitness buffs, Bush watchers, and lobstermen requires close cooperation between local, state and federal law enforcement agencies.



Protecting the seaward side is Lt. Commander Donald Thompson's responsibility as head of both the Portsmouth Harbor's Search and Rescue and the Presidential Security Detachment.



Bush family activities add to the problem of security, as they head off in a high-speed boat for an ocean run or a day of fishing.

cameras scan the shoreline while people with portable communication units randomly stroll the compound occasionally talking into their units.

Protecting the seaward side is PSD's responsibility. Lt. Commander Donald B. Thompson runs both the PSD and Portsmouth Harbor SAR. He came to the station in May 1989 after a stint as an intelligence officer in Washington.

PSD enforces a 500 yard "waterborne" security zone around Walker Point, marked by buoys. It is always there, but only in effect when the President is at Sea Ledge. Sailors hear a Notice to Mariners on channel 22A when the zone is activated.

The detachment's coxswains, engineers, and crewmen man standard 41 foot utility boats specifically designed for SAR and law enforcement missions; stable fair weather platforms equipped for towing, first aid, and firefighting.

Before the presidential party arrives, it's a different story. Coast Guard boats, including 19-foot rubber-hulled whalers, move along the demarcation line. A 110-foot Island Class patrol boat, such as the *Wrangell*, provides additional support. It's here the officer-in-charge of the PSD shift maintains the security zone command post.

The patrol boats shift in and out during a PSD mission. Therefore, during a two or three day presidential vacation, several patrol craft may have a piece of the action. Home ports for these vessels vary, but most are under the ultimate command of the First Coast Guard District in Boston, Massachusetts.

There is no interference with boaters outside the zone and vessels are free to continue sailing around Cape Arundel as long as they avoid the zone.

Lobstermen, with permission to work their traps while the President is at Walker Point, are on an access list. They check in with a patrol boat when they arrive in the area.

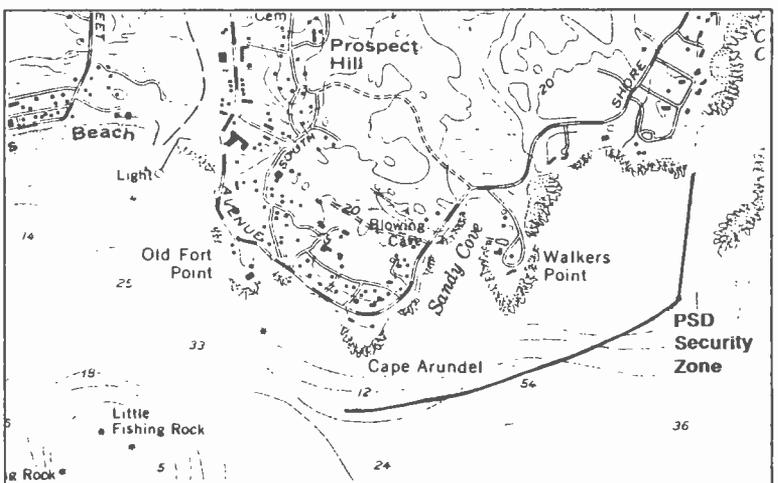
Coast Guardsmen conduct a security sweep on-board the lobster boats making sure each person is cleared by the Secret Service and not being coerced. A check is conducted for explosives and other items that could be a hazard to the President or his family.

Then the crew is free to enter the zone, work their traps, and come back out.

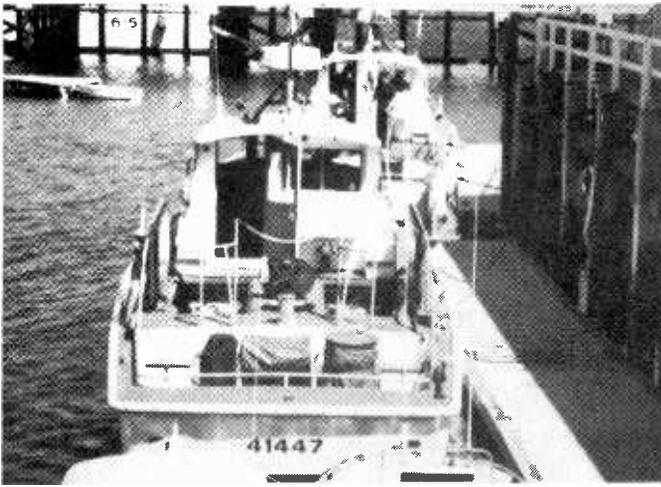
When not engaged in activities at Kennebunkport, the unit pulls a normal two-days-on two-off search and rescue shift at Portsmouth Harbor. The difference between the unit and other personnel is the duty roster designation that keeps them available for a PSD mission.

PSD is made up of personnel from several other duty stations who have been posted to Portsmouth. This puts a viable unit in place at a single, convenient location. Many current unit members also patrolled Walker Point when Bush was Vice-President.

Members of the PSD receive no special designation. The detachment has no special identifier. However, career coast guardsmen consider



PSD enforces a 500 yard security zone that's marked with buoys, but is only activated by a Notice to Mariners when the President is at Sea Ledge.



Two of the 41 foot Search and Rescue craft assigned to the Presidential Security Detachment.



Before the presidential party arrives, Coast Guard boats, including 19 foot rubber hulled Boston whalers (here being given preventive maintenance by Machinist Technician David Taylor), patrol the demarcation line.



Boatswain's Mates John Knaub and Christopher Cooney prepare one of the PSD boats for duty.

having PSD duty on one's service record a distinct advantage.

Unit members are trained in protection procedures, law enforcement, search and rescue, and maritime rules and regulations -- skills applicable to most assignments.

Though the Bush family tries to minimize their impact on this small New England resort town, the President's presence obviously does have an effect. It's hard to ignore the Secret Service "suits" wandering downtown or coast guardsmen with squawking radios eating supper in local restaurants.

And a Coast Guard guidon flapping from the mast of a vessel zipping around Cape Arundel or up the Kennebunk River always draws attention.

The community's police force found itself out of overtime money and asked the federal government to help out. When the President is in town, there's an increase in visitors and traffic, and the small force is on alert. Even the local fire department is on their toes.

While they have only a peripheral protection role, the state police in New Hampshire and Maine are very much aware when the Bush family comes back to Walker Point.

Meanwhile, dedicated "Bush watchers" crowd Ocean Road turning it to gridlock as they vie for prime viewing points. CBs crackle spreading the word that "George is back in town." Spectators line the rocks hoping to catch a glimpse of him or Barbara and a grandchild.

Nearby marinas are flooded by transients occupying slips and moorings usually filled by long-time summer residents. The ship-to-marina activity increases in geometric proportion to the number of extra visitors.

Even the famous local fish takeout, The Clam Shack, is overwhelmed by tourists and news reporters elbowing their way up to the counter for a pint of the Bush family's favorite fried clams.

One apocryphal story involves a local resident who noticed Secret Service men ordering fried clam buckets. "There must be a convention of deaf people in town. Look at all those people with hearing aids."

Though Lt. Commander Thompson would not reveal the PSD frequencies for security reasons, the marine VHF channels become active. Ship-to-ship and ship-to-shore picks up dramatically. There are also scrambled transmissions one may assume come from the PSD.

On marine channels reserved for the U.S. government and those dedicated to port activities, a patient listener may well be rewarded by nabbing a "hot" transmission.

Portsmouth Harbor Station is in the Group Portland chain of command and "secure" traffic passes through the Portland transmitter.

Look to the police and fire bands for activity, particularly when one of the presidential party leaves the compound. Both military and civilian aero frequencies deserve attention when the President is flying or a VIP is coming for a visit. Don't forget the cellular channels are also active during these times though the majority of the calls will not have any Bush-watching relevance.

Creative scanning does catch community activities that range from a plumbing contractor leaving Sea Ledge after repairing a faucet to the driver of a sightseeing trolley reporting traffic congestion on Ocean Road.

Network reporters and their broadcast gear are everywhere when the Bushes are in town. Selective monitoring on the mobile news bands can produce reports seldom presented on the six-o'clock news.

Keep in mind also that Sea Ledge is a year-round home, so a fall or winter vacation trip to Kennebunkport may mean good listening without fighting the tourists or paying outrageous prices for motel accommodations.

Keep a small bag packed; so when the President announces a vacation, you can head for Kennebunkport. When you arrive, pick up a thermos of New England fish chowder and a book on "How To Speak Yankee." Select a spot on the rocks across from Walker Point. Then fire up the scanners and, using the frequencies on page 11, have a "wicked good time" listening to the Presidential Security Detachment on patrol.



All photos by the author except presidential photos courtesy of the White House.

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Bearcat® 760XLT-T

List price \$499.95/CE price \$244.95/SPECIAL 12-Band, 100 Channel • Crystalless • AC/DC Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Bearcat 760XLT has 100 programmable channels organized as five channel banks for easy use, and 12 bands of coverage including the 800 MHz band. The Bearcat 760XLT mounts neatly under the dash and connects directly to fuse block or battery. The unit also has an AC adaptor, flip down stand and telescopic antenna for desk top use. 6-5/16" W x 1 1/4" H x 7 3/4" D. Model BC 590XLT-T is a similar version without the 800 MHz band for only \$194.95. Order your scanner from CEI today.

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MP5510XL-T Regency 60 Ch. marine transceiver \$159.95
MP6000XL-T Regency 60 Ch. marine transceiver \$209.95
MP2000XL-T Regency handheld marine trans. \$189.95

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List price \$799.95/CE price \$299.95/SPECIAL 16 Channel • 25 Watt Transceiver • Priority The Regency RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A 60 Watt VHF 150-162 MHz. version called the **RH606B-T** is available for \$429.95. A UHF 15 watt, 16 channel version of this radio called the **RU156B-T** is also available and covers 450-482 MHz. but the cost is \$454.95.

★★★ Uniden CB Radios ★★★

The Uniden line of Citizens Band Radio transceivers is styled to compliment other mobile audio equipment. Uniden CB radios are so reliable that they have a two year limited warranty. From the feature packed PRO 810E to the 310E handheld, there is no better Citizens Band radio on the market today.

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PRO330E-T Uniden 40 Ch. Remote mount CB \$104.95
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Bearcat® 200XLT-T2

List price \$509.95/CE price \$239.95/SPECIAL 12-Band, 200 Channel • 800 MHz. Handheld Search • Limit • Hold • Priority • Lockout Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Bearcat 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the **BC 100XLT-T** for only \$189.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-T2

List price \$549.95/CE price \$239.95/SPECIAL 12-Band, 40 Channel • No-crystal scanner Priority control • Search/Scan • AC/DC Bands: 29-54, 118-174, 406-512, 806-912 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz. The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9 1/4" x 4 1/2" x 1 1/2". If you do not need the 800 MHz. band, a similar model called the **BC 210XLT-T** is available for \$178.95.

Bearcat® 145XL-T

List price \$189.95/CE price \$94.95/SPECIAL 10-Band, 16 Channel • No-crystal scanner Priority control • Weather search • AC/DC Bands: 29-54, 136-174, 406-512 MHz. The Bearcat 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the **BC560XL-T** featuring priority, weather search, channel lockout and more is available for \$94.95. CEI's package price includes mobile mounting bracket and mobile power cord.

President® HR2510-T

List price \$499.95/CE price \$239.95/SPECIAL 10 Meter Mobile Transceiver • Digital VFO Full Band Coverage • All-Mode Operation Backlit liquid crystal display • Auto Squelch RIT • Preprogrammed 10 KHz. Channels Frequency Coverage: 28,0000 MHz. to 29,6999 MHz

The President HR2510 Mobile 10 Meter Transceiver made by Uniden, has everything you need for amateur radio communications. Up to 25 Watt PEP USB/LSB and 25 Watt CW mode. Noise Blanker. PA mode. Digital VFO. Built-in S/R/MOD/SWR meter. Channel switch on the microphone, and much more! The HR2510 lets you operate AM, FM, USB, LSB or CW. The digitally synthesized frequency control gives you maximum stability and you may choose either pre-programmed 10 KHz. channel steps, or use the built-in VFO for steps down to 100 Hz. There's also RIT (Receiver Incremental Tuning) to give you perfectly tuned signals. With receive scanning, you can scan 50 channels in any one of four band segments to find out where the action is. Order your HR2510 from CEI today.

NEW! President® HR2600-T

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BC760XLT
800 MHz.
mobile scanner
SPECIAL!

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BC70XL-T Bearcat 20 channel scanner \$159.95
BC175XL-T Bearcat 16 channel scanner \$156.95
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R1099-T Regency 45 channel scanner \$109.95
TS2-T Regency 75 channel scanner \$269.95
UC102-T Regency VHF 2 ch. 1 Watt transceiver \$114.95
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MFF-T Midwest Federal Frequency directory \$14.95
A60-T Magnet mount mobile scanner antenna \$35.95
A70-T Base station scanner antenna \$35.95
A1300-T 25 MHz.-1.3 GHz. Discone antenna \$109.95
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Monitor These Marine Frequencies

Distress and Calling Frequencies

2182 kHz (usually USB In New England) MF Calling Channel
 5696 kHz (USB) MF
 CB Ch 9 Is monitored by USCG as a courtesy to boaters. However, a watch is not necessarily maintained. If the traffic becomes too raucous, they stop monitoring.
 156.800 kHz VHF-FM Channel 16 Marine Calling Frequency. This is where you'll hear the routine security zone traffic initiated.
 157.100 kHz VHF-FM Channel 22A Alternate Marine Calling and Working Frequency. Most of the coast guard-to-ship traffic will switch to this channel.

Official Distress and Emergency Codes and Protocols

Grave Danger: "Mayday, Mayday, Mayday" followed by "This is (name of ship)." Phrase is repeated three times. Call sign is given; then the position and the distance from a known mark followed by the type of emergency. This type of message could pull the patrol boat off-station or bring out one of the 44-foot rescue boats, designed to take a 360 degree roll and keep going.

Urgent Call for Immediate Aid: "Pan, Pan, Pan" followed by "All Stations" repeated three times. "This is the (name of ship)" followed by position and the reason for requesting immediate aid. Depending on the situation, rescue craft could be dispatched from Portsmouth Harbor or from Walker Point.

Urgent messages affecting ships in a given area are prefaced by "Securite" (pronounced say-cure-it-ahy). These are usually originated at shore installations. This is the protocol that precedes a Notice to Mariners on the Presidential Security Zone. It originates from Group Portland on Channel 16 and 22A.

Source -- U.S. Coast Guard

Communities near Pease AFB

Frequency	Call Sign	Unit
37.180	KCA797	Portsmouth Police
44.820		NH State Police
44.940		NH State Police
45.300		NH State Police
45.600	KZI231	Kittery Government
	KZI232	Kittery Government
	WRE496	Kittery Government
	KAU748	Kittery Government
	KW7254	Kittery Government
154.145	KCB207	Portsmouth Fire
154.190	"33"	Newington Fire
	KDG373	Kittery Fire
	KBK558	Kittery Fire
154.280	KCC991	Newington Fire
	KDG372	Kittery Fire
	KBK558	Kittery Fire
154.740	KCA7973	Portsmouth Police
154.770	KNGG366	Kittery Police
154.815	"440-459"	Rockingham County Sheriff
155.115	KXA542	Kittery Government
155.370		Stratham Police
155.415	"440-459"	Rockingham County Sheriff
155.445	WBY516	Maine State Police
	WAM955	Maine State Police
155.475	KYI919	NH State Police
	KQR491	NH State Police
156.090	"1131"	NH State Police

Sources -- Official New Hampshire Scanner Guide, Police Call Radio Guide

Pease Air Force Base

Tower	128.4000
Security Police	148.1000
Medical Network	150.3500
Security Police Tactical	163.0750
Security Police	163.4875
Law Enforcement	163.5875
Police	164.9625
Disaster Preparedness	165.0375
Security	173.5375
Fire and Crash	173.5625
	173.5875

Source -- Police Call Radio Guide

Current Active Marine VHF Channels

Channel	Xmit Freq	Rvr Freq	Notes
6	156.300	156.300	Intership safety and S&R communications only. Possibly used by the PSD.
9	156.450	156.450	Intership and ship-to-coast.
12	156.600	156.600	Port operations and ship-to-coast. Messages restricted to advisory and safety information at ports, locks, and waterways. Look for Group Portland transmissions during PSD deployments. Navigation: Ship's bridge to ship's bridge.
13	156.650	156.650	Same as channel 12.
14	156.700	156.700	Environment information, receive only. Includes WX and Notice to Mariners Distress, Safety, and Calling - Primary channel. After contact is made, vessels switch to 22A. Will include Notice to Mariners from PSD. Look for "Wrangell" and other Island Class Patrol Boats in the clear. Also, the cutter Reliant, now berthed at Portsmouth.
15		156.750	Communications with ships and shore installations run by state governments. Worth checking during PSD deployments.
16	156.800	156.800	Port Operations Ship-to-Coast Reserved for U.S. government use only. Check during PSD deployments. USCG communications after contact on channel 16. In the clear action.
17	156.850	156.850	Reserved for U.S. government use only. Ship-to-Coast, public use.
20	157.000	161.600	Same as channel 24.
21A	157.050	157.050	Same as channel 24. Primary.
22A	157.100	157.100	Same as channel 24.
23A	157.150	157.150	Same as channel 24. Primary.
24	157.200	157.200	Port operations. Same as channel 12.
25	157.250	161.850	Port operations. Same as channel 12.
26	157.300	161.900	Noncommercial intership and ship-to-coast.
27	157.350	161.950	Pleasure boat ship-to-ship and ship-to-shore only.
28	157.400	162.000	Digital Selective Calling (DSC). Not for general communications.
65A	156.275	156.275	Same as channel 69.
66A	156.325	156.325	Same as channel 68 intership only.
68	156.425	156.425	Same as channel 20.
69	156.475	156.475	Same as channel 20.
70	156.525	156.525	Pleasure boat ship-to-ship and ship-to-shore.
71	156.575	156.575	Reserved for U.S. government use only.
72	156.625	156.625	Reserved for U.S. government use only.
73	156.675	156.675	Reserved for U.S. government use only.
74	156.725	156.725	Same as channel 24.
78A	156.925	156.925	Same as channel 20.
81A	157.075	157.075	Pleasure boat ship-to-ship and ship-to-shore.
82A	157.125	157.125	Reserved for U.S. government use only.
83A	157.175	157.175	Reserved for U.S. government use only.
84	157.225	161.825	Same as channel 24.
85	157.275	161.875	Same as channel 24.
86	157.325	161.925	Same as channel 24.
87	157.375	161.975	Same as channel 24.

Source -- U.S. Coast Guard

Kennebunkport Frequencies

Frequency	Call Sign	Unit
33.700	KCB526	Kennebunkport Fire
	KCC825	Kennebunk Fire
	KFN716	Arundel Fire
33.760	KCC825	Kennebunk Fire
33.860	KCC825	Kennebunk Fire
33.880	KCC825	Kennebunk Fire
42.140	KF6900	Kennebunkport Police
153.800	KCG631	Kennebunkport Government
153.860	KBN446	Kennebunk Government
154.310	KCB526	Kennebunkport Fire
	KCC825	Kennebunk Fire
154.770	WAM972	Kennebunkport Police
	KDX385	Kennebunk Police
155.190	KZQ542	Kennebunkport Police
155.265	KNDG605	Kennebunkport Emergency Services
155.220	KNIW657	Kerr Ambulance Service
155.730	KDX385	Kennebunk Police

Sources -- Official New Hampshire Scanner Guide, Police Call Radio Guide



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NRD525 \$1179.00 + \$12 UPS



KENWOOD

The **KENWOOD R5000** is the new high performance receiver from the leader in communications technology. 150 kHz to 30 MHz. 100 memories. Keyboard entry. AM, FM, USB/LSB, CW, FSK, VHF 108-174 Opt VC20.

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The **KENWOOD R2000** 150 kHz to 30 MHz. 10 memories. AM, FM, SSB, CW, VHF 118-174 MHz opt VC10.

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FRG8800 offers functionality and operating convenience for the serious shortwave listener. 150 kHz to 29.999 MHz. Direct keyboard entry. Dual Clocks/Timers. Wide/Narrow Filter. 12 Memories. AM, SSB, CW, FM. VHF 118-174 MHz option \$119.95.

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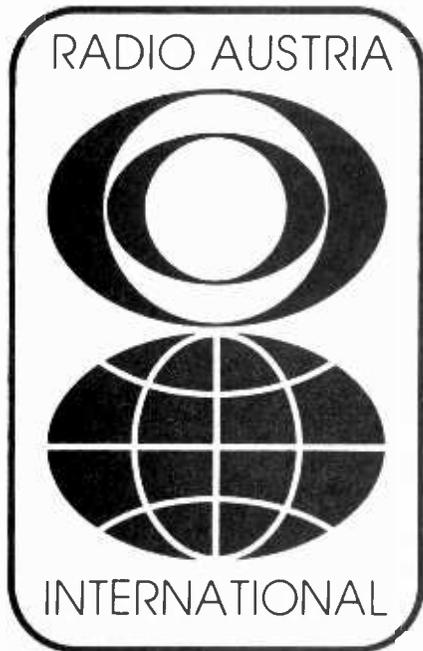
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: A BROADCASTER PROFILE

by William Pell

Catch the sign-on of Radio Austria International and you'll hear what someone once dubbed Austria's second national anthem -- the first few notes of Strauss's Blue Danube Waltz.

Austria -- once home to the Hapsburg monarchy and musical luminaries such as Strauss, Shubert, and Mozart, and now to famous festivals of music and art -- just recently joined the growing community of international broadcasters using time-shared transmitters to get a stronger signal to North American listeners. That's as good a reason as any to take a look at Radio Austria International.

Radio Austria International is the external service of Osterreichischer Rundfunk (ORF), a government funded radio-TV service which operates three radio networks and two TV program services in Austria. The ORF is a statutory organization to which Austrian law guarantees complete political and economic independence.

It may sound somewhat a contradiction, but ORF says that it operates on behalf of the federal government but no influence is brought upon the organization by that government. A 1974 Broadcasting Law and Additional Agreement between the two parties calls on the ORF to observe a "strict objectivity and plurality of opinion in its broadcasts."

The task of the ORF has always been to provide an objective picture of Austria and

a "broad spectrum of current information." Radio Austria International sees its primary goal as one of providing a complete and objective presentation of Austria as a neutral country committed to western style democracy. The external service also recognizes that it serves as a means for Austrians abroad to keep in touch with home.

ORF came into being in 1954, a year before Austria re-emerged as a fully independent state. Since the end of World War II, Austria had been occupied by the Allied powers until full independence was restored with the Austrian State Treaty signed in 1955.

Those 1954 broadcasts amounted only to a shortwave relay of the domestic Radio Vienna service, with the first official shortwave programs starting on February 15, 1955, in time to broadcast the signing of the Austrian State Treaty.

Actually, shortwave in Austria goes back to the 1920s when experimental broadcasts were aired in the 49 meter band prior to the opening of a small shortwave service. Austria had a 50 kilowatt transmitter ordered in 1938 but the outbreak of the war prevented it from being put into service.

Once ORF got going again, it used a 5 kW transmitter based in Upper Austria. Later on, transmitters were rented from the Austrian Postal Administration and a commercial radio-telegram company known, coincidentally, as "Radio Austria."

By 1960 a home service relay was being broadcast from a low-power transmitter at Aldrans, in Tirol province. The site in use today, Moosbrunn, was purchased in 1959; and the facility has been developed and improved in the years following. The first 100 kW transmitters went on the air



Radio Austria's English-language section from left: Patricia Maadi, Murray Hall, David Ward, Eugene Hartzell, Ann Dubsy, David Hermges, and Elizabeth Blane.

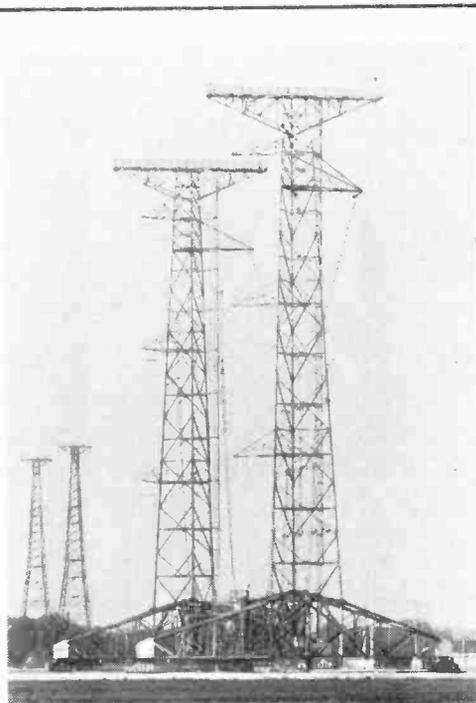
here in 1966 and a 500 kilowatt added a couple of years ago.

Radio Austria International's programming emphasizes a straight-forward, if sometimes dry, presentation of information about the arts, the economy, history, science, and spots. Not surprisingly, music plays a somewhat larger part in the programming than might be the case in broadcasts from other countries, since listeners expect to hear a bit of Strauss and Mozart now and again.

The external service pumps out around 83 hours of programming a week in English, German, French, and Spanish; and is also responsible for providing English and French language news summaries on the domestic networks.

The English section has four full-time employees and a number of freelancers who provide brief features. Only announcers and presenters who have English as a native language are used (to make them as easily understandable as possible).

David Hermges, head of the English service, was a "charter member" of the station, having started with Radio Austria International when it first went on short-wave. He provided the radio commentary of the signing of the Austrian State Treaty back in 1955. A native of England, he came to Austria with the British army in



The curtain antennas at the Transmitting Centre at Moosbrunn.

1946, returned to teach in 1953, and then joined the radio. He hosts the Sunday *Panorama* program and also serves as a correspondent for the BBC and other international broadcasters.

Radio Austria International's other English language voices belong to Eugene Hertzell, Elizabeth Blaine, and David



The RAI office and studios project like two afterthoughts from the ORF Centre complex in Vienna.

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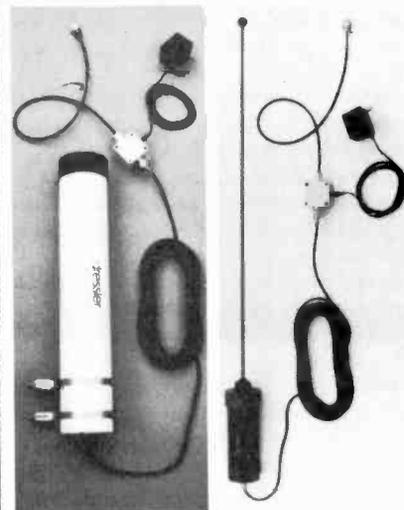
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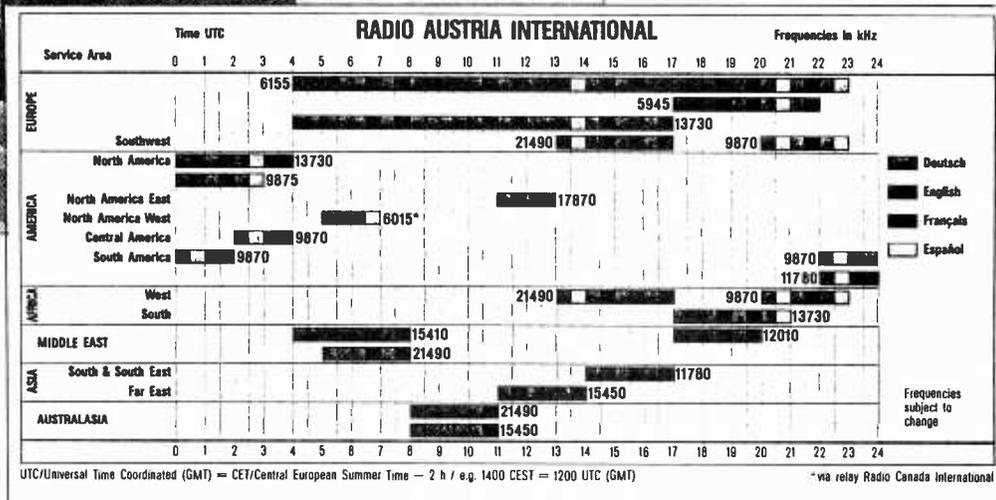
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A listener-responsive station, RAI is quick to respond with colorful schedule brochures and QSL cards.



Ward. Hartzell, a Cincinnati native, began as a freelancer in 1966 and moved to full-time in 1974. He has studied music and is a recognized composer with over 60 works to his credit.

Elizabeth Blane was born in Vienna but raised in the United States. She returned to Austria on a vacation and decided to stay but did not hook up with the station until much later, in 1979, after a 15 year marriage ended. David Ward joined the team in 1979. He is English and has worked for the *Daily Telegraph* and BBC in both radio and TV.

The four member staff produces *Report from Austria*, the main daily program in the English service, in three editions each day. It is aired daily at 0130, 0530, 0730, 1330, 1630, and 1930 to various parts of the world, also daily except Sundays at 1030 and daily except Saturday and Sunday at 1130 and 1430. The program is also carried on the local FM Blue Danube Network.

The most recent program schedule is contradictory on some of the above times, listing one set of times in the text but on the frequency chart it shows the same program as one hour later. Although not specified, this may be due to daylight time in North America, i.e. the normal 0530 English broadcast is shown at 0630 etc.

Austrian Coffeetable is a mostly music program (but also with other features)

which airs weekly on Saturdays at 1130 and 1430. *Austrian Shortwave Panorama* has been on the air since 1975 and deals with communications news and DX listening. It's broadcast on Sundays at 1030, 1130, and 1430.

The English language service gets about 1,000 letters a week, although that number is likely being surpassed now thanks to a larger audience the RCI relay has undoubtedly created. This relay uses the 250 kW Radio Canada International transmitter at Sackville, currently between 0500 and 0700 on 6015 -- (RCI gets reciprocal treatment via the Moosbrunn transmitters).

The Moosbrunn transmitting plant has two 500/300 kW transmitters and four 100 kW units. The antenna system includes a tunable multi-band curtain consisting of two curtain antenna "walls" -- one for 6, 7, and 9 MHz, the other covering 11, 13, 15, 17, and 21 MHz bands. The entire antenna can be rotated a full 360 degrees (that takes about eight minutes to accomplish) and is controlled from the transmitter building.

Other antenna types include a flex directional five-band curtain antenna aimed east for Asia and west for America. Each beam can be electronically slewed by as much as plus or minus 30 degrees. A third type in use is an omnidirectional quadrant, covering 5 to 9 MHz, used for the European service.

Back in Vienna the external service occupies a part of the huge steel and glass building complex in the Kunigberg area. There are five studios, a master control area, two control rooms, two "continuity suites," two recording studios, and a maintenance room.

The headquarters building also houses the ORF's monitoring service which keeps tabs on the technical quality of ORF's output. Besides that, this part of the ORF technical department has agreements to provide regular monitoring reports on some 45 other international broadcasters, attempts to identify interference sources, and develops band occupancy charts.

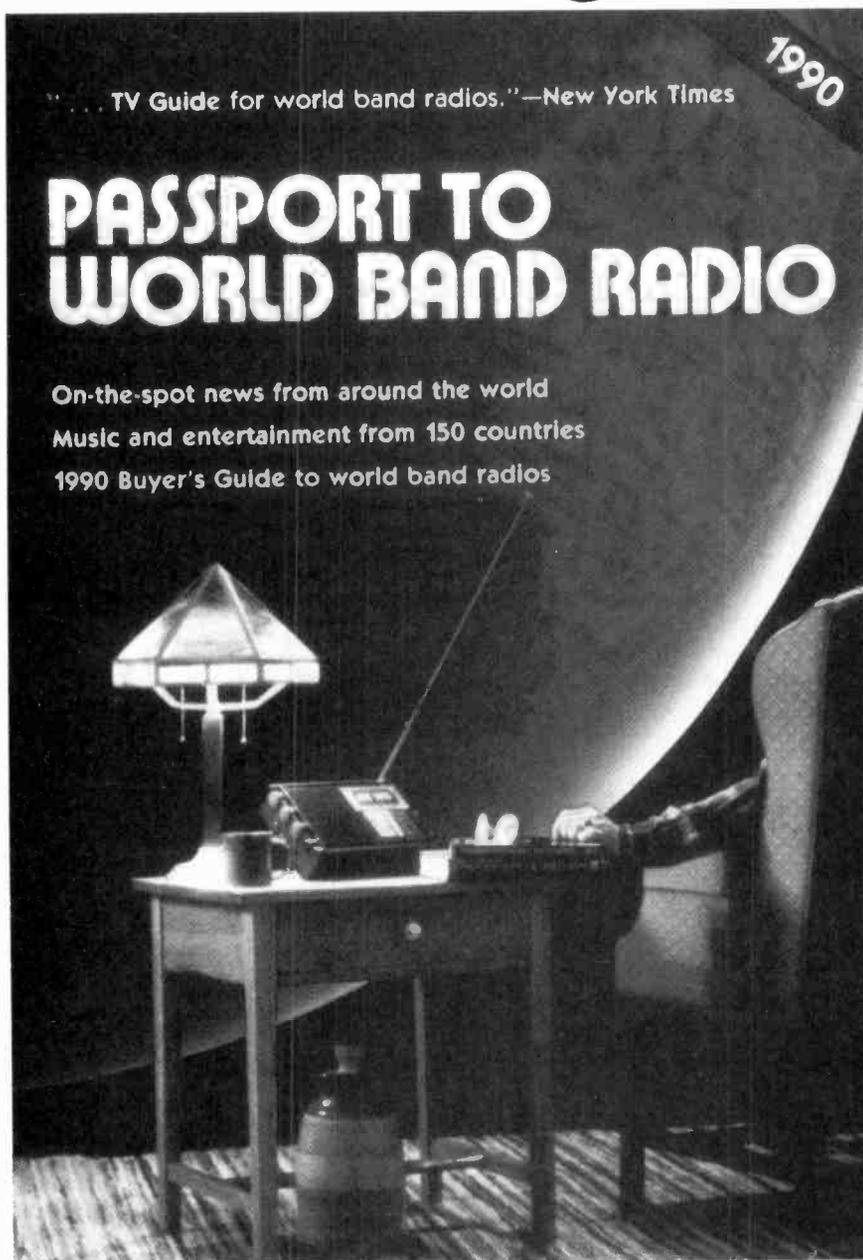
On a friendliness scale of 0 to 10, Radio Austria International must rank as at least a 9. Reception reports are very welcome and are confirmed with a wide and ever-changing variety of cards. Well-designed report forms are also available for the listener who wishes to provide regular reports on signal strength.

Program comments and other input are much welcomed, too. A regular program guide and frequency schedule makes generous use of color coding so that times, frequencies, and language segments are easily identifiable. Correspondence should be sent to Radio Austria International, 1136 Vienna, Austria.



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Beckoning Beacons

by Joe Woodlock

Summertime is not the best time for low frequency DXing. Conditions are awful -- and that's an understatement. But conditions do improve. They always do. And that time is upon us now.

In September, conditions begin to improve on some bands. But for the more fragile longwave signals, October is the real beginning of a new season; the time when conditions become noticeably better. (I'm talking, of course, about the northern hemisphere. In the southern hemisphere, the situation is reversed; winter is over and longwave DX conditions are deteriorating. We are not yet at our peak, and they are not yet at their low point.) As a result, October and November offer an excellent opportunity for some exotic beacon DXing.

Exotic Beacons of the South Sea

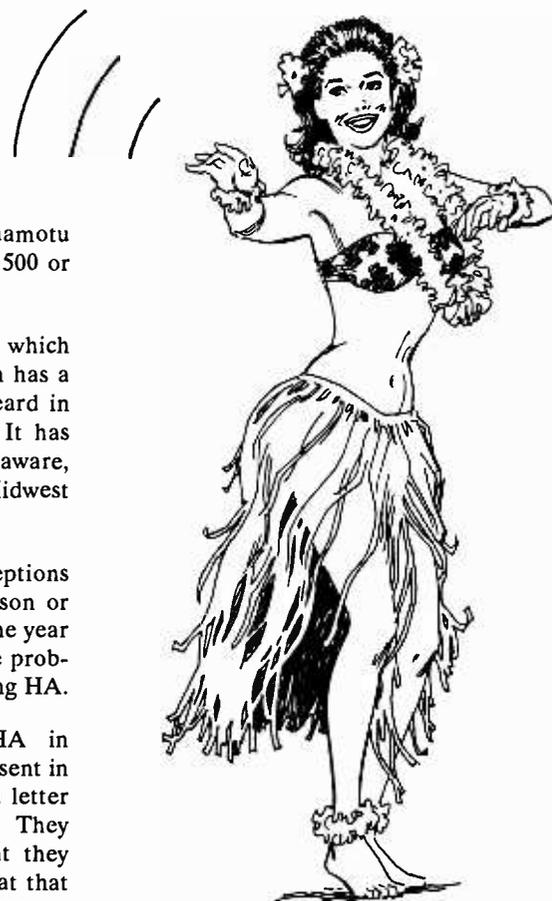
Down in French Polynesia, in the south Pacific, there is a place known as Hao Atoll.

It is near Tuamotu Island in the Tuamotu Archipelago. This locates it about 500 or 600 miles east of Tahiti.

Hao Atoll has a beacon, HA, which transmits on 367 kHz. This beacon has a power of 5000 watts and can be heard in many parts of the United States. It has been reported on the east coast (Delaware, for instance) and in the upper Midwest (Ohio and Illinois for two places).

Most of these long range receptions have occurred during this early season or the reverse period in the spring of the year here. October and November have probably been the best months for hearing HA.

One Chicago DXer heard HA in October a couple of years ago. He sent in for a verification (using a prepared letter that the station had only to fill in). They sent a letter in return, noting that they were only operating on 2500 watts at that time. If the signal could reach Chicago with 2500 watts, 5000 watts should reach where you live.



The next exotic beacon is down in that same area, just several hundred miles to the east. There is a beacon operating on 280 kHz using the ID of IPA. This stands for Isla de Pascua. The more familiar name is Easter Island.

The beacon has a power of 3000 watts. But it will take more than the power to catch this beacon. You also have to be lucky. This beacon does not operate continuously; only on request. This means two kinds of operation. The beacon is turned on to coincide with normally scheduled flights to Easter Island. Or the beacon is turned on for special flights, if arrangements are made beforehand.

Most of the receptions of IPA reported in this country have been around 1000-1100 GMT. There was a scheduled flight to Easter Island that arrived around that time. You might check with a travel agent to find out current arrival time for this flight.

Don't feel that you *must* listen just at that time, however. My own reception of IPA occurred apparently on one of those special flights. I heard it at 0634 in early December a couple of years ago. This is

Morse Table

Virtually all beacons use Morse code to identify themselves. Fortunately, their speed is often slow and easy to copy. This chart should help.

Letters

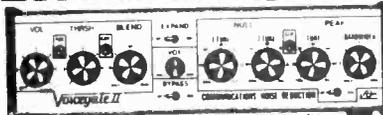
A di-dah
B dah-di-di-dit
C dah-di-dah-dit
D dah-di-dit
E dit
F di-di-dah-dit
G dah-dah-dit
H di-di-di-dit
I di-dit
J di-dah-dah-dah
K dah-di-dah
L di-dah-di-dit
M dah-dah
N dah-dit
O dah-dah-dah
P di-dah-dah-dit
Q dah-dah-di-dah
R di-dah-dit
S di-di-dit

T dah
U di-di-dah
V di-di-di-dah
W di-dah-dah
X dah-di-di-dah
Y dah-di-dah-dah
Z dah-dah-di-dit

Numbers

1 di-dah-dah-dah-dah
2 di-di-dah-dah-dah
3 di-di-di-dah-dah
4 di-di-di-di-dah
5 di-di-di-di-dit
6 dah-di-di-di-dit
7 dah-dah-di-di-dit
8 dah-dah-dah-di-dit
9 dah-dah-dah-dah-dit
0 dah-dah-dah-dah-dah

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one of those frequencies that you check in on whenever you are dialing in the area. If you keep checking like that, one day you may get "lucky."

There is a little competition for IPA these days. MID (Merida, Mexico) returned to 280 kHz after being off the air for a couple of years. It was thought that this beacon had been decommissioned, but it reappeared a few months ago. This will make IPA more difficult, but also more rewarding if you are successful.

Signals from South America

African beacons seem to be beyond the range of North America. South American beacons are often difficult to catch, but some do get within our range. Argentina and mainland Chile are virtually never reported. Brazil is far from easy, but here are a couple that have been heard in the US: Santana STN/270 kHz and Tefe TFE/300 kHz. There are others reported now and then.

The northern part of South America is much more productive. Georgetown, Guyana, has a beacon, TIM, on 356 kHz. This has been heard fairly often along the east coast, but is rarely reported further inland. El Valor Peru (LOR/521) has been heard in the upper middle west, but, certainly, neither easily nor often. The same can be said for Salinas, Ecuador (SLS/415).

Colombia and Venezuela are considerably easier to log. This doesn't mean you automatically hear them, but you will have a pretty good chance to log the following beacons when conditions are just right.

Keep listening. Keep working the dial. Longwave DXing is not the easiest thing to do. But with targets like the ones mentioned above, it can be the most rewarding.



South American Targets	
Ipiales, Colombia	SLI/244
Maiquetta, Venezuela	MIQ/292
Valledupar, Colombia	VUP/325
Higuerote, Venezuela	HOT/353
Bucaramanga, Colombia	BGA/400
Monteria, Colombia	MTR/260
Riohacha, Colombia	RHC/295
Turbo, Colombia	TUR/352
San Andres Is., Colombia	SPP/387



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Allan Harry Weiner is just the sort of person George Bush warned you about.

He's not merely a card-carrying member of the American Civil Liberties Union and therefore part of that class of people singled out by Bush during the 1988 campaign as would-be wreckers of all that is right and good and American. Weiner is a troublemaker.

Weiner is the mastermind of a scheme that made him and his pal Ivan Rothstein the first people ever accused of "obstructing government function" by the U.S. government. His story has been blared in 120-point type across the front page of the *New York Post*, that ultimate tabloid arbiter of all that is sleazy and foul.

ALAN WEINER

The Notorious Radio Pirate of Monticello, Maine

by Donald Kreis

The Federal Communications Commission (FCC) hates him, the U.S. Coast Guard doesn't know what to do about him, and *The Village Voice* loves him. The ACLU is defending him for free, all the way to the U.S. Supreme Court if necessary.

Allan Weiner has been running afoul of the law since he was 18 years old. Now 35, Weiner is still at large in Aroostook County, Maine.

Not to condescend to stereotyping or anything like that, but Weiner looks like a hippie. He sports long, straight, light-brown hair that reaches below his ears and threatens to fall into his eyes, which are covered by a pair of wire-rimmed spectacles. He would not be out of place at the Common Ground Fair, but he happens to be sitting in the living room of his father's garden apartment in

Yonkers, New York, with four lanes of Cross-Westchester Expressway whizzing away outside the window, explaining to a visitor how a back-to-the-lander from Monticello (north of Houlton, south of Presque Isle) could become America's notorious radio pirate.

Weiner is the chief perpetrator of something called Radio New York International, which has twice now sought to light up the airwaves of the East coast by broadcasting rock and roll music from off the coast of New York aboard a rusting, 160-foot former fishing (and drug-running) vessel known as the Sarah.

The first time, in July of 1987, the Coast Guard showed up after three days and arrested everyone on board. The second time, in October of 1988, the Coast Guard showed up after four days and fired a temporary restraining order across Sarah's bow. The restraining order has since become permanent, but Weiner has a date in August before the U.S. First Circuit Court of Appeals.

All of which has both everything -- and nothing -- to do with Allan Weiner's decision to migrate from suburban New York City to northern Maine in 1971. As an 18-year-old recent graduate of Lincoln High School in Yonkers, just north of The Bronx, Weiner was already an avowed radio techie with a record as a radio pirate.

While other kids were playing their Crosby, Stills, Nash and Young records, Weiner and 20 "neighborhood friends" were broadcasting them, without benefit of license from the FCC, from the basement of Weiner's parents' home, AM and FM, no less, in the name of peace and understanding," Weiner says. "And of course that was the height of the anti-war movement, so our radio stations were pretty political."

The local ham radio club just thought we were communists, literally," he continues. "And they put pressure on the federal authorities in New York." So, in August of 1971, at the ungodly hour of 8 a.m., the doorbell rang at the Weiner home.

Weiner was arrested, his broadcasting equipment confiscated, and at age 18 he ended up with a year's probation and a draft classification of 1-Y. "That," he says, "meant that they wouldn't take me unless there was nuclear war or something like that. That was the one good thing about being busted for free radio."

The minds of teenage radio pirates do not often wander to the potato barrens of Aroostook County. "When I was in high school," Weiner concedes, "I kind of thought: Oh Maine -- what's that? an island off the coast of Rhode Island or something?" But at age 18, Weiner had already amassed a healthy dose of what he considered a kind of urban alienation.

"I was just fed up with the, quote, rat race -- fed up with New York at the time. We had tried to put these radio stations on the air that were trying to help the public and talk about love and peace, and all we do is get arrested and thrown in jail and treated like a bunch of common thugs."

So when a friend told him about a place called Ricker College in Houlton, one of those pastoral and progressive liberal arts colleges that has since gone defunct, Weiner and his trusted friends J.P. and Michael headed north in a 1953 Plymouth, for The Country.

"We drive like six hours and we get to Kittery, Maine," Weiner remembers. "And we're looking at each other and go: Well, are we here yet? and I take out the map and I look at Houlton, Maine, and I said we're just about halfway. Oh no! . . . The most impressive part of the trip, and I'll never forget it, is when we got to Bangor. Of course, the Bangor to Houlton run really gets you back to nature because you don't see anything but trees. And all you see are signs that say 'Entering T2 R6' and I would see that, and here I am 18 years old, just out of high school, just out of being busted by the FCC, and I said: Ah, this looks like it's far enough away."

Herbert Hoover, then U.S. Secretary of Commerce, was among those pleading with Congress to do something in 1927. A new technology, radio, was becoming a national obsession; no one really had the authority to decide who could broadcast on what frequency and the country was becoming one giant theater with everyone yelling "Fire!" at once.

The lawmakers faced numerous options: like some governments, they could simply have taken over the national airwaves and banned private broadcasting. They could have allowed everyone who wanted to go on the air to do so, by requiring stations to share the relatively small number of frequencies available under the technology of the era.

Instead, Congress passed the Radio Act of 1927, which later became the Communications Act of 1934. The law established the Federal Communications Commission, which would assign individuals exclusive rights to broadcast on assigned frequencies -- but would grant those licenses based on "public

convenience, interest, or necessity."

Thus was born the legal principle that the airwaves belong to the people, and thus was a giant asterisk added to the First Amendment. Congress shall make no law abridging the freedom of speech -- but the FCC can tell some people they cannot go on the air. And it can impose some restrictions on those who do get the coveted license to go on the air.

So says the U.S. Supreme Court. In 1969 Justice Byron White wrote the court's unanimous opinion in a landmark case on the subject, *Red Lion v. FCC*. "When there are substantially more individuals who want to broadcast than there are frequencies to allocate, it is idle to posit an unbridgeable First Amendment right to broadcast comparable to the right of every individual to speak," White declared.

But White was writing in a different climate than the one that exists now. The *Red Lion* case affirmed the constitutionality of the FCC's infamous Fairness Doctrine, which required broadcasters to grant airtime to opposing viewpoints when presenting opinions on "controversial issues of public importance."

In 1986 the Reagan FCC abolished the Fairness Doctrine from its rules; twice President Reagan vetoed congressional attempts to make it law. In fact, the Reagan FCC embarked upon a wholesale relaxation of the requirements imposed on broadcasters.

License terms were lengthened, record-keeping requirements were abolished, limits on the number of stations any one company or individual could own were eased. So were restrictions on how quickly someone could resell a station after buying it, touching off a spectacular national bidding spree that sent the price of acquiring a station soaring.

Mark Fowler, Reagan's FCC chairman during much of this, justified the paradigm shift by stating that advances in broadcast technology had turned the old Herbert Hoover idea of the broadcast spectrum as a "scarce" resource into a myth.

So it was inevitable that sooner or later some wise guy (or gal) would step forward and ask: If the broadcast spectrum is no longer a scarce resource, how about letting the regular people in on the action? Civil liberties lawyer Jeremiah Gutman thinks his client, Allan Weiner, is just that guy.

Maine was kind to Weiner. He opened a natural food store in Houlton and reports he was treated "just like anyone else" even though he was a long-haired hippie in the era of law and order. He enrolled at Ricker College, and pressed his electronics expertise into service by building the school its own radio station and cable TV studio.

"And when those two things were built," he recalls, "we all got together and we decided to open up a communications department . . . it's like I created the department that I graduated from." Back in those days, the "liberal" in liberal arts was a loosely construed term.

And it was at Houlton that Weiner refined his idea of "free-form" radio. "We used to do a Sunday morning breakfast show," he remembers. "We would mike an entire area, we'd set up a big table, and we'd cook up breakfast. We'd have, like, four or five people there, and we'd all kind of chat about the week's events . . . it's fun. You can paint a lot of pictures."

By the time Ricker closed in 1978, Weiner had modulated from student to faculty, teaching broadcasting and broadcast engineering. But it was not his destiny to lose himself in the halls of academe, or indulge his love of radio by "pitching" for contributions on some noncommercial community station somewhere.

He may have peace and understanding in his head, but Weiner's feet are firmly planted on the soil of capitalism. So by late 1980, he had consummated his second Maine bargain: \$75,000 bought him WOZI-FM in Presque Isle.

Weiner took over WOZI the day after John Lennon was shot to death, which "kind of put a black mark on it," the radio pirate recalls. For two weeks WOZI was a rock and roll station that couldn't sell any ads because there were already three rock stations in the area.

Someone suggested switching to a country music format. "Country to me was just something that was played in a jukebox at a truckstop," Weiner says. "I didn't know the difference between something sung by Conway Twitty or Loretta Lynn or Alabama."

He does now. Weiner refused to join the Rotary Club, but he made WOZI a country station and struggled for three years before breaking even. He also became the only radio station in northern Maine to broadcast editorials. And he personally became host of "Uncle Fred's Just Plain Old Talk Show," which he says took up "everything from abortion to the schools to President Reagan destroying the country."

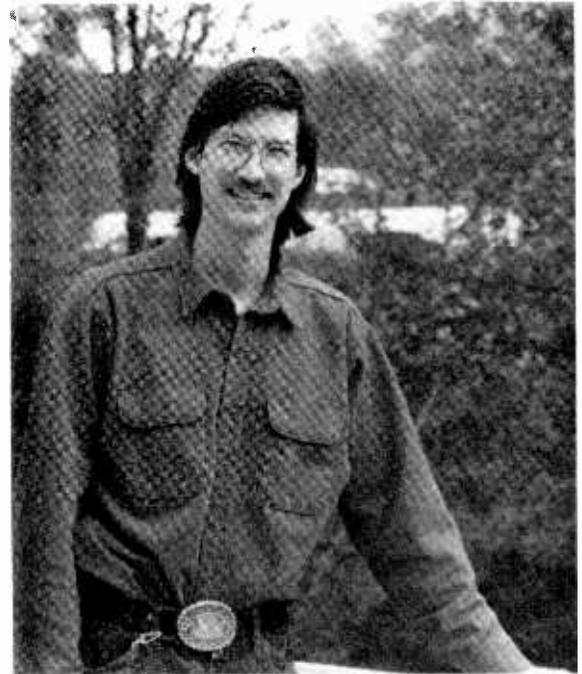
This was before the great bidding wars of the mid '80s, that drove the price of even small stations like WOZI into the many hundreds of thousands of dollars. In 1980 if you knew how to jury-rig a transmitter and a studio, you could plunk down a few thousand

and not worry about what your creditors would think of "free-form" radio.

"What I did with my radio station was, I had fun with it," Weiner recalls. "And I think that was a new concept to a lot of the more conservative types that run the radio and TV stations in northern Maine."

And Weiner might still be having fun at WOZI to this day if his restless mind hadn't gotten the better of him. Weiner got to thinking of Yonkers again, remembering that his hometown -- suffering the eclipse of Reagan-era urban decay -- still had no radio station of its own although it is one of the largest cities of New York State.

He got to thinking of what happened the last time he and his friends tried to do something about that. So, in 1984, Weiner



Allan Weiner; photo by Donald Kreis

crossed over the line, permanently, into the extra-legal world of radio piracy. Leaving WOZI in the hands of his employees, Weiner came back to Yonkers with a copy of the FCC's Rules and Regulations tucked under his arm and a diabolical smile on his face. He had found a loophole.

The FCC, it turns out, reserves the part of the radio spectrum just above the AM band for "auxiliary broadcast service," e.g. radio stations relaying their programming from in-town studios to their hilltop transmitters.

But Weiner noticed that nothing in the rules said you couldn't use those frequencies for regular broadcasting as well. It happened that auxiliary broadcast frequency 1622 kilohertz, receivable on most AM radios,

was available in Yonkers.

"Just out of curiosity," Weiner insists, "I threw in an application for this auxiliary station located at my friend J.P.'s house on Warburton Avenue." He never mentioned that the proposed 100-watt station would broadcast to the public rather than relay. Three months later, a license for KPF941 arrived in the mail. "I remember walking back from the post office, stunned," Weiner recalls.

He fired up noncommercial WPK941 in the name of "community awareness" and "peace and understanding" on the day after Ronald Reagan defeated Walter Mondale. After three weeks a telegram arrived from the FCC ordering the station off the air.

Weiner called up the telegram's author. "And I said: Where does it say in the rules I can't do this? And this is what he said, quote: I don't care what the rules say. We're telling you to get off the air. And I said: so what you're saying to me is, you're making up the rules along the way. And he really got mad."

**Not to be discouraged,
Weiner has big plans for
a worldwide shortwave
station at his farm in
Monticello.**

Weiner's lawyer advised pretending WPK941 was a relay station by setting up a phony receiving point somewhere -- somebody with a receiver and a tape recorder. That done, the station returned to the airwaves in March, 1985. "This time the FCC did not send a telegram," Weiner recalls. "They issued a nationwide news release stating that they were going to revoke all of my broadcast licenses. They went absolutely wild."

Maine's radio pirate did two things in response. He called his lawyer, who cut a deal with the FCC that allowed Weiner to sell WOZI at 75 percent of its assessed value rather than lose it outright. And Weiner started looking into buying a boat.

The scene cuts to July 1987. Thinking he had found another loophole, Weiner and friends were aboard the rusting, 160-foot former trawler, rechristened the Sarah, anchored some 3-1/2 miles off the south coast of New York's Long Island.

Having registered the boat with a foreign country (Honduras), and having anchored in international waters, Weiner figured he was beyond the long arm of the law -- just like Radio Caroline off the coast of England and

other floating pirate stations in European waters.

Cranking up the boat's diesel generators, the Weiner gang gave the world Radio New York International -- on the FM, AM, and shortwave band.

Weiner's tone becomes reverential when he describes it. "To be in the bowels of a ship, at the control console of a radio station, feeling the ocean gently pitch the ship back and forth, hearing the thump, the roar of the diesel generators in the engine room, and watching the transmitters and the meters and everything . . . and knowing that people are really listening to you . . . to me, that was the whole thing. That moment made it all worthwhile."

That moment turned out to be a fleeting one. Owing to the vicissitudes of U.S.-Central American relations, the Hondurans didn't exactly prove resistant to the idea of the U.S. Coast Guard boarding a Honduran ship in international waters.

Radio New York International (RNI) lasted three days -- broadcasting free-form rock and roll programming that would not have seemed out of line to those familiar with the early days of WNEW-FM in New York, WBCN in Boston, or WMGX in Portland before the programming consultants and the station-sale brokers took over.

But the Coast Guard Cutter Cape Horn showed up, arrested everyone on board, and went at RNI's transmitting equipment with hacksaws.

The RNI crew became the first people ever charged with the federal offense of "obstructing government function," which carried a potential penalty of five years and \$250,000. But a month later the government mysteriously dropped the charges. Weiner towed the Sarah to Boston Harbor and plotted his next move.

Seeking money to keep the project going, Weiner wrote to celebrities like Donald Trump and Stephen King. "Wasn't that ridiculous," he sighs. He changed Sarah's registry to Sealand, something the U.S. government doesn't recognize since "Prince Michael" has not won international recognition for his tiny nation off the coast of Britain.

Weiner says the FCC thinks he's some kind of crazy anarchist, but he insists it's the FCC that's crazy and he's just an idealistic businessman who is seeking to do something perfectly legal under international law. In that light, and noting that all charges against him and his buddies had been dropped, he sailed the Sarah back to its old location off New York last September and turned on the transmitters again.

This time the FCC got an injunction from U.S. District Court Judge John McNaught in Boston. Learning this when the Coast Guard arrived, Weiner avoided a second confrontation by agreeing to pursue his quest through the courts. RNI has been silent ever since, but Weiner and his attorney haven't.

"I'm sure the odds are very much against us winning," concedes attorney Gutman, who is throwing his 40 years of experience as a civil liberties attorney behind his invitation to the First Circuit Court of Appeals to reexamine the very foundation of the federal government's right to regulate broadcasting.

"It's time for a fresh look," proclaims Gutman's brief. "The old 'public trustee' model for broadcasters has fallen, and with it must also fall the notion that prior restraints on access to this forum can be justified consistently with the First Amendment."

Noting the disappearance of the earth's forest cover, he argues that it is newspapers rather than radio stations that are now using a "scarce" resource as a medium.

Meantime, Weiner has big plans for Aroostook County. Pending before the FCC is his application to build a worldwide shortwave station at his farm in Monticello. "We will operate it as a station dedicated to love and peace," he says. "It would put Monticello and northern Maine on the international map." It sounds like a crazy idea, but Weiner has a record of following through where others might fold.

But here again, the FCC isn't cooperating. And as he talks about it, Weiner's voice raises to an intensity that seems more Manhattan (where he is spending his summer working as an engineer for ABC) than Monticello. "They're saying that I may not have the character -- the character -- to be a licensee," he shouts. "Who the hell gave the government the right to determine who has the character to be on the air?"

Allan Weiner continues to maintain that his biggest problem is his lack of money. He told *The Nation* that if Donald Trump had tried to start RNI, he would have been hailed as a "maverick entrepreneur."

"I use this," Weiner says, pointing to his head, "because I don't have much of this," pointing to the wallet in his pants pocket. Which is strangely reminiscent of George Bush's inaugural proclamation that as a nation we have "more will than wallet." George Bush warned us about guys like Weiner. But now it's out of George Bush's hands.



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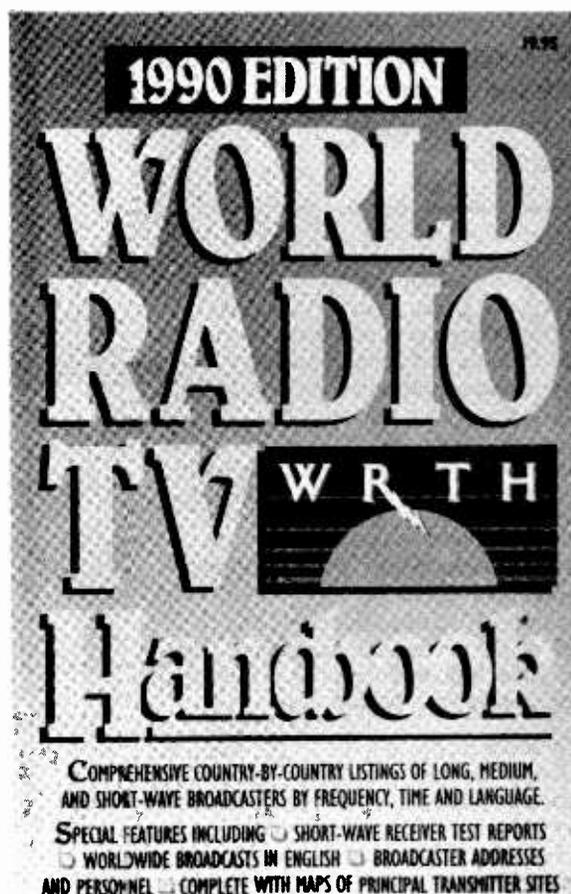
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Monitoring the Crash of United Flight 232 in Sioux City, Iowa

by Dale Baity

We have all heard the details of the United Flight 232 disaster on the news. I would like to report some of the behind the scenes events that I heard while scanning this emergency to give a different view of a tragic event.

The nation watched as the details of United Flight 232 were flashed across the world's news networks. The monitoring of the tragedy started for me when a fellow employee received a call from his wife. She informed us there was a plane in serious trouble attempting a landing in Sioux City, Iowa. Vermilion, South Dakota, is 35 miles from the town of Sioux City, thus allowing a good scanning opportunity.

It was time for me to leave, so I headed for my vehicle. As I arrived at my Blazer, Vermilion's emergency vehicles were headed past my location and out of town.

I turned on my Regency Informant, switched on all the service channels, changed to the Iowa bank, tuned the Blazer's FM radio to an Iowa station, and headed for home.

I was not out of the parking lot yet when I was shocked into the realization that the largest tragedy in the history of our area had just occurred. There would be no stories of the tower guiding the brave pilot down to a safe landing. There would be no reports of how the crew worked to bring the craft and all its passengers down, avoiding a tragic end.

At 4:02 p.m., on July 19, 1989, United Flight 232, a DC-10, carrying up

to 300 passengers, crashed in Sioux City, Iowa.

My excitement turned to thoughtful reflection of the fragility of our existence. I prayed for the best, but the reports sounded grim. My scanner was swamped with emergency traffic. The Regency could not even scan, passing instead from one loaded channel to the next. This time, the news that came out of the radio was not exciting; it was shocking.

I arrived home to tell my wife of the tragedy, but I could see she already had

heard. We went to the radio room, and turned on the desk full of scanners -- the two Radio Shack PRO-2004s, PRO-2003, PRO-32, and the Bearcat 300 with service scan.

The radios had been programmed for just such a happening -- 1000 channels waiting to report the news. Two cable-fed TVs added to the flood of information.

Flight 232 had been in trouble for half an hour before the pilot attempted to land and the time gave emergency crews a chance to prepare and implement the emergency plans they had spent so much time establishing. And because of its geographic location (the town of Sioux City lies in three states: Iowa, South Dakota, and Nebraska, and Minnesota is only 70 miles to the north), emergency crews from all four states were pitching in to help where needed.

Forty-three ambulances and 30 fire units were staged, and 50 Iowa Highway Patrol units were on the way. The South Dakota Highway Patrol was waiting at the border if needed. In all, emergency crews from over 74 communities were either already at Sioux City or on the way to the scene.

When 232 finally did come down, the news from the scene was grim. The plane had broken up in a ball of fire and there were only two pieces of the plane large enough to be identified. Suddenly the scanner traffic turned to confusion. Officials wanted to know who had allowed people access to the runway and the adjacent corn field!



Officials wanted to know who had allowed sightseers on the runway ... Then irritation turned to elation as they realized: There were survivors!

Then sounds of elation were heard as the rescue crews realized the people were not sight-seers but survivors walking from the hopeless tangle. Twenty-seven people stumbled from the wreckage and headed for the main terminal. Unbelievable news for all!

Access by Scanner Only

The media was not allowed near the scene and were instead supplied with reports from outside the airport fences. In fact, the scene was closed to all but emergency vehicles with proper ID.

Fences, however, did not deny access to the scanner listeners who heard of the first injured victim arriving at one of the waiting hospitals via helicopter at 4:17 p.m.

The hospital frequencies were filled with reports of the injured being transported. The search modes were getting a workout finding new frequencies that had never been activated in my many hours of searching in the past. Encouraging reports of many survivors were being reported, and the mood was one of increasing hopefulness.

Yes! 185 alive! Unidentified voices expressed excitement and joy with this report. Now that all of the located survivors had been transported, the up side of the rescue was changing. These voices soon expressed tension, grief, and mental overload.



Rescue crew leaders were rotating the staff of emergency workers. After 1-1/2 to 2 hours of this type of work, the emergency crews had experienced too much. It may take months, years, or a lifetime for them to forget what they were witness to that day.

Scanners reported semi-trucks full of medical supplies were coming from Omaha, Nebraska. My spirits sagged as I heard an emergency official order 150 body bags and five refrigerated semi-trailers for the victims. This transmission seemed to end most conversation from the rescue scene. There was no one else to save.

FAA, FBI, and DCI lab people started arriving to identify and secure the area. The Iowa Air National Guard were the first on the scene and began setting up lights to ward off the coming darkness.



A Salute to Humankindness

The response shown by our midwestern community in the nation's heartland should serve as a model for all communities in the U.S. and the world. I salute the groups I heard on the scanner: the brave pilot, Al Haynes, and his crew who minimized the loss of life with their great skill, the hospitals, nurses, doctors, ambulance crews, EMTs, Life Flight crews, Air National Guard, police, fire, Highway Patrol, Sheriff's units, Red Cross, Salvation Army, Civil Defense, County Disaster Control, airport staff, tower crew, FAA, DCI, FBI, local city and state communication operators, news people of the nation, University of South Dakota Psychological staff, Briar Cliff College and students for shelter and food, public and private security officers.

These are the people I heard mentioned on the scanner, and there were many other volunteers and donors not mentioned, but whose efforts were much appreciated.

And finally, thanks to the local residents who expressed their feelings by placing flowers, wreaths, and notes on the airport fences in memorial to the 111 dead and 185 survivors of the crash of United Flight 232. These are the kind of people who live in the Midwest.



Illustrations for this article were taken from a Philadelphia Fire Dept. Emergency Preparedness exercise.

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

Shortwave Broadcasting

Glenn Hauser

Box 1684 - MT

Enid, OK 73702

Who Needs Meter Bands?

A lot of shortwave terminology is unnecessarily confusing to newcomers. Why do we have two separate ways of giving dial positions, with the numbers going in opposite directions? Three, if you consider kilohertz and megahertz, which differ only in where the decimal point goes.

True, the clear winner is frequencies in kHz or MHz, but wavelengths in meters continue to be announced by some stations, and meter-bands by a lot more. Just last year, in its printed schedules, Radio Bucharest finally started listing frequencies primarily, with a conversion table to meters rather than the other way around. This year, Radio Australia abolished meters and meter-bands, but converted to redundancies such as "21740 kHz in the 21 MHz band," which ought to be fairly obvious.

This is not a conflict between "metric" and "English" as applies to measuring other quantities. Frequencies in kHz or MHz are in fact metric, since they depend on a universal time quantity, the second.

There are good reasons for ignoring metric wavelengths, except when constructing antennas. Frequencies are (generally) assigned 5 kHz apart, throughout the shortwave range; yet, the amount of centimeters apart changes widely from one end of the range to the other. In conversion tables, a single metric wavelength can often apply to two adjacent frequencies (unless taken to three decimal places). Although some ancient or foreign receivers are calibrated primarily in meters, they cannot achieve accuracy in readout to two decimal places, let alone three; and there is no such thing as a digital wavelength readout.

Old timers like to say "kilocycles" or megacycles" or even "megs," meaningless without a suffix. But all these really say nothing without the time constant added, "per second." MHz and kHz are defined as megacycles per second and kilocycles per second, so include the time constant.

Yet, why should the second reign supreme? It's all arbitrary. Megacycles per hour would work just as well, once everyone got used to it. For example, to convert 13.720 MHz to Mc/h, just multiply by 3600, resulting in 49392. Isn't that a more impressive figure? No doubt in some future column Mc/h will be the accepted quantity, but for now, back to plain old kHz.

ANDAMAN ISLANDS All India Radio, Port Blair, has been heard testing on 4760, from 1230 past 1600 UTC, good for 10 kilowatts. (Victor Goonetillede, Sri Lanka, Radio Netherlands Media Network)

But AIR also testing new transmitter on 4760 at 1130-1630 from Leh on the mainland, perhaps alternate days to Port Blair. If you hear an ID in Ladakhi, you know it's only Leh. (Manosij Guha, India, RNMN) We may have to settle for broadcasts to Port Blair, the latest usage for 10330 kHz from Delhi during home service news; formerly used for Sinhalese and Nepali when those were hot spots. (Guha, RNMN)

ARGENTINA If you want to QSL one of the RAE or Radio Nacional frequencies (except LRA36, LRA7 and LRA13, which confirm directly), write to: Gabriel Ivan Barrera, Casilla 2868, 1000 Buenos Aires. He will QSL as a service in a fast and safe way, if you include two IRCs to cover postal expenses only.

AUSTRALIA Radio Australia noted on unlisted 15080 at 0614 in English, spurious? (Don Moman, Alberta, CIDX Messenger) Most likely mixing product between 15240 and 15160, 80 kHz apart. Whenever you hear a signal in a strange place, check for such leapfrogs.

BANGLADESH Radio Bangladesh heard on new 17910.2 in

English at 1230-1300, bad hum, no sign of 15195 or 17710. (Don Hosmer, MI, Fine Tuning)

BHUTAN The long-awaited 50-kilowatt transmitter given by India may actually be reality now. It was reportedly installed in August, for use on 9615 in the local daytime and 6035 at night. (Manosij Guha, RNMN)

BOLIVIA New here on 3280 is Radio Chaco de Ayacuiba, CP195, scheduled 0900-0400. (World Radio TV Handbook Latin American News)

CAMEROON Radio Bafoussam is again active on 4000 kHz, heard with a clear ID in French at 2004, and the next day fading in at 1846. (Roland Schulze, West Germany, RCI SWL Digest)

CAPE VERDE Also reactivated is A Voz de Sao Vicente, 3939.10 kHz in Portuguese heard from 1926 to 2010. (Schulze, *ibid*)

CHAD The director of technical services says a rarely reported shortwave station is still active at Abeche, Radio Tchad Libre, at 0500-0600, 1630-1800 in French and Arabic with one kilowatt on 5900 kHz, address B.P. 105. (Andy Sennitt, WRTH, RNMN)

COLOMBIA Radio Reloj, HJHK, Manizales, heard at 0214-0230 on 4260.2, the third harmonic of 1420. (W.J. Parks and Terry Krueger, FL, DSWCI SW News)



COSTA RICA Radio for Peace International plans to use SSB on 13660 in the evenings; this would be especially appropriate as long as the weak Soviet station is also there to provide a carrier. SSB experiments have also been carried out from 0430 to 0500 or 0600 on 7375, deliberately chosen to see if it helps on a noisy band; reports wanted.

CZECHOSLOVAKIA Radio Prague's Interprogram can be heard on 13715 kHz, with "good music" introduced in four languages at 2315-0100 UTC, from classical to Czech pop music, reminiscent of the French style, not rock. The new sound of shortwave? I hope somebody copies it. (Howard Box, TN, World of Radio)

DOMINICAN REPUBLIC? Another theory about the mystery station on 5067.9, heard at 2325-2340. It could be La Voz de Las Casas, harmonic of a new station in Padre Las Casas, Azua Province. The UTC -4 time checks match, and IDs say they cover the whole nation, which on mediumwave would have to be one about this size. (Henrik Klemetz, Sweden, Radio Nuevo Mundo)

EQUATORIAL GUINEA Pan American Broadcasting has tentatively scheduled our World of Radio show Thursdays at 2030 on 7190, Saturdays at 1200 on 9585.

FALKLAND ISLANDS FIBS operates at 0610-1300 and 1630-2130 local; BFBS London is aired at 1300-1630 and after 2130 local; add three hours for UTC October-April, five hours April-October; on 3958. (Daniel Camorini, Argentina, Play-DX)

A letter from BFBS, Mount Pleasant says the 3958 transmitter was destroyed by a hurricane; no plans to reactivate so only on AM and FM. (DX Magazine, West Germany, via Onda Corta, Argentina) Not heard in 9-10 months and BFBS London says inactive, but reserving frequencies 2380 and 3958. (Tony Jones, Paraguay, NU via RNM)

GUAM Due to red tape on the island, the debut of Voice of Hope's new station is delayed until mid-October or November; call will probably be KHBN; using a refurbished RCA 100 kW transmitter at 50 kW, just like KVOH in Los Angeles. (Don Otis, High Adventure, RNMN)

ICELAND Ríkisutvarpid continues its foray through the outofbands: 13855 at 1855. (Frank Baldwin and Mark Hattam, UK, World DX Club Contact) 15767 and 13855 at 1852 to closing at 1930. (Brian Alexander, PA, FT) 15675 USB until 2330. (Bruce MacGibbon, OR, DX Spread) Until 1932 on 13855, from 1946 on 15767. (Andy Sennitt, WRTH, Holland, ANARC BBS via ASWLC)

INDONESIA Several new stations observed while sailing through the archipelago: on 2325 kHz from 1000 to 1500, Music Radio Kota Jakarta, also IDing as Nomor 1. On 2478, a new one in Jakarta at 1100-1430 +, Radio Pancaran with Hindi film songs. On 2675 at 1000-1500 and 2130-2230, Radio Himpunan Bhakti Social Radio, Kota Jakarta. On 2727 at 1130-1430, a new official station from Lubuklinggau, Sumatera Selatan (near Bengkulu), radio Angkasa Jaya. A new outlet for RRI Pekanbaru is 5974, from 0930 past 1330 and around 2200; RRI Samarina on new 9614.5 at 0530-0910 only. (Prodyut Banerjee, Oz DX)

IRAN The May-September schedule of IRIB showed English at 1130-1225 UTC on 7215, 9575, 11715, 11790; 1930-2030 on 6030, 9022. (Tom McKeon, IN)

Radio of the Wage Slaves of Iran (a better rendering than Radio Iran Toulers), still airs dated commie propaganda; it was Russian-sponsored and unchanged despite "glasnost" due to production in Kabul, on 4775, 6230 at 1530-1730. (John Campbell, UK, RNMN)

ISRAEL/LEBANON (ISANON? LEBRAEL?) The King of Hope transmitter site has been moved into the no-man's-land where Israel has pushed its border one km north into what is officially Lebanon; studios are still in Marjuyun, Lebanon, and Metulla, Israel. A new 25 kW transmitter will soon be shipped from the USA, and new curtain antennas have been ordered to reach Africa and the USSR on a north-south axis. (Don Otis, High Adventure, RNMN)

KOH already has two shortwave transmitters, the main one on 6280, but also sporadically with very low power on 6215, which is blocked in Europe by Radio Caroline. (Andy Sennitt, WRTH, RNMN) Hams have managed to declare "neutral zones" between Kuwait and Saudi Arabia separate radio countries, so why not this?

ITALY Italian Radio Relay Service has signed long-term contracts with UN Radio in New York, and UNESCO Radio in Paris. Most of the programs Sundays at 0830-1230 on 9865 (replacing 9860) come from these sources.

World News and Information Radio ended a trial run July 30. Unfortunately, Radio Earth could not find sufficient funding to continue on IRRS despite its popularity, nor could Roy Sandgren's Radio Scandinavia. The mailbag program "Hello There" airs at 1100-1130. IRRS is gratified at the amount of listener enthusiasm, but where is the support in the form of program time-buyers? (Alfredo Cotroneo, IRRS)

Italian radio relay service

JAPAN Radio Finland and Voice of Turkey have expressed interest in relay swaps with Radio Japan, but no agreements have been reached. (Kaz Matsuda, Radio Japan, RNMN via SPEEDX)

KIRIBATI Radio Kiribati found on new 14859.3 USB at 0700. (Peter Card, RI, SPEEDX)

KOREA, NORTH Echo of the Masses, the clandestine founded August 15, 1985, closed down in late June 1989, but Voice of National Salvation has been expanded, using Echo transmitters; only in Korean: 2000-0100 on 3480, 4400, 4450, 4557; 0300-0700 on 3480, 4400; 1000-1700 on 3480, 4120, 4400; 1000-1400 also on 6010; and on 1053 throughout.

4120 is the same transmitter used on 9665 for KCBS Pyongyang domestic service; 4400 and 6010 are Echo of Masses transmitters, the latter the same as used by Pyongyang's external service on 6250. (Toru Yamashita, NHK DX Corner) Monitored on 4452.7 and 4119.6, both

jammed, at 1032, not audible on 3480. (Kirk Allen, OK, DXLD)

KOREA, SOUTH Voice of the People, clandestine originating here, heard from 1159 to 1230, varying 6603 to 6604 kHz, martial and instrumental vocals. (Ed Kusalik, Alta, RCI SWLD)

MACAO Radio Macao will start shortwave broadcasts in 1992, and continue after reversion to China in 1999, per a report on Radio Portugal. (BBC Monitoring via RCI SWLD)

MEXICO Most Mexican shortwave stations are inactive most of the time, but fire up sporadically to keep their license. Supposedly active on 9545 is a Radio La Jorocho at 1130-0600. (Radio Panorama via Onda Corta, Argentina) Admittedly inactive is a 150-watt outlet on 11820 from Hermosillo at 1300-0600, which would now be called Radio La Correcaminos (Roadrunner). (Radio Panorama via RNM)

MONTSERRAT Deutsche Welle has ceased its shortwave relays here, and DW's support for Radio Antilles will end by year's end. East Caribbean states are trying to acquire the high-power 930 kHz facility. (Christian Knaack, The Big RA, RNMN) VOA would also like to get the station, which already relays it part of the day, and close down the much less effective relay on 1580 from neighboring Antigua.

MOZAMBIQUE Radio Nacional on 3210.4, Beira on 3280.4, and Interprovincial on 3338.1 all heard around 0330. (Al Quaglieri, NY, SWLD)

MYANMAR This is the new name for Burma, and Yangon is the new name for Rangoon, per numerous press reports, but the last letter is silent in each case, confusing the spelling in English to Myanma.

NAMIBIA The UN has a 5-minute info service weekdays via SWABC, UNTAG Radio after 0500 on 3270, 3290. The Voice of Namibia, clandestine, now uses 6050 only, 0430-0800 and 1800-2000 (weekends from 1300) (Richard Ginbey, Winhoek, RNMN)

Radio SWA on new 7189.5, bilingual in English and Afrikaans around 0530 past 0620. (Kirk Allen, OK, RCI SWLD)

NETHERLANDS ANTILLES TWR has a weekly program in a Brazilian Indian language. Saturday at 0715 on 800 kHz, plus 9 and 11 MHz shortwave. Chuck Roswell told me it's Banawa, but the Brazilian announcer says Baniwa. I wouldn't think even farmers or hunters would be up at 4:15 a.m. local time, but Chuck assured me they are. (Tim Hendel, FL, World of Radio)

TWR says they will move their international HQ from Chatham, NJ to Raleigh, NC by late 1989 or early 1990, due to lower costs and a moderate climate. (Chuck Yarbrough, NC, DXLD)

NEW ZEALAND The print-disabled station on 1602 kHz, 2XA, has been authorized to add the 75-meter band, exact frequency to be assigned by the ITU between 3900 and 4000 kHz, 990 watts. Current schedule is Sunday, Monday, Thursday at 0630-1000. (Arthur Cushen, NZ, RNMN) Inspired by 2RPH in Sydney; will use 19-metre high inverted V, NE/SW, schedule 9 a.m. to 11 p.m. local, to start January 1, 1990, with International Literacy Year; NZ-wide coverage expected. (Bryan Clark, NZ, Radio Australia Communicator)

Contrary to last month's info, until NZ goes on DST Oct 7, between 1830 and 0730, the frequencies are 15485 and 11780. (Bryan Clark, RA Communicator) And at 0900-1205 on 11780 and 9850, not 9805, our typo, sorry.

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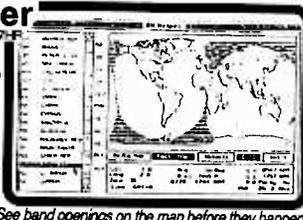
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See band openings on the map before they happen!

Shortwave Broadcasting

International is still planned to come on in January, with the goal of serving Pacific neighbors with programs in their languages and a signal strong enough to relay. It will be run by a partnership between the Ministry of External Relations and Trade, and Radio New Zealand, the latter continuing to be responsible for program content and day-to-day running of the station, according to a media release. (via F.D. Trumpy, IA)

PAKISTAN Radio Pakistan in English at 1721 on new 15200. (Bruce MacGibbon, DX Spread)

PAPUA NEW GUINEA According to a QSL card, Radio West Sepik, Vanimo, has been renamed Radio Sandaun, the name of the province; address is P.O. Box 37. (Eric Swedberg, OR, DX Spread) 3205 kHz.

PERU Radio Vision, Juanjui on new 5457 kHz at 0230. (Gabriel Ivan Barrera, Radio Nederland Radio-Enlace)

Andean music and IDs measured after 1000 UTC from these stations: 4820.82 Radio Atahualpa; 4824.50 La Voz de la Selva; 4826.27 Radio Sicuani; 4881.63 Radio Nuevo Mundo; 4910.78 Radio Tawantinsuyo; 5030.5 variable Radio Los Andes. (Ernie Behr, Ont. RCI SWLD)

PHILIPPINES FEBC Manila on 15100, opening at 1112 with interval signal, English ID as "Vietnamese tribal broadcast," religious program to 1400, next day to 1430. (Ernie Behr, Ont., RCI SWLD)

POLAND Radio Polonia is running a competition marking the 50th anniversary of the outbreak of World War II. Answer one or both of these questions: 1. What can you say about the role of the Poles in WW II? 2. What can you do, what can your government do and should do to prevent a world war ever breaking out again? Replies should be sent by December 1989 to Radio Polonia, P.O. Box 46, Warsaw, Poland. Everyone entering will get a special QSL card, and there will be a lottery draw for many attractive prizes, results to be announced 15 February 1990. (via Mike Harla, NJ, World of Radio)



SCOTLAND Weekend Music Radio had big signals here on a UTC Sunday from 0000 past 0400 on 15043, announcing 100 watts. Also heard in California and Pennsylvania. (Mitch Sams, Kansas) Also heard a week later on 15042.4 at 0156-0256, peaked at 0215; had been trying for this one eight years! (Kirk Allen, OK) And again two weeks after that, during noisy conditions on 15042 variable, from 0046 past 0500. (Bruce MacGibbon, OR, DX Spread) Watch out for the WWCR harmonic!

SEYCHELLES FEBA planned this English schedule for October: Saturday 0432-0505 on 15325; Monday the same plus 17820. 1458-1555 (Saturday and Sunday to 1540) on 11865; 1458-1600 on 9590 or 15325. 1731-1804 on 11810. All are 100 kilowatts, except 75 kW on 11810. Some new languages on the schedule at 1242-1258 on 15325: Mundari on Monday, Tuesday, Wednesday; Nagpuria on Thursday; Bhojpuri on Friday.

SOMALIA We've had several reports that Hargeisa, including the radio station on 7120, has been leveled by the war. That leaves Radio Mogadishu, varying around 7200. Sheryl Paszkiewicz says the correct address is: Third Street, Box 6100 Post Haden, Mogadishu.

A prepared card was verified by Mohammed Hassan Haad, producer of an entertainment program, Imaqashii Imadadaali. I enclosed mint stamps and a dollar with a lengthy thank-you letter. Curiously, this arrived in a plain envelope metered in Washington DC, containing the original envelope with beautiful Somali stamps canceled in that country. (Kirk Allen, OK, W.O.R.)

A new clandestine is Radio SNM, voice of the Somali National Movement, on 6470 at 1500-1700. (BBC Monitoring via RCI SWLD)

SRI LANKA Some new clandestines, using the 7 MHz band like the old ones, either 7050, 7105, or 7125 kHz, at 0130-0200, 1030-1100, frequency changed day to day; difficult to say where these are aimed, no

political talk yet; in Tamil. ID as Voice of the Tamil Nation, but doesn't mention "Eelam," good strength and no publicity locally. (Victor Goonetillede, Sri Lanka, RNMN)

SUDAN National Unity Radio, Khartoum, on 9435 has been replaced by Radio Omdurman, as early as 0420, as late as 2100, including English news at very approximately 1945; nor is Voice of Ethiopian Unity heard any longer at 1800-2000 on 9435, and the clandestine program from Sudan to Ethiopia, Voice of Oromo Liberation is no longer heard at 1530 on 9550. (BBC Monitoring via RCI SWLD)

SWITZERLAND SRI has an experimental transmission on 21705 USB plus full carrier, in English at 2100, Spanish at 2130, 15 kilowatts for the Swiss medical unit in Namibia. (Bryan Clark, NZ, Radio Australia Communicator)

TAIWAN The mystery station New Star Broadcasting very likely comes from here, first noted in April 1977. The ID "Xing xing" (Pinyin romanization) has many interpretations including New Star. It broadcasts numbers in Chinese in four different services: 11430, 15388, 9725, 8300. (Tetsuya Kondo, Japan, DX Spread)

TIBET Lhasa in Chinese from 2200 to 2310 on new 5950, perhaps ex-7110, parallel to 5995. (Bob Padula, Australia, DXLD)

TONGA TBC went off the air in early June due to failure of a crucial part; a long delay in getting the replacement from France is expected. Chief engineer says SW operation is still experimental, implied not a high priority. (Geoff Cosier, Australia, NU via DX Ontario) Nuku'alofa is on 5025 instead of 5030, daily except Sunday at 1750-1000. (Arthur Cushen, NZ, RNMN)

UNITED KINGDOM BBC Spanish heard on 10005 from 0030 to 0300, parallel to 9825 and 11680, Ascension relay? (Mike Hardester, VA, RCI SWLD) Another mixing product, from England with English on 9915, 90 kHz apart.

USA It's football season, making pre-emptions of "World of Radio" likely on WRNO, especially Saturday evenings and Sunday afternoons, but additional airtime has been adopted, UTC Fridays at 0030 on 7355. Other scheduled times are: UTC Thursdays 0030 on 7355, 1530 on 11965, 2300 on 13720, UTC Saturday 0300 on 6185, Saturday 2330 on 13720, Sunday 2030 on 15420. When DST ends, these shift an hour later by UTC, and some frequencies will change.

New Mexico's main shortwave station (in the absence of KJES) has been on 3160, the second harmonic of KNUS, 1580 in Albuquerque. To improve local coverage, a new transmitter site should now be in use, probably also changing the circumstances which made the harmonic possible.

USSR Bashkir Radio, Ufa, RV147, is back on shortwave, but this time 4030 instead of 4485, at 0500 to 1900, relaying mediumwave to emigres in Far East, Canada. (Sweden Calling DXers)

Radio Grodno, Byelorussia, is often heard with local program at 1400-1440 on 7140. (Olle Alm, Sweden, SW Bulletin) Most parts of the Soviet Union and Europe end DST Sept. 24, so domestic and some external programs shift to one hour later by UTC.

VENEZUELA Radio Yaracuy plans to reactivate shortwave on 4940, despite Radio Continental de Barinas which has come on nearly the same frequency recently. Radio Capital left 4850 due to relocation of transmitter and interference from their FM on 104.5 MHz to the shortwave transmission. Once this is solved, they expect to reactivate 4850. (Manuel Rodriguez Lanza, The Radio News) La Voz de Carabobo also planned to be back on 4780 with a replacement transmitter. (Jairo Salazar, TRN)

Keep up to date with much more news about shortwave broadcasting in Review of International Broadcasting and/or DX Listening Digest. Samples are \$2 each in North America, 7 IRCs or US\$3 each overseas airmail, US funds on a US bank; 10-issue subscriptions in North America US\$21 or both for US\$40, from Glenn Hauser, Box 1684-MT, Enid, OK 73702.

Broadcast Loggings

Let other readers know what you're enjoying. Send your loggings to **Gayle Van Horn**, P.O. Box 1088, Gretna, LA 70053-1088. English broadcast unless otherwise noted.

0000 UTC on 11735

Yugoslavia: Radio Yugoslavia. News and commentary, followed by feature on the church's role in Yugoslavia, and a university for senior citizens. (Leonard Price, Annandale, VA)

0005 UTC on 4810

South Africa: Radio Orion. Top 20 Chart music countdown and commercial for sleep aid. Station ID/request line phone number. (Bob Doyle, Shelton, CT) (Harold Frodge, Midland, MI)

0005 UTC on 4825

Brazil: Radio Cancao Nova. Portuguese. Popular Brazilian tunes and station ID/frequency schedules. Weak signal consistent through atmospheric static. (Robert Landau, Secaucus, NJ)

0014 UTC on 11685

Czechoslovakia: Radio Prague. Editorial about NATO, and announcer with program frequency schedule. Interference from radio-teletype. (Harold Frodge, Midland, MI) Monitored at 0100 on 5930 kHz. (Gunter Wurr, Santos, Brazil) Other freqs to check are 6055, 7345, 9540, 9625 and 11990 kHz. (Lance Micklus, Essex Junction, VT)

0035 UTC on 4915

Brazil: Radio Anhanguera. Portuguese. Frequent IDs and Braz pops to news at 0100 UTC. Poor signal fighting to get through the static. (Robert Landau, Secaucus, NJ)

0047 UTC on 4755

Brazil: Radio Educacao Rural. Portuguese. Lively pop vocals from DJ format. Accordion music and news briefs on Brazil. (Frank Hillton, Charleston, SC)

0112 UTC on 7415

Pirate: Free Radio One. Feature on the political aspects of medicine, followed by religious music. Station address, 3434 Pacific Hwy, Medford, OR 97501. Also noted this station IDing as "Radio North America One" with an 800 phone number and discussions about political prisoners. Station audible for several nights, sometimes on 7416 kHz. (Harold Frodge, Midland, MI)

0215 UTC on 11710

USSR: Radio Kiev. "Ukraine Today" program on the increasing amount of train disasters in the USSR. Sports news report and Ukrainian folk music. Parallel on 11890 kHz. (Robert Hurley, Baltimore, MD) Audible on 7400 kHz at 2330 UTC (Gunter Wurr, Santos, Brazil)

0229 UTC on 6804

Clandestine: Radio Venceremos. Spanish. Commentary with reference to El Salvador and pop music. Frequency change of 6808 kHz at 0233 UTC, earlier had found them on 6812 kHz. (Harold Frodge, Midland, MI)

0230 UTC on 11920

Iraq: Radio Baghdad. Commentary on Lebanese politics and traditional Iraqi music to 0247 UTC. Letterbag show monitored to 0300 UTC. (Robert Hurley, Baltimore, MD)

0233 UTC on 9705

Portugal: Radio Portugal. National news and weather forecast to report on presidential visit to the Azores. (Harold Frodge, Midland, MI) Audible on 9680 kHz at 2344 UTC. (Robert Hurley, Baltimore, MD)

0241 UTC on 6215 SSB

Pirate: Radio Caroline. Noted as being off the coast of Kent, England. DJ presents pop music program, with only occasional chat. Heavy interference for this one tonight. (Harold Frodge, Midland, MI)

0252 UTC on 9500

Albania: Radio Tirana. Feature on Albanian history, and "Introducing You to Albania." (Harold Frodge, Midland, MI) Monitored on 15115 kHz at 0533 UTC. (Frank Duggan, Phoenix, AZ)

0253 UTC on 15455

USSR: Armenia-Radio Yerevan. Discussion on the demand needed for qualified workers in Armenia. Broadcast sign-off at 0258 UTC. (Robert Hurley, Baltimore, MD)

0255 UTC on 15380

Romania: Radio Bucharest. Folk music program and invitation to DXers to join the station's "Listener's Club." Spanish programming commencing at 0256 UTC. (Frank Duggan, Phoenix, AZ) Audible on 11940 kHz at 0243 UTC with "Ham Radio Show." (Lance Micklus, Essex Junction, VT)

0256 UTC on 9475

Egypt: Radio Cairo. Arabic music program, anthem and world newscast at 0315 UTC. (Harold Frodge, Midland, MI) Monitored on 15220 kHz at 2355 UTC with Arabic programming. (Frank Duggan, Phoenix, AZ)

0305 UTC on 15280

Bulgaria: Radio Sofia. International news and editorial on changes in the Chinese communist party leadership. "Viewpoint Studio" show, and discussion about Armenian refugees struggle. (Robert Hurley, Baltimore, MD) (Jerry Witham, Keauau, HI)

0400 UTC on 15485

New Zealand: Radio New Zealand. International and regional news to station ID, with strong clear signal quality. (Jerry Witham, Keauau, HI) (Frank Hillton, Charleston, SC)

0415 UTC on 4920

Ecuador: Radio Quito. Spanish. Latin vocals and ID as "transmitte Radio Quito, La Voz de la Capital" audible through weak signal quality. (Robert Landau, Secaucus, NJ)

0430 UTC on 4904

Chad: Radiodiffusion Nationale Tchadienne. French. Sign-on routine with IDs and frequency schedule. French vocals and conversation. (Robert Landau, Secaucus, NJ)

0430 UTC on 7412.4

Pirate: Radio Garbanzo. Rock music at tune-in. Station ID with Hilo, Hawaii, address for QSLs. Intros for 70s song, suffering from interference. (Frank Hillton, Charleston, SC)

0510 UTC on 4820

Botswana: Radio Botswana. English/Setswana. News coverage of Africa and national anthem. Native drum music interspersed with Setswana announcements, suffering from massive interference. (Jim Reagan, Mustang, OK)

0550 UTC on 6075

Colombia: Radio Sutatenza. Spanish. Lively latin vocals, phone conversations and station promotions. Signal dropped at Deutsche Welle sign-on. (Jerry Witham, Keauau, HI) (Frank Hillton, Charleston, SC)

0855 UTC on 3905

Papua New Guinea: New Ireland-Radio New Ireland. Pacific Island music to IDs and regional news at 0900 UTC. Significant amateur radio operator interference. (Jerry Witham, Keauau, HI)

0926 UTC on 3345

Indonesia: Kalimantan (Borneo)-Radio Republik Indonesia Pontianak. Indonesian. "Siranang Angkatan Darat" programming to "Song of the Coconut Island" interval signal. Christian style music and Bible program at 0935 UTC. Regional news Kalimantan Barat at 1000 UTC. (Aboe Thallep, Batang, Indonesia)

1130 UTC on 9580

Australia: Radio Australia. "International Top Hits" pop music program. (Bob Fraser, Cohasset, MA) Audible on 15420 kHz at 0350 UTC. (Robert Hurley, Baltimore, MD) (Donald Myra, Brooklyn, NY)

1130 UTC on 6120

Canada: Radio Japan relay. "Crosscurrents" program with letters from listeners on worldwide pollution. (Bob Fraser, Cohasset, MA) (Gunter Wurr, Santos, Brazil)

1212 UTC on 3260

Papua New Guinea: New Guinea-Radio Madang. Pidgin. Youth programming for high school age students. Station ID at 1212 followed by roller rink music. Good signal. (Guy Atkins, Issaquah, WA)

1235 UTC on 21610

Sweden: Radio Sweden. "News and Current Affairs" show. "Sweden Calling DXers" program with feature on Chinese clandestine stations. Severe fades and poor reception. (Robert Landau, Secaucus, NJ) Monitored on 17880 kHz at 1550 UTC with "Swedish Accent" show. (Harold Frodge, Midland, MI)

1355 UTC on 6115

Mexico: Radio Universidad. Spanish. Mexican mariachi music program with brief break for station promotional. (Frank Duggan, Phoenix, AZ) (Frank Hillton, Charleston, SC)

1500 UTC on 11650

Guam: KTWR. Station ID at the hour followed by "Radio Bible Class" program, and religious choral music. (Jim Reagan, Mustang, OK)

1545 UTC on 15120

Vatican State: Vatican Radio. International news and interview discussing the plight of African refugees in Angola and Zambia. (Jim Reagan, Mustang, OK) Audible on 6150, 9605, 11780 kHz. (Lance Micklus, Essex Junction, VT)

1710 UTC on 15260

Ascension Islands: BBC relay. Report on the Anglo-Brazilian agreement to save the Amazon Basin rain forest. (Bob Fraser, Cohasset, MA)

2000 UTC on 9560

Jordan: Radio Jordan. National Jordanian news and topics from Oman, Lebanon and Ethiopia. Pop music program to 2030 UTC. (Robert Hurley, Baltimore, MD) (Stephen Price, Conemaugh, PA)

2010 UTC on 15095

Syria: Radio Damascus. Lady with international news topics. "Miami Vice" theme song and local Damascus time check. (Frank Hillton, Charleston, SC)

2130 UTC on 15690

United States: WWCR. "Yahweh Calls" program and ID. First reception of this station. (Leonard Price, Annandale, VA) (Robert Landau, Secaucus, NJ)

2146 UTC on 25945

Costa Rica: Radio for Peace Int'l. Discussion on the theory of evolution to 2205 UTC, and announcer Paul Kelly with news. (Harold Frodge, Midland, MI) Audible on 13660, 21495, 21535 kHz in Spanish. (Lance Micklus, Essex Junction, VT)

2315 UTC on 11800

Gabon: Radio Japan relay. Featured commentary on the ASEAN Conference in Cambodia. (Bob Fraser, Cohasset, MA)

2330 UTC on 7270

Poland: Radio Polonia. National news of Poland and coverage of a televised political debate. Ear-splitting interference from amateur radio operators testing their equipment! (Robert Hurley, Baltimore, MD)

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Earlier this year, Ute World's regular military communication reporter, Bill Battles, noticed a major change in frequency designators on tactical military frequencies heard in the HF spectrum. After reporting this in the column, reader mail started pouring in discussing this new discovery.

A lot of our readers were convinced that what Bill and I both heard was not frequency designators, but references to off shore military operating areas that are designated as warning areas. These zones are also called National Defense Operating Areas. These warning zones are similar to land-locked MOAs (Military Operating Areas).

For those of you that are new to the hobby of listening to military communications, the Department of Defense reserves sections of air and coastal waters throughout the country to conduct military exercises and training missions. These operating areas are clearly marked on aeronautical charts and have such designators as W-101, W-102, etc.

Charts that show these military operating areas as well as other specific information concerning MOAs, military training routes, military tower frequencies, etc., are available from regional aeronautical charts published by the Department of Commerce. You can get these from anyone who sells pilot supplies at any reasonably sized airport. A list of the warning areas along the coastal United States appears in Table 1.

As mentioned before, a lot of mail indicated that the "Whiskey" designator that Bill Battles identified in his log of 13247 kHz referred to these offshore warning areas. To all who wrote in, I do appreciate this information but, pilgrim, the designators that Bill and I heard were not op areas. They are clearly frequency designators.

At first I, too, was a little skeptical at the log. I went to the R-5000 and monitored 13247 for several hours. It was quite evident from monitoring the traffic that Bill's log was valid and that the operators were referring to the channel as "Whiskey 109."

What really convinced me that things in the mil comm world have changed is when I heard references to other frequency designators such as Sierra, Papa, and X-ray channels.

The full reason for this wholesale change is not known for certain, but it appears to be quite widespread and involves

several military agencies. As I have mentioned several times over the last few months, 13247 kHz has definitely become a very interesting and sometimes bizzare frequency to park on and listen to.

Some of the more interesting stations heard on "Whiskey 109" include: Andrews AFB (Andy) working SAM 24126/27000 (Mystic Star network); Ft. McCoy, WS, calling Andrews AFB; Freehand working Ore Hand with a SAC Emergency Action Message broadcast; WAR 46 (FEMA-Ft. Richie, MD) working Neon Gas; GLB working Taco/Goodrich/Larborg/Election with radio checks; McClellan AFB working several aircraft using TAC call signs and Strike Command with messages for DDY38. (This might be a Navy transmission as it was simultaneously transmitted on 4461, 8778, and 13181.)

As you can see, the variety of units showing up on 13247 has been plentiful. My initial impression of all this is that the military is starting to use not only departmental exclusive channels (i.e. Sierra channels appear to be SAC channels), but also DOD now has channels in the HF spectrum that will be shared among the different services.

This development could very well be a forerunner to the long awaited SHARES (Shared Resources) program first described in these pages by Bob Grove. For several years now, the government has been abandoning the HF spectrum in favor of satellites.

It would appear, though, that a renaissance has occurred in DOD with respect to shortwave, and the bands are starting to see increased use again by the U.S. government. To quote Bob Grove, "We got it, it works, let's use it."

This is just the beginning. My crystal ball shows that in the future all sorts of government agencies other than DOD will be using common channels throughout the HF spectrum on a shared basis.

Don't be surprised to see agencies such as Coast Guard, FAA, VA, DOD, and FHA all using the same frequencies on the shortwave utility bands. It is just around the corner and the changes we see now with 13247 kHz might just be the tip of the iceberg.

Since these new designators have only appeared in recent months, a complete analysis and list of frequencies and designators is impossible. However, several of the new designators in use have made it to my desk and are included in Table 2.

I would appreciate any changes, additions, or corrections to this list sent to the address printed in the masthead. Your detailed logs of frequency, designator, call signs, and times are also welcomed. All of this will help our MT readers keep track of this new military radio mystery occurring right now within the shortwave bands of the Utility World.

Monitoring Coastal Warning Areas

For those of you who live close to the coast of the United States, monitoring the military operating areas can really be fun and interesting. By listening to a combination of military aircraft frequencies and HF channels, you can pretty well keep track of what is happening off the coast.

Most of the op areas are under control of the Navy and ships/aircraft of all military services utilize these areas. The primary responsibility for control services falls to the navy's Fleet Area Control and Surveillance Facility (FACSFAC).

TABLE 1
Military Op Areas off the U.S. Coast

W-102	Off the coast of Maine
W-104	Off the coast of Massachusetts
W-105; 506	Off southern New England coast
W-107	Off the coast of New Jersey
W-108; 386	Off the coast of Maryland
W-50; 72; 122	Off the coast of Virginia, North Carolina
W-161; 177	Off the coast of South Carolina
W-132; 134; 157; 158; 159	Off the coast of South Carolina, Georgia, Florida
W-151; 155; 168; 174; 465; 470; 497	Off the coast of Florida
W-453	Off the coast of Alabama, Mississippi
W-92	Off the coast of Louisiana
W-228; 602	Off the coast of Texas
W-60; 61; 251; 260; 283; 285; 289; 290; 291; 513; 532; 537	Off the coast of California
W-570	Off the coast of Oregon
W-237; 460; 601	Off the coast of Washington

TABLE 2 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-109	13247	A truly unique frequency with a lot of DOD different activity on it.

SIERRA DESIGNATORS

S-304	4495	SAC channel Echo -- Airborne Command Post
S-391	6761	SAC channel Quebec -- Primary night channel
S-393	11243	SAC channel Alpha -- Primary day channel
S-312	13211	SAC channel Bravo Whiskey -- Airborne Command Post

X-RAY DESIGNATORS

X-904	9017	Commonly reported Mystic Star channel
X-905	11226	Listed as a USAF GCCS channel, commonly reported Mystic Star channel

PAPA DESIGNATORS

P-382		See note
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NOTE: While a specific frequency has yet to be noted for this designator, references to the designator have been heard on the air.

The list below is presented so that the complete picture is represented for those readers who live close to offshore warning areas. I will include not only HF, but VHF and UHF military frequencies as well.

FACSFAC VACAPES - Call sign Giant Killer

Opareas W-50/ 72/ 110/ 386/ 387:	127.65 Arr/Dep	233.7 Arr/350.0 Dep
Oparea W-122:	135.875/ 251.6/ 310.1 Arr/Dep	
Opareas W-107/ 108:	135.725/ 249.8/ 255.0 Arr/Dep	
Opareas W-105/ 106:	135.225/ 338.1/ 305.0 Arr/Dep	
HF freq all areas:	2552/ 4373 in USB	

FACSFAC Jacksonville - Call sign Sealord

Opareas W-132/ 133/ 134/ 157/ 158/ 159/ 497	ATIS:265.2
Sealord primary:	120.950/ 267.5
Jacksonville secondary:	134.65/ 284.5
Beaufort secondary:	135.925/ 313.7
Patrick secondary:	135.825/ 369.9
HF freq all areas:	3130/ 6723/ 6742/ 11252 in USB

FACSFAC Pensacola - Call sign Seabreeze

Opareas W-155/ 453/ Eagle Echo/ Eagle Golf/ Eagle Zulu	
313.2/ 118.425/ 275.6/ 303.4/ 280.7/ 383.8/ 274.2/ 306.8/ 346.5/ 353.2/ 385.2/ 382.0/ 362.8 and on HF 6835 kHz.	

FACSFAC San Diego - Call sign Beaver

Opareas W-291/ 513/ 260/ 283/ 285	ATIS:282.0
118.65/ 120.85/ 285.7/ 289.9/ 272.6/ 266.9/ 314.7/ 344.1	

Another Mystery Surfaces

Another Bill Battles mystery has surfaced, this time on 10478 kHz. Bill listened in on the frequency from about 1800 UTC until his local dark. The traffic consisted of coded letter traffic (like SAC) and Bill says, "...in fact, at first, I thought I'd found a stray SAC frequency, but the rhythm and call signs don't fit."

The calls Bill heard include November Lima, Sierra Alpha, etc.. Bill said that at the end of the coded broadcast group, they identify how many "items" are in the message and

announce -- "All stations stand by to acknowledge." Then they seem to wait for the receiving stations to decode the message and reply.

Signals are weak at Bill's New Hampshire shack but modulation is very full and clear; and sometimes they seem to shout. Bill gets them best on a dipole that is north/south oriented.

Bill, I have seen this type of call sign pop up all over the spectrum and I believe that it might originate from the U.S. Army in Europe, but I have nothing hard to confirm that yet.

If anybody else would like to take a stab at this one, drop me a line and I will forward it to Bill. In fact, how about it, Mr. U.K.; any guesses from your neck of the woods on the feature this month or Bill's unknown?

Numbers, Numbers Everywhere . . .

Andrew McCormick in Kettering, Ohio, has heard something new and he didn't hear it on his shortwave radio. He says he has tried to hear "number stations" on shortwave without success. One morning recently he got a real surprise.

Andrew explains, "I generally listen to my scanner in the early morning while I am getting up. At 6:00 a.m. (EDT) while scanning the railroad frequencies in my area, my scanner stopped on 161.520 MHz (CSX transportation road channel #1).

"A female voice (rarely heard on railroad channels) was sending single digit numbers in Spanish. This channel broke squelch several times during the next few minutes. Unfortunately I didn't get my tape recorder hooked up in time to record this. I am very puzzled as to what this might be."

Well, Andrew, you probably experienced a tropospheric DX opening into Latin America. Occasionally with the right weather conditions, VHF and UHF signals will propagate over long distances. But ... just wouldn't it be interesting to find out if there really are number stations on VHF. Hmmmm... think I'll plug 161.520 in the scanner for a while and listen.

QSLs and UTES

MT's own Elsa Kerschner took time out from typing to pose an interesting question concerning last month's column on QSLs. She asks, "Why would anyone expect a commercial station to reply to a reception report with a QSL or verification card?"

Elsa continues, "In a few instances I realize they can gain knowledge of their coverage area through reception reports, and consequently it is only fair to return one. But for many businesses, I fail to see any value to the company. Why would an airline say, 'okay, you heard us.'"

Elsa, to be honest, this is hard to pin down. Most likely, "goodwill" is probably the prime reason. Also, the more widely heard stations have received so many reports that they have some understanding of the value QSLs have to listeners. Some stations even have ham radio operators on their staff who understand what the listener is trying to do, so card and letter QSLs are frequently received from such stations.

The practice of QSLing dates back many years and it would appear that ham radio operators can be thanked for the practice. But I would be amiss if I did not say that not all stations QSL. Utility QSLing is the hardest part of the hobby to do successfully. Results aren't always good, but when that special QSL is received, it usually is the one you never forget. Thanks, Elsa, for the letter.

And now, let's tune in to what you are hearing in the Utility World ...

Utility Loggings

Abbreviations used in this column

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

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

- 2103.5 Halifax Coast Guard working U.S. Coast Guard Southwest Harbor Group, Maine, with traffic in reference to a distress message received on 156.800 MHz. Yarmouth CG Radio also heard at 2258 in USB. This was believed to be a hoax call by the Coast Guard. (Battles, NH)
- 4067.0 British military comms referenced the landing of the Sea Approach in USB at 0010. (Battles, NH)
- 4020.0 Spanish female five-digit number station ending transmission at 1112 (Thursday UTC). (HS, CA) *Welcome back, HS, glad you could check in with us.-ed.*
- 4125.0 Vessels Perseverance and Mar-Gar (WSA6661) chatting in USB at 0729. Both at sea heading for Cape Flattery, Washington, and discussing the Tofino, BC Coast Guard weather broadcast. (Hulse, OR)
- 4670.0 Spanish female four-digit number station ending transmission at 1122 (Thursday UTC). (HS, CA)
- 5218.0 Spanish female five-digit number station ending transmission at 0618 (Tuesday UTC). (HS, CA)
- 5320.0 USCG Hampton Roads, Virginia, working Coast Guard Cutter Point Arena at 2210 in USB. (Doyle, CT)
- 5370.0 Spanish female five-digit number station at 0630 (Tuesday UTC). (HS, CA)
- 5526.0 PanAm 440 working ATC Belem, Brazil, with its ETA to Miami at 1015. Heard at 0420 in USB. (Ken Beresford, UK) *Welcome aboard, Ken. Thanks for the first time report.-ed.*
- 5696.0 NOQ-US Coast Guard Air Station Mobile, Alabama, heard in USB at 0059 with traffic. NOP-US Coast Guard Air Station Brooklyn, New York, working CG aircraft 1475 at 1245 in USB. (Battles, NH)
- 5830.0 Blank carrier heard at 0200, then into English female sending five-digit numbers from 0215-0300. Noted no words sent during broadcast. It was easy to follow along and make a transcript, which I did. If you think I went crazy listening to this for 45 minutes, wait till you see 10735.0. (Thursday UTC). (HS, CA) *More patience than I have, HS.-ed.*
- 6227.0 Spanish female five-digit number station active here at 0700/0800 (Tuesday UTC), 0900 (Monday UTC), and 1000 (Saturday UTC). (HS, CA)
- 6506.4 NMO-Coast Guard COMSTA Honolulu, Hawaii, heard in USB at 0546 reporting weather broadcast and channels monitored constantly. (Hulse, OR)
- 6637.0 Qantas 11 working Sydney and Brisbane, Australia, LDOC stations at 1820 in USB.
- 6714.0 King 74 calling Eglin Rescue Operations several times in USB at 0106. (Battles, NH)
- 6756.0 Andrews AFB, Maryland, working SAM 31681 in USB at 0048. Said they were using the Scott and Texas (???*interesting-ed.!!*) antenna sites. (Battles, NH)
- 6757.0 Boulevard working Re-Arrange on frequency "Whiskey 103" at 0448 in USB. (Battles, NH)
- 6842.0 Spanish female five-digit number station heard 0600 (Friday UTC). (HS, CA)
- 6876.0 Spanish female five-digit number station ending transmission at 0726 (Thursday UTC). (HS, CA)
- 6892.0 Spanish female five-digit number station at 0700 (Wednesday UTC). (HS, CA)
- 7473.0 TJK-ASECNA Douala, Cameroon, in RTTY at 2341 with RYs and garbled traffic. (Kirby, UK)
- 7485.0 Spanish female five-digit number station heard ending broadcast at 0946 (Tuesday UTC). (HS, CA)
- 7552.0 WNFT 417-Morristown, New Jersey, net control for monthly HF radio net in USB at 1913. (Battles, NH)
- 7614.0 5UA-ASECNA Niamey, Niger, with RTTY message: *RYRY QRK 5/5/5/5 GA TFC DE 5UA TESTING at 2349. (Kirby, UK)
- 7860.0 Spanish female five-digit number station heard between 1034-1048 (Saturday UTC) (HS, CA)
- 8112.0 Spanish female five-digit number station heard ending transmission at 0937 (Thursday UTC). (HS, CA) *I have had reports of some CW numbers on this frequency around 0236, interesting.-ed.*
- 8186.0 Spanish female five-digit number station heard ending broadcast at 0233 (Thursday UTC), 0744/1000-1006 (Tuesday UTC) and 0719 (Saturday UTC). (HS, CA)
- 8390.0 EWCS-Soviet M/V Pevek heard in CW at 0608 working OBC3 with a position report message for the Callao Harbor master. (Garie Halstead, Saint Albans, WV)
- 8400.0 COJO-Cuban vessel Rio Toa in CW at 0542 working OBY2 with a position report and ETA. Puerto de Destino mentioned in text. (Halstead, WV)
- 8401.0 UUOV-Soviet M/K Kronshtadt heard in CW at 0750 working OBC3 with a ship's position report for the Callao harbor master. Vessel located off of Trujillo, Peru. (Halstead, WV)
- 8401.0 UIAW-Soviet M/V Mikail Kvasnilov heard in CW at 0745 working OBC3 with a position report message for Agencia Maritima Concordia. Vessel's home port believed to be Murransk. (Halstead, WV)
- 8404.0 EVRP-Soviet vessel Paudzha with a crew of 84 heard in CW at 0549 with a message for Alaska. Message asked for immediate approval for crew port-of-call to Dutch Harbor (Aleutian Islands). (Halstead, WV)
- 8404.5 UYHW-Soviet M/V Ilya Kulik heard in CW at 0550 working SUH with an ETA message for Port Said. Ship loaded with 12055 tons of sugar. Same message sent to the authorities at Suez. Message number three and four sent to Aqaba, Jordan, and Beirut, Lebanon, respectively with the same text. (Halstead, WV)
- 8405.0 BOFO-People's Republic of China M/T Hongzehu, heard in CW at 0518 working PJC with an ETA message for Punta Cardon, Venezuela. (Halstead, WV)
- 8432.0 YQIY-Romanian M/V Sulina heard in CW at 0639 working DAL with a message for Hamburg giving ETA for Latakia (Syrian port city). (Halstead, WV)
- 8744.0 KMI-Point Reyes, California, heard a phone conversation between a sailor at sea and his wife and brother on shore. The brother told the filthiest joke I have ever heard in my life. This catch would not have been possible without the frequency list in the March MT. Thanks, MT. USB on channel 809. (HS, CA) *Wow! And I have heard more than my share of good ones in the navy, too. You must send me that one, HS.-ed.*
- 8765.4 NMN-US Coast Guard COMSTA Portsmouth, Virginia, in USB working the fishing vessel Allyson Blair located at 40N/74.21W at 0828. Coast guard giving doctor's advice for injured seaman and instructions for getting him off the vessel when it reaches the sea buoy. At 0901 NMN requested weather conditions and the number of persons on board vessel. Captain advised ETA to the sea buoy about 0923. Transfer made at 0927. (Jim Boehm, San Antonio, TX)
- 8765.4 NMO-US Coast Guard COMSTA Honolulu, Hawaii, in USB requesting and receiving weather observations from the research vessel New Horizon WAO3864 at 0900. (Boehm, TX)
- 8765.4 NOJ-US Coast Guard COMSTA Kodiak, Alaska, working CGC Sedge, NOAA ship Miller Freeman, CGC Planetree and CGC Ironweed. Also heard COMSTA New Orleans working CGC Mesquite, informing ship it will dispatch Chilula from North Carolina and perhaps the Wedge to aid the Mesquite at sea. New Orleans signal is strong, walking all over Kodiak, which is substantial itself. (Hulse, OR)
- 8867.0 Qantas 11 working Sydney with SELCAL check at 0710 in USB. Air New Zealand 147 working Auckland also with a SELCAL check at 0802 in USB. (Beresford, UK)
- 8867.0 Honolulu Radio asking a Continental aircraft to raise Qantas 4 on the guard frequency to check for a stuck mike. He did, it was. in USB at 1401. (K.R. McKenzie, North Delta, BC, Canada)
- 8918.0 Tehran Radio working two aircraft. One was a JAL flight, the other unidentified, in USB at 1520. (McKenzie, BC)
- 8942.0 United 822 working Vientiane, Laos, with a position report at 1639 in USB. (Beresford, UK)
- 8967.0 Rosy 81 working Trenton Military, Canada, with NORAD traffic in USB at 2009. (Battles, NH)
- 8984.0 NMC-USCG COMSTA San Francisco, California, working Rescue 1703 in USB at 0120 in reference to a search track. (Doyle, CT)
- 8990.0 Poor Treat working Six Hotel Mike, Beaver, 12 Bravo etc. with RAF communications in USB at 2017. (Battles, NH)
- 9010.0 J54T working St. John's, Canada, military in USB at 0021. (Battles, NH)

9014.0 Tactical call signs Aruba 24 working Aruba 25 in USB at 0138. (Doyle, CT)

9023.9 Muscular working Hornfrog, 9023.5, heard at 1710 in USB. Exercise Amber 1, fighter in tail chase. I think I copied the same exercise on UHF 258.9 which IDs as Huntress. (Doyle, CT)

9283.0 Juliett working Kilo with tactical operations involving Loran equipment in USB at 0019. (Battles, NH)

9450.0 Spanish female five-digit number station heard ending at 0517 (Tuesday UTC). (HS, CA)

10024.0 Lima Radio, Peru, working many aircraft in USB in Spanish at 0320. (McKenzie, BC)

10066.0 Kuala Lumpur Radio, Malaysia, working Malaysia 4 with position reports and frequencies for Madras (6556). Nothing heard on that frequency. At 1635 in USB. (McKenzie, BC)

10194.0 Century 62 working Trenton Military, Canada, at 2104 in USB. Aircraft told to switch frequencies to 13207. (Battles, NH)

10478.0 Bravo Romeo working Yankee Whiskey with a radio check and tactical traffic in USB at 0015. (Battles, NH)

10632.0 SUC-Cairo Aeradio, Egypt, sending RTTY RYs at 2308. (Kirby, UK)

10735.0 Heard a station sending Spanish female five-digit block numbers. Some were whole, some were 2/3, some were 4/1 some were 3/2 and yes, there was even a ten-digit block. The weird part was this: it lasted 15 minutes, then repeated and it never stopped. Listened to this bozo from 0727 until 1111. This is one for the Guinness Book. I just turned it off and went to bed. Did anyone else hear it? They have my sympathy. (HS, CA)

10780.0 Gazette working Ascension Island and Cape Radio with traffic at 0215 in USB. (Battles, NH)

11058.0 AFA-Andrews AFB, Maryland, working Cheerleader with radio checks plus assumed the aircraft's guard. This is a new Mystic Star frequency for me. Heard at 2214 in LSB. (Battles, NH)

11149.0 Mike 2 Mike working Sierra 3 Charlie with speed-course traffic at 1512 in USB. USN? (Battles, NH) *Probably so, Bill.-ed.*

11175.0 5HD-Dar es Salaam Aeradio with RTTY weather and AFTN traffic at 2047. (Kirby, UK)

11226.0 Stickler working Alley Oop on frequency X-ray 905 in USB at 0124. (Battles, NH)

11234.0 LP 89 working RAFAIR 9253 with relay for Architect (RAF) at 1744 in USB. (Battles, NH)

11243.0 Palm Date making an EAM broadcast on frequency Sierra 393 at 0323 in USB. (Battles, NH)

11342.0 Delta Airlines flight 1571 working Delta maintenance about an air conditioning problem. First class cabin temp was 78 degrees F, aft cabin was 65 degrees F. The captain seemed quite annoyed with the maintenance man and the maintenance man seemed to be in a hurry for dinner. In USB at 1557. (McKenzie, BC)

11408.0 Mandatory working an unidentified unit with authentication and challenges on SAC channel Yankee Quebec at 1940. (Battles, NH)

11410.0 Missionary working an unidentified station with SAC type traffic in LSB at 1903. Stations mentioned setting up a data channel. (Battles, NH)

11430.0 HMF55-KCNA Pyongyang, North Korea, with RTTY French news at 2235. (Kirby, UK)

11450.0 RDD77-Moscow Meteo, USSR, with RTTY weather at 2239. (Kirby, UK)

11453.0 IMB3-Rome Meteo, Italy, with RTTY weather at 2240. (Kirby, UK)

11466.0 Andrews AFB, Maryland, working SAM 86790 and Dress Suit at 1940 in USB. (Battles, NH)

11475.0 HMF52-KCNA Pyongyang, North Korea, heard at 2242 with English RTTY news. (Kirby, UK)

11636.0 KRH51-Department of State Radio, London, heard at 2246 in RTTY. Believe the transmitters are at RAF Croughton. (Kirby, UK) *Chris says he gets key clicks all over the bands from KRH51 and the transmissions appear to come from Croughton.-ed.*

12348.6 GOVL working Rainbow Radio with phone patch traffic from vessel Act IV at 0041 in USB. (Battles, NH)

12831.5 ULY4-Aleksandrovsk Radio, USSR, heard in CW at 0339 calling UIJ2 with negative results. Then called UWX2 but again no contact. Not sure what this service is, but it is a maritime allocation. (Haistead, WV)

13306.0 Gander ATC, Canada, working Speedbird Concorde 4 in USB at 1949. Concorde advised to call Gander on 126.9. (Battles, NH)

13211.0 Brown Rat working Home Team and Stringer on channel Sierra 312 at 0112 in USB. (New ID?) (Battles, NH) *I think so, Bill.-ed.*

13247.0 Spar 60 working Andrews AFB, Maryland-AFA enroute to Hanscom AFB, Maine, with General Galvin on board in LSB at 1947. (Battles, NH)

13247.0 Andrews AFB, Maryland, working SAM 203 (got trounced by SAC units Electric and Pack Mule) using frequency designator Whiskey 109 identifier at 1739 in USB. (Battles, NH)

13273.0 Japan Airlines 420 working Honolulu with a position report at 0410 in USB. (Beresford, UK)

14780.0 MAC 40625 working Cape Radio with phone patch. Cape requested the aircraft position to turn antenna on them. Then advised that they would try to "sing the paint of the aircraft with the radar signal" at 1854 in USB. (Battles, NH)

15015.0 Omni 51269 working USAF GCCS Ascension Island with phone patch to Army Aero Operations for HF frequency. Phone patch party advised that HF primary was 13250 and 15400 secondary army aero in USB at 2110. (Battles, NH)

15018.0 Andrews AFB, Maryland, working SAM 26000 with phone patch to SAM command in USB at 1558. (Battles, NH)

15038.0 Swordfish 01 working Vancouver Military, Canada, at 2102 in USB with a weather request. (Battles, NH)

16870.6 DJJ-Manila (Bulacan) Radio, Philippines, in KCW with a 30 minute press release concerning that country at 1500. Send its standard CQ marker at 1530. (Boehm, TX)

16952.0 9MB-Penang Naval Radio, Malaysia, with a CW V marker at 1252. QSX 6 9 13 16 19 MHz. (Boehm, TX)

17910.0 Rainbow Radio working CMM 226 with departure information enroute to Toronto at 1841 in USB. (Battles, NH)

18390.0 Andrews AFB, Maryland, working SAM 60203 with HF radio guard check at 1944 in USB. (Battles, NH)

20050.0 Acrobat (this is at Andrews AFB-ed.) working Gold Bloom Search with hand-off time information. Also stated that operator was getting bored at 1912 in LSB. Sounded like one-half of a phone patch duplex pair. (Battles, NH) *It probably was, Bill. That's how you normally find Acrobat operating.-ed.*

20490.0 AQP10-Pakistan Naval Radio, Karachi, with a CW ID for AQP 2/4/5/6/9/10 at 1856. (Chris Kirby, UK)

20870.0 Ferret working Guard Dog at 2001 in USB in reference to the V-1 and NOAA. (Battles, NH)

20975.0 ACM6USC working AAR5USB (Ft. Lewis, WA) with army MARS traffic in USB at 2126. (Battles, NH)

23220.0 Royal Air Force call sign Architect heard at 1931 in USB with a weather broadcast. (Doyle, CT)



"How does Bill Battles hear so much?" you may ask. Well, his monitoring post testifies to his dedication: three ICOM receivers, two Realistic scanners, two Regency scanners, and more. And that was last year!

The Scanning Report

Bob Kay
P.O. Box 98
Brasstown, NC 28902

Cellular Secrets

The times are changing, my friends. When I first began writing for *Monitoring Times*, the Electronic Communications Privacy Act had not yet become a household word. The 800 megahertz band was largely unexplored and "trunking" was something we all did before going on vacation.

Cellular car phones were coming of age, but the cellular price wars hadn't begun. As a result, cellular phones were mostly limited to commercial interests.

In today's paper, I saw cellular car phones selling for \$195.00. A few years ago, the cheapest cellular phone retailed for about \$600.00.

Earlier this year, in January's column, I mentioned that cellular phones would soon be installed in private homes. That trend has started with the installation of fixed cellular phones into some parts of rural America.

Yes, the times are changing and so are cellular phones. However, the cellular industry doesn't want you to know that. It's supposed to be a secret.

In a few years, "digital cellular" will have become a reality. Simply put, digital cellular will allow the cellular industry to add more channels (and make more money), without having to ask the FCC for additional frequencies.

So what's the big secret? If you already own a cellular phone, you may want to sit down for this one. Ready? The standard cellular car phone will not work on a digital cellular network!

It's one of the best-kept secrets in the cellular industry. Most agents that sell cellular phones either don't know about the digitalization plan or are unwilling to openly discuss it with potential customers. Very bluntly stated, digitalization will render your current cellular phone into a useless pile of junk.

As I mentioned once before, digitalization isn't expected to become a reality until the mid-1990s. As we near this projected date, nondigital cellular phones will continue to decrease in price. After all, the industry wants to get rid of them to make room for the new digital models.

Digitalization will begin slowly and not every member of the cellular industry is expected to jump aboard. As a result of this sporadic change-over, owners of nondigital equipment may be able to use their phones for an extended period of time. However, other cellular owners may not be so lucky. Determining where the lines will be drawn between digital and conventional service is difficult, if not impossible.

The cellular giants like Bell Atlantic, Bell South, Pacific Bell, G.E., GTE and MCI are not going to sit down and draw us a map of areas targeted for digitalization. After all, it's supposed to be a secret.

When digitalization comes of age, it will mark the end of cellular monitoring -- at least as we know it. As the industry changes, I'm quite sure that the scanner industry will also change.

Your letters are testimony to the fact that many of you are also computer buffs. As more people become interested in scanning, I suspect that an even larger number will enter our ranks with a solid computer background. If scanner manufacturers would give us a computer-compatible scanner radio, I think our hobby would change right along with the times.

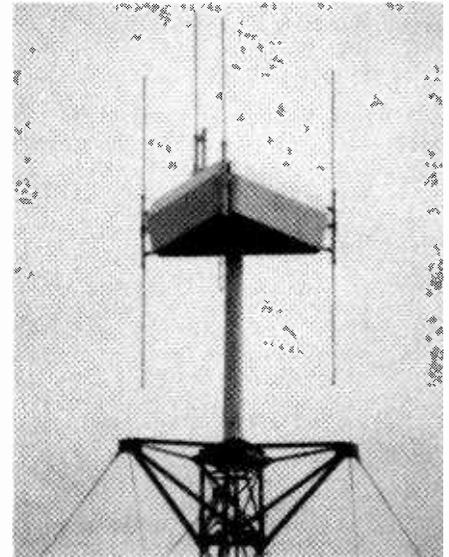
Scanner radios would become the computer buff's new toy. As soon as a transmission defied monitoring, the computer whiz kids would go nuts trying to crack it.

Cellular Harmonics

When Larry Hardie wrote in and explained that he was monitoring cellular phones between 454 and 455 megahertz, I figured that he was probably confusing cellular calls with the mobile telephone service on 455 megahertz.

After I printed Larry's letter in the June issue, more letters came in explaining that the intercepted transmissions were indeed cellular, and not mobile, telephone.

All of the scanner buffs that responded have a cellular tower within one-half mile of their listening post. If you live within close proximity to a cellular tower and can monitor cellular calls between 454 and 455 megahertz, I'd like to hear about it.



Computer operated scanner radios would probably inspire the creation of some very interesting software. Imagine being able to buy the following titles on a micro-diskette: "Digital Cellular Solution," "Trunk Buster," "DVP Revenge" and "Satellite Tracker."

Yes, the times are changing. If you want to read about how these changes will impact upon our hobby, I need your help. Don't keep what you are thinking and what you are monitoring a secret. Send your comments, photos and frequency lists to The Scanning Report, P.O. Box 98, Brasstown, NC 28902. For a personal reply, please include an SASE.

MT Treasure Hunt

If you have not participated in any of the past Treasure Hunts, don't miss out on this one. The prizes include two 1300 H/A frequency counters from Opto Electronics and two quartz halogen dimmer controlled lamps from Littlite/CAE Inc..

The 1300 H/A that you can win is housed in an aluminum cabinet and features 1 MHz to 1300 MHz frequency coverage in a small pocket-size instrument. The red LED displays eight digits and automatically sets the decimal point.

Input sensitivity is excellent, making the 1300 H/A one of the world's most sensitive hand-held frequency counters. The excellent sensitivity makes the 1300 H/A ideal for portable frequency hunting. Transmissions from police, fire, taxis, etc. can be detected while on foot or from within your vehicle.

If your entry is selected as one of the lucky winners, the 1300 H/A will be sent to your door step with rechargeable Ni-Cad batteries, telescoping antenna and a 9 volt wall transformer.

Can't wait? The 1300 H/A retails for approximately \$170.00 and can be ordered directly from Opto Electronics, 5821 N.E. 14th Avenue, Fort Lauderdale, Florida 33334.

With the approach of winter, our daylight hours will begin to shorten, and a lot of us will be scanning after dark. Like most of you, I don't like scanning with the entire room illuminated. Regular desk lamps were okay, but they were often too bright and

too large. I wanted a small dimmer-controlled lamp with a slot for a filter; a directional lamp that could be manipulated to direct a beam of light to a specific area.

Sound impossible? That's what I thought until the folks at Littlite sent two of their gooseneck lamps for the Treasure Hunt.

The base of the lamp measures 2" x 4" and the 12" gooseneck can be positioned in almost any configuration. On either side of the lamp head there are two slots for installation of a filter. For improved night vision, it wouldn't be hard to cut a piece of red plastic and slide it into place.

The lamps are powered by a 12 volt transformer that is included. Since the supplied current can be either AC or DC, the Littlite could easily be modified for mobile use as well.

Littlite is a reliable dimmer-controlled lamp, ideally suited for night time scanning. Retail price is \$49.95. Again, if you simply can't wait for the drawing, contact Littlite/CAE Inc., P.O. Box 430, Hamburg, MI 48139, or call 313-231-9373.

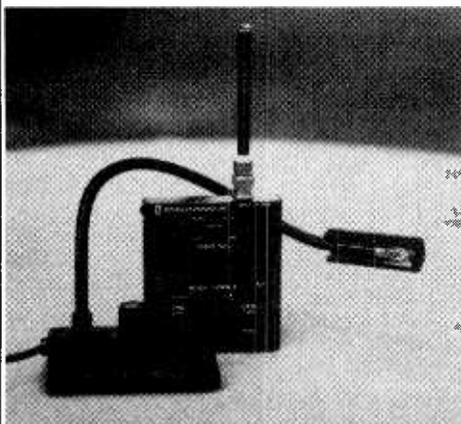
Ready for the clues? Since the prizes are extremely popular, the clues are a little more challenging this time. Let me know if you want clues that are even more difficult.

1. The April 1989 edition began our first treasure hunt. Provide the answer for clue #4.
2. "The Pros Subscribe. Shouldn't You?" What was the original wording of this popular *MT* ad?
3. Take a standard sheet of 8-1/2 x 11 typewriter paper and place it over the front cover of the July 1989 edition of *MT*. Align the top and left hand edge of the paper with the top and left hand edge of the cover. Trace the arm of the girl onto the paper. When you're done, her hand will appear to be pointing. Using the July 1989 edition, turn to page 53 and tightly press the paper into the left hand seam of the magazine. Once again, align the top edge of the paper with the top of the page. The hand is now pointing to a specific sentence on page 53. What are the four numbers in that sentence?
4. On commercial airplanes, flight recording devices are commonly called "Black Boxes." What color are the devices actually painted?
5. The following is the last sentence from a popular column in the June 1989 issue of *MT*: "Drop us a line." What is the name of the column?

Okay, that's all of them. When you send in the answers, remember that an SASE is not needed. A lot of folks simply send the answers on a postcard. Here's the address: Treasure Hunt, P.O. Box 98, Brasstown, NC 28902.

Frequency Exchange

A few months back, Steve Hada from northern California asked



The Opto Frequency Counter and the "Littlite" goose neck lamp are the prizes for the Oct-Nov Treasure Hunt.

if anyone could identify the agencies using 163.975 and 167.275. These frequencies are used exclusively by the FBI. As pointed out by one reader, Steve's scanner is probably rounding off the frequencies to the third digit after the decimal. Steve is actually monitoring 163.9625 or 163.9875 and 167.2625 or 167.2875.

Anyone have the business and/or mall security frequencies for Sacramento, California? If so, Gary Webbenhurst would appreciate receiving your list.

Near Phoenix, Arizona, the Salt River Irrigation Project has been monitored on 451.250 and 451.20. Along with the Salt River frequencies, John Moran also sent in the following Arizona Highway Patrol frequencies: 460.225, 460.30, 460.325, 460.025, 460.40 and 460.475.

In Baytown, Texas, Michael Elder has been doing some serious monitoring. Mike sent in over 100 frequencies. Here is a brief sample of his list:

Harris County Sheriff's Office	Mobile Unit	Dispatcher
East	155.910	154.890
West	155.850	153.920
Car to car	154.950	154.950
Intercity	154.950	155.370
Narcotics	154.725	153.995
Organized Crime	159.030	158.790

If you want the complete list, here's the deal. Send an SASE to Texas Frequencies, P.O. Box 98, Brasstown, NC 28902. This is another freebie, folks, so hurry. Letters postmarked after October 31, 1989, should include a dollar to cover copying and handling charges.

If the lights go out in south-central Georgia, here are some of the frequencies for Georgia Power and Light: 451.075-Albany, 451.1-Tifton, 451.025/451.125-in many areas including Thomasville. Thanks to Wain Buckley for sending these along.

Leaving the warm Georgia air behind, our next stop is Groton, Connecticut. Although the November air can be quite cold up there, Arthur Heely's scanner radio is kept warm by monitoring the hot action frequencies of the Groton Submarine Base:

Housing	138.850
Public Works	139.550
Base Security	140.350
Fire/Ambulance	140.225
Pier Security	140.700
Hospital Paging	149.075
Radiation Control	149.125

If you prefer a slightly colder climate, let's wrap up this month's frequency exchange with a visit to Winona, Minnesota. To hear all the action in his neck of the woods, Thomas Siemers has provided the following list of frequencies.

151.085	Buffalo County Highway Department
152.005	Winona Hospital Paging
152.03	Mobile Phone
152.09	Mobile Phone
152.3	Whetstone Salvage Towing
152.39	Winona Taxi-Base
153.665	Northern States Power Company
153.77	Wabasha County Fire
153.86	Winona City Police-Mobile
154.04	Winona Local Government
154.16	Winona County Fire
154.68	Wisconsin State Patrol
154.8	Winona County Sheriff
154.905	Minnesota State Patrol
154.92	Minnesota State Patrol
155.04	Winona City Police
155.055	Arcadia Local Government
155.1	Trempealeau Local Government

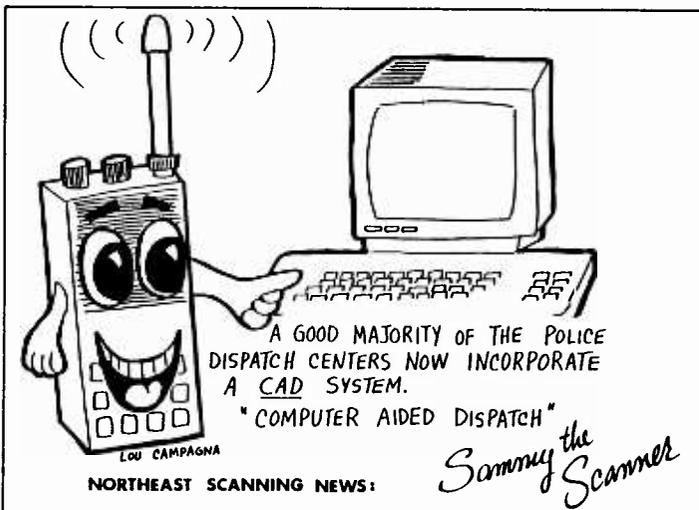
- 155.115 Buffalo County Sheriff
- 155.12 Winona County Highway Department
- 155.235 Winona Ambulance
- 155.34 Winona General Hospital
- 155.37 Point-to-Point
- 155.385 Winona General Hospital
- 155.43 LaCrosse County Sheriff
- 155.475 Winona City Police
- 155.625 Wisconsin State Patrol
- 155.715 Wabasha County Sheriff
- 155.775 Trempealeau County Sheriff
- 155.925 Wabasha City Police
- 155.955 Winona State University Security
- 157.65 Winona Taxi-Mobile
- 158.88 Winona Local Government
- 158.895 Buffalo County Sheriff
- 158.91 Winona City Police-Mobile
- 159.12 Winona County Highway Department
- 159.33 Wisconsin DNR
- 160.425 Burlington Northern RR
- 160.62 Burlington Northern RR
- 160.65 Burlington Northern RR
- 160.77 Soo Line RR
- 160.89 Chicago & Northwestern RR
- 161.1 Burlington Northern RR
- 161.25 Amtrak
- 161.37 Soo Line RR
- 163.25 Winona Hospital Paging
- 163.4125 Corps of Engineers Locks and Dams
- 453.2 Winona County Sheriff
- 453.25 Minnesota State Patrol
- 458.2 Winona County Sheriff
- 458.25 Minnesota State Patrol

The Unscrambler

It wasn't that long ago that speech inversion was considered to be a state-of-the-art method for insuring voice privacy. A ham radio operator, tinkering around at home, built the first inverted speech decoder. A few years later, the units sold in magazines for under fifty bucks.

Although the ECPA has made the decoders illegal for use with a scanner radio, the devices are still available for other purposes. Ramsey Electronics sells an inverted speech unit for telephone security. This handy kit could also be used with any scanner radio to unscramble inverted speech.

Using the device in this manner would be illegal. So, limit your use to test purposes only. The retail price of the kit is about \$30.00. If you are interested, contact Ramsey Electronics, 2575



Baird Road, Penfield, NY 14526. 716-586-3950.

Fast Food Frequencies

Have you been monitoring your local McDonald's order window? While it may not rank up there with cordless or cellular monitoring, there are some dedicated listeners out there. Bob Eisner, from Germantown, Maryland, is one of them. Here is his list:

Restaurant	Customer	Clerk	Location
Arby's	30.8400	154.5700	Atlanta, GA area
Burger King	457.5500	467.7750	Baltimore, MD area
	457.5625	467.7875	Washington, DC area
Hardee's	30.8400	154.5700	Washington, DC area
Kentucky Fried Chicken	30.8400	154.5700	Occoquan, VA area
	457.5875	467.8125	Vienna, VA area
	460.8875	465.8875	Washington, DC area
	462.7625	467.8875	Washington, DC area
McDonald's	35.0200	154.6000	Washington, DC area
	154.5700	170.2450	Washington, DC area
	154.6000	171.1050	Washington, DC area
Roy Rogers	457.5375	467.7625	Washington, DC area
Taco Bell	30.8400	154.5700	Washington, DC area
Wendy's	457.6125	467.8375	Washington, DC area
	460.8875	465.8875	Washington, DC area

Driving in the Fast Lane

In Connecticut there are 24 hour radar units that automatically photograph the license plates of speeding vehicles. After the film is reviewed, a summons is sent to the offender through the mail.

In addition to video tape, speed enforcement is also done by aircraft and by routine road patrols. The frequencies for speed enforcement are: 42.200, 42.240, 42.300, 42.360, 42.520, 42.580, 42.640, 42.680, 154.665, 154.830 and 159.150.

Bob Murphy, who lives in Gales Ferry, Connecticut, sent in the frequencies and an updated list of roadside camera locations. However, I won't print the camera locations. Oh, stop moaning and groaning. Look, this is the scanning column. I'm not supposed to print State Police roadside camera locations!

Frequency Allocation Guides

Back in the June issue I offered a wallet-sized frequency guide enclosed in plastic. The small guide listed the various agencies between 30 and 1200 megahertz.

Since there were "left-overs" from the first Treasure Hunt, I laminated, individually cut them out and stuffed them in your envelopes for two bucks. On some of them, I even included a personalized note on the back.

A lot of you have written and asked me to do again. Since I'm beginning to soften up for the holidays, I decided I would. I even went a step further and made up an exclusive wallet-sized federal government guide as well. The federal guide lists the frequency ranges used by the government between 29 and 419 megahertz.

Simply send an SASE with two bucks and specify either the regular or federal guide to: P.O. Box 173, Prospect Park, PA 19076.

Revisiting Connecticut

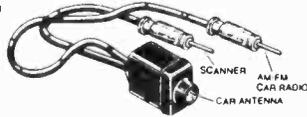
No, I still refuse to print the camera locations. However, since I'm being so nice to my other readers, I'll wrap up this column by offering them for an SASE. Send your request to P.O. Box 98, Brassstown, NC 28902.

Bob Kay's book, the *Citizen's Guide to Scanning*, will be published this fall by DX Radio Supply. Look for it at your radio store.

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- Brilliantly backlit LCD shows frequency, channel and function
- Selectable search steps--5, 12.5, 50 kHz (30 kHz on cellular when restored)
- Zeromatic search stop for accurate frequency readout
- Dimmer for night viewing
- Sound squelch skips dead carriers
- Dual 120 VAC/12 VDC power supply
- Weight: 4-3/4 lbs.; Dimensions: 8-1/2"W x 3"H x 8"D

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Only **\$389**

Retail **\$419.95**

**Plus \$5 UPS/\$10 U.S. Parcel Post
Canadians: \$15 Air P.P.**

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Replace that inefficient flex antenna with our universal 25-1300 MHz whip -- and stand back! Adjustable from 7 to 46 inches, the ANT-8 is made of chrome-plated brass and equipped with a standard BNC base to fit most amateur hand-helds and scanners. Transmits on 45-960 MHz.

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**Plus \$1.50 Shipping
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DESKTOP UNITS

If your desktop scanner is equipped with a BNC antenna connector, try the new Grove ANT-8B with right-angle adaptor for improved low, high and UHF band reception when an outside antenna is not practical.

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\$17.⁹⁵

Mobile Antenna

*Designed specifically for today's
wide frequency coverage scanners!*

Utilizing Grove's exclusive multi-element construction, this sleek, black, *24 fiberglass whip, mounted on a strong, chrome-finished magnetic base, assures premium signal reception on 30-50 MHz low band, 118-136 MHz aircraft, 136-174 MHz high band, 225-400 MHz military aircraft, 406-512 MHz UHF land mobile and 806-960 MHz microwave mobile.

Tested to withstand at least 85 MPH road speed and equipped with 12 feet of coaxial cable.

ANT-4M

\$30

(Magnetic mount with Motorola Connector)

ANT-4B

\$35

(Magnetic mount with BNC connector)

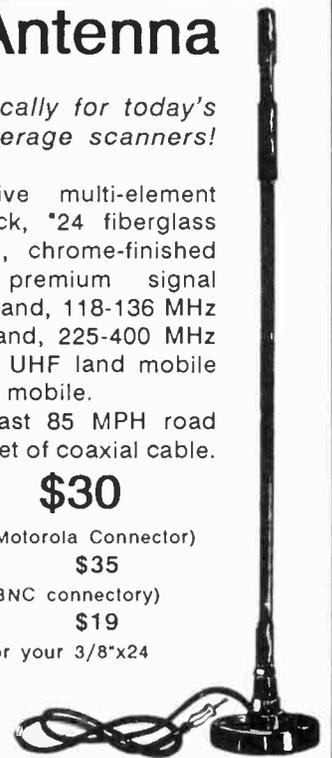
ANT-4W

\$19

(Whip antenna alone for your 3/8"x24

TPI threaded mount)

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what's new?

Aero Comms

If every book was done as well as *The Aeronautical Communications Handbook, HF Edition*, there'd be a lot more people involved in this hobby. Author Bob Evans has produced a very impressive work covering every conceivable aspect of aero-DXing imaginable.

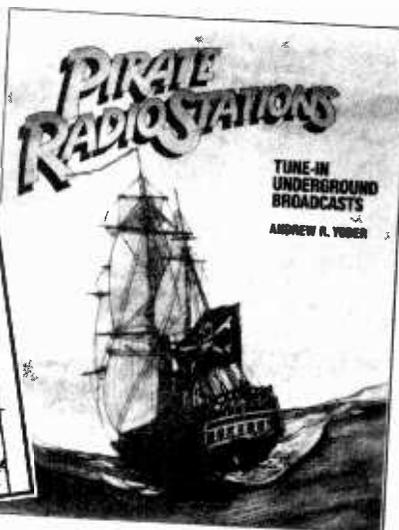
Within the 270 pages, there's commercial airlines, AFTN RTTY networks, USAF and other military services, Drug Enforcement Agency Operations and even QSLing.

The Aeronautical Communications Handbook is rounded out with a master list of over 500 active frequencies, a glossary and a bibliography. All this costs just \$19.95 plus 1.25 book rate delivery. Send check or money order to DX Radio Supply, P.O. Box 360, Wagontown, PA 19376.

Pirate Radio Stations: Tune-In Underground Broadcasts

If you've ever wondered how everybody else seems to be tuning in pirates that you never hear, this book is for you. Not just a list of stations or collection of profiles, author Andrew Yoder explains how to tune them in, identify them, and QSL them.

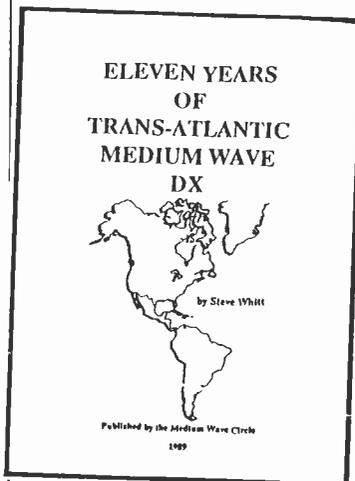
Yoder also traces the history of pirate radio from its emergence in the 1920s, interviews the broadcasters and provides a "behind the scenes" look at one some people say is the last remnants of fresh air on the



shortwave bands.

There's also an up-to-date station listing. Total pages: 192, including 85 illustrations.

Pirate Radio Stations is scheduled to ship next month. You can save \$1.00 off the cover price by ordering now from DX Radio Supply, P.O. Box 360, Wagontown, PA 19376. Send \$11.95 plus 1.25 USPS book rate or 2.50 UPS.



Trans-Atlantic Medium Wave DX

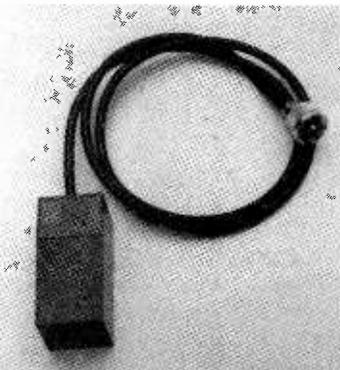
Medium Wave News, a British DX club, is offering a 20 page booklet called *Eleven Years of Trans-Atlantic Medium Wave DX*. It is a booklet, says the club, "that no DXer should be without."

Eleven Years is a chronicle of every station from the Americas and

Caribbean heard in the UK and Ireland since 1978. The list is impressive.

Around 750 stations are itemized with full details of when they were last heard and by whom. Full details of call signs and frequency changes are also noted.

To order this interesting little piece of work, send \$1.75 (if you live in the UK) or \$2.00 elsewhere (payable by international money order or Girocheque) or 7 IRCs (available from your post office for .95 each). The address: MWN Reprints, 43 Atwood Drive, Lawrence Weston, Bristol, BS11 OSR.



Loop Coupler

A lot of people who would otherwise make pretty fine AM broadcast band DXers find themselves limited by their non-DX radios. While these consumer-grade units have a built-in ferrite-bar antenna, it cannot be disconnected and there is often no provision for connecting a better, external antenna.

Palomar Engineers have put an end to this problem,

allowing you to couple a special DX antenna to any radio, regardless of whether it has a connection for an external antenna.

It's the Palomar model LC-1 Loop Coupler. It takes the output of a Palomar loop antenna and converts it into a magnetic field that the radio's built-in ferrite antenna can utilize.

The LC-1 is available for a mere \$20.00 plus \$4.00 shipping from Palomar Engineers, P.O. Box 455, Escondido, CA 92025 or call 619-747-3343. A free catalogue is available on request if you mention *Monitoring Times*.

ICOM IC-726 HF/50 MHz Transceiver

Hams interested in taking advantage of the great 50 MHz band conditions during this time of exceptionally high sunspot activity will want to check out the new IC-726. This small, lightweight, and easy to operate HF transceiver covers 500 kHz to 30 MHz and from 50 to 54 MHz.

There's 100 watts power output, wide dynamic range, 26 memory channels and best of all it's a compact unit designed to meet the demands of mobile users.

The IC-726 is now available for \$1,299 at your favorite radio store.

FDNY Video

If the new fall lineup has already got your eyes crossed, push this nifty sounding (we were not offered the opportunity to review the tape) video in the VCR and prepare for disaster.

The disaster is not the tape itself, rather actual footage of the New York City Fire Department in action. Scanner buffs should send \$20.00 plus 5.00 shipping and handling to Richard Quick, 905 Waverly Place, Baldwin, NY 11510.

Featured Product of the Month:

Communications Manager

by Datametrics

With the age of micro-computers well established, it is about time that an effective system for linking computers and radios became available.

While thousands of home-brew programs glut the market, most are rather primitive and of marginal value to the serious listener to the

and edited.

Three different scan-resume delay characteristics may be chosen: Select the delay time in seconds whether or not a signal remains on; select a minimum delay time; or select a delay time in seconds after the signal drops out (like a real scanner!).



radio spectrum. The Datametrics Communications Manager is a profound exception.

Separate versions of the program are available for the ICOM R71A and R7000 communications receivers. The program allows an IBM-compatible desktop computer to control the receiver's frequency, mode, channel number, and scan or search routines--and much more.

An autolog feature allows the user to set the recording times for intercepts and print out summary reports in spread-sheet fashion when queried. A memory sort feature is also included and memory data can be printed out on command.

The autolog records time of intercept, duration of transmission, frequency and mode setting for reference. The search routine permits the installation of any frequency limits, search increments and mode. The memory file may be retrieved

The scanning speed itself can be changed and any combination of memory channels can be selected for scanning.

Each record includes data on frequency, mode and channel number. A filter field allows for searching the comments for common terms like "emergency", "police" or "base" so that custom sorts can be conducted based according to need. Up to 1000 channels may be memorized per file.

Peripherals

In order to utilize this system with the ICOM R71A the user must procure the ICOM UX14 interface; the R7000 requires no additional hardware.

Datametrics includes a small interface of their own which connects between your home computer and the ICOM devices; it is "symbiotic" -- it requires no external power source, and no internal connections to



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- ICOM R-71A HF Scanning Receiver\$850
- Collins R390A (Reconditioned/Calibrated)\$750*
- Japan Radio NRD-525\$1,150
- Sony ICF-2010\$318
- Sony ICF-2003\$245
- Sony Pro-80\$350
- RACAL RA-6790 (GM)/R-2174 CALL
- Realistic PRO-2005 Scanner\$399
- 3TF7 Ballast Tube - Brand New!\$40
- Bearcat BC-200XLT - w/Cellular restoration\$275

* Cost includes Federal Express Shipping

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the ICOM receiver. A floppy disk is included.

Software

Documentation for the Datametrics Communications Manager is slick; it is brief and to the point, and comes in a professional vinyl binder. 48 pages in length, it is well indexed for quick and easy reference.

Your computer's keyboard function keys become powerful when used with the Communications Manager, allowing the callup of:

- HELP (summarized operating commands)
- CODES (ten codes and other signal codes which relate to the active file)
- PARAMETERS (customize subroutines like delay, duration, etc.)
- LOCKOUT (temporarily ignore certain

- memorized frequencies)
- PAUSE (wait for your command to resume)
- RESUME (start scanning sequence without waiting for automatic command)
- FILTER (sets targeted channels such as "POLICE")
- MAIN MENU (return to choosing basic program functions).

We rate the Communications Manager program tops in the field for professional data handling of R71A and R7000 receiver routines.

Communications Manager is \$299 from Datametrics, 2575 South Bayshore Drive, #8A, Coconut Grove, FL 33133. A manual and demonstration disk for system evaluation are available for \$15.

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

Doing the Hobby on a Hundred Dollars

I dunno... Sometimes I just get in this weird sort of mood. As a student and sometimes sage of the radio hobby, I feel it is my duty to keep up on all the latest information. To keep you *Monitoring Times* readers abreast of the latest stuff, I chase after press releases and attend as many shows and conventions as a "normal lifestyle" will allow.

But I'll tell you something; this hobby is going very high tech, high end and all too high priced! I think it was the premiere of the Sony CRF-V21 that sent me slightly over the edge. With a list price of \$6,500 less accessories, there is now a "hobby" radio that goes for more than some cars.

I don't think I'd mind it so much if the folks at Sony (and other manufacturers) took the time to put out a good entry level radio. How can we get kids away from their Nintendo systems long enough to discover the radio hobby without spending the cost of their first semester of college? And what about making the hobby accessible to people on limited or fixed incomes? I don't think too many folks can blow their next half dozen Social Security checks on a communications receiver.

Are you feeling sorry for yourself, Uncle Skip???

You betcha!!! The time has come to turn Old Uncle Skip's radio expertise in the direction of getting folks involved in the hobby for a minimum amount of money. But how cheap can you go? What would be a good, logical budget for someone to get a good start in DXing?

Thinking back to when I first started turning the dials (not all that long ago), I got rolling with a used Hallicrafters S-120 and aluminum foil tacked around two walls of my



Many fine pre-owned radios are available for under \$100.

bedroom for an antenna. As I recall, I logged my first fifty shortwave broadcast countries and learned to copy code well enough to get my first amateur radio license with this set-up. Total cost -- \$35 -- if you count the subscription to *Electronics Illustrated*.

Well, time certainly has passed. And costs have risen quite a bit. So we will just have to up the ante a bit. Could a person set up a practical shortwave listening post for \$100? Let's give some thought in that direction as we transit into (drum roll please)

UNCLE SKIP'S C-NOTE SHORTWAVE STATION

Well, right off the bat I must say that this is not going to be easy. I also hope to give you folks access to just a tad more technology. In planning this article, I came to the conclusion that we should look at receivers that give complete shortwave band coverage, are at least double conversion in design and solid state in circuitry.

Why rule out tubes? If you want to go the tube route, you can find dozens of rigs that will fit the bill. Simple, Compadre. We don't need a beginner frustrated from the get go by needing to go tube scrounging, do we? Who knows, we might even be able to throw in digital readout!

So, let's see now, general coverage communications receivers under \$100. A quick scan of any shortwave supplier's catalog will show you that, except for a handful of "pocket rocket" portables with limited band coverage, you are not going to find any new equipment that fits the standards set above.

Fear not, old son! Uncle Skip is going to point you in the direction of the hottest "Pre-owned" equipment in all of radioland.

•Kenwood R-300

I have always liked this radio. First of all, its drum style frequency and bandspread readouts have always made sense to me. It's a wonder so few analog rigs were designed with this set up.

The receiver comes equipped with a built-in crystal calibrator to allow you to get spot accuracy without a digital dial. It also has an S-meter and can run off your car battery if you go on a DXpedition. Can be found used for under \$75.

•Panasonic RF-2200

This little box is almost too good to be true. It is an analog portable with many features of

higher priced table-top style receivers. In addition to good technical performance, it comes with a generous four inch speaker that makes arm chair listening a joy.

In addition to its great shortwave performance, some broadcast band DXers have had very good results with this receiver. Don't look to haggle down below \$80, because these radios are sought after.

•Phillips/Magnavox D2935

Personally, I would opt for either of the above analog readout receivers. But I grew up playing with analog dials and have learned to tolerate the system. If you absolutely must have digital readout, this might be a good rig to start out with. It's a high performance portable with membrane controls.

Like the Panasonic, it has a four inch speaker. Check this one over thoroughly before buying, especially the performance of the keypad. Try to keep the price down around \$80.

•Realistic DX-160

There must be more of these little gems sitting around collecting dust than any other radio made for this hobby. This was a fairly high performance "Entry Level" radio that gave many currently well-known DXers their start. It is analog readout with a bandspread dial calibrated for the amateur bands.

You will learn the fun of tuning with two hands. It really makes you feel like you are playing radio. These wonders still command \$75 when being sold third and fourth hand but they tend to be worth every penny. I have kept track of mine through three owners and I'm trying to buy it back for my #1 son.

•Realistic DX-400

The Radio Shack DX series radios between the DX-160 and the DX-400 have a reputation for being real bowsers performance-wise. The DX-300 and 302 just never quite lived up to their potential. However, Radio Shack managed to redeem itself with this clone of the Uniden CR 2021.

This is a nice portable with triple conversion circuitry to give you solid performance for serious listening. Once again, we encounter the membrane keypad. Check the buttons out for severe overpressing and then press on to buy this digital readout rig for anything in the neighborhood of \$80.

•Sony ICF-2001

The digital shortwave portable that redefined the hobby can now be found for well under \$100. A lot of these hit the used

market when the 2010 model came out. It has a few quirks such as membrane keypad and going through batteries like bourbon through my great grandfather. But it also has many nice features like its clock-timer circuit and a four inch speaker. Give it a good going over and then plunk down no more than \$80.

•Uniden CR-2021

I keep looking around for one of these to use as a sort of "go anywhere and not worry too much about it" radio. They are fairly well constructed when compared to most serious shortwave portables, a rare case where cheaper might be better. Performance is similar to the DX-400, just a cut under that of the SONY 2001.

Since the manufacturer closed them out in 1985 at under \$100, I would look to pay around \$80 today. If you run across two, let me know.

Any of the above radios will give you reasonable performance that will let you not only get your feet wet in DXing but may even let you get in up to your neck.

Used radios can be found in many places. Local amateur radio clubs often run Hamfests and Fleamarkers where such gear is commonly available. I only made it to about four hamfests this year, all smaller ones, and I am certain I ran across most of the rigs listed above at one place or another.

Another place to look is your local newspaper. I am always amazed at the things that show up in the classified ads. Old Uncle Skip has run across more than a few radio deals using the local press in the past.

While I wouldn't go there just to dig for radios, if your "significant other" drags you along to the local garage sale or swap meet, you might come up with a wonder or two. All of Old Uncle Skip's collection of antique radios were culled from this resource and my wife had to drag me away from more than one serious communications receiver going for ridiculously few dollars. Give it a shot. It will keep the spouse happy and you may get lucky.

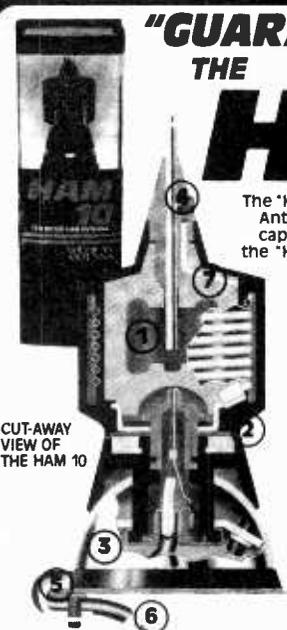
Many of the dealers listed in the pages of *MT* come up with used gear. It never hurts to give them a call and see what's in the shop. The additional advantage here is that you are dealing with radio people who can help steer you in the direction of equipment that is good for your applications. Tell them Uncle Skip from *MT* sent you.

Analog vs. Digital

I have never really seen the point of this debate. Ten years ago everyone had analog readouts. Once you get the hang of using the bandspread dial and logging scale, you will find it's just as accurate as most digital readouts.

You can't just punch up your favorite

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frequency, but that is not necessarily a liability. While tuning over to that favorite station, you might just run across something exciting and new that you would have missed if you went for the keypad. Analog keeps your listening from getting stale. Don't let the readout bother you too much. Worry about the rig's performance in other areas first.

What About Antennas?

Most of the receivers listed in this article come with a built-in antenna of some sort. In addition to that, all you need do is scrounge some wire from somewhere. Any good strong copper wire will do. It doesn't really matter if it has an insulated coating or not. Insulated wire will last a little longer. You can make your own antenna insulators out of the plastic cut from a gallon milk jug.

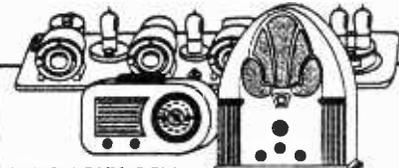
Bingo, a nearly free antenna. You will find that some of the radios in our budget price range might overload with too much wire hung off them, so stay modest for now.

What Else

Your budget station will really only need two other pieces of equipment to get you started in style.

First off, you will need a log book of some sort. Some sort being a low-priced lined notepad or simple three-ring binder for a start. Check the December 1988 issue of *MT* for Old Uncle Skip's copious conclusions on rolling your own logbook.

Last but not least, you are going to need all the support and information you can gather to take full advantage of your modest, but powerful, listening post. Therefore, you simply must tear the subscription card out of this issue of *MT* you are reading and get down to some serious radio business with the whole *MT* crew.



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Balanced Budget

Unlike Uncle Sam, Old Uncle Skip did not have to go into deficit spending.

Receiver	\$80.00 (average)
MT Subscription	18.00
Antenna wire	2.00

With the notebook and antenna insulator material scrounged up, you can come in at exactly one hundred big ones.

One Last Thought

If you happen across somebody using several thousand dollars worth of equipment and all they want to do is tell you what a wonderful station they have, ignore them. Head on home and have fun with what you've got. Bunkey, he ain't hearing that much more than you anyway and the time spent listening to him is better spent enjoying the greatest hobby of all.

Hang in there and be sure to drop us a line and let us know about your budget station.



What's New in Washington

New Moves and Equipment for the FBI

The FBI is considering moving its data operations headquarters from its current Pennsylvania Avenue building to a new data center in Warrenton, Virginia, sometime during the 1990s.

It is not yet clear whether the FBI will build a new data center at Vint Hill Farm Army Station or simply expand its two existing regional facilities which are located at Fort Monmouth, New Jersey, and Pocatello, Idaho.

The data operations consist of the ADP (Automatic Data Processing) equipment – computers and the such, to state it simply.

Finding Lost Persons

One of the interesting uses of computers by the FBI is the "ImAger." The ImAger is a computerized aging machine that provides an image of a suspect or missing person as they would probably look today -- even after the last known photograph was ten years old!

The device ages the subject's face by enlarging them, filling them out, and even adding acne. A set of aging templates are used to naturally age the person from a photograph.

The device cost the FBI \$25,000 and has already been put into good use with the finding of a missing child -- three years after the child was reported missing. This system also recently made the national news when a suspect was apprehended after being wanted for the past 17 years.

Finding Stupid Persons

Authorities arrested a bank robbery suspect who called the Boston FBI office collect and then proceeded to talk with them for forty-five minutes!

The Boston office confirmed that he was a suspect and traced the call to San Diego. The Boston office then notified the San Diego office who arrested the suspect while he was still talking to the Boston office. True story.

Cellular Propagation

The Washington, D.C., FBI office intends to negotiate with Motorola for cellular telephone subscription service (furnished by both Bell Atlantic and Cellular One prime cellular networks).

The telephone service must ensure compatibility with 42 different types of Motorola cellular telephones which have the capability to store two discrete phone numbers, one from each network in one portable unit. It is interesting that the

service uses both the land line and nonwire cellular services in the same cellular district.

Does NCIC data base threaten civil rights?

The FBI is redesigning the National Crime Information Center (NCIC) data base and it is meeting with opposition from the House Civil Rights Subcommittee and the American Civil Liberties Union (ACLU).

The NCIC provides a computer data base that contains information on missing persons, stolen property, and criminal state and local law enforcement officials from the United States and Canada. Over 64,000 users can currently access the system.

The proposed NCIC change is described in the documentation for project NCIC 2000, a look at the needs for the next century. The objections arise from a fear of a police state where the federal government maintains files of citizens who are not guilty of any crimes.

The FBI plans to provide on-line tracking of crime suspects and computer links to other civil data bases as part of the NCIC redesign. The proposed changes threaten to transform the system into a transcontinental surveillance network, as concluded by the House Civil and Constitutional Rights Subcommittee.

Further concerns about principles of data base management, such as security, accountability, accuracy, and reliability are voiced by the ACLU to protect the rights of Americans as well as to serve the proper law enforcement interest.

One of the most controversial proposals would link NCIC to five other agencies, including the Canadian Motor Vehicle Department. The concern is that if the NCIC is linked directly with the five other systems the FBI will not be able to maintain proper controls. It is beyond the jurisdiction of the FBI to guarantee that the other systems meet the security, accountability, and data quality standards that will guide the design of the NCIC.

Another major concern of the House Subcommittee is the proposed tracking feature that would compile electronic dossiers of people suspected of crimes every time they were subjected to police checks, even though criminal charges were not pending. Then the final major concern -- who monitors the guard dog looking over the chicken coop?

Without a method of monitoring system access, there is no way of knowing whether the data has been altered or misused. Inaccurate data within a system that can be accessed by 64,000 users can threaten constitutional rights and damage individuals' reputations. One



suggestion is to use audit trails of data base alterations and store the audit trails on a read-only format media.

IRS on the Computer Trail

The Internal Revenue Service is planning to teach its CID (Criminal Investigative Division) agents how to recover data in computers that have been confiscated during a raid. The IRS views computer disks as nothing more than electronic file cabinets which could contain data useful for their case.

A course is in the planning stages at the Federal Law Enforcement Training Center in Glynco, Georgia, and should be in operation by the time this newsletter issue is mailed. (*Federal Computer Week*).

The days of flushing "contraband" down the toilet has been exchanged with the quick "format disk" command as the agents pound down the door.

National Guard Mobilized Against Drugs

Select National Guard forces, including helicopter units and military police detachments, will be utilized in anti-drug activities. The Department of Defense hopes by involving Guard units that the public pressure to utilize the Air Force, Army, and Navy in the drug wars will relent.

The National Guard helicopter and air units will be utilized for finding drug traffickers and for transporting law enforcement officers to intercept drug runners. Guard MP and reconnaissance units will assist local officers with surveillances, including training and formal mission of the Guard to include anti-drug activities.

A Chip for the NSA Bloc

The National Security Agency will be building a semiconductor plant at its Fort Meade (Maryland) facility. The plant will manufacture "computer chips" for use in NSA computers. Not much detail was released from DOD or NSA about America's largest intelligence agency and the new plant.

Your Own "Authoritative Source"

There is a place where you can pick up an amazing number of "tips" to help you in your listening. *Commerce Business Daily* (CBD) is published each business day by the federal government.

It lists requests (from various federal agencies and military branches) for quotes on equipment and services. Quite often, listings appear for radio communication equipment and systems, and at times even frequency ranges and specific frequencies are listed.

One recent one was by the Bureau of Alcohol, Tobacco and Firearms (ATF) for radio communication equipment. ATF has stated its intention to purchase vast amounts of Motorola DES equipment for the "nationwide ATF DES network."

The equipment varies from mobile radios to crystals to control stations to antennas. A brief highlight of the equipment is as follows - Syntor X 9000 series digital radios with receiver pre-amplifiers, 100W 16 channel mobiles; VHF quarter wave mobile antennas, crystals for frequency of 165.5125, MX 300 hand-held accessories, cellular adaptor boards, various types of DES modules, and so forth.

USFWS on the Trail of Wildlife

The U.S. Fish and Wildlife Service is also on the prowl for equipment. It is looking for a programmable scanning receiver that is frequency synthesized, has 4000 channels (yes, 4000!) of memory, add-delete feature and continuous scan for frequencies between 164 and 168 MHz without altering modes. The 4000 memory channels will be banked into four separate groups.

The unit is to have an LCD display and be capable of 12 VDC operation with a 110 VAC charger/adaptor. The RF connectors are to be BNC type and the radio must have an internal speaker. The unit is to be used for wildlife telemetry tracking.

The USFWS is also looking for SAT-3 transmitters with attached beacons for use on Polar Bears for wildlife tracking. The operating temperature range varies from -40 to +60 degrees centigrade and must survive at least 365 consecutive days in the arctic region with four hours of operation a day. I would

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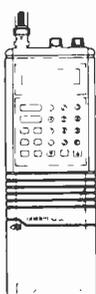
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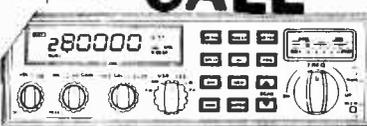


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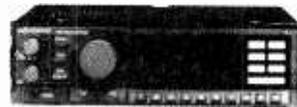
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not like to be the one for the field assignment to "install" these devices.

US Marshals on the Trail of Fugitives

A function of the US Marshal's Service is to track and locate fugitives who have jumped bail or who have violated the conditions of their parole or probation. The USMS has deployed a series of operations known as the Fugitive Investigative Strike Teams (FIST) which has apprehended over 15,000 fugitives since 1979 with the help of state and local police and other federal agencies.

Innovative schemes for capturing fugitives peacefully have included luring them with football tickets or invitations to special parties.

That's it for this month. We hope you enjoyed this look inside the Federal Government. And we hope that it gives you some useful information on which to do some educated monitoring. Your comments, contributions and suggestions are welcome.

mt

Directing Air Flow

The following exchange, with minor variations, is repeated many times a day at the nation's busiest airports:

PILOT: "Hello Clearance Delivery, this is Fagin Air 23. We're ready to copy our clearance to Chicago O'Hare."

CLEARANCE DELIVERY CONTROLLER: "Roger, Fagin Air 23. However, please be advised that there is a 45-minute gate hold for all O'Hare inbound traffic at this time."

PILOT: "A 45-minute gate hold -- what the . . . ? Twenty minutes ago Dispatch said that there would be no problems up there today."

CD CONTROLLER: "Sorry, sir, blame it on Central Flow Control. They told us that O'Hare is saturated and they won't take any more inbound flights until the situation lightens up."

Here's the story about FAA's Central Flow Control and why flights sometimes are delayed, not only enroute, but before they even get off the ground.

Before the PATCO (Professional Air Traffic Controllers) strike in 1981, the enroute system's traffic count had topped the 100,000 mark on only one day. Now, 100,000-plus per day is nearly the norm. One of the culprits is, of course, the hub-and-spoke system, which has brought its own problems into the fray. Weather is also a contributing factor, albeit one that cannot be altered.

FAA's Central Flow Control handles much of the direction for rerouting, gate holds, and spacing in the friendly skies over the U.S. Operating from facilities at FAA headquarters in Washington DC, it is supposed to be FAA's solution for rapid air traffic growth and capacity conditions at our major airports. The facility is a nerve center of communications consisting of land lines (telephones), satellite feeds, weather radar, and air traffic radar.

At 5:00 a.m. (Eastern Time) each morning, controllers at this facility gather for a weather briefing by one of the staff meteorologists. Thus, the flow strategy for the day emerges.

By the time 8:30 a.m. rolls around, the crew is ready to explain the strategy to ATC facilities in the east through a telephone conference, called TELECON. Other groups also are on the line, including airline dispatchers, military services, and some commercial flight planning services. Another TELECON is conducted at 11:30 (ET) for the western half of the country.

Through these briefings, airline operations people obtain a general idea of which airports are going to have capacity constraints that day, which routes will experience weather-related problems, and how severe delays or detours

may be, including the reasons for them -- i.e., closed runways, local weather conditions, or noise abatement requirements, and/or winds which may dictate particular approach procedures.

Obviously, traffic and weather conditions are dynamic and moving. To keep all concerned current, live feeds from air traffic radar covering the entire U.S. go into the FAA facility at Atlantic City and are then fed to the computer at Central Flow Control; the computer is updated every three minutes.

Aircraft aloft are depicted on these computers. However, only flights tracked by an Air Traffic Control Center can be identified. By placing the cursor over a dot, a controller can identify an aircraft by flight or N (tail) number and learn its altitude, departure point, route, destination, and time to destination.

Conversely, a controller can pinpoint the location of a given flight by typing into the computer a request to search for that specific aircraft.

As the daily traffic begins to build, color codes are given to flights operating to specific destinations. This way, at a glance, the strings of color show where flow problems are developing.

Central Flow Control discusses conditions with the ATC centers involved. If the acceptance rate of a given airport is down or is reaching saturation, ARTCC and approach control facilities may want additional spacing between arrivals.

To achieve this, it may be necessary to alter the speed of lights hundreds (and sometimes thousands) of miles away from the crowded sector. Thus, a flight crew will get a speed reduction request from ARTCC even though nothing in the immediate vicinity requires it.

If weather is the culprit, the ARTCC may reroute traffic based on its Severe Weather Avoidance Plan (SWAP). The SWAP uses as many pre-ordinated routes as necessary to keep traffic flowing, depending on the location and severity of the weather.

Another problem that Central Flow Control must contend with is the unpredictable numbers and routes of general (private) aviation and military air traffic. Another computer focuses in on this.

All flight plans from military base operations and flight service stations as well as those pre-filed by airlines are in the data bank. The computer analyzes routes and forecasts which ATC sectors may become saturated and when. These sectors will blossom in red on the screen. From approximately 30 minutes to one hour in advance, the computer will predict which

sectors will be saturated with traffic.

With this advance alert, Central Flow Control will contact the ARTCC involved and arrive at a decision. Sometimes, additional personnel can be put on the controller positions in the sectors which will be involved. In other instances, traffic may have to be rerouted around the red sectors.

With more than 600 sectors in the system, a saturated sector can pop up at any time. Consequently, a red sector caused by a saturated airport or severe weather in one area of the country can have a direct and very often unexplained effect on flights anywhere else in the system.

One of the most frustrating and nerve-racking aspects of flow control, on which pilots, controllers, and dispatchers alike agree, is the failure to maintain current communications despite radio, land lines, satellites, radar, and computers.

In addition to the daily TELECONS, Central Flow Control also passes information to all flight services stations over Aeronautical Radio, Inc. (ARINC), and on the Aeronautical Fixed Telecommunications Network (AFTN).

There are two telephone hotlines, which are dedicated to airline dispatchers, available for immediate query or update. In addition, there is an 800 telephone number going into the facility for aviation system users to get a recorded recap of current conditions, updated as conditions change.

By this writing, new computer screens that cover the walls should have replaced desk-top screens to provide faster, better recognition of traffic movements for all Flow Control personnel.

However, even with the new, updated equipment and the best efforts of the entire FAA system, the problems of gate holds, rerouting, and airport saturation are going to continue.

This is due to a combination of more people flying, which means more aircraft in the skies, airport capacity which has not grown to handle the increased flying population, and conditions that are above and beyond any man-made solution. So keep your scanners on, folks. It's going to get more and more interesting to see how these problems are being coped with. And, remember, you'll read all about it here in *Monitoring Times!*

Recommended Publications

I am a firm believer in using books, magazines, and other publications to enhance and/or aid our monitoring. Let's examine a few of them:

While visiting a local hobby store in hopes of finding some new model aircraft kits to build, I stumbled upon a magazine guaranteed to gladden the hearts of us commercial aviation buffs. It's called *Airliners*. The contents are chock-full of articles about the planes themselves, airline companies, air-ground communications, and all sorts of goodies.

The ads in this magazine are for such items as airliner model kits (wider selections than can ever be found in most hobby stores), decals, posters, books, tee shirts with airline emblems on them, videos about airlines and airliners, pins, calendars, etc. Anything and everything concerning airliners and related subjects can be found in this magazine.

Published four times yearly, it is supplemented each month by a smaller magazine called *Airliners-Monthly News* containing features on the above as well as new and existing airline companies, route changes, fleet updates, trivia, and more. The cost of a subscription to *Airliners* is \$14.95 (U.S. currency), and \$39.95 for the supplemental monthly magazine.

The magazine can be found in hobby stores, large news and magazine stores, airports, and the like; however, it is too specialized to be found at your local drug store. You can order a sample copy (for \$3.95), or subscribe by writing to the following address: AIRLINERS, World Transport Press, Inc., P.O. Box 52-1238, Miami, FL 33152-1238.

The editor informed me that they are going to have an article or two on aviation communications in this year's fall issue. You can bet your boots that this writer will be sure to look at that issue!

Another publication that's both interesting and instructive is the *Official Airlines Guide*. Known in travel agency circles as simply the *OAG*, it is an extremely valuable tool for monitors who like to find out where flights to which they are listening originate, as well as their destinations.

The airline edition comes in two volumes: the North American edition, which covers all flights originating in North America, and the Worldwide edition, for flights originating from other continents.

In addition to timetables for all of the airlines, there are airport/city codes, airline codes and addresses, as well as currency equivalents, and itineraries for those flights which have intermediate stops. There are also editions for cargo flights and cruise ships.

The only catch to obtaining these guides is that they are not sold in the retail marketplace. Yes, you can buy them from the publishers via subscription; however, a visit to your local travel agency can save you big bucks as the *OAG* does not come cheaply. For instance, a one-year subscription to the N.A. edition alone costs \$305.00. There is an *OAG Pocket Guide* that is available for \$59.00 per year; however, it is an extremely cut-down version and is not worth the money.

I've discovered that most travel agents are more than willing to give their used *OAGs* to me at the middle and/or end of the month as soon as they receive their new copies. Usually they are glad to put them to good use rather than simply throwing them away. Airline schedules don't change that much from month to month, so most of the info in the *OAG* remains current.

Larry Van Horn, who writes the "Utility World" column for *MT*, did a fine job in the June issue of listing three excellent reference books for utility monitors. But I will mention one book which really should be put on the "forget it" list: the *Utility Address Handbook*, by Reinhard Klein-Arendt.

The latest edition available was published in 1986 and is minus some utility station addresses which were available back then and haven't changed for the past 12 years or more. Conversely, addresses which had changed within four or five years, prior to 1986, were not updated. For \$12.95 you expect more for your money. Stick with the books which Larry mentioned.

Odds and Ends

EM3 Graham, who is in the Navy, contributed the following frequencies for Ellington Field in Texas: Tower -- 126.2, 253.5 and Ground Control -- 275.8.

For mock dogfights in the Gulf area, these frequencies are utilized: 228.8, 234.7, 261.8, 263.2, 292.7, 306.4, 338.4, 364.2.

The merry month of May brought increased air traffic to Indianapolis International Airport, as well as to the nearby satellite airports, culminating in an absolute madhouse on the day of the 500 mile race. Most of this increase was due to private aircraft belonging to race fans (as well as corporate jets).

Wayne Anderson, Federal Aviation Administration Air Traffic Control Supervisor at Indy International says that landings increased to about 60 an hour, with 40 landing at Interna-



On race day, Indianapolis Air Traffic Control becomes a madhouse with a plane landing every minute.

tional and another 20 at satellite airports. The normal (nonrace day) amount of traffic at International is a takeoff and/or landing every four to five minutes of commercial airliners and private aircraft.

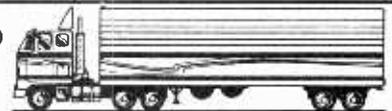
Pamphlets outlining landing instructions are mailed in advance to airports across the country. Pilots register flight plans and are given a landing time they must hit within five minutes in order for traffic to run smoothly. Most do. "We've been very lucky," Anderson said.

Most pilots coming in for the race are on their best behavior and sincerely make an effort to comply with all rules and regulations. There are a few "hot dogs," of course. However, after a few words to the wise, they generally shape up. The penalties are severe if they don't.

That does it for this month. Next time, we'll have some tips for VHF aero band monitoring. Until then, 73 and out.



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ARRL Wants a No Code License?

This past summer, the Board of Directors of the American Radio Relay League met and decided to propose a "No Code" Amateur Radio License. The Board was split in its decision. The vote was nine "yeas" and six "nays." Here's the result of that tussle:

The exam will consist of Element 2 and an expanded element 3A. The expansion of 3A will consist of questions about Morse code! Which means the applicants will be required to at least know what Morse code is and demonstrate that they know the code if they see it. (After passing Element 2 and 3A² all the new ham needs to do is pass a five word per minute code test to qualify for a regular Technician license.)

The call signs issued to this new "Communicator grade" of license will be assigned from the D Call sign block, and tests will be administered through the present VE system. The name of the new license will be *Communicator*. Licensees will be restricted to 250 watts of power on frequencies above 220 MHz, and will not be allowed to be the control operator of a repeater or auxiliary station.

Too Timid?

As the saying goes, "half a loaf is better than nothing." However, I strongly feel the League missed the idea behind the whole thing. Forcing the new licensee to learn to recognize Morse code on paper was simply pap to appease the rabid "Morse Forever" gang!

I agree that it is simple to memorize Morse in a visual fashion. But remember there is almost no Morse operation at these frequencies and if the new Communicator wants to learn Morse so he can advance to a higher grade of license he will do so on his own.

Nor will restricting the new license to 220 MHz and above allow the newcomer to sample the fare on two or six meters as was originally proposed by the League's fact finding group!

I understand the idea of not giving a lot of spectrum to the Communicator on two meters, for much of the two meter band is overpopulated in many parts of the U.S.A. But to deny access to the six meter band is criminal! I doubt if there is any area in the country that has an over abundance of activity on 50 MHz. In fact this band is so underutilized that it could be the subject of the next band take-over!

Couple this with the fact that it is possible to work half-way round the earth when the band is open and there is no point in not allowing the Communicator on six. Doing so would be good for everyone; it will let the newcomers see what it is like to work stations in other parts of the

world, and populate a band that needs it sorely.

250 Watts should be more than adequate power on the assigned frequencies; especially when you consider that a 50 watt station is high power for most operators on these bands.

However:

We are at least on the right track, and every one of us should get behind this new license and push for its acceptance as soon as possible.

As I mentioned earlier, there are flaws in the plan, but to fight over them will only put off this important new license to the detriment of amateur radio in this country. We need the Communicator license now!

QRM

Interference from other stations (QRM) has been a major problem for radio amateurs and SWL's ever since radio was invented. There are several types of QRM: the first and most common is casual interference from other stations operating near your frequency and producing a strong signal that your receiver is not able to filter out.

The second most common interference is from stations operating directly on your frequency because they cannot hear you or the station you are in contact with.

The third and least common (but most heard about) is deliberate interference from a station who wants to be a pain in the ***.

Coping

There are several ways of dealing with deliberate interference. The best way is to ignore the fool or move to some other frequency and hope he won't follow.

Little can be done about a station that cannot hear you. There are many reasons stations cannot hear certain signals. The first is due to vagaries in propagation wherein you and a station some distance away can hear each other, but someone at some other location on the earth can not hear either signal.

Sometimes the offending station does not have his gain turned up, or local noise may be masking weak signals. Or perhaps the offender has a high power station and directive antenna; if the antenna is not aimed at you he may not hear you, but his high power is producing enough signal from his side lobes to produce QRM. Whatever the reason, the best thing to do in this case is to move frequency.

The first cause of QRM (i.e. poor receiver selectivity) can be cured in several ways. Purchasing a new receiver will help if it has improved selectivity.

Less drastic steps are favored by the

average ham. Years ago most of us learned how adept the human brain was as a filter. It takes little practice to ferret out the elusive signal from a hubbub of signals when all are about the same strength. Some fortunate operators are able to produce readable copy from signals buried under a dozen layers of signals, QSB (fading) and QRN (noise such as electrical storms, etc.). For us mere mortals, however, more is required.

Adding Filters

Add on selectivity is the method most of us choose today. Years ago one could purchase or build a variety of devices, among them the Q-Multiplier, Selectoject, super IF strips and crystal filters. All would help reduce the problem to a more manageable degree.

Today's choices still favor IF selectivity in the form of sharp multi-pole crystal or mechanical filters. The main difficulty here, however, is that such a filter allows the operator only one option -- the bandwidth of that particular filter. Consequently if you choose a 400 Hz filter and need 300 Hz or 1.8 Hz you must purchase or build another filter.

Since most receivers allow only a half dozen or less filters to be installed we quickly run out of options, and considering the cost of a decent IF filter, the expense is high.

In the early 60's the audio filter hit the scene and things have not been the same since when it comes to QRM reduction. The first devices were fairly simple and allowed the operator to insert a filter between his receiver and headphones. The filter produced a fairly sharp passband and did not require digging into the receiver's innards.

Passbands of 6kHz down to a few Hz are easily produced with many of today's audio filters and it is possible with some modern filters to incorporate both peak and null features to enhance selectivity in almost any situation.

For example, if you choose a sharp peak filter but still have interference from a strong adjacent signal, simply switch in the null filter and sweep it across the passband to reduce the strength of the offending signal to the point where it does not over ride the effect of the peak filter.

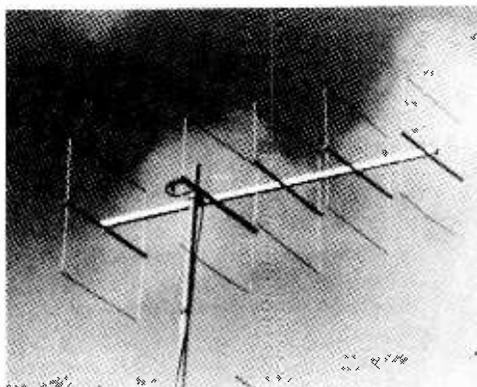
Many combinations are possible with good audio filters. One such filter is shown in the accompanying photo. It is the MFJ Signal Enhancer Model MFJ-752C which I chose to use in conjunction with my Argonaut QRP rig. This unit has allowed many QSO's to continue in spite of extremely difficult QRM.



This particular filter is actually two filters in one: the primary filter can be used in conjunction with the auxiliary filter to produce extremely sharp peaks. The unit also features a low pass filter to reduce high frequency hiss, splatter and noise, a high pass filter to remove unwanted low audio frequencies and a notch filter to suppress unwanted signals by as much as 70dB.

In addition, a 2 watt amplifier allows use of a speaker. At a cost of under 100 bucks this is one dandy unit. This little gem can make QSO's possible on CW and SSB when everything else fails. You can get the MFJ-752C from your local dealer or directly from MFJ, PO Box 494, Mississippi State, MS. 39762.

Antenna Bargain



A few years ago at the Shelby, NC, Hamfest, I spotted a dandy two meter quad that was being sold by a fellow and decide to purchase one. Returning a few hours later with cash in hand I was disappointed to find that he had sold out and gone home.

Later the same year I spotted him at the Atlanta Hamfest and decided to grab one early. You guessed it, he sold out again and was gone by the time I got back with the cash. So when I spotted him at this year's Atlanta show I grabbed my money and went straight out and bought one of these dandy little five element quads.

The antenna has a five and a half foot boom, and is made entirely from aluminum -- no glass or plastic spreaders. Sturdy is the word that best describes the antenna. An SO-239 mounted directly to the spreader of the driven element accepts the PL-259 on your 50 ohm coax. The antenna comes complete -- all you need do is assemble the elements on the pre-drilled boom with the included hardware.

Did it work? You bet! With 250 milliwatts I can access repeaters I never heard before, and at my 25 watt level, contacts on simplex out to 100 miles are common (my new location is terrible for VHF).

The quad is very lightweight and is easily turned with a TV rotor. The manufacturer claims 12dB gain for the antenna (I did not make any measurements, but the gain is quite adequate). SWR on my unit was under 2 : 1 across the entire band. Front to back rejection is about 25dB and side rejection is very good.

Another feature I like is the fact that the antenna can be erected for horizontal or vertical polarization with out worrying about the material the mast is made from. Mine is vertically polarized on a steel mast, with no distortion of the pattern due to the steel mast.

The basic antenna is five elements and costs only 35 dollars. The manufacturer will ship the antenna anywhere in the continental USA for only five bucks. Additional elements up to 8 can be added at a cost of \$5.00 per element. Models are available for 220 MHz too.

You can obtain one of these fantastic bargains from W4PYO Peg Dickson, Route 3 Box 411, Williamston, SC 29697.

Ham Radio Aboard Columbia

Ron Parise, WA4SIR, will operate from mission STS-35 (scheduled to lift off April 26, 1990). He will be using the same Motorola HT used by W5LFL and W0ORE during the previous shuttle ham missions.

In addition, a TNC will be carried to allow Packet operation. A robot mode will be available so amateurs can work Columbia even when there is no operator present. The mission is scheduled to last nine days.

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Propagation

Wildly varying solar activity is keeping things interesting on the ham bands. Flux levels have varied from a low of 192 to a high of 326 in recent months. The average solar flux remains at about 200.

October is the beginning of the DX season in the Northern Hemisphere; consequently we should see some fantastic openings on the higher frequency bands.

RUDAK-2

RUDAK - 2 Transponder will Fly on RS-14 in Mid-1990. At a meeting between AMSAT-DL and the Soviet amateur radio satellite organization known as ORBITA at the AMSAT-UK/RSGB DATASPACE 89 a tentative agreement was reached to fly a "follow-on" RUDAK transponder aboard RS-14.

Many will remember that the RUDAK experiment which flew on AO-13 (RUDAK is a German acronym that stands for Regenerating Transponder for Digital Amateur Communications) failed to realize its full potential because a temperature sensitive PROM would not allow the RUDAK computer to boot-up properly.

Despite many intensive efforts to work around this problem, it was not possible to solve and all attempts were eventually abandoned.

But characteristic of the indomitable spirit of the RUDAK group within AMSAT - DL organization, there will soon be a new and improved version of this digital experiment known as RUDAK-2. This new experiment promises to be extremely interesting, and amateurs involved in digital communication are looking forward to the new effort (via AMSAT).

We will try to keep you posted as events develop with this project. That's all for this month gang, see ya in November. 73 - Ike, N3IK



ARGENTINA

Radiodifusora Argentina al Exterior-RAE, 9690 kHz. Full data station logo card, without verification signer. Received in 120 days for an English reception report. Booklets and Argentine travel brochures enclosed with QSL. Station address: Correo Central 10000, Buenos Aires, Argentina. (Donald Choleva, Euclid, OH)

AUSTRIA

Radio Austria International, 9870 kHz. Full data card of Austrian folk costumes, without verification signer. Station stickers and program schedules enclosed with QSL. Station address: A-1136 Wien, Austria. (Robert Landau, Secaucus, NJ) (Gregory Grushko, Chester, NY)

CHILE

Radio Santa Maria, 6030 kHz. Partial data card and info booklet. Verification signer, Pedro Andrade Vera. Received in 120 days for a Spanish reception report and two IRCs. Station address: Casila 1, Coyhaique, Chile. (Aboe Thaliep, Batang, Indonesia)

COLOMBIA

La Voz de los Centauros, 5955 kHz. Full data QSL. Verification signer, Juan Carlos Torres Leyva, Gerencia. Received in 66 days for a Spanish reception report and two IRCs. Station address: Apartado A. 2472, Villavicencio, Meta, Colombia. (Robert Landau, Secaucus, NJ)

CUBA

Radio Havana, 6140 kHz. Full data card of Lenin Park in Havana, without verification signer. Received in 270 days for an English reception report. Station address: P.O. Box 7026, La Habana, Cuba. (Donald Choleva, Euclid, OH)

Radio Rebeide, 5025 kHz. Full data personal letter, card, and pennant. Verification signer, Jorge Luis Mas Zabala (Relaciones Publicas y Gerencia Commercial). Received in 45 days for a Spanish reception report. Station address: Apartado 6277, La Habana, 6 Cuba. (Aboe Thaliep, Batang, Indonesia)

EGYPT

Radio Cairo, 9900 kHz. Full data card of Egyptian art and hieroglyphics, without verification signer. Received in 100 days for an English reception report. Station address: P.O. Box 566, Cairo, Arab Republic of Egypt. (Robert Landau, Secaucus, NJ)

GERMAN DDR

Y35 Time Signal Station. 4525 kHz. Partial data QSL card and station info booklet, without verification signer. Received in 126 days for an English utility report. Station address: Fachgebiet Zet Und Frequenz, Furstenwalder Damm 388, DDR-1162 Berlin, Germany. (Nick Grace, Harvard, MA)

GHANA

Ghana Broadcasting Corp. (GBC), 4915 kHz. Full data station card, without verification signer. Received in 36 days for an English reception report. Station address: P.O. Box 1633, Accra, Ghana, Africa. (Gregory Grushko, Chester, NY) (Donald Choleva, Euclid, OH)

GREECE

The Voice of Greece, 9420 kHz. Full data Greece

OMA CZECHOSLOVAKIA



Nick Grace of Harvard, Mass., is "one of the few individuals" to hear the McMurdo, Antarctica, station; the Czech time station was another catch.

scenery card, without verification signer. Received in 150 days for an English reception report. Station address: Hellenic Radio-TV, V.O.G., P.O. Box 600019, 18 Aghia Paraskevi, Athens, Greece. (Donald Choleva, Euclid, OH)

INDONESIA

(Sumatera) Radio Republik Indonesia-Gorontalo, 3265 kHz. Partial data station card. Verification signer, Saleh Thalib (Kepala Seksi Teknik). Received in 20 days for an Indonesian reception report. Station address: Jalan Jerderal Sudirman, Gorontalo, Sulawesi, Utara, Indonesia. (Aboe Thaliep, Batang, Indonesia)

(Sumatera) Radio Republik Indonesia-Palembang, 4855 kHz. Partial data station letter and QSL card. Verification signer, Drs. Abdul Rochim. Received in 7 days for an Indonesian reception report and a self-addressed stamped envelope. Station address: Jalan Radio 2, Km 4, Palembang, Sumatera Selatan, Indonesia. (Aboe Thaliep, Batang, Indonesia)

MOROCCO

Radiodiffusion TV-Marocaine, 15335 kHz. Full data station QSL, without verification signer. Received in 87 days for an English reception report and three IRCs. Station address: 1, Rue El Brihi (or Boite Postal 1042), Rabat, Morocco. (Gregory Grushko, Chester, NY) (Donald Choleva, Euclid, OH)

PAKISTAN

Pakistan Broadcasting Corporation, 21740 kHz. Full data scenery card. Verification signer, Frequency Management Controller. Received in 46 days for an English reception report. Station address: Broadcasting House, Constitution Avenue, Islamabad, Pakistan. (Nick Terrence, Huntington, NY)

PIRATE

Falling Star Radio, 6240 kHz. Partial data QSL letter. Verification signer, Al Chandler. Received in 40 days for an English reception report and a stamped self-addressed envelope. Station address: P.O. Box 1659, Gracie Station, New York, NY 10028. (Fraser Bonnett, Kettering, OH)

SHIP TRAFFIC

MISS ALIKI, 500 kHz-USB (Bulk carrier vessel). Full data verification letter. Verification signers, Mr. Olof Nilsson of Sweden, Mr. Patrick O'Connor of Hinsdale. Received for a utility report and return postage enclosed. Ship address: M/V MISS ALIKI, Shipping & Produce Co., Ltd., Prince Rupert House



9/10 College Hill, London EC4R 1AS England. (Hank Holbrook, Dunkirk, MD)

KSHF-SEALAND ADVENTURE, 8360 kHz-USB (Container/Cargo ship). Full data verification letter, with signature. Received for a utility report and return postage. Comments included, "Ship was layed up in Portugal and found your QSL card in the files." Ship address: SEALAND Services, 441 US Highway 1, Elizabeth, NJ 07202. (Hank Holbrook, Dunkirk, MD)

WPKB-SEALAND VALUE, 500 kHz-USB (Container ship). Full data verification letter, with signature. Received for a utility report and return postage enclosed. Noted this ship is one of the largest container ships in the world, and full bridge controlled automated. Ship address: SEALAND Service Inc., P.O. Box 800, Iselin, NJ 08830. (Hank Holbrook, Dunkirk, MD)

KSHF-GUADELOUPE, 8291.1 kHz-SSB (Steam Tanker/Petrochemical carrier). Full data verification letter, with signature. Received for a utility report and return postage enclosed. Noted that this was a rare morning that they were using SSB, as are fewer and fewer ships being heard these days. Ship address: Sabine Towing & Transportatn Co., Inc., P.O. Box 1528, Groves, TX 77619. (Hank Holbrook, Dunkirk, MD)

SOUTH AFRICA

Radio Five. 11880/4880 kHz. Full data art/scenery card, without verification signer. Received in 56/45 days for an English reception report and two IRCs. Stickers and program schedules enclosed with QSL. Station address: P.O. Box 4301, Johannesburg 2000, Republic of South Africa. (John Carson, Norman, OK) (Fraser Bonnett, Kettering, OH)

THAILAND

Radio Thailand, 9655 kHz. Full data color card of "Orchids From Thailand," without verification signer. Received in 60 days for an English reception report. Station address: Rajdamner Avenue, Bangkok 10200, Thailand. (Donald Choleva, Euclid, OH)

VENEZUELA

Radio Capital, 4850 kHz. Full data logo card, with illegible signature. Received in 105 days for a Spanish reception report and two IRCs. Station address: Centro Commercial Los Ruices, Av. Francisco de Miranda, Caracas, Venezuela. (Robert Landau, Secaucus, NJ)

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MT Uncovers Another Mode

Guess what! There's another new mode and this one is real tough. It involves a multiple tone system that, unlike Piccolo, sends 16 tones and all 16 tones are sent simultaneously.

It's not like FDM because each tone is spaced evenly and no channelization is used. The tones are spaced 109 Hz apart. A constant 605 Hz tone is used to frequency lock the channel or as a Doppler carrier for satellite communications.

The 16 tones are phase modulated using a two, four or eight phase scheme and the system is sometimes referred to as "parallel tone data."

The system can be encrypted but I believe that testing in the past on HF was in the clear. I copied the system on 13.912 using LSB voice to communicate while testing the link on USB. Call signs on voice such as "Canary Seed" and "Duran" were used. Canary Seed is in Palmerola, Honduras, and Duran is at Andrews AFB, Florida.

The system can support baud rates on HF as high as 3600 baud and a system known as in-band diversity and error correction is used to improve bit error performance. It sounds very much like FDM but the buzzing sound is more subtle.

I did some research and found out that the system in question uses a military standard known as MIL-STD-188C and GE, Harris and Rockwell are the three prime manufacturers. The Rockwell unit is pictured below.

A home-brewed unit would involve the implementation of a DSP (digital signal

The Rockwell-Collins TE-233P



processor), a computer and software development. It's not a job for Superman! That's for sure. But I want you to start on it tomorrow and report to me in a week.

But seriously, because of its complexity this system poses a real challenge to the hobbyist who wants to build a decoder. You could probably purchase a unit by simply calling one of the three abovementioned manufacturers, but you will probably receive an invoice for \$70,000.00 (not including tax). I wonder if GE will include a free toaster?

Nightmare on HF Street

Another Voice/RTTY test was heard on 14.8675. This link didn't use the other sideband for RTTY and the RTTY frequency was unknown. A microphone was stuck open and you could hear the radio operator singing in the background and using the call "Missionary this is Juliet 8 Juliet."

He was tuning another radio and, apparently, calling someone on another channel. Sounds that were coming from other radios indicated that the "comm" center used RTTY gear. I guess you can say that a "stuck mike" is a radio man's nightmare.

Another Find

This summer was the best for SWLing because the skip conditions caused openings into Europe just about every night on 20 meters. I did some tuning above 20 meters and found two strange sounding FSK signals: one on 14.823 and the other on 14.833.

After playing with the M7000 for a few minutes, I found that it synchronized with TDM4 mode using 170 Hz shift and 192 baud. That, according to Fred Osterman at Universal SW, is a first, because no one has ever reported TDM4 loggings.

I left my receiver and modem on the whole night in order to catch traffic but I received nothing but errors. This went on for several weeks. If you had any luck with TDM4 modes, drop me a line.

News Wire Services

I received several letters from readers requesting UPI and AP news frequencies. For the most part, the news wire services on HF are nonexistent. However, they can be found on military FDM channels. These services are used by the AFRTN (Armed Forces Radio & Television Network).

Also, from time to time, news bulletins can be copied on the marine bands using SITOR mode B or FEC. These transmissions are sent to ships at sea for the benefit of crew members and travelers.

Sometimes unidentified transmissions would pop up just about anywhere on the HF bands sending news using standard RTTY at 75 baud and 850 Hz shift.

NNN

AP/UPI AFRTN FREQUENCIES

FREQ	SHIFT/WPM	COMMENT
3.1914	75/100	AP
4.0439	85/100	AP
4.620	85/100	AP
5.0731	170/45	UPI
5.3729	75/45	UPI
5.3879	85/45	UPI
6.432	100/67	UPI
6.993	170/67	AP
7.871	75/100	UPI
7.923	170/100	UPI
7.9234	65/100	AP
9.2141	170/67	AP
9.9607	65/67	UPI
9.961	75/67	UPI
9.9907	75/100	AP
10.206	75/100	UPI
10.2588	65/100	AP
10.316	85/100	AP
10.3172	30/100	AP
10.3174	65/100	AP German
10.6095	30/67	UPI
10.8628	75/100	AP
11.0486	170/67	UPI
11.0068	75/100	Weather
11.0071	85/67	AP
12.5259	170/67	UPI
11.5395	170/67	UPI

All loggings were made using the direct receiver method (no FDM decoder) with the modem set to RTTY mode and standard shifts. The receiver was in USB and the readout frequency for the FDM channel was logged.

SCPC Made Easy

There have been moments in the technological progress of the home satellite TV industry which are worthy of historic note. Among these would surely be:

1. The addition of the actuator. Dishes need not be stationary and they may be moved from indoors.
2. The lightweight see-through dish. The reflectors need not be hulking steel monsters. Folks could salve their critical neighbors with environmentally esthetic dishes.
3. Electronically integrated satellite receivers. Power supply, actuator controller, stereo processor and receiver all combined into one device which can be controlled from anywhere in or out of the house with a hand-held remote.



For \$450 the Heil SC-One! comes to the rescue of the avid SCPC listener. The SC-One! measures 9-1/2"x7-1/2"x3" and includes cables and 950-1450 MHz splitter and program guide chart.

New Heights in TVRO

Through the years designers and builders have worked to push the capabilities of the home Television Receive Only (TVRO) earth terminal to higher levels. A new height has been reached this year with the introduction of the Heil SC-ONE!

This is the first consumer oriented Single Channel Per Carrier (SCPC) receiver with near broadcast quality sound to hit the home dish market.

World of SCPC

To understand the significance of the SC-ONE! here's a quick look at the world of SCPC.

Each channel or transponder on a satellite is capable of carrying a finite amount of information at any given time. When a transponder is used to uplink video, the bulk of the 36 MHz bandwidth each C-band channel enjoys is eaten up carrying the video signal and its corresponding audio. Sometimes a channel will be in stereo which requires a separate audio subcarrier for left and right signals. These subcarriers are Frequency Modulated and fall within the receiving capabilities of all satellite receivers.

In addition, some transponders will carry other audio programming unrelated to the video. A good example is the Mind Extension University which has its video and corresponding audio on Galaxy 3,11.

But tuning around, one will encounter some eight or ten other FM subcarriers totally unrelated to the video. The trick is that these subcarriers must ride the carrier of the video in order to be on the transponder. Take the video carrier away and the FM subcarriers disappear as well. With this method we have many channels per carrier.

One disadvantage to broadcasters with the FM subcarrier method is expense. Transponder brokers, like real estate developers, want more money for prime location property and FM subcarriers enjoy prime location. Besides, radio networks need lots of carriers in order to feed various time zones or backhaul raw news feeds for network editing. The cost of leasing five or six FM audio subcarriers on a 24 hour per day basis would not be cost effective.

FM/SCPC to the Rescue

Instead, networks use on-site satellite transmitters which send a very narrowband FM carrier to the bird. The bandwidth is so narrow that it will not be detectable by a regular satellite receiver even in the narrowband mode.

This works out nicely, especially for networks. Using the Single Channel Per Carrier method, a radio network can lease several channels relatively cheaply for in-house swapping and editing of daily news material as well as several other channels to feed network affiliates with a variety of programs.

With all network programming on the same satellite, indeed the same transponder, costs per affiliate are further reduced by the use of "dedicated TVRO terminals."

These units feature immobile dishes with custom receivers designed to receive only those frequencies the network uses. It should be added that these commercial installations can cost in the \$10,000 range.

Monitoring FM/SCPC

Monitoring SCPC frequencies is very simple. First swing your dish over to Westar 4 and set the receiver to channel 3. The screen will show no video but your signal strength meter should show the presence of a strong signal.

If you are using a 950-1450 MHz block downconversion system, there will likely be a 70 MHz loop on the back panel of the receiver. Using a cheap portable TV band radio, simply feed the 70 MHz signal from the loop out (via a splitter) into the antenna of the radio and back to the loop in.

Now turn on the radio and tune slowly through the channel 2-6 TV band on the radio. Every inch or so you will hear the audio of any one of the twenty or more SCPC channels in use.

A Few Problems

Once you've gotten over the initial thrill of monitoring SCPC you'll discover the shortcomings of such reception via the portable TV radio. Here are a few:

1. SCPC signals are fairly weak.
2. Carrier to noise ratio is very high on the noise and low on the carrier.
3. The signal seems to drift around a lot requiring retuning of the signal every ten minutes.
4. Signals are jammed together so close as to make reception of some impossible.
5. The audio is tinny. It's like listening to music over a telephone line.
6. You're actually missing a good bit of the SCPC band because the radio doesn't tune

low enough.

7. There's no tuning reference. Programming comes and goes and you can never remember where it was.

These are just some of the problems for those who have 70 MHz loops. Many new satellite receivers don't even have the loops, thus requiring the experimenter to buy a second receiver with the loop to use via a special 950-1450 splitter.

Those who have the old LNA single conversion 70 MHz receivers will be able to tune SCPC but will likely suffer with an cradible hum.

The Heil SC-ONE! To the Rescue

Luckily for those of us who enjoy this aspect of home dish entertainment, the Heil SC-ONE! has effectively countered all of the above problems. The Heil receiver is very sensitive. Signals which could not even be detected via the portable TV radio method were received with little noise on the SC-ONE! and strong signals were crystal clear.

The receiver is also very selective. Signals which were impossible to separate before are now easily tuned. In addition, the receiver seems very stable. There was no signal drift on the unit I used even with the receiver on the same signal overnight.

The best part is that the receiver has excellent audio. The front-mounted speaker is very useful for tuning purposes though I use the audio-out jack on the back to send the audio through a ten band graphic equalizer to offset the compression which is done to the uplinked signal.

The only thing the SC-ONE! doesn't cure is the tuning reference. There's still no way to figure out where you've heard something or trying to locate a channel you'd like to hear. But even that is easily remedied. The Kilo-Tec company makes a mechanical turns counter dial which would fit neatly on the shaft of the tuning knob and give one an excellent and precise reference. (See address at the end of this column.)

For those of us who have spent years searching for ways to improve SCPC reception, the SC-ONE! is the answer. For those who have never enjoyed the world of SCPC, the Heil SC-ONE! adds a new dimension to home dish entertainment.

What's Up There Anyway?

At present, seven C-band satellites carry SCPC signals including the Canadian Anik D and Mexican Morelos I birds. The most popular American birds are W4 and G2 which took up the slack when W3 closed down.

W4,3 has the most news oriented SCPC with all the National Public Radio frequencies, Mutual, NBC radio, ABC radio, American Public Radio, Pacifica News, Minnesota Public Radio and the BBC. You'll also find many religious networks, contemporary rock channels, Spanish lan-

guage networks, a reading service for the visually impaired, Alabama Radio Network, Stardust 68 from Atlanta, and WHO radio from Des Moines, just to name a few more all on one transponder.

Galaxy 2 channel 3 is where most of the sports-related SCPC is located. Here you'll find at least 20 of the 26 major league baseball cities uplinking their flagship stations. In addition, you'll find farm related networks, more BBC and the Sun Radio Network to list a few. Look here for NFL, NHL, NBA and college sports networks.

Mailbag:

✓ "I've heard that the Detroit TV stations (WTVS, WXYZ, WJBK and WDIV) were on satellites but that they used a different scrambling system and they were not on there for the public. Is this true? If so, why are they on satellite and who puts them there?" - David Sheley, Blytheville, AR.

It's true, David. The above stations are found on Anik D 104.5 degrees west and are scrambled using the same Oak-Orion system used by the other scrambled channels on that bird.

Here's why. They are there for the Canadian public and are uplinked by Can Com and distributed to Canadian cable systems via Anik D. This allows Canadians to watch the four American networks which would not be available to many Canadians otherwise.

The decoders are not available, legally, in the U.S. and Can Com has no U.S. marketing strategy. It's a peculiar fact that these uplinkers (called common carriers) do not need permission of the stations involved nor do they have to compensate the signal originator for the programming. They simply collect the ever increasing cable fees for their efforts.

✓ "I would like to know if there is any way I can get a list of TV stations in North America." - James Green, Oklahoma City, OK.

There is, James. Your local library has the *Broadcasting Yearbook* which is published annually by *Broadcasting Magazine*, a trade journal. Look for it in the reference section of the library and copy what you will. For about a dollar you'll get the whole list. Look in the *Yearbook*, too, for interesting information on satellite programmers, common carriers and the like.

✓ "I am trying to convince my cable TV company to carry the BBC and VOA via SCPC and was wondering if you have a listing of shortwave SCPC feeders?" - Zack Schindler N8FNR

Not to put too fine a point on it, Zack, I say forget it. Most cable systems don't even feed the FM stereo subcarriers which are available via satellite let alone cater to the wild desires of esoteric monitoring enthusiasts.

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Look at it this way, Zack: If you're lucky, you're spending \$300/year on cable fees. For \$600 you can have a nice used satellite system and get it all. I've never heard of a dish owner cashing in the system to get back on cable. And don't forget, Zack, install it yourself and you'll have a lot of fun and learn a lot!

As to listings, there really aren't any. I've noted only the BBC, VOA, Voice of China Radio, Radio Canada, and United Nations Radio (most on Westar 4).

✓ "About a year ago you gave out an address for...a great pamphlet for those just beginning to purchase satellite equipment...I would sure like to get it." - Dan Packard, Seattle, WA.

Here they are, Dan:

Satellite TV and You -- 30 pages, magazine format and it's free. Write: Triple D Publications, P.O. Box 2347, Shelby, NC 28151 or call 704-482-9673.

Satman -- Mail order dealer, small but useful booklet on TVRO gear. It's free, too. Write: Sat TV Buying Guide, Satman, 5017 N. Melody, Peoria, IL 60614 or call 800-4-SATMAN.

Satellite TV Buyer's Guide 1989 Edition (\$3.50). 100 pages of top grade TVRO info. Worth the money. Write: Satellite TV Week, P.O. 308, Fortuna, CA 95540.

For more information on the Heil SC-ONE! and free listings of SCPC channels, write Bob Heil, K9EID, Heil Sound, Marissa, IL 62257.

For more information on the Model TC-48 Turns Counter Dial write: Kilo-Tec, P.O. Box 1001, Oak View, CA 93022.

And one final note: Monitor the TVRO users net on 20 meters on Sundays around 14.309 MHz USB at 1800 UTC. It's an informal get-together of amateur radio operators who are also TVRO dealers or hobbyists. Hams with an interest in TVRO are welcome, and SWLers might also be interested in the subject.



The Miracle on Lakeshore Road

WZZZ cost only one dollar. It could be called a miracle, but it's really the product of love. Peter and Carol Hunn call it their "Little House that Talks and Sings." But things weren't always that cheery.

The first time they saw the station, they couldn't even find the driveway. It, like the rest of the station, lay mouldering under a heavy cover of weeds and brush. An old rain-soaked console decomposed quietly, its rusting innards providing a moist home for hundreds of spiders and crickets.

Burnt station records and materials were everywhere. The huge neon sign that once proudly proclaimed "WOSC" was broken and rusting. Carol Hunn looked at her husband and said, "Honey, I don't think this is the one for us." But Peter had other ideas.

After what seemed like years of negotiations, Hunn had bought the station for one dollar. The former owners had accrued an enormous debt with the Internal Revenue Service. They destroyed all the station's records and assets, and let them rot outdoors. They had also acquired a more desirable nearby station, and the FCC required them to sell the old station first. In exchange for the one dollar price tag, Hunn was to assume the outstanding debt. The FCC approved the sale, and a few days later WZZZ was born.

A local television station sent a crew to witness the opening. They struggled through the vines, weeds, insects and mud, and entered the small transmitter building from the rear. The door was stuck and had to be broken down. The floor was several inches below ground level and filled with water. The ceiling was caving in, the familiar smell of a damp basement pervasive.

For the next two weeks, Peter and a ham buddy of his camped out in the building and lived on pizzas. More than twenty loads of junk went to the town dump. The driveway was cleared, and the old General Electric transmitter was refurbished, tuned up, and

readied for testing.

Today, WZZZ is a highly successful community radio station. It is situated between two larger cities: Syracuse and Oswego in Fulton, New York. Although the station had been on the air since 1949, until about a year before the Hunn family bought it, no one thought of it as Fulton's radio station. To sell more advertising, former owners identified the station with the larger surrounding cities.

Syracuse and Oswego now have many radio stations of their own, so WZZZ became "The Hometown Station Serving Fulton, New York." By concentrating on one town, the station is virtually competition free.

With a thousand watts on 1300 kHz, the station operates from dawn to dusk, with a daytime only license authorization. Peter Hunn does a live morning show from sign-on until 9 am, spinning records and using "barter features" to spice up the programming.

Free short feature shows are available to radio stations, but they include an advertisement that must be played as well. "Tom Morgan's Moneytalk," "The Mother Earth News" and "Having Kids with Shirley Jones" all air on WZZZ for free. These slick sounding programs are sent on cassette to stations nationwide, and make local radio stations sound much more professional.

The morning show also includes farm reports, lost pet, and birthday announcements, and lots of community news. "I call the local fire control for news or listen to my new scanner. Some of the best news comes from funny false alarm stories. One morning the entire fire department arrived at a house to extinguish a burnt breakfast!"

Listen to the Dish

The rest of the day is filled with program-

WZZZ has come a long way from the overgrown, mildewed mess Peter and Carol Hunn bought for \$1.00!

WZZZ RADIO

The Hometown Station RADIO 1300



ming from The Satellite Music Network. "Hits from the 1960s to Today" are broadcast directly from the dish antenna in the driveway from 9 am to sign-off. "I play

local commercials and announcements twice an hour to give it a community feel," says Hunn.

This subscription service frees him from on-air duties for the rest of the day. His wife, Carol, spends the day taking care of their five-year-old and selling advertising throughout Fulton. It is truly a Mom and Pop operation. They have no employees but themselves.

Weekend programming is dominated by polkas and contemporary Christian programs. A brief prayer is played at sign-off, which is provided free as a service of the Southern Baptists. A Holy Bible rests on top of the cartridge tape machines in the WZZZ studio. Obviously, the Hunn's faith has paid off.

Peter Hunn is an active broadcaster outside of WZZZ as well. He is trying to establish a new FCC rulemaking that would allow AM only stations to operate very low power FM transmitters to increase their financial security.

He also wrote a book last year, reviewed in *Monitoring Times*, called "Starting and Operating Your Own FM Radio Station." (12.95 plus 1.25 shipping from DX Radio Supply). *MT* Editor Larry Miller called it "a great read...absorbing, well-written...one of the year's best radio books."

It chronicles the beginnings of Hunn's first station, WHRC-FM, in Port Henry, New York. His second book, to be published in the fall, will be about his other love, outboard engines. You'll find them being repaired all over the WZZZ transmitter room.

Hunn's advice to potential broadcasters: "Don't buy a small AM to make lots of money and have lots of spare time. It's lots of work, but it's lots of fun!"

Bits 'n' Pieces

Television is now on radio! WNRI-AM in Woonsocket, Rhode Island, now broadcasts two of its call-in talk shows from the studios of Rollins Cablevision. They have constructed a combination radio and television studio to broadcast the shows, and many people have been tuning in to see what happens behind the microphones.

Four stations in the Raleigh, North Caro-



lina, area are transmitting the soundtrack of the six o'clock newscast of nearby Channel 28, WPTF, in Durham. The AM stations sell their own advertising and broadcast the show as if it were a syndicated talk show.

WSOC-TV in Charlotte, North Carolina, wanted to gain an edge over archrival WBTV and offered their newscasts to WRHI in Rock Hill and WIRC in Hickory. These two small AM stations were delighted to be able to rebroadcast a complex and proficient newscast every night at 6 pm, and WSOC-TV has gained many would-be viewers who might still be in their cars heading home.

What do you do when you want to have a parade but you don't have a marching band? WILI-AM in Willimantic, Connecticut, solved their community's predicament by creating a "Boom-box Parade." Since 1985, Willimantic residents have marched on July 4 to the march music played by WILI. Participants carry everything from small portables to enormous boom-boxes all tuned to the station. One of the floats every year is a large radio, and everyone seems to love the idea. WILI certainly knows how to line up an audience.

Mailbag

W. Earle Doan of Collingswood, New Jersey, sent in an article about some really outrageous promotional gimmicks being tried by radio stations all over the country. WFLZ-FM in Tampa had a paranoia contest. First prize was \$5,000 worth of services

from a local private eye. "He'll spy on your cheating spouse, track the dealings of a shady boss, or shed light on the nighttime doings of an unneighborly neighbor."

Nashville's Y-107, "The Outrageous FM," made their listeners roll in the dough. Chosen contestants were rolled in honey and then thrown into an empty swimming pool filled with \$100,000 in paper money. They really tried to make money stick to them!

The next contest planned for WFLZ in Tampa is the "Pete Rose for a Day" contest. Winners will see a Cincinnati Reds game and then be flown to Atlantic City for an evening of betting.

Mail your favorite broadcast story to: American Bandscan, c/o MT, P.O. Box 98, Brasstown, NC 28902. We'd love to hear from you.

New Station Grants

Look for new stations in these communities in the coming months: Opelika, AL 96.7; Baker, CA 101.5; Jupiter, FL 105.5; White City, FL 104.7; Syracuse, IN 103.5; Laughling, NV 93.5; and Montauk, NY 94.9.

For Sale

Do you like to ski? If you do, this might be for you. A small market Colorado AM/FM station is for sale. It covers two ski resorts in a beautiful winter and summer resort area. Only \$50,000 down. Call Bill Kitchen at 303-665-8000.

A northeast Wisconsin FM is priced at \$250,000, and features a possible power upgrade and a low down payment, with seller financing available. Call Nick Strandberg at 612-831-3300.

If you have Georgia on your mind, how about a one kW fulltime AM station for \$400,000? Call 404-237-2570 for details.

KWYS, 920 AM, in West Yellowstone, Montana, is on the block. Call 406-646-7361, and buy yourself a kilowatt signal.

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paper? Send them to
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Box 98, Brasstown, NC
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International Bandscan

The Eternal Word TV Network is building a 24 hour a day radio network near Rome, Italy. The network will broadcast from two towers atop a mountain in the vicinity of Rome, and will broadcast in English, French, Spanish, Russian, Polish and Ukrainian. Supported by the Vatican and other sources, there will be no on-air fund raising. They will carry some of the audio from EWTN's cable TV network, although most will be in foreign languages.

AWR Asia hopes to start a noncommercial FM station from Facpi Point, near Agat, Guam, by the end of 1989. The service will cover the Mariana Islands of Guam, Rota, Tinian and Saipan. A 24 hour a day operation, with 3 kW of power, AWR will broadcast news and public affairs programming along with digitally recorded music.

New Irish longwave station Atlantic 252 is looking for disk jockeys. Send your tape and cover letter to: Trevis Baxter, Station Manager, Atlantic 252, Mornington House, Summerhill Road, Trim, County Meath, Ireland.

Shortwave broadcaster Deutsche Welle has decided to cease funding Radio Antilles, the 200 kW powerhouse from Montserrat in the Caribbean on 930 kHz. The Voice of America and The Caribbean News Agency have shown interest in the station.

Cadena 13 in Catalunya, Spain, is planning a 900 kW medium wave transmitter to cover Europe. It should be an easy catch for the most casual DXer!



Credits

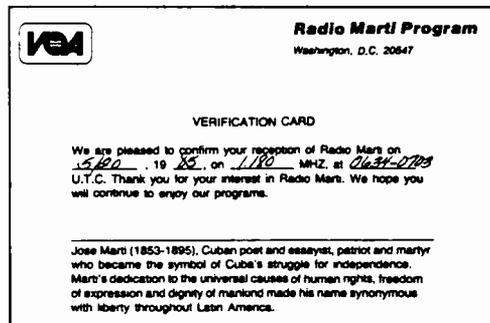
Our thanks to readers Ken Hydeman, Ruth Hesch, and W. Earle Doan for sending along materials for this month's column. Also, thanks to *Broadcasting*, *Radio World*, *The New York Times* and *The M Street Journal*, and to the British DX Club for our international news. See you next month!

Report from South Florida

While speaking at a recent radio convention, I had the pleasure of meeting fellow *Monitoring Times* columnist Glenn Hauser, who gave an outstanding slide presentation on Central American and Caribbean broadcasters. There was also the opportunity to do interviews for Radio Canada International, Radio Nederland and Radio Korea, and to meet such station personalities as Ian McFarland, Tom Meyer, Jonathan Marks, and Han Hee Joo.

One of the highlights of the entire weekend, however, was hearing Dr. Ernesto Betancourt, Director of Radio Marti, deliver the keynote address. He spoke on "Radio Marti in the Era of Glasnost."

Dr. Betancourt is a man who is obviously very dedicated to his work, and he was quite willing to provide additional information about Radio Marti in informal conversations during the convention.



Radio Marti, Dr. Betancourt emphasizes, is not a clandestine station. It is owned and operated by the United States government and must go about its business under very strict guidelines. The station is not permitted to encourage people to defect or commit acts of sabotage. Its job is not even to present the views of the United States government. That is left to the Voice of America.

Rather, its purpose is to provide to the people of Cuba news which they otherwise might not be able to obtain. It is, of course, permitted to supplement news with programs intended to be educational or to provide general entertainment. The *Novela*, or soap opera, is extremely popular with women listeners.

Radio Marti is permitted to direct its programs only to Cuba, not the exile community, Central America, or general shortwave listeners. A transmitter on 1180 kHz mediumwave (AM) suffers from severe Cuban jamming; however, the shortwave transmissions are widely heard throughout

the world. Try 6075, 9525, 9590 and 11930 kHz. Like VOA, Radio Marti will verify reception reports from outside its target area. The address is 400 Sixth Street S.W., Washington, DC 20547.

While Radio Marti claims to have the largest audience of any station reaching the island of Cuba, there are plenty of local stations vying for the attention of the local population as well. Radio Progreso, which can sometimes be heard at 640, 660 and 820 kHz on the AM dial, is reportedly the number two station in Cuba.

Also highly regarded among the followers of Fidel: Miami's WQBA, La Cubanisiam, on 1140 kHz. Just how popular is WQBA? Popular enough that the Cuban leader placed an angry-sounding jammer just two kilohertz away on 1142.

Panama

Also in attendance at the convention was Mayin Correa, a former Panamanian radio and television broadcaster and still technically a senator in the legislative assembly. Today she must live in exile in Miami because General Noriega's government has issued a warrant for her arrest.

Persons close to Noriega tried to silence Senator Correa's family-owned station, K.W. Continente (700 kHz), by offering to buy it. When she publicly rejected the offer on her program *La Palabra* ("The Word") and called on Panamanians to defend freedom of expression, police and soldiers loyal to Noriega closed the station in June 1987. This also resulted in the forced shutdown of Radio Sonora (1120) and Radio Fiesta (1330), which shared the Panama City facilities of K.W. Continente.



Today Mayin Correa continues the struggle against Noriega by serving as a correspondent for Miami's newspaper *El Herald* and Costa Rican based Radio Impacto. You can hear her excellent reports on the Panamanian situation nightly

on Radio Impacto anywhere between about 0200 and 0400 UTC.

She notes that Noriega has tried to jam the Impacto signal on both mediumwave and shortwave with Cuban-supplied equipment. (This is the reason for the recent shifts in frequency back and forth from 5030 to 5045 kHz.) Should you monitor an Impacto broadcast, your report can be sent to Apartado 6133, 1000 San Jose, Costa Rica. Sometimes a prepared card QSL helps to get a reply.

Luis Endara, another Panamanian exile, gave an unscheduled and fascinating presentation on clandestine broadcasting in Panama. Because of his technical knowledge of radio, Endara was accused by Noriega of being involved in clandestine radio activities. He denied the charge, but had to leave the country.

According to Endara, clandestine broadcasting in Panama and elsewhere often involves tapping into a studio-transmitter link. Once when this happened to Panama's Radio Nacional (840 kHz), there was no way to shut down the transmitter by remote control. It took station personnel thirty minutes to get there, and gave opponents of Noriega that long to air their protests over the government's own station!

Correa and Endara both remarked that during the recent Panamanian elections, clandestine activity increased. Most appeared to be from low-power FM transmitters. Seven different apartments in Panama City were used as broadcasting sites, with each limited to fifteen minutes a day to make detection more difficult. While Noriega's government did move against these, most involved managed to escape.

There has been no shortwave in Panama because for many years the government has denied all license applications. Now, according to Endara, Noriega appears to be ready to take to the airwaves himself. He is securing a Cuban grant for one 50 kW and one 100 kW transmitter from Czechoslovakia.

It was Czechoslovakia who manufactured the 300 kW Radio Taino or Tour Radio transmitters Castro uses on 830, 1160 and recently 1040 kHz to broadcast in English, Spanish, and occasionally French and German. Cuban technicians have been spotted around the facilities of Radio Nacional apparently erecting the shortwave antennas the Panamanian government will

need when it begins shortwave programming.

As you can see, Latin American broadcasting is a timely topic these days. If you find the subject "alien" or at least very confusing, I would suggest Joan Didion's outstanding book, *Miami*, published by Pocket Books.

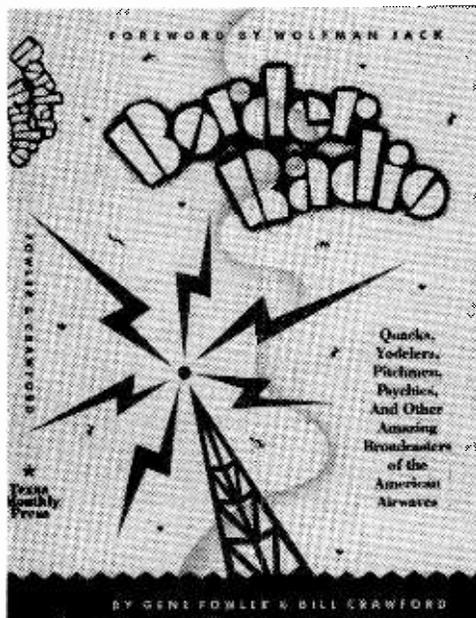
Didion does make some references to the influence and role of radio, but for the most part hers is not a radio book. However, it will give the reader considerable insight into the world view of the Latin American, especially the Cuban exile, and the impact he has had on both Latin America and this country. I highly recommend this book. It will make your radio listening more enlightening, and your nonradio monitoring friends may also find it helpful.

That Outlaw X

If you were listening to radio at anytime during the 1950s, 1960s, and 1970s or even earlier, then it is almost a certainty you came across XERF, XEG, and other "border blasters."

Considered by some to be illegal, the stations did have licenses issued by Mexico. They ran high power, as much as 250 kW in the case of XERF. Most broadcasts were in English and could be heard coast to coast, and sometimes literally around the world.

With a repertoire of gospel and country music, plus a large stable of fundamentalist preachers, they sold almost everything including miracle prayer cloths, live baby chicks, and questionable to downright dangerous medical treatments. They also



gave tremendous popularity to a number of entertainers and announcers such as Paul Kallinger, "your good neighbor along the way," who had a huge audience on XERF during the 1950s. The 1960s saw the same station help make Wolfman Jack a household word.

Having been a fan of XERF and other border stations for years, meeting Bill Crawford was an opportunity not to be missed. Crawford, along with Gene Fowler, authored the definitive work on XERF and similar operations in a hard-back book appropriately entitled *Border Radio* (\$18.95 plus 2.50 UPS from DX Radio Supply, Box 360, Wagontown, PA 19376).

The book is well-illustrated and comes with a small record containing brief excerpts of classic border broadcasts. Anyone who ever heard a "border blaster" or simply has an interest in American history will find it difficult to stop reading this extremely well-researched and highly entertaining work.

For some, it will bring back treasured and perhaps forgotten memories of long ago. Those who have come into the hobby in recent years will have the opportunity to share in the fascination of a day that is just about gone forever.

Stations such as XERF and XEG still exist, but many now run considerably less power. They broadcast almost exclusively in Spanish (XERF is now owned by the Mexican government), and since 1986 Mexican law has made it illegal to transmit religious programs in English.

Those of you on the west coast still have a chance to catch a last glimpse at that magic period. XETRA in Tijuana continues to broadcast in English with a

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Find Hidden radio transmitters (bugs) in your home, office or car. The TD-17 is designed to locate the most common type of electronic bug - the miniaturized radio transmitter - which can be planted by anyone, almost anywhere.

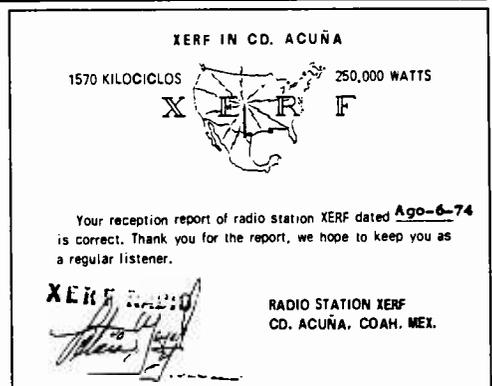
The TD-17 warns of the presence of nearby RF transmitters, within the frequency range of 1 MHz to 1,000 MHz, when the RF ALERT LED turns on. The flashing RANGE LED and audio tone give an indication of the distance to the bug. The SENSITIVITY control, used in conjunction with the two LEDs helps you quickly zero in on hidden bugs.

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rock-and-roll format to the Los Angeles area with 50 kW on 690 kHz 24 hours a day. (If anyone would be willing to make me a tape of one of its transmissions, it would be deeply appreciated.)

A Tijuana FM station, XHRM, also broadcasts to the Los Angeles market with programs aimed primarily at the black audience. But this is about all that is left of "border radio." There is sometimes something sad about "progress." The great LeRoy "Satchel" Paige said, "Don't look back." That is often good advice, but occasionally I find I must.

Yes, There is Pirate Activity

Pirate activity continues at a high level. We will catch you up on that next month, and ask your forgiveness for the delay. Like every other columnist, our space is limited. Sometimes it seems appropriate to do something different from our usual format. This was one of those times. We hope you understand and found the effort informative.

Rumblings in the Basement

I recently had a letter from Terry Krey of Austin, Texas. He had purchased one of the last Radio Shack DX-302 receivers and stored it. Now he has taken it out and begun using it. And he found some unusual transmissions in the very low frequencies. Here is how he put it:

"If the normal format for NAA and NLK is highly encrypted RTTY, why does NSS every so often come up with extended Morse (code) at about ten words per minute? What significance has a musical medley of several different pitches in the region of 27-30 kHz? In the midst of such a broad spread of signal, one can pick up a Morse CW signal at slow speed."

I usually like to check out these transmissions myself, or at least make a try on the same frequencies. In this case, however, that was impossible. My receiver gives up somewhere down around 130 kHz. So I turned to the man who wrote the book about low frequencies, Peter Carron.

Peter said, "As soon as someone mentions a "musical sounding signal," I immediately think of the OMEGA navigation system, which, as you know, transmits "strange sounding notes of different pitch" between 10 and 14 kHz."

He went on to suggest that OMEGA signals heterodyning with RTTY or FSK signals could produce a sound like this. (Not to mention the possibility of a harmonic of signal around 13 to 14 kHz.)

Peter added that the only signals he was aware of in this range were RTTY and FSK from the Strategic Air Command Survivable Low Frequency Communications System. The USSR also operates RTTY and FSK stations in this frequency range.

He suggested that only NSS itself could really answer the question as to why it occasionally transmits in slow Morse code. His own personal guess is that the target of the transmission is best equipped at that time to receive that mode.

NAA, NLK, and NSS are U.S. Navy shore stations that transmit high-level commands to ships, planes, and submarines operating in the northern latitudes. The targets of the transmissions vary considerably and some may be better able to receive Morse code than anything else.

RTTY or FSK equipment could be out of order at the time, or conditions may be such that other types of transmissions are not getting through to the target. As Peter puts it, Morse code will get through when nothing else does. All you need is an old fashioned head set and paper and pencil!

Among the other services that one may find down in the lowest frequencies are standard frequency stations at 20 and 60 MHz. The Loran C radionavigation system is on 100 kHz. Some fixed and/or maritime mobile radiolocation transmissions may be heard in the 70-90 MHz range and the 110-130 MHz range. These are secondary frequencies and so are only used occasionally.

Of course, the GWEN stations are operating between 150 and 175 kHz. With the second stage transmitters under construction in various places, it is likely that these frequencies will be active for some time to come. They send encrypted packet radio bursts and sound almost like heavy breathing.

If you listen carefully, you will note different patterns between different stations. It is like an ID of high and low or short and long bursts.

The 1750 meter band extends from 160 to 190 kHz. This is where the amateur beacons operate. With GWEN more active, it seems likely that the amateur beacons will begin to cluster in the upper half of the band.

Finally, I would like to cheat and go above 500 kHz. The Traveler's Information Service (TIS) stations are on 530 kHz. These are low power transmitters that send tapes about road conditions and other information of value to travelers. They will be heard in or near many larger cities. The range is quite short, so you might have two or three different TIS broadcasts on 530 in the large cities.

Tune your car radio to 530 as you are driving along. You might hear some information that will save you a delay or detour. In some locations these broadcasts will be on 1610 kHz instead of 530.

Follow Up: Bob Curtis of Vermont reports some changes to the Schedule for Canadian Coast Guard stations with CW below 500 kHz that appeared in July. Rather than just list the changes, the revised schedule is shown in table one.

Coral Harbour and Killinek are remote transmitters operated by Iqaluit (formerly Frobisher Bay). The Iqaluit group, Churchill, and Resolute operate only during the Arctic navigation season, roughly July through October. The + sign indicates that there are some other hours of broadcast: St. John's 0150, 1200, 1630; Halifax 2300; Killinek 1430.



TABLE ONE

Location	Call	Freq	GMT
Coral Harbour	VFU	484	+40 02/13/15
Quebec	VCC	474	+20 00/13/15
Labrador	VOK	444	+20 2/8/14/20
Resolute	VFR	474	+20 01/13
Prince Rupert	VAJ	420	+20 08/11/20
Tofino	VAE	478	+20 08/12/20
Churchill	VAP	420	+30 02/14
St. John's	VON	478	0000 0920 2130+
Montreal	VFN	420	+10 00/13/15
Sydney	VCO	464	0100 1230 2230
Victoria	VAK	430	+20 09/13/21
Halifax	VCS	484	+00 12/14/22+
Iqaluit	VFF	430	1430 18 & 2300
Killinek	VF?	416	+00 1/18/23+
Riviere-au-Renard	VCG	434	+50 00/13/15
Yarmouth	VAU	489	1300 1730 2300
Mont Joli	VCF	446	+30 00/13/15
St. Anthony	VCM	489	0210 1305 17/21

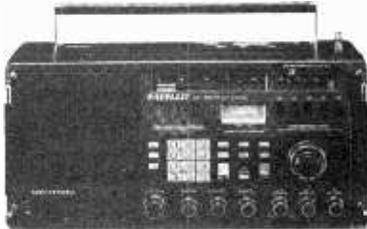


GRUNDIG

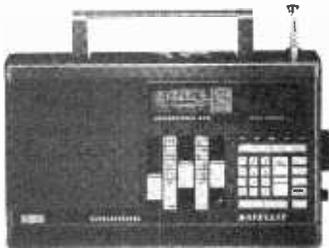
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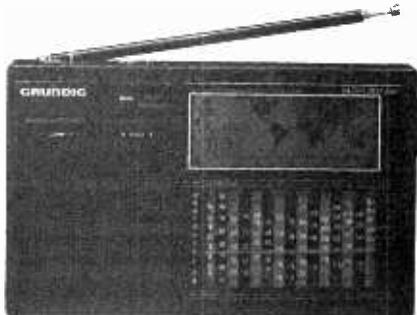
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Jim Frimmel

Willow Park, Texas

Dale Vanderpoel

Ft. Lauderdale, Florida

Sunday

Oct 1st, 8th, 15th, 22nd, 29th

- 0004 Radio Berlin Int'l: Give Peace a Chance. A weekly review of events in the International peace movement.
- 0009 Radio Yugoslavia: Music Break. A brief musical interlude.
- 0011 Radio Yugoslavia: Current Affairs. Background reports and analysis on current news items.
- 0014 Radio Berlin Int'l: Yours for the Asking. Panelists give short answers to listener questions.
- 0016 Radio Yugoslavia: Art and Culture. A look at different art displays and other cultural happenings in Yugoslavia.
- 0030 BBC: Composer of the Month. Profiles of great composers and selections from their works.
- 0037 Radio Netherlands: Newslines. News analysis from correspondents worldwide.
- 0050 Vatican Radio: With Heart and Mind. A look at the spiritual dimension of human living.
- 0052 Radio Netherlands: Over to You. A listener contact program with Barry O'Dwyer.
- 0101 BBC: Play of the Week. Hour-long drama selections.
- 0110 Radio Berlin Int'l: Musical Interlude. A short break featuring East German music.
- 0112 Radio Berlin Int'l: Commentary. East German comments on the day's top news stories.
- 0113 Radio Prague: Commentary of the Week. Czech commentary on major world news developments of the past week.
- 0118 Radio Prague: Music Requests. Musical requests from listeners' letters.
- 0119 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
- 0122 Radio Prague: Report on Religion. Current activities of Christian religious groups in Europe are outlined.
- 0127 Radio Prague: Stamp Corner. New information on the hobby of stamp collecting.
- 0129 Radio Berlin Int'l: Yours for the Asking. See S 0014.
- 0136 Radio Prague: Spin the Discs. A music program featuring top Czech pop stars.
- 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0157 Radio Berlin Int'l: Commentary. See S 0112.
- 0204 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
- 0209 BBC: British Press Review. Survey of editorial opinion in the British press.
- 0214 Radio Berlin Int'l: Yours for the Asking. See S 0014.
- 0215 BBC: Stories by L.P. Hartley. Short stories by the noted author L.P. Hartley (except October 22nd, 29th: The Book People, a look at people in the book trade).
- 0230 BBC: The Ken Bruce Show. A mix of popular music and entertainment news.
- 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0310 Vatican Radio: With Heart and Mind. See S 0310.
- 0312 Radio Berlin Int'l: Commentary. See S 0112.
- 0313 Radio Prague: Commentary of the Week. See S 0113.
- 0315 BBC: From Our Own Correspondent. In-depth news stories from correspondents worldwide.
- 0318 Radio Prague: Music Requests. See S 0118.
- 0319 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
- 0322 Radio Prague: Report on Religion. See S 0122.
- 0327 Radio Prague: Stamp Corner. See S 0127.
- 0329 Radio Berlin Int'l: Yours for the Asking. See S 0014.
- 0330 BBC: Back to Square One. A quiz show about famous phrases and songs.



Jonathan Marks with Rick Kingma, busy with a Media Network production.

- 0336 Radio Prague: Spin the Discs. See S 0136.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0352 Radio Netherlands: Over to You. See S 0052.
- 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0357 Radio Berlin Int'l: Commentary. See S 0112.
- 0404 Radio Berlin Int'l: Give Peace a Chance. See S 0004.
- 0414 Radio Berlin Int'l: Yours for the Asking. See S 0014.
- 0430 BBC: Boys in the Back Room. A look at the people behind the scenes in the theatre.
- 0430 Radio Netherlands: Sunday Spotlight. A look at events and issues affecting Africa over the past week.
- 0445 BBC: Personal View. A personal opinion on topical issues in British life.
- 0500 Vatican Radio: The Pope, the Church, and the World. A look at the Pope's weekend message and a brief meditation.
- 0509 BBC: Twenty-Four Hours. Analysis of the main news of the day.
- 0530 BBC: Financial Review. A look back at the financial week.
- 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.
- 0630 BBC: Jazz for the Asking. A jazz music request show.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: From Our Own Correspondent. See S 0315.
- 0730 Radio Netherlands: Happy Station. Tom Meyer's family entertainment program with music and letters.
- 0745 BBC: Book Choice. Short reviews of current or future best-sellers.
- 0750 BBC: Waveguide. How to hear the BBC better.
- 1115 BBC: From Our Own Correspondent. See S 0315.

LEGEND

- * The first four digits of an entry are the program start time in UTC.
- * The time is followed by the station name, program name, and a brief summary of the program's content.
- * Some listings may be followed by "See X 0000." The letter stands for a day of the week:

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

The four digits stand for a time in UTC. Listeners should check back to that date and time to find out more about that particular program.

- * All broadcasts are listed in chronological order, starting on Sunday at 0000 UTC and ending on Saturday at 2359 UTC.
- * All days are in UTC. Remember that if you are listening in North

American prime time, it is actually the next morning UTC. For example, if you are listening to a program at 8:01 pm [EDT] on your Thursday night, that's equal to 0001 UTC and therefore Friday morning UTC.

We suggest that you tune in to a program a few minutes before the schedule start time, as some stations have tentative schedules which may slightly vary. We invite listeners and stations to send program information to the program manager at the address above.

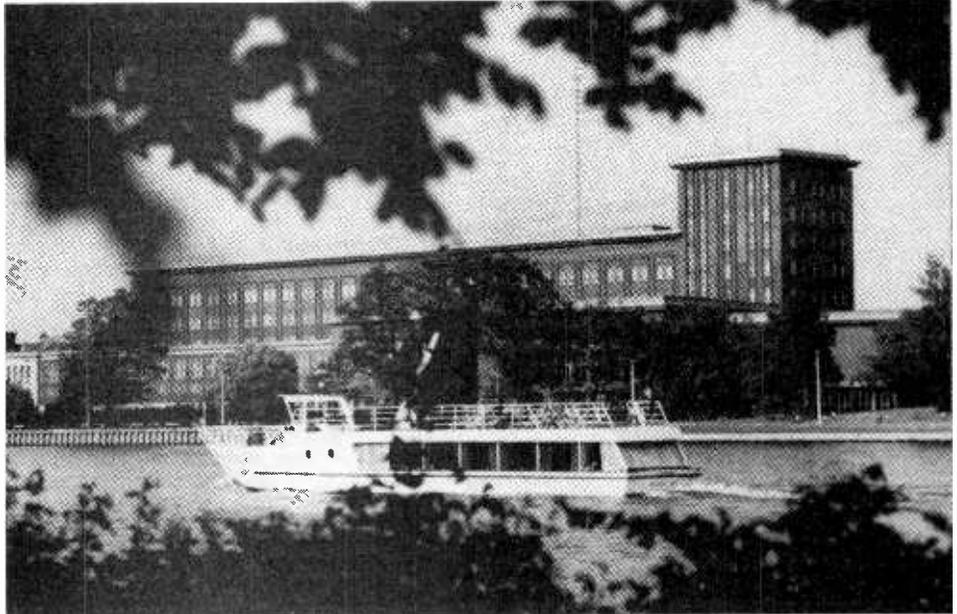
program

guide

- 1130 BBC: Composer of the Month. See S 0030.
- 1130 Radio Netherlands: Happy Station. See S 0730.
- 1201 BBC: Play of the Week. See S 0101.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Sports Roundup. The day's sports news.
- 1345 BBC: Personal View. See S 0445.
- 1401 BBC: The Chinese People Stand Up. Chinese history, from the 1949 revolution to the Tiananmen Square uprising.
- 1430 BBC: Anything Goes. Sounds from the BBC archives as requested by listeners.
- 1430 Radio Netherlands: Happy Station. See S 0730.
- 1515 BBC: Concert Hall. A program of classical music from the world's great concert halls.
- 1615 BBC: Feature. Programming on various subjects.
- 1630 Radio Netherlands: Happy Station. See S 0730.
- 1645 BBC: Letter from America. See S 0545.
- 2300 Radio for Peace Int'l: Peace Talks. Issues such as peace education, and development and peace.
- 2310 BBC: Book Choice. See S 0745.
- 2315 BBC: Letter from America. See S 0545.
- 2330 BBC: The Chinese People Stand Up. See S 1401.
- 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 2357 Radio Berlin Int'l: Commentary. See S 0112.

- 0030 Radio Netherlands: Happy Station. See S 0730.
- 0050 Vatican Radio: The Pope, the Church, and the World. See S 0500.
- 0101 BBC: Feature/Play. Programming on various subjects.

- 0145 BBC: Cole Porter Among Friends. A look at the great American songwriter.
- 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0157 Radio Berlin Int'l: Commentary. See S 0112.
- 0201 Radio Berlin Int'l: Mailbag. See M 0001.



This imposing building is the home of Radio Berlin International.

Monday

Oct 2nd, 9th, 16th, 23th, 30th

- 0001 Radio Berlin Int'l: Mailbag. A weekend feature answering listener letters and thanking listeners for writing.
- 0011 Radio Yugoslavia: International Economic Review. A look at the economic situations in different countries worldwide.
- 0013 Radio Berlin Int'l: Weekend Magazine. A look at many different cultural events in East Germany.
- 0014 Radio Yugoslavia: Music Break. See S 0009.
- 0016 Radio Yugoslavia: Tourism. Visits to many popular tourist spots in Yugoslavia.
- 0020 Radio Yugoslavia: Music Box. Interviews with Yugoslavian composers and excerpts from some of their compositions.
- 0030 BBC: In Praise of God. A half-hour program of worship.

- 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0112 Radio Berlin Int'l: Commentary. See S 0112.
- 0113 Radio Prague: Prague Mosaic. Various cultural events in the Czech capital.
- 0116 Radio Berlin Int'l: Mailbag. See M 0001.
- 0126 Radio Prague: Visitor's Guide to Czechoslovakia. What there is to see in Czechoslovakia.
- 0128 Radio Berlin Int'l: Weekend Magazine. See M 0013.
- 0132 Radio Prague: Questions and Answers. Questions are put to invited guests in an interview session.
- 0138 Radio Prague: Sunday Concert. Classical opera music presented by Czech musicians

- 0209 BBC: British Press Review. See S 0209.
- 0213 Radio Berlin Int'l: Weekend Magazine. See M 0013.
- 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.
- 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0310 Vatican Radio: The Pope, the Church, and the World. See S 0500.
- 0312 Radio Berlin Int'l: Commentary. See S 0112.
- 0313 Radio Prague: Prague Mosaic. See M 0112.
- 0315 BBC: Good Books. A recommendation of a book to read.

NEWS GUIDE

This is your guide to news broadcasts on the air. All broadcasts are daily unless otherwise noted by brackets. These brackets enclose day codes denoting days of broadcast. The codes are as follows:

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

We invite listeners and stations to send program information to the program manager.

- 0000 BBC: Newsdesk
- 0000 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]
- 0000 Radio Havana Cuba: Int'l News [M-A]
- 0000 Radio Moscow: 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 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]
- 0051 Spanish National Radio: News Summary [S]
- 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 Berlin Int'l: News
- 0100 Radio Canada Int'l: News [S-M]
- 0100 Radio Havana Cuba: Int'l News [M-A]
- 0100 Radio Japan: News [M-A]
- 0100 Radio Moscow: 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 National News [M-A]
- 0130 Christian Science Monitor: News [T-F]
- 0130 KVOH: UPI Headline News [T-A]
- 0130 Radio Havana Cuba: News [M-A]

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Bush House is home to the BBC's World Services, most notably (for MT readers) the World Service in English.

- 0316 Radio Berlin Int'l: Mailbag. See M 0001.
 0326 Radio Prague: Visitor's Guide to Czechoslovakia. See M 0126.
 0328 Radio Berlin Int'l: Weekend Magazine. See M 0013.
 0330 BBC: Anything Goes. See S 1430.
 0330 Radio Netherlands: Happy Station. See S 0730.
 0332 Radio Prague: Questions and Answers. See M 0132.
 0338 Radio Prague: Sunday Concert. See M 0138.
 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0357 Radio Berlin Int'l: Commentary. See S 0112.
 0401 Radio Berlin Int'l: Mailbag. See M 0001.
 0413 Radio Berlin Int'l: Weekend Magazine. See M 0013.
 0430 BBC: Off the Shelf. A reading selected from the best of world literature.
 0437 Radio Netherlands: Newslines. See S 0037.
 0445 BBC: Nature Now. Information about flora, fauna, and natural resources.
 0500 Vatican Radio: A Many-Splendored Thing. A look at culture, history, spirituality, and the past (except October 30th: Letterbox, replies to listeners' questions with Veronica Scarsbrick).
 0509 BBC: Twenty-Four Hours. See S 0509.
 0530 BBC: Waveguide. See S 0750.
 0540 BBC: Words of Faith. See S 0540.
 0545 BBC: Recording of the Week. A personal choice from the latest classical music releases.
 0630 BBC: The Chinese People Stand Up. See S 1401.
 0709 BBC: Twenty-Four Hours. See S 0509.
 0730 BBC: Feature. See S 1615.
 0737 Radio Netherlands: Newslines. See S 0037.
 0752 Radio Netherlands: The Research File. A science and technology review, covering the latest discoveries and developments.
 1115 BBC: Tech Talk. What's new in the world of engineering.
 1130 BBC: The Ken Bruce Show. See S 0230.
 1137 Radio Netherlands: Newslines. See S 0037.
 1152 Radio Netherlands: The Research File. See M 0752.
 1200 Vatican Radio: A Many-Splendored Thing (except October 30th: Letterbox). See M 0500.
 1215 BBC: The Litmus Test. A science quiz show, covering everything from ornithology to geology.
 1245 BBC: Sports Roundup. See S 1330.
 1309 BBC: Twenty-Four Hours. See S 0509.
 1330 BBC: Feature. See S 1615.
 1405 BBC: Outlook. Conversation, controversy, and color from Britain and the rest of the world.
 1430 BBC: Off the Shelf. See M 0430.
 1437 Radio Netherlands: Newslines. See S 0037.
 1445 BBC: Stories by L.P. Hartley (except October 23rd, 30th: The Book People). See S 0215.
 1452 Radio Netherlands: The Research File. See M 0752.
 1515 BBC: Feature/Play. See M 0101.
 1611 Radio Portugal: Sun and Sea. A look at tourism and favorite tourist spots in Portugal.
 1615 BBC: Good Books. See M 0315.
 1630 BBC: Tech Talk. See M 1115.
 1637 Radio Netherlands: Newslines. See S 0037.
 1645 BBC: The World Today. News analysis on a selected location or event in the news.
 1652 Radio Netherlands: The Research File. See M 0752.
 2300 Radio for Peace Int'l: University of the Air. Educational courses via the radio - a novel concept!
 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.
 2315 BBC: Poems by Post. Selected poems written by listeners.
 2330 BBC: Mullitrack 1: Top 20. What's hot on the British pop music charts.
 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 2357 Radio Berlin Int'l: Commentary. See S 0112.

Tuesday

Oct 3th, 10th, 17th, 24th, 31st

- 0001 Radio Berlin Int'l: Our Report. Reports and updates on events happening in East Germany and worldwide.
 0006 Radio Berlin Int'l: Spotlight on Sport. A wrap-up of the weekend's national and international sports results.
 0008 Radio Yugoslavia: Commentary of the Week. Selected topics for commentary are discussed.
 0013 Radio Berlin Int'l: RBI DX Club Meeting. Articles for DX'ers and responses to member comments.
 0018 Radio Yugoslavia: People and Events. The lives of Yugoslavian people and topics that affect their way of life.
 0030 BBC: Megamix. A compendium of music, sport, fashion, health, travel, news and views for young people.
 0030 Radio for Peace Int'l: Stepping out of Babylon. Interviews with people concerned with freedom and liberty.
 0037 Radio Netherlands: Newslines. See S 0037.
 0050 Vatican Radio: A Many-Splendored Thing (except October 31st: Letterbox). See M 0500.
 0052 Radio Netherlands: The Research File. See M 0752.
 0100 Radio for Peace Int'l: Wings. Women's news and current affairs.
 0101 BBC: Outlook. See M 1405.
 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
 0112 Radio Berlin Int'l: Commentary. See S 0112.
 0113 Radio Prague: Newslines. Commentary on current news items in Czechoslovakia.
 0116 Radio Berlin Int'l: Our Report. See T 0001.
 0121 Radio Berlin Int'l: Spotlight on Sport. See T 0006.
 0122 Radio Prague: Folk Music Section. Traditional folk music from the Slovak region.
 0125 BBC: Financial News. See M 2310.
 0126 Radio Prague: Introducing Czechoslovakia. Different facets of work and life in

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| 0130 Radio Moscow (World Service): News in Brief [S-M] | 0200 Radio RSA: News | 0300 Radio Beijing: News |
| 0145 Radio Berlin Int'l: News | 0200 Swiss Radio Int'l: News | 0300 Radio Berlin Int'l: News |
| 0150 HCJB: News [T-A] | 0200 Voice of America: News | 0300 Radio Canada Int'l: News [M-F] |
| 0151 Radio Veritas Asia: World News [M-F] | 0200 Voice of Free China: News and Commentary | 0300 Radio for Peace Int'l: News [T-A] |
| 0151 Spanish National Radio: News Summary [S] | 0200 WWCR: News [M-F] | 0300 Radio Havana Cuba: Int'l News [M-A] |
| 0153 Radio Prague: News Wrap-Up | 0215 Radio Cairo: News | 0300 Radio Japan: News [M-A] |
| 0155 HCJB: News [S] | 0230 Christian Science Monitor (East Africa): News [M] | 0300 Radio Moscow: News |
| 0155 Radio Veritas Asia: World News [A] | 0230 Christian Science Monitor: News [T-F] | 0300 Radio Prague: News |
| 0155 Voice of Indonesia: News in Brief | 0230 KVOH: UPI Headline News [T-A] | 0300 Voice of America: News |
| 0200 BBC: World News | 0230 Radio Berlin Int'l: News | 0300 Voice of Free China: News and Commentary |
| 0200 Christian Science Monitor: News | 0230 Radio Finland: Northern Report [T-A] | 0309 BBC: News About Britain |
| 0200 Deutsche Welle: World News | 0230 Radio Havana Cuba: Newsbreak [M-A] | 0310 Radio Beijing: News About China |
| 0200 HCJB: News [M] | 0230 Radio Moscow (World Service): News in Brief [S] | 0315 Radio Cairo: News |
| 0200 KVOH: UPI Radio News [T-A] | 0230 Radio Portugal: News [T-A] | 0315 Radio France Int'l: News |
| 0200 Radio Australia: International Report | 0300 BBC: World News | 0315 Radio Havana Cuba: Cuban National News [M-A] |
| 0200 Radio Canada Int'l: As It Happens [T-A] | 0300 Belize Radio One: News | 0330 Christian Science Monitor (East Africa): News [M] |
| 0200 Radio Havana Cuba: Int'l News [M-A] | 0300 Christian Science Monitor: News | 0330 Christian Science Monitor: News [T-F] |
| 0200 Radio Kiev: News | 0300 Deutsche Welle: World News | 0330 KVOH: UPI Headline News [T-A] |
| 0200 Radio Moscow: News | 0300 HCJB: News [T-A] | 0330 Radio Havana Cuba: News [M-A] |
| | 0300 KVOH: UPI Radio News [T-A] | 0330 Radio Moscow (World Service): News in Brief [S-M] |
| | 0300 Radio Australia: World and Australian News | |

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- Czechoslovakia.
- 0128 Radio Berlin Int'l: RBI DX Club Meeting. See T 0013.
- 0130 BBC: Short Story. Brief tales written by BBC listeners.
- 0130 Radio for Peace Int'l: New Dimensions Radio. Innovative thinkers and ideas on the leading edge.
- 0130 Radio Prague: Sports Roundup. Full coverage of European sports, and sports commentaries.
- 0133 Radio Prague: Meet the People. Questions from listeners are posed to guests in the studio.
- 0139 Radio Prague: The World Federation of Trade Unions Calling. Reports on business dealings and trade unions.
- 0145 BBC: Europe's World. A magazine program reflecting life in Europe and its links with other parts of the world.
- 0149 Radio Prague: Interview Time. Interviews with tourists visiting Czechoslovakia.
- 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0157 Radio Berlin Int'l: Commentary. See S 0112.
- 0201 Radio Berlin Int'l: Our Report. See T 0001.
- 0206 Radio Berlin Int'l: Spotlight on Sport. See T 0006.
- 0209 BBC: British Press Review. See S 0209.
- 0213 Radio Berlin Int'l: RBI DX Club Meeting. See T 0013.
- 0215 BBC: Network UK. A look at the issues and events that affect the lives of people throughout the UK.
- 0230 BBC: Sports International. Feature program on a topic or person making sports headlines.
- 0230 Radio for Peace Int'l: European Profile. Correspondent reports on European politics and social developments.
- 0241 Radio Portugal: Sun to Sea. See M 1611.
- 0245 Radio for Peace Int'l: United Nations Radio. Various programming relating to the United Nations.
- 0300 Radio for Peace Int'l: University of the Air. See M 2300.
- 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0310 Vatican Radio: A Many-Splendored Thing (except October 31st: Letterbox). See M 0500.
- 0312 Radio Berlin Int'l: Commentary. See S 0112.
- 0313 Radio Prague: Newsvision. See T 0113.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Berlin Int'l: Our Report. See T 0001.
- 0321 Radio Berlin Int'l: Spotlight on Sport. See T 0006.
- 0322 Radio Prague: Folk Music Section. See T 0122.
- 0326 Radio Prague: Introducing Czechoslovakia. See T 0126.
- 0328 Radio Berlin Int'l: RBI DX Club Meeting. See T 0013.
- 0330 BBC: John Peel. Tracks from newly released albums and singles from the contemporary music scene.
- 0330 Radio Prague: Sports Roundup. See T 0130.
- 0333 Radio Prague: Meet the People. See T 0133.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0339 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
- 0349 Radio Prague: Interview Time. See T 0149.
- 0352 Radio Netherlands: The Research File. See M 0752.
- 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0357 Radio Berlin Int'l: Commentary. See S 0112.
- 0401 Radio Berlin Int'l: Our Report. See T 0001.
- 0406 Radio Berlin Int'l: Spotlight on Sport. See T 0006.
- 0413 Radio Berlin Int'l: RBI DX Club Meeting. See T 0013.
- 0430 BBC: Off the Shelf. See M 0430.
- 0437 Radio Netherlands: Newslines. See S 0037.
- 0445 BBC: New Ideas. A radio shop window for new products and inventions.
- 0455 BBC: Book Choice. See S 0745.
- 0500 Vatican Radio: Talking Point. A roundtable discussion on both religious and secular topics.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0530 BBC: Financial News. See M 2310.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0630 BBC: Rock Salad. Tommy Vance presents another series of heavy metal music. (Rock on?)
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Europe's World. See T 0145.
- 0737 Radio Netherlands: Newslines. See S 0037.
- 0745 BBC: Network UK. See T 0215.
- 0752 Radio Netherlands: Images. A cultural magazine, highlighting film, theatre, opera, books, and serious music.
- 1115 BBC: Waveguide. See S 0750.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Megamix. See T 0030.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: Images. See T 0752.
- 1200 Vatican Radio: Talking Point. See T 0500.
- 1215 BBC: Multitrack 1: Top 20. See M 2330.
- 1245 BBC: Sports Roundup. See S 1330.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1345 BBC: Boys in the Back Room. See S 0430.
- 1405 BBC: Outlook. See M 1405.
- 1430 BBC: Off the Shelf. See M 0430.

BULLETIN BOARD

BBC features for October

At 1615 UTC on Sundays, the BBC presents "A Year of Dying Dangerously," a look at the role of murder and manslaughter in today's society (October 1st/8th); "Getting to Know You," a program about such practitioners as handwriting analysts, astrologers, and phrenologists (October 15th); and "In the Psychiatrist's Chair," a series of interviews with well-known personalities (October 22nd/29th). These programs are repeated on the following day (Monday) at 0730 UTC and 1330 UTC.

At 0101 UTC and 1515 UTC on Mondays, the BBC presents Lillian Hellman's drama about a private boarding school for girls, "The Children's Hour" (October 2nd/9th); "Chinese Lives," profiles of various Chinese individuals (October 23rd); and "The Child Behind the Eyes," an Israeli drama about a handicapped child and his mother (October 30th).

The BBC also features this month a rather odd series, entitled "Food Plants." In their words, the ten-minute programs profile "the history and economics, science and folklore of the relationship between human beings and those plants that nourish us." The program can be heard weekly at 1215 UTC on Wednesdays and 0630 UTC on Thursdays.

Coincidentally, each of those broadcasts comes right before a broadcast of "The Farming World," perhaps reflecting a new-found agrarian bent in Bush House!

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| 0330 Radio Netherlands: News [T-S] | 0430 Radio Moscow (World Service): News in Brief | 0530 Radio Moscow (World Service): News in Brief [S] |
| 0345 Radio Berlin Int'l: News | 0430 Radio Netherlands: News [M-A] | 0545 Radio Canada Int'l: News [M-F] |
| 0350 Radiotelevisione Italiana: News | 0500 BBC: World News | 0550 HCJB: News [T-A] |
| 0353 Radio Prague: News Wrap-up | 0500 Christian Science Monitor: News | 0551 Spanish National Radio: News Summary [S] |
| 0400 BBC: Newsdesk | 0500 Deutsche Welle: World News | 0555 HCJB: News [S] |
| 0400 Christian Science Monitor: News | 0500 HCJB: News [S-M]; Latin American News [T-A] | 0600 BBC: Newsdesk |
| 0400 Deutsche Welle: World News | 0500 Radio Australia: World and Australian News | 0600 Christian Science Monitor: News |
| 0400 HCJB: News [M-A] | 0500 Radio Berlin Int'l: News | 0600 Deutsche Welle: World News |
| 0400 Kol Israel: News | 0500 Radio Havana Cuba: Int'l News [M-A] | 0600 HCJB: News [M] |
| 0400 Radio Australia: International Report | 0500 Radio Japan: News [S-F] | 0600 Radio Australia: International Report |
| 0400 Radio Beijing: News | 0500 Radio Moscow: News | 0600 Radio Havana Cuba: Int'l News [M-A] |
| 0400 Radio Canada Int'l: News [M-F] | 0500 Radio New Zealand Int'l: News | 0600 Radio Korea: News |
| 0400 Radio Havana Cuba: Int'l News [M-A] | 0500 Spanish National Radio: News | 0600 Radio Moscow: News |
| 0400 Radio Moscow: News | 0500 Voice of America: News | 0600 Voice of America: News |
| 0400 Radio RSA: News | 0515 Radio Berlin Int'l: News | 0630 Christian Science Monitor: News [M-F] |
| 0400 Swiss Radio Int'l: News | 0515 Radio Canada Int'l: News [M-F] | 0630 Radio Finland: Northern Report [T-A] |
| 0400 Voice of America: News | 0515 Radio Havana Cuba: Cuban National News [M-A] | 0630 Radio Havana Cuba: Newsbreak [M-A] |
| 0410 Radio Beijing: News About China | 0530 Christian Science Monitor (East Africa): News [M] | 0630 Radio Moscow (World Service): News in Brief [S-M] |
| 0425 Radiotelevisione Italiana: News | 0530 Christian Science Monitor: News [T-F] | 0630 Swiss Radio Int'l: News |
| 0430 Christian Science Monitor (East Africa): News [M] | 0530 Radio Havana Cuba: News [M-A] | 0655 HCJB: News [M-A] |
| 0430 Christian Science Monitor: News [T-F] | | 0700 BBC: World News |
| 0430 Radio Havana Cuba: Newsbreak [M-A] | | |

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- 1437 Radio Netherlands: Newslines. See S 0037.
- 1445 BBC: Cole Porter Among Friends. See M 0145.
- 1452 Radio Netherlands: Images. See T 0752.
- 1515 BBC: A Jolly Good Show. Dave Lee Travis presents listener record requests and dedications, and the UK's top ten albums.
- 1611 Radio Portugal: Our Choice of Music. Portuguese folk, classical, and modern rock music.
- 1615 BBC: Omnibus. A half-hour program on practically any topic.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1645 BBC: The World Today. See M 1645.
- 1652 Radio Netherlands: Images. See T 0752.
- 2300 Radio for Peace Int'l: RFPI's Mailbag. Listener opinions, comments, suggestions, and questions.
- 2305 BBC: Commentary. See M 2305.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Concert Hall. See S 1515.
- 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 2357 Radio Berlin Int'l: Our Report. See T 0001.



Suh Mi-Hye of Radio Korea's English Service.

Wednesday

Oct 4th, 11th, 18th, 25th

- 0001 Radio Berlin Int'l: Commentary. See S 0112.
- 0006 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0008 Radio Berlin Int'l: Stamp Album. Updates on new issues, history, and other information about stamps.
- 0012 Radio Berlin Int'l: GDR Kaleidoscope. Features on science, social life, and youth affairs in East Germany.
- 0030 Radio for Peace Int'l: Peace Forum. The search for world peace.
- 0037 Radio Netherlands: Newslines. See S 0037.
- 0050 Vatican Radio: Talking Point. See T 0500.
- 0052 Radio Netherlands: Images. See T 0752.
- 0100 Radio for Peace Int'l: Red Cross Roads. Activities of the Red Cross.
- 0101 BBC: Outlook. See M 1405.
- 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0112 Radio Berlin Int'l: Our Report. See T 0001.
- 0113 Radio Prague: Newsvision. See T 0113.
- 0116 Radio Berlin Int'l: Commentary. See S 0112.
- 0121 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0123 Radio Berlin Int'l: Stamp Album. See W 0008.
- 0124 Radio Prague: Culture. Interviews with Czech

- people on living and working in Czechoslovakia.
- 0125 BBC: Financial News. See M 2310.
- 0127 Radio Berlin Int'l: GDR Kaleidoscope. See W 0012.
- 0130 BBC: No Life for a Child. A look at the conditions in which some children live.
- 0130 Radio for Peace Int'l: World Citizen's Hour. Opinions and various types of programs from around the world.
- 0132 Radio Prague: Economic Report. Updates on the business world in Czechoslovakia.
- 0144 Radio Prague: Folk Music. Original Czech folk music is presented (except October 25th: Brass Band Music, a look at recent Czech brass band sounds).
- 0145 BBC: Country Style. David Allan presents British country music.
- 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0157 Radio Berlin Int'l: Our Report. See T 0001.
- 0201 Radio Berlin Int'l: Commentary. See S 0112.
- 0206 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0208 Radio Berlin Int'l: Stamp Album. See W 0008.
- 0209 BBC: British Press Review. See S 0209.
- 0212 Radio Berlin Int'l: GDR Kaleidoscope. See W 0012.
- 0215 BBC: Tech Talk. See M 1115.
- 0230 BBC: McCartney on McCartney. Mike Read talks with the ex-Beatle about his musical career.
- 0230 Radio for Peace Int'l: United Nations Radio. See T 0245.

- 0241 Radio Portugal: Our Choice of Music. See T 1611.
- 0300 Radio for Peace Int'l: World of Radio. Glenn Hauser's comprehensive communications magazine.
- 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0310 Vatican Radio: Talking Point. See T 0500.
- 0312 Radio Berlin Int'l: Our Report. See T 0001.
- 0313 Radio Prague: Newsvision. See T 0113.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Berlin Int'l: Commentary. See S 0112.
- 0321 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0323 Radio Berlin Int'l: Stamp Album. See W 0008.
- 0324 Radio Prague: Culture. See W 0124.
- 0327 Radio Berlin Int'l: GDR Kaleidoscope. See W 0012.
- 0330 BBC: Discovery. An in-depth look at scientific research.
- 0330 Radio for Peace Int'l: RFPI's Mailbag. See T 2300.
- 0332 Radio Prague: Economic Report. See W 0132.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0344 Radio Prague: Folk Music (except October 25th: Brass Band Music). See W 0144.
- 0352 Radio Netherlands: Images. See T 0752.
- 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0357 Radio Berlin Int'l: Our Report. See T 0001.
- 0401 Radio Berlin Int'l: Commentary. See S 0112.
- 0406 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0408 Radio Berlin Int'l: Stamp Album. See W 0008.
- 0412 Radio Berlin Int'l: GDR Kaleidoscope. See W 0012.
- 0430 BBC: Off the Shelf. See M 0430.
- 0437 Radio Netherlands: Newslines. See S 0037.
- 0445 BBC: Country Style. See W 0145.
- 0500 Vatican Radio: Vatican Week. A look at the Pope's weekly general audience.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0530 BBC: Financial News. See M 2310.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0630 BBC: Meridian. The world of the arts, including music, drama, and books.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Development '89. Aid and development issues.
- 0737 Radio Netherlands: Newslines. See S 0037.
- 0752 Radio Netherlands: Mind Your Own

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- 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 [S-F]
- 0700 Radio Moscow (World Service): News
- 0700 Voice of Free China: News and Commentary
- 0715 Radio Havana Cuba: Cuban National 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]
- 0745 Radio Berlin Int'l: News
- 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 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 [S-M]
- 0830 Radio Netherlands: News [M-A]
- 0830 Swiss Radio Int'l: News
- 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 Berlin Int'l: News
- 0900 Radio Japan: News [S-F]
- 0900 Radio Moscow (World Service): News
- 0930 Christian Science Monitor: News [M-F]
- 0930 Radio Canada Int'l: News [M-F]
- 0930 Radio Moscow (World Service): News in Brief [S]
- 0945 Radio Berlin Int'l: News
- 1000 BBC: News Summary
- 1000 Christian Science Monitor: News

- 1000 Kol'Israel: News
- 1000 Radio Australia: International Report
- 1000 Radio Moscow (World Service): News
- 1000 Radio New Zealand Int'l: News [M-F]
- 1000 Swiss Radio Int'l: News
- 1000 Voice of America: News
- 1030 Radio Moscow (World Service): News in Brief [S-M]
- 1030 Radio Netherlands: News [M-A]
- 1100 BBC: World News
- 1100 Christian Science Monitor: News [M-F]
- 1100 Deutsche Welle: World News
- 1100 Radio Australia: World and Australian News
- 1100 Radio Beijing: News
- 1100 Radio Berlin Int'l: News
- 1100 Radio Finland: Northern Report [T-F]
- 1100 Radio Japan: News [S-F]
- 1100 Radio Korea: News
- 1100 Radio Moscow (World Service): News
- 1100 Radio New Zealand Int'l: News
- 1100 Radio RSA: News
- 1100 Swiss Radio Int'l: News
- 1100 Voice of America: News

program

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- Business, Commerce, business, and finance - especially in Holland.
- 1115 BBC: Country Style. See W 0145.
 - 1130 BBC: Meridian. See W 0630.
 - 1152 Radio Netherlands: Mind Your Own Business. See W 0752.
 - 1200 Vatican Radio: Vatican Week. See W 0500.
 - 1206 Radio Netherlands: Serious Music. Harry Kiphuis presents new Dutch compact disc recordings.
 - 1215 BBC: Food Plants. A look at the relationship between human beings and the plants that nourish us.
 - 1225 BBC: The Farming World. Issues in agriculture.
 - 1245 BBC: Sports Roundup. See S 1330.
 - 1309 BBC: Twenty-Four Hours. See S 0509.
 - 1330 BBC: Development '89. See W 0730.
 - 1405 BBC: Outlook. See M 1405.
 - 1430 BBC: Off the Shelf. See M 0430.
 - 1437 Radio Netherlands: Newslines. See S 0037.
 - 1445 BBC: Business Matters. See W 0430.
 - 1452 Radio Netherlands: Mind Your Own Business. See W 0752.
 - 1506 Radio Netherlands: Serious Music. See W 1206.
 - 1515 BBC: Poems by Post. See M 2315.
 - 1530 BBC: King Street Junior. Another series about life in a fictional inner-city elementary school.
 - 1611 Radio Portugal: Sun and Sea. See M 1611.
 - 1615 BBC: Rock Salad. See T 0630.
 - 1637 Radio Netherlands: Newslines. See S 0037.
 - 1645 BBC: The World Today. See M 1645.
 - 1652 Radio Netherlands: Mind Your Own Business. See W 0752.
 - 2300 Radio for Peace Int'l: University of the Air. See M 2300.
 - 2305 BBC: Commentary. See M 2305.
 - 2310 BBC: Financial News. See M 2310.
 - 2315 BBC: Good Books. See M 0315.
 - 2330 BBC: Multitrack 2. Mitchell Johnson presents pop music and news.
 - 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
 - 2357 Radio Berlin Int'l: Our Report. See T 0001.

- the East German pop charts.
- 0008 Radio Yugoslavia: Current Affairs. See S 0011.
- 0014 Radio Berlin Int'l: Question Time. Detailed answers to listener questions.
- 0018 Radio Yugoslavia: Spotlight on Culture. A program focusing on the different aspects of Yugoslavian culture.
- 0030 BBC: King Street Junior. See W 1530.
- 0030 Radio for Peace Int'l: Consider the Alternatives. High-level experts on foreign policy issues.
- 0037 Radio Netherlands: Newslines. See S 0037.
- 0050 Vatican Radio: Vatican Week. See W 0500.
- 0052 Radio Netherlands: Mind Your Own Business. See W 0752.
- 0100 Radio for Peace Int'l: Voices of Our World. Interviews and reports from around the world.
- 0101 BBC: Outlook. See M 1405.
- 0106 Radio Netherlands: Serious Music. See W 1206.
- 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0112 Radio Berlin Int'l: Our Report. See T 0001.
- 0113 Radio Prague: Newsview. See T 0113.
- 0116 Radio Berlin Int'l: Commentary. See S 0112.
- 0121 Radio Prague: Czech Scrapbook. A contest

- and music program, including "Rock Rodeo," a segment on Czech rock music.
- 0122 Radio Berlin Int'l: Pop Corner. See H 0007.
- 0125 BBC: Financial News. See M 2310.
- 0129 Radio Berlin Int'l: Question Time. See H 0014.
- 0130 BBC: Wavegulde. See S 0750.
- 0130 Radio for Peace Int'l: New Dimensions Radio. See T 0130.
- 0140 BBC: Book Choice. See S 0745.
- 0145 BBC: Society Today. A weekly look at the changes in Britain.
- 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0157 Radio Berlin Int'l: Our Report. See T 0001.
- 0201 Radio Berlin Int'l: Commentary. See S 0112.
- 0207 Radio Berlin Int'l: Pop Corner. See H 0007.
- 0209 BBC: British Press Review. See S 0209.
- 0214 Radio Berlin Int'l: Question Time. See H 0014.
- 0215 BBC: Network UK. See T 0215.
- 0230 BBC: Assignment. Examinations of current topical issues.
- 0230 Radio for Peace Int'l: United Nations Radio or The Newmaier Report. Various UN programming or commentaries from John Newmaier.
- 0241 Radio Portugal: Sun and Sea. See M 1611.
- 0245 Radio for Peace Int'l: United Nations Radio. See T 0245.
- 0300 Radio for Peace Int'l: Scan. Religious program featuring ordinary people.
- 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0310 Vatican Radio: Vatican Week. See W 0500.
- 0312 Radio Berlin Int'l: Our Report. See T 0001.
- 0313 Radio Prague: Newsview. See T 0113.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Berlin Int'l: Commentary. See S 0112.
- 0321 Radio Prague: Czech Scrapbook. See H 0121.
- 0322 Radio Berlin Int'l: Pop Corner. See H 0007.
- 0329 Radio Berlin Int'l: Question Time. See H 0014.
- 0330 BBC: The Litmus Test. See M 1215.
- 0330 Radio for Peace Int'l: University of the Air. See M 2300.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0352 Radio Netherlands: Mind Your Own Business. See W 0752.
- 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0357 Radio Berlin Int'l: Our Report. See T 0001.
- 0401 Radio Berlin Int'l: Commentary. See S 0112.

Thursday

October 5th, 12th, 19th, 26th

- 0001 Radio Berlin Int'l: Commentary. See S 0112.
- 0007 Radio Berlin Int'l: Pop Corner. Music from



Radio for Peace International (Costa Rica) staff: (from left) James Latham, Helga Fahrenheit, Armando Solano, Debra Latham, and Maximilian Loffler.

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|--|--|--|
| 1109 BBC: News About Britain | 1230 Christian Science Monitor: News | 1330 Swiss Radio Int'l: News |
| 1110 Belize Radio One: News Summary [T-F] | 1230 Radio Moscow (World Service): News in Brief [S-M] | 1330 Voice of America: News (Special English) |
| 1110 Radio Beijing: News About China | 1230 Trans World Radio, Bonaire: News [M-A] | 1345 Radio Berlin Int'l: News |
| 1115 Trans World Radio, Bonaire: News [M-F] | 1245 Radio Berlin Int'l: News | 1352 Radio RSA: News in Brief |
| 1120 Belize Radio One: News Summary [A] | 1245 Radio France Int'l: News | 1400 BBC: News Summary [A-S]; Five-Minute News [M-F] |
| 1125 Belize Radio One: News Summary [M] | 1300 BBC: World News | 1400 Christian Science Monitor: News |
| 1130 Christian Science Monitor: News | 1300 Belize Radio One: News | 1400 Radio Australia: International Report |
| 1130 Radio Berlin Int'l: News | 1300 Christian Science Monitor: News | 1400 Radio Beijing: News |
| 1130 Radio Moscow (World Service): News in Brief | 1300 Christian Science Monitor: News [M-F] | 1400 Radio France Int'l: News |
| 1130 Radio Netherlands: News [M-A] | 1300 Radio Australia: World and Australian News | 1400 Radio Japan: News [S-F] |
| 1152 Radio RSA: News in Brief | 1300 Radio Berlin Int'l: News | 1400 Radio Korea: News |
| 1200 BBC: News Summary [S]; Newsreel [M-A] | 1300 Radio Canada Int'l (Asia/Pacific): News [S-F] | 1400 Radio Moscow (World Service): News |
| 1200 Christian Science Monitor: News [M-F] | 1300 Radio Canada Int'l: News [S] | 1400 Radio RSA: News |
| 1200 Radio Australia: International Report | 1300 Radio Finland: Northern Report [T-A] | 1400 Voice of America: News |
| 1200 Radio Beijing: News | 1300 Radio Moscow (World Service): News | 1400 WWCR: News [M-F] |
| 1200 Radio Canada Int'l: World Report [M-F] | 1300 Radio RSA: News | 1405 Radio Finland: Northern Report [T-A] |
| 1200 Radio Finland: Northern Report [T-F] | 1300 Trans World Radio, Bonaire: News [S] | 1410 Radio Beijing: News About China |
| 1200 Radio Moscow (World Service): News | 1300 Voice of America: News | 1425 HCJB: News [M-F] |
| 1200 Swiss Radio Int'l: News | 1325 HCJB: News [M-F] | 1430 Christian Science Monitor: News [M-F] |
| 1200 Voice of America: News | 1330 Christian Science Monitor: News [M-F] | 1430 Radio Moscow (World Service): News in Brief |
| 1210 Radio Beijing: News About China | 1330 Radio Moscow (World Service): News in Brief [S] | 1430 Radio Netherlands: News [M-A] |
| 1215 Radio Berlin Int'l: News | | 1445 Radio Berlin Int'l: News |
| 1230 BRT, Brussels: News [M-S] | | |

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- 0406 Radio Netherlands: Serious Music. See W 1206.
- 0407 Radio Berlin Int'l: Pop Corner. See H 0007.
- 0414 Radio Berlin Int'l: Question Time. See H 0014.
- 0430 BBC: Off the Shelf. See M 0430.
- 0437 Radio Netherlands: Newslines. See S 0037.
- 0445 BBC: Andy Kershaw's World of Music. See M 0215.
- 0500 Vatican Radio: Vatican Viewpoint. An examination of the ethical and moral issues



Sean-Patrick Lovett, head of Vatican Radio's English Service.

- of Catholicism.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0530 BBC: Financial News. See M 2310.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0630 BBC: Food Plants. See W 1215.
- 0640 BBC: The Farming World. See W 1225.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Write On... Paddy Feeny answers listener letters.
- 0730 Radio Netherlands: Newslines. See S 0037.

- 0745 BBC: Network UK. See T 0215.
- 0752 Radio Netherlands: Media Network. A weekly survey of communications developments around the globe.
- 1115 BBC: New Ideas. See T 0445.
- 1125 BBC: Book Choice. See S 0745.
- 1130 BBC: Up the Garden Path. A soap opera revolving around Izzy, a vivacious young teacher.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: Media Network. See H 0752.
- 1200 Vatican Radio: Vatican Viewpoint. See H 0500.
- 1215 BBC: Multitrack 2. See W 1830.
- 1245 BBC: Sports Roundup. See S 1330.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1345 BBC: Jazz Scene UK (October 5th, 19th) or Folk in Britain (October 12th, 26th). A look at jazz or folk music on the British Isles.
- 1405 BBC: Outlook. See M 1405.
- 1430 BBC: Off the Shelf. See M 0430.
- 1437 Radio Netherlands: Newslines. See S 0037.
- 1445 BBC: Write On... See H 0730.
- 1452 Radio Netherlands: Media Network. See H 0752.
- 1515 BBC: The Pleasure's Yours. Gordon Clyde presents classical music requests.
- 1611 Radio Portugal: Cultural and Current Events. Reviews of cultural happenings and current events in Portugal.
- 1615 BBC: Assignment. See H 0230.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1645 BBC: The World Today. See M 1645.
- 1652 Radio Netherlands: Media Network. See H 0752.
- 2300 Radio for Peace Int'l: University of the Air. See M 2300.
- 2305 BBC: Commentary. See M 2305.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Music Review. Classical music events and developments from around the world.
- 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 2357 Radio Berlin Int'l: Our Report. See T 0001.

Friday

October 6th, 13th, 20th, 27th

- 0001 Radio Berlin Int'l: Commentary. See S 0112.
- 0007 Radio Berlin Int'l: Mid-Week Sports Report.

- 0019 Radio Berlin Int'l: The Land We Live In. A look at the people of East Germany and their way of life.
- 0030 BBC: Verdi and His World. A look at the great operatic composer.
- 0030 Radio for Peace Int'l: World Goodwill. Groups furthering the interests of peace.
- 0037 Radio Netherlands: Newslines. See S 0037.
- 0050 Vatican Radio: Vatican Viewpoint. See H 0500.
- 0052 Radio Netherlands: Media Network. See H 0752.
- 0101 BBC: Outlook. See M 1405.
- 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0112 Radio Berlin Int'l: Our Report. See T 0001.
- 0113 Radio Prague: Newslines. See T 0113.
- 0116 Radio Berlin Int'l: Commentary. See S 0112.
- 0122 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
- 0125 BBC: Financial News. See M 2310.
- 0125 Radio Prague: Folk Music Section. See T 0122.
- 0128 Radio Prague: Health and Medicine. A look at different aspects of health care in Czechoslovakia.
- 0130 BBC: Jazz Scene UK (October 6th, 20th) or Folk in Britain (October 13th, 27th). See H 1345.
- 0130 Radio for Peace Int'l: Alternative Radio. Current political issues facing Latin America.
- 0134 Radio Berlin Int'l: The Land We Live In. See F 0019.
- 0135 Radio Prague: Letter from Czechoslovakia. A program focusing on the real personal life in Czechoslovakia, and opinions of Czech individuals.
- 0140 Radio Prague: DX Chat. Reception reports and DX news.
- 0145 BBC: Talking From... Profiles from Northern Ireland, Scotland, and Wales.
- 0149 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
- 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0157 Radio Berlin Int'l: Our Report. See T 0001.
- 0201 Radio Berlin Int'l: Commentary. See S 0112.
- 0207 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Seven Seas. A weekly program about ships and the sea.
- 0219 Radio Berlin Int'l: The Land We Live In.

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- 1445 Radio Canada 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 Japan: News [S-F]
- 1500 Radio Moscow (World Service): News
- 1500 Radio RSA: News
- 1500 Voice of America: News
- 1510 Radio Beijing: News About China
- 1525 H.C.J.B.: 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 [S-M]
- 1530 Swiss Radio Int'l: News

- 1545 Radio Berlin 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 Portugal: News [M-F]
- 1600 Voice of America: News
- 1609 BBC: News About Britain
- 1615 Radio Canada Int'l: News
- 1625 H.C.J.B.: News [M-F]
- 1630 Christian Science Monitor: News [M-F]
- 1630 Radio Moscow (World Service): News in Brief [S]
- 1630 Radio Netherlands: News [M-A]
- 1630 Voice of America (except Africa): News (Special English)
- 1700 BBC: World News
- 1700 Belize Radio One: News [M-F]
- 1700 Christian Science Monitor: News

- 1700 Kol Israel: News
- 1700 Radio Australia: World and Australian News
- 1700 Radio Japan: News [S-F]
- 1700 Radio Moscow (World Service): News
- 1700 Voice of America: News
- 1715 Radio Berlin Int'l: News
- 1730 BRT, Brussels: News
- 1730 Christian Science Monitor: News [M-F]
- 1730 Radio Berlin Int'l: News
- 1730 Radio Moscow (World Service): News in Brief
- 1730 Radio New Zealand Int'l: News [S-F]
- 1730 Swiss Radio Int'l: News
- 1800 BBC: Newsdesk
- 1800 Belize Radio One: Headline News [M-A]
- 1800 Christian Science Monitor: News
- 1800 Radio Australia: International Report
- 1800 Radio Canada Int'l: News
- 1800 Radio Korea: News
- 1800 Radio Moscow (World Service): News
- 1800 Radio New Zealand Int'l: News
- 1800 Radio RSA: News
- 1800 Voice of America: News

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- See F 0019.
- 0230 BBC: Up the Garden Path. See H 1130.
- 0230 Radio for Peace Int'l: Media World or This Wondrous World. Details not available at press time.
- 0245 Radio Portugal: Cultural and Current Events. See H 1611.
- 0245 Radio for Peace Int'l: United Nations Radio. See T 0245.
- 0300 Radio for Peace Int'l: Peace Forum. See W 0030.
- 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0310 Vatican Radio: Vatican Viewpoint. See H 0500.
- 0312 Radio Berlin Int'l: Our Report. See T 0001.
- 0313 Radio Prague: Newsview. See T 0113.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Berlin Int'l: Commentary. See S 0112.
- 0322 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
- 0325 Radio Prague: Folk Music Section. See T 0122.
- 0328 Radio Prague: Health and Medicine. See F 0128.
- 0330 BBC: Focus on Faith. Comment and discussion on the major issues in the worlds of faith.
- 0330 Radio for Peace Int'l: University of the Air. See M 2300.
- 0334 Radio Berlin Int'l: The Land We Live In. See F 0019.
- 0335 Radio Prague: Letter from Czechoslovakia. See F 0135.
- 0337 Radio Netherlands: Newsline. See S 0037.
- 0340 Radio Prague: DX Chat. See F 0140.
- 0349 Radio Prague: The World Federation of Trade Unions Calling. See T 0139.
- 0352 Radio Netherlands: Media Network. See H 0752.
- 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0357 Radio Berlin Int'l: Our Report. See T 0001.
- 0401 Radio Berlin Int'l: Commentary. See S 0112.
- 0407 Radio Berlin Int'l: Mid-Week Sports Report. See F 0007.
- 0419 Radio Berlin Int'l: The Land We Live In. See F 0019.
- 0430 BBC: Off the Shelf. See M 0430.
- 0437 Radio Netherlands: Newsline. See S 0037.
- 0445 BBC: Jazz Scene UK (October 6th, 20th) or Folk in Britain (October 13th, 27th). See H 1345.
- 0500 Vatican Radio: The Church Today. The

- Catholic perspective on contemporary issues.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0530 BBC: Financial News. See T 0125.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0630 BBC: Meridian. See W 0630.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: Churchill at War. A look at Churchill's actions during the Second World War.



The BBC's George MacPherson checks out the cattle social scene for "The Farming World." The program airs on Wednesdays at 1225 UTC, repeated on Thursdays at 0640 UTC.

- 0737 Radio Netherlands: Newsline. See S 0037.
- 0752 Radio Netherlands: Rembrandt Express. A magazine program with a "fresh dimension".
- 1115 BBC: Talking From... See F 0145.
- 1130 BBC: Meridian. See W 0630.
- 1137 Radio Netherlands: Aslascan. A live magazine show with interviews with newsmakers, press reviews, monthly quizzes and listener opinion.
- 1200 Vatican Radio: The Church Today. See F 0500.
- 1215 BBC: Churchill at War. See F 0730.
- 1245 BBC: Sports Roundup. See S 1330.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: John Peel. See T 0330.
- 1405 BBC: Outlook. See M 1405.
- 1430 BBC: Off the Shelf. See M 0430.
- 1437 Radio Netherlands: Aslascan. See F 1137.
- 1445 BBC: Nature Now. See M 0445.

- 1515 BBC: Music Review. See H 2315.
- 1611 Radio Portugal: Mallbag or DX/Philately. Programs on listeners' letters, shortwave listening, and stamp collecting can be heard in this broadcast.
- 1615 BBC: Science in Action. See M 0230.
- 1637 Radio Netherlands: Newsline. See S 0037.
- 1645 BBC: The World Today. See M 1645.
- 1652 Radio Netherlands: Airtime Africa. Music, discussion with studio guests, and analysis of the issues that concern both Europe and Africa.
- 2300 Radio for Peace Int'l: University of the Air. See M 2300.
- 2305 BBC: Commentary. See M 2305.
- 2310 BBC: Financial News. See M 2310.
- 2315 BBC: Worldbrief. A roundup of the week's news headlines and human-interest happenings.
- 2330 BBC: Multitrack 3. Sarah Ward presents innovative and alternative rock music.
- 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 2357 Radio Berlin Int'l: Commentary. See S 0112.

Saturday

October 7th, 14th, 21st, 28th

- 0001 Radio Berlin Int'l: Our Report. See T 0001.
- 0007 Radio Berlin Int'l: Panorama. Reports about cooperation between East Germany and other socialist nations.
- 0011 Radio Yugoslavia: Current Affairs. See S 0011.
- 0016 Radio Yugoslavia: Sidewalk Rock. Rock music from the Third World and other developing countries.
- 0021 Radio Berlin Int'l: Did You Know? Tidbits of information about East Germany and other countries.
- 0030 BBC: From the Weeklies. A review of the weekly British press.
- 0030 Radio for Peace Int'l: World of Radio. See W 0300.
- 0037 Radio Netherlands: Newsline. See S 0037.
- 0045 BBC: Recording of the Week. See M 0545.
- 0050 Vatican Radio: The Church Today. See F 0500.
- 0052 Radio Netherlands: Rembrandt Express. See F 0752.
- 0100 Radio for Peace Int'l: Common Ground. Political, economic, military, and social

- 1800 WWCR: News [M-A]
- 1803 Radio Jamahirliya, Libya: Headlines
- 1830 Belize Radio One: Network News
- 1830 Christian Science Monitor: News [M-F]
- 1830 Radio Canada Int'l: News [M-F]
- 1830 Radio Finland: Northern Report [M-F]
- 1830 Radio Kuwait: News
- 1830 Radio Moscow (World Service): News in Brief [A-S]
- 1830 Radio Netherlands: News [M-A]
- 1830 Radio New Zealand Int'l: News [M-F]
- 1830 Swiss Radio Int'l: News
- 1830 Voice of America: News (Special English)
- 1847 Radio Jamahirliya, Libya: News
- 1852 Radio RSA: News in Brief
- 1900 BBC: News Summary
- 1900 Christian Science Monitor: News
- 1900 Deutsche Welle: World News
- 1900 HCJB: Latin American News [M-F]
- 1900 Kol Israel: News
- 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 Spanish National Radio: News
- 1900 Voice of America: News
- 1915 Radio Berlin Int'l: News
- 1930 Christian Science Monitor: News [M-F]
- 1930 Radio Havana Cuba: Cuban National News [M-T]; Newsbreak [W-A]
- 1930 Radio Moscow (World Service): News in Brief [S]
- 1935 Radiotelevisione Italiana: News
- 1945 Radio Berlin Int'l: News
- 1950 HCJB: News [M-F]
- 2000 BBC: World News
- 2000 Christian Science Monitor: 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 RSA: News
- 2000 Voice of America: News
- 2000 Voice of Indonesia: News
- 2025 Radio Havana Cuba: Cuban National 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]
- 2052 Radio RSA: News in Brief
- 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 Berlin Int'l: News
- 2100 Radio Canada Int'l: News [A-S]; The World at Six [M-F]

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- issues in international relations.
- 0101 BBC: Outlook. See M 1405.
- 0110 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0112 Radio Berlin Int'l: Commentary. See S 0112.
- 0113 Radio Prague: Newsview. See T 0113.
- 0116 Radio Berlin Int'l: Our Report. See T 0001.
- 0120 Radio Prague: The Week's Events in Czechoslovakia. A weekly news review of recent happenings in Czechoslovakia.
- 0122 Radio Berlin Int'l: Panorama. See A 0007.
- 0125 BBC: Financial News. See M 2310.
- 0125 Radio Prague: The Arts in Czechoslovakia. A look at the cultural atmosphere in Czechoslovakia.
- 0130 BBC: Behind the Wall. Colin Thubron's account of his travels across China.
- 0130 Radio for Peace Int'l: New Dimensions Radio. See T 0130.
- 0135 Radio Prague: North American Mailbag Program. Reception reports, musical requests, and listener letters.
- 0136 Radio Berlin Int'l: Did You Know? See A 0021.
- 0145 BBC: Book Choice. See S 0745.
- 0150 BBC: New Ideas. See T 0445.
- 0155 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0157 Radio Berlin Int'l: Commentary. See S 0112.
- 0201 Radio Berlin Int'l: Our Report. See T 0001.
- 0207 Radio Berlin Int'l: Panorama. See A 0007.
- 0209 BBC: British Press Review. See S 0209.
- 0215 BBC: Network UK. See T 0215.
- 0221 Radio Berlin Int'l: Did You Know? See A 0021.
- 0230 BBC: People and Politics. Background to the British political scene.
- 0230 Radio for Peace Int'l: The World This Week. Current global events, emphasizing the need for peace.
- 0241 Radio Portugal: Mailbag or DX/Philately. See F 1611.
- 0245 Radio for Peace Int'l: United Nations Radio. See T 0245.
- 0300 Radio for Peace Int'l: University of the Air. See M 2300.
- 0310 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0310 Vatican Radio: The Church Today. See F 0500.
- 0312 Radio Berlin Int'l: Commentary. See S 0112.
- 0313 Radio Prague: Newsview. See T 0113.
- 0315 BBC: The World Today. See M 1645.
- 0316 Radio Berlin Int'l: Our Report. See T 0001.
- 0320 Radio Prague: The Week's Events in Czechoslovakia. See A 0120.
- 0322 Radio Berlin Int'l: Panorama. See A 0007.
- 0325 Radio Prague: The Arts in Czechoslovakia. See A 0125.
- 0330 BBC: The Vintage Chart Show. Past top ten hits with Jimmy Savile.
- 0335 Radio Prague: North American Mailbag Program. See A 0135.
- 0336 Radio Berlin Int'l: Did You Know? See A 0021.
- 0337 Radio Netherlands: Newslines. See S 0037.
- 0352 Radio Netherlands: Rembrandt Express. See F 0752.
- 0355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 0357 Radio Berlin Int'l: Commentary. See S 0112.
- 0401 Radio Berlin Int'l: Our Report. See T 0001.
- 0407 Radio Berlin Int'l: Panorama. See A 0007.
- 0421 Radio Berlin Int'l: Did You Know? See A 0021.
- 0430 BBC: Here's Humph! All that jazz with Humphrey Lyttelton.
- 0437 Radio Netherlands: Newslines. See S 0037.
- 0445 BBC: Personal View. See A 0030.
- 0500 Vatican Radio: With Heart and Mind. See S 0050.
- 0509 BBC: Twenty-Four Hours. See S 0509.
- 0530 BBC: Financial News. See M 2310.
- 0540 BBC: Words of Faith. See S 0540.
- 0545 BBC: The World Today. See M 1645.
- 0630 BBC: Meridian. See W 0630.
- 0709 BBC: Twenty-Four Hours. See S 0509.
- 0730 BBC: From the Weeklies. See F 2315.
- 0737 Radio Netherlands: Newslines. See S 0037.
- 0745 BBC: Network UK. See T 0215.
- 0752 Radio Netherlands: Over To You. See S 0052.
- 1115 BBC: Behind the Wall. See A 0130.
- 1130 BBC: Meridian. See W 0630.
- 1137 Radio Netherlands: Newslines. See S 0037.
- 1152 Radio Netherlands: Over to You. See S 0052.
- 1215 BBC: Multitrack 3. See F 2330.
- 1245 BBC: Sports Roundup. See S 1330.
- 1309 BBC: Twenty-Four Hours. See S 0509.
- 1330 BBC: Network UK. See T 0215.
- 1345 BBC: Sportsworld. Paddy Feeny presents almost three hours of live sports.
- 1401 BBC: Sportsworld (continued). See A 1345.
- 1437 Radio Netherlands: Newslines. See S 0037.
- 1452 Radio Netherlands: Over to You. See S 0052.
- 1515 BBC: Sportsworld (continued). See A 1345.
- 1615 BBC: Sportsworld (continued). See A 1345.
- 1637 Radio Netherlands: Newslines. See S 0037.
- 1652 Radio Netherlands: Over to You. See S 0052.
- 2300 Radio for Peace Int'l: Peace Forum. See W 0030.
- 2310 BBC: Book Choice. See S 0745.
- 2315 BBC: A Jolly Good Show. See T 1515.
- 2355 Radio Berlin Int'l: Musical Interlude. See S 0110.
- 2357 Radio Berlin Int'l: Commentary. See S 0112.



Deutsche Welle's North American team: (from left) Gregory Benzow, Lany Wayne, Andrew Carnegie, Martin Farent, Peggy Graham, Helga Koerjgen, and Dieter Wernig.

Suggestions? Something missing?

Let us know your corrections, suggestions of what you'd like to see, and additions to Program Manager Kannon Shanmugan at 4412 Turnberry Circle, Lawrence;

news guide cont'd from p.63

- 2100 Radio Finland: Northern Report [M-F]
- 2100 Radio Japan: News
- 2100 Radio Moscow (World Service): 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 Kol Israel: News
- 2130 KVOH: UPI Headline News
- 2130 Radio Canada Int'l (Africa): News
- 2130 Radio Canada Int'l: As It Happens [M-F]
- 2130 Radio Moscow (World Service): News in Brief [A-S]
- 2130 Swiss Radio Int'l: News
- 2145 Radio Berlin Int'l: News
- 2200 BBC: Newshour
- 2200 Christian Science Monitor: News
- 2200 KVOH: UPI Radio News
- 2200 Radio Australia: International Report
- 2200 Radio Canada Int'l (Asia/Pacific): News
- 2200 Radio Canada Int'l: News [A-S]; The World at Six [M-F]
- 2200 Radio Havana Cuba: Int'l News [M-A]
- 2200 Radio Moscow: News
- 2200 Radiotelevisione Italiana: News
- 2200 Voice of America: News
- 2200 Voice of Free China: News and Commentary
- 2230 Christian Science Monitor: News [M-F]
- 2230 KVOH: UPI Headline News
- 2230 Radio Havana Cuba: Cuban National News [M-A]
- 2230 Radio Moscow (World Service): News in Brief [A-S]
- 2230 Radio Polonia: News
- 2230 Voice of America: News (Special English)
- 2300 BBC: World News [A-S]; Five-Minute News [M-F]
- 2300 Belize Radio One: News [M-F]
- 2300 Christian Science Monitor: News
- 2300 Kol Israel: 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 [S-F]
- 2300 Radio Moscow: News
- 2300 Radio New Zealand Int'l: News
- 2300 Voice of America: News
- 2300 Voice of Turkey: News
- 2330 BRT, Brussels: News
- 2330 Christian Science Monitor: News [M-F]
- 2330 KVOH: UPI Headline News
- 2330 Radio Canada Int'l: As It Happens [M-F]; News [A]
- 2330 Radio for Peace Int'l: News [M]
- 2330 Radio Kiev: News
- 2330 Radio Korea: News
- 2330 Radio Moscow (World Service): News in Brief [M]
- 2330 Radio New Zealand Int'l: News [S-H]
- 2335 Voice of Greece: News [S]
- 2345 Radio Berlin Int'l: News

MT Monitoring Team

Greg Jordan,
Frequency Manager

1855-I Franciscan Terrace
Winston-Salem, NC 27127

Joe Hanlon

Philadelphia, Pennsylvania

Richard A. Keen

Golden, Colorado

frequency

section

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0030	BBC, London, England	5975	6005	6175	7325
		9590	9915	12095	15260
0000-0030	Kol Israel, Jerusalem	11605	12080	15615	
0000-0030	Radio Berlin Int'l, East Germany	6080	11890		
0000-0030	Radio Korea (South), Seoul	15575			
0000-0030	M Radio Norway, Oslo	15165			
0000-0045	Radio Yugoslavia, Belgrade	7215	11735	15105	
0000-0045	WINB, Red Lion, Pennsylvania	15145			
0000-0050	Radio Pyongyang, North Korea	15115	15160		
0000-0055	Radio Beijing, PR China	15130	17715	17855	
0000-0100	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	
0000-0100	Adventist World Radio, Costa Rica	9725	11870		
0000-0100	CBC Northern Quebec Service	6195	9625		
0000-0100	CBN, St. John's, Newfoundland	6160			
0000-0100	CBU, Vancouver, British Colombia	6160			
0000-0100	CFCF, Montreal, Quebec	6005			
0000-0100	CFCN, Calgary, Alberta	6030			
0000-0100	CHNS, Halifax, Nova Scotia	6130			
0000-0100	Christian Science World Service	7400	9850	13760	
0000-0100	CKWX, Vancouver, British Colombia	6080			
0000-0100	CFRB, Toronto, Ontario	6070			
0000-0100	FEB, Manila, Philippines	15445			
0000-0100	KSDA, Guam	15125			
0000-0100	KVOH, Rancho Simi, California	17775			
0000-0100	Radio Australia, Melbourne	15140	15160	15240	15320
		17750	17795	21740	
0000-0100	Radio Canada Int'l, Montreal	5960	9755		
0000-0100	Radio Havana Cuba	11820			
0000-0100	Radio Luxembourg	6090			

0000-0100	Radio Moscow	12025	15415	17860	17880
		21585	21690	21790	
0000-0100	Radio Moscow N. America Service	7165	9600	9700	9720
		9865	11710	11730	11750
		11850	11930	13605	15290
		15330	21470		
0000-0100	Radio New Zealand, Wellington	15485	17705		
0000-0100	Radio for Peace, Costa Rica	13660	21565		
0000-0100	Radio Thailand, Bangkok	9655	11905		
0000-0100	Radio Tonga, Tonga	5050			
0000-0100	SBC Radio One, Singapore	5010	5052	11940	
0000-0100	Spanish National Radio, Madrid	9630	15110		
0000-0100	T-S Superpower KUSW, Utah	15580			
0000-0100	Voice of America, Washington	5995	6130	9455	9775
		9815	11580	11695	11740
		15205			
0000-0100	WHRI, Noblesville, Indiana	7315	9495		
0000-0100	WRNO, New Orleans, Louisiana	7355			
0000-0100	WYFR, Oakland, California	5985	9505	15170	
0030-0045	BBC, London, England*	6195	7235	9570	11945
		15360	17875		
0030-0100	BBC, London, England	5975	6005	6175	7325
		9915	9590	12095	15260
0030-0100	HCJB, Quito, Ecuador	9745	11775	15155	15230
0030-0100	Radio Budapest, Hungary	6110	9520	9585	9835
		11910	15160		
0030-0100	Radio Netherlands, Hilversum	6020	6165	15315	
0030-0100	SLBC, Colombo, Sri Lanka	6005	9720		
0035-0040	All India Radio, New Delhi	3925	4860		
0045-0100	Radio Korea (South), Seoul	15575			
0045-0100	Radio New Zealand, Wellington	15485	17705		
0048-0100	WINB, Red Lion, Pennsylvania	15145			
0050-0100	Vatican Radio, Vatican City	9605	11780	15185	

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0110	Vatican Radio, Vatican City	9605	11780	15180	
0100-0115	All India Radio, New Delhi	6055	7215	9535	9910
		11715	11745	15110	
0100-0120	RAI, Rome, Italy	9575	11800		
0100-0125	Radio Netherlands, Hilversum	6020	6165	15315	
0100-0130	Kol Israel, Jerusalem	11605	12077	15615	
0100-0130	Radio Canada Int'l, Montreal	9535	9755	11845	11940
0100-0130	Radio Japan, Tokyo	17775			

LEGEND

- * The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
- * In the space between the end time and the station name is the broadcast schedule.

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

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

- * [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- * The last entry on a line is the frequency. Codes here include "SSB" which indicates a Single Sideband transmission, and "V" for a frequency that varies. [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
- * v after a frequency indicates that it varies
- * Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
- * Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (the are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

frequency

section

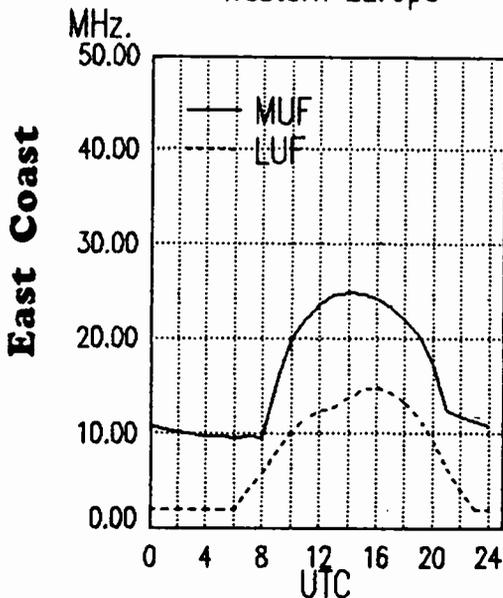
0100-0130	Radio Sweden, Stockholm	15405	17800
0100-0130	Laotian National Radio	7113v	
0100-0130 S,M	WINB, Red Lion, Pennsylvania	15145	
0100-0145	Radio Berlin Int'l, East Germany	6080	11890
0100-0150	Deutsche Welle, West Germany	6040	6085 6145 9565
		9735	11865 15105
0100-0200	BBC, London, England	5975	6005 6175 7325
		9410	9590 9915 12095
		15260	
0100-0200	CBC Northern Quebec Service	6195	9625
0100-0200	CBN, St. John's, Newfoundland	6160	
0100-0200	CBU, Vancouver, British Columbia	6160	
0100-0200	CFCF, Montreal, Quebec	6005	
0100-0200	CFCN, Calgary, Alberta	6030	
0100-0200	CHNS, Halifax, Nova Scotia	6130	
0100-0200	Christian Science World Service	7400	9850 13760
0100-0200	CKWX, Vancouver, British Columbia	6080	
0100-0200	CFRB, Toronto, Ontario	6070	
0100-0200	FEBC, Manila, Philippines	15445	
0100-0200	HCJB, Quito, Ecuador	9745	11775 15155 15230
0100-0200 T-A	KVOH, Rancho Simi, California	17775	
0100-0200	Radio Australia, Melbourne	15160	15180 15240 15320
		15395	17715 17795
		17750	21740
0100-0200	Radio Havana Cuba	11820	
0100-0200	Radio Japan, Tokyo	5960	17810 17835 17845
0100-0200	Radio Luxembourg	6090	
0100-0200	Radio Moscow	15415	17605 17850 17860
		17880	21585 21690 21790
0100-0200	Radio Moscow, N. American Service	7165	7290 9600 9700
		9720	9865 11710 11750
		11850	11930 21470
0100-0200	Radio New Zealand, Wellington	15485	17705
0100-0200 T-A	Radio for Peace, Costa Rica	13660	21565 25945(A)
0100-0200	Radio Prague, Czechoslovakia	5930	7345 9540
		11685	
		11990	13715 15540
0100-0200	Radio Thailand, Bangkok	9655	11905
0100-0200	Radio Tonga, Tonga	5050	
0100-0200	RAE, Buenos Aires, Argentina	9690	
0100-0200	SBC Radio One, Singapore	5052	11940
0100-0200	SLBC, Colombo, Sri Lanka	6005	9720 15425
0100-0200	Spanish National Radio, Madrid	9630	15110
0100-0200 T-S	Superpower KUSW, Utah	11695	

0100-0200	Voice of America, Washington	5995	6130 7205 9455
		9740	9775 9815 11580
		11740	15160 15205 17735
		18157	USB
0100-0200	Voice of Indonesia, Jakarta	9680	11784
0100-0200	WHRI, Noblesville, Indiana	7315	9495
0100-0200	WRNO New Orleans, Louisiana	7355	
0100-0200	WWCR, Nashville, Tennessee	15690	
0100-0200	WYFR, Oakland, California	5985	9505 9680 15170
0130-0140 T-S	Voice of Greece, Athens	9395	9420 11645
0130-0145WHFA	Radio Budapest, Hungary	6110	9520 9585 9835
		11910	15160
0130-0155	Radio Austria Int'l, Vienna	9870	9875 13730
0130-0200	Radio Baghdad, Iraq	11810	11945
0130-0200 S,M	Radio Canada Int'l, Montreal	9535	9755 11845 11940
0130-0200	Radio Veritas Asia, Philippines	15330	15365
0130-0200	WINB, Red Lion, Pennsylvania	15145	
0145-0200	Radio Berlin Int'l, East Germany	6080	11785 11890 15125

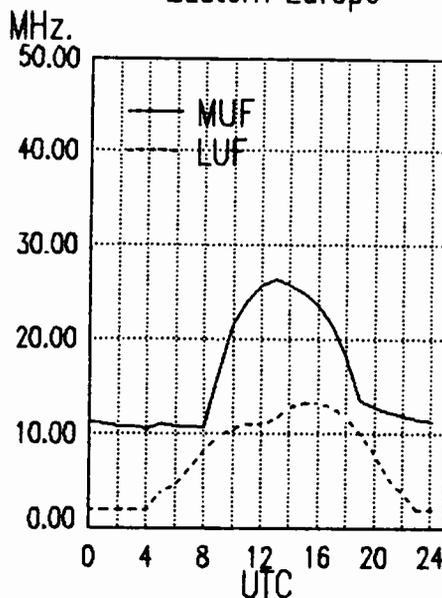
0200 UTC [10:00 PM EDT/7:00 PM PDT]

0200-0205 T-A	KVOH, Rancho Simi, California	17775	
0200-0215	Vatican Radio, Vatican City	6145	7125 9650
0200-0230	Burma Bcasting Service, Rangoon	7185	
0200-0230	Kol Israel, Jerusalem	11605	12080 15615
0200-0230	Radio Berlin Int'l, East Germany	6080	11785 11890 15125
0200-0230	Radio Kiev, Ukrainian SSR	9610	9800 11675 15180
		17665	17690
0200-0230	Swiss Radio Int'l, Berne	6095	6135 9725 9885
		12035	17730
0200-0230	Voice of America, Washington	5995	7205 9815 11580
		15160	15205 18157 USB
0200-0250	Deutsche Welle, West Germany	6035	7285 9690 11945
		15205	15235 17770
0200-0250	Radio Bras, Brasilia, Brazil	11745v	
0200-0255	Radio Bucharest, Romania	6155	9510 9570 11830
		11940	15380
0200-0300	BBC, London, England	5975	6005 6175 7325
		9410	9590 9660 9915
		12095	15260 15310 17875
0200-0300	CBC Northern Quebec Service	6195	9625
0200-0300	CBN, St. John's, Newfoundland	6160	
0200-0300	CBU, Vancouver, British Columbia	6160	

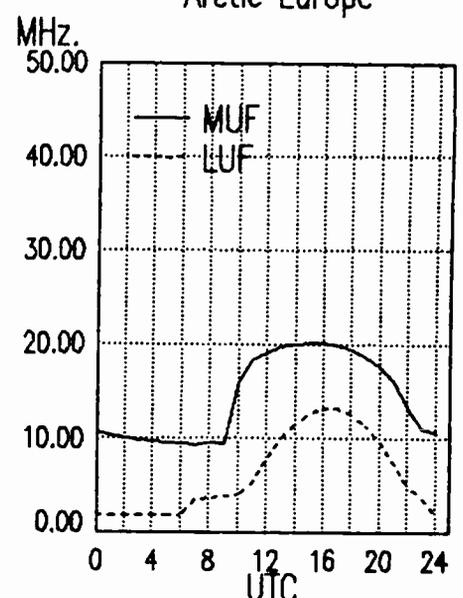
East Coast To Western Europe



East Coast To Eastern Europe



East Coast To Arctic Europe



frequency

section

0200-0300	CFCF, Montreal, Quebec	6005
0200-0300	CFCN, Calgary, Alberta	6030
0200-0300	CFRB, Toronto, Ontario	6070
0200-0300	CHNS, Halifax, Nova Scotia	6130
0200-0300	Christian Science World Service	9455 9850 13760
0200-0300	CKWX, Vancouver, British Columbia	6080
0200-0300	HCJB, Quito, Ecuador	9745 11775 15155
0200-0300 A,S	KSDA, Guam	17865
0200-0300	Radio Australia, Melbourne	15160 15180 15240 15320
		15395 17715 17750 17795
		21740
0200-0300	Radio Baghdad, Iraq	11810 11945
0200-0300	Radio Cairo, Egypt	9475 9675
0200-0300 T-A	Radio Canada Int'l, Montreal	9535 9755 11845 11940
0200-0300	Radio Havana Cuba	9710 11820
0200-0300	Radio Luxembourg	6090
0200-0300	Radio Moscow, USSR	11845 12025 15415 17600
		17860 17880 21585 21690
		21790
0200-0300	Radio Moscow N. Amerlca Service	7165 7290 9600
		9720
		9865 11710 11750 11850
		15425 21470
		3955
0200-0300	Radio Orion, South Africa	13660 21565 25945(A)
0200-0300 T-A	Radio for Peace, Costa Rica	15485 17705
0200-0300 A	Radio New Zealand, Wellington	9580 9615 11935
0200-0300	Radio RSA, South Africa	9655 11905
0200-0300	Radio Thailand, Bangkok	5050
0200-0300	Radio Tonga, Tonga	5052 11940
0200-0300	SBC Radio One, Singapore	6005 9720 15425
0200-0300	SLBC, Colombo, Sri Lanka	11695
0200-0300 T-S	Superpower KUSW, Utah	7285
0200-0300	Voice of Asia, Taiwan	5950 7445 9680 9765
0200-0300	Voice of Free China, Taiwan	6045
0200-0300	Voice of Kenya, Nairobi	15145
0200-0300	WINB, Red Lion, Pennsylvania	7315 9495
0200-0300	WHRI, Noblesville, Indiana	7355
0200-0300	WRNO, New Orleans, Louisiana	7520
0200-0300 IRR	WWCR, Nashville, Tennessee	5985 9505 15170
0200-0300	WYFR, California	5005 7165
0215-0220	Radio Nepal, Kathmandu	3925 4890 5960 5985
0230-0240	Port Moresby, Papua New Guinea	6020 6040 6080 6140
		9520

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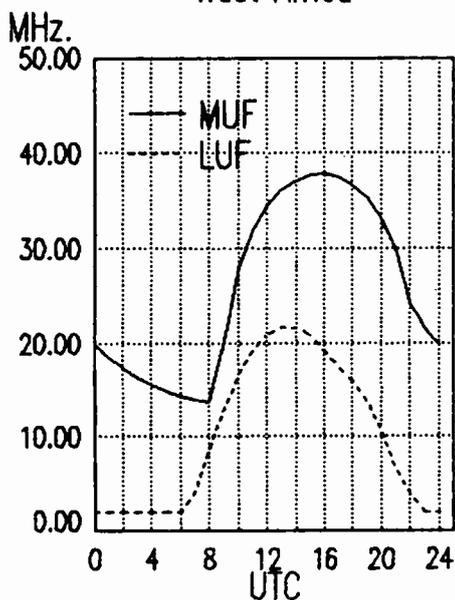
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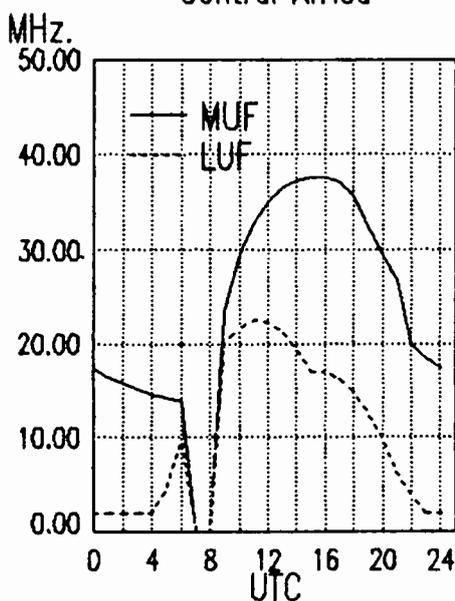


RADIO SANTA CRUZ
ENTRADA DEL INSTITUTO RADIODIFUSIVO DE YALEGRIA

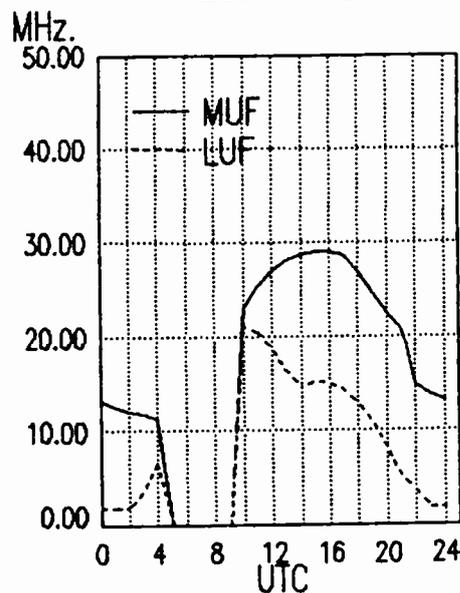
East Coast To West Africa



East Coast To Central Africa



East Coast To East Africa



East Coast

frequency

section

0230-0245	Radio Pakistan, Islamabad	7010 11570 15115 15580
		17660
0230-0300	Radio Berlin Int'l, E. Germany	9730 13610 15240
0230-0300	Radio Finland, Helsinki	11755 15185
0230-0300 T-A	Radio Portugal, Lisbon	6060 6080 9600 9680
		9705 11840
0230-0300	Voice of America, Washington	7205
0240-0250	All India Radio, New Delhi	3905 4860 1880 4895
		5960 5990 6110 6120
		7195 7295 9550 9610
		11830 11870 15305
0245-0300	Radio Korea, Seoul, South Korea	9640 15575
0252-0257v	Radio Yerevan, Armenian SSR	11675 15180 17665 17690

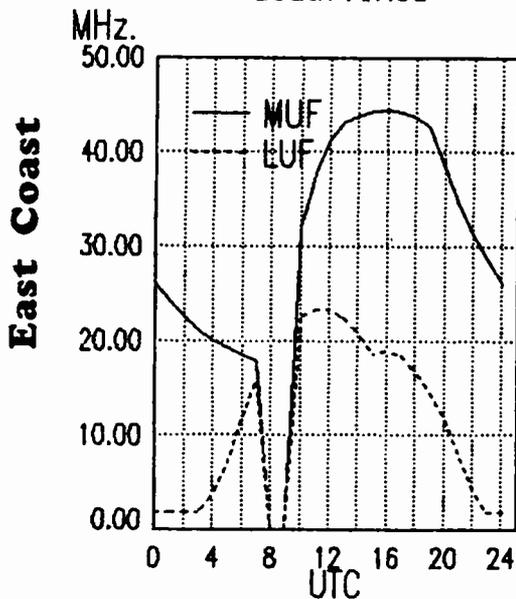
0300-0400	Radio Australia, Melbourne	11945 15160 15240 15320
		15395 17715 17750 17795
		21740
0300-0400	Radio Havana Cuba	9710 11820
0300-0400	Radio Moscow, USSR	7165 7290 7390 9600
		9720 11675 11710 11850
		15180 15280 15415 17600
		17665 17880 21585 21625
		21690 21790
0300-0400 T-A	Radio for Peace, Costa Rica	13660v 21565
0300-0400	Radio Prague, Czechoslovakia	5930 7345 9540 11685
		11990 13715 15540

0300 UTC [11:00 PM EDT/8:00 PM PDT]

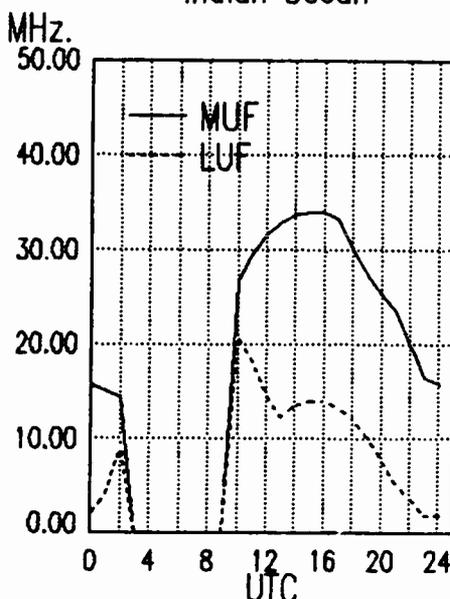
0300-0315	Radio Berlin Int'l, E. Germany	6125 11750 13610
0300-0330	WINB, Red Lion, Pennsylvania	15145
0300-0307	Radio Pakistan, Islamabad	5090 5930 7095
0300-0330	BBC, London, England	3955 5975 6005 6175
		6195 7325 9410 9915
		11750 12095 15260 15390
		15420
0300-0330	Radio Cairo, Egypt	9475 9675
0300-0330	Radio Japan, Tokyo	15195 15325 17765 21610
0300-0330	Radio Sweden Int'l, Stockholm	9695 11705
0300-0345	Radio Berlin Int'l, East Germany	11785 15125
0300-0345 A	Radio New Zealand, Wellington	15485 17705
0300-0350	Deutsche Welle, West Germany	6085 9545 11810 15205
0300-0350	Radio Baghdad, Iraq	11810 11945
0300-0355	Radio Beijing, China	9690 11715 15066 15130
		15510 17855
0300-0400	CBC Northern Quebec Service	6195 9625
0300-0400	CBN, St. John's, Newfoundland	6160
0300-0400	CBU, Vancouver, British Columbia	6160
0300-0400	CFCF, Montreal, Quebec	6005
0300-0400	CFCN, Calgary, Alberta	6030
0300-0400	CHNS, Halifax, Nova Scotia	6130
0300-0400	Christian Science World Service	9455 9850 13760
0300-0400	CKWX, Vancouver, British Columbia	6080
0300-0400	CFRB, Toronto, Ontario	6070
0300-0400	HCJB, Quito, Ecuador	9745 11775 15155
0300-0400	La Voz Evangelica, Honduras	4820

0300-0400	Radio Sofia, Bulgaria	11750
0300-0400	Radio Thailand, Bangkok	9655 11905
0300-0400	SBC Radio One, Singapore	5052 11940
0300-0400	SLBC, Colombo, Sri Lanka	6005 9720 15425
0300-0400 T-S	Superpower KUSW, Utah	9815
0300-0400	Trans World Radio, Bonaire	9535 11930
0300-0400	Voice of America, Washington	5995 6035 7280 9525
		9575 11835
0300-0400	Voice of Free China, Taiwan	5950 7445 9680 11745
		15345
0300-0400	Voice of Kenya, Nairobi	6045
0300-0400	Voice of Turkey, Ankara	9445 17760
0300-0400	WHRI, Noblesville, Indiana	7315 9495
0300-0400	WMLK, Bethel, Pennsylvania	9465
0300-0400	WRNO, New Orleans, Louisiana	6185
0300-0400 IRR	WWCR, Nashville, Tennessee	7520
0300-0400	WYFR Satellite Net, California	5985 9505 15566
0310-0330	Vatican Radio, Vatican City	9610(A) 11725
0315-0345	Radio France Int'l, Paris	3965 5990 7135 7280
		9550 9745 9790 11670
		11700 11790 11995 15135
		15155 15300
0330-0400	BBC, London, England	3955 5975 6005 6175
		6195 9410 9915 12095
		15390 15420
0330-0400	Radio Netherland, Hilversum	6165 9590
0330-0400 S,M	WINB, Red Lion, Pennsylvania	15145
0335-0400	Radio New Zealand, Wellington	15485 17705
0330-0400	Radio Tanzania, Dar es Salaam	9684
0330-0400	Radio Tirana, Albania	9500
0330-0400	United Arab Emirates Radio	11940 15435 15555 17890
0335-0340	All India Radio, New Delhi	3905 4860 9610 11830
		11870 11890 15305

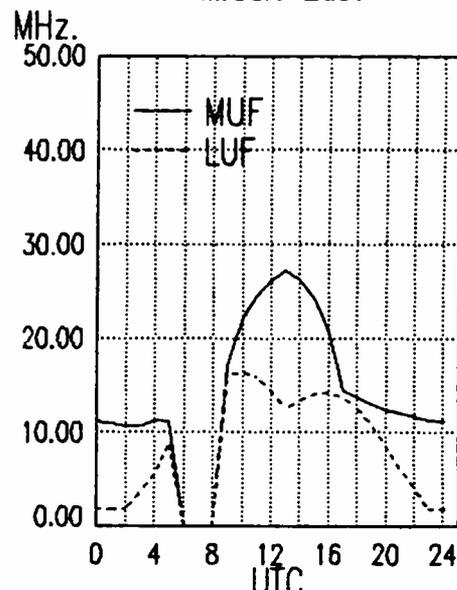
East Coast To South Africa



East Coast To Indian Ocean



East Coast To Middle East



frequency

section

0340-0350	M-A Voice of Greece, Athens	7430	9395	9420
0345-0400	Radio Berlin Int'l, East Germany	11785	15125	
0350-0400	RAI, Rome, Italy	15330	17795	21610

0400 UTC [12:00 AM EDT/9:00 PM PDT]

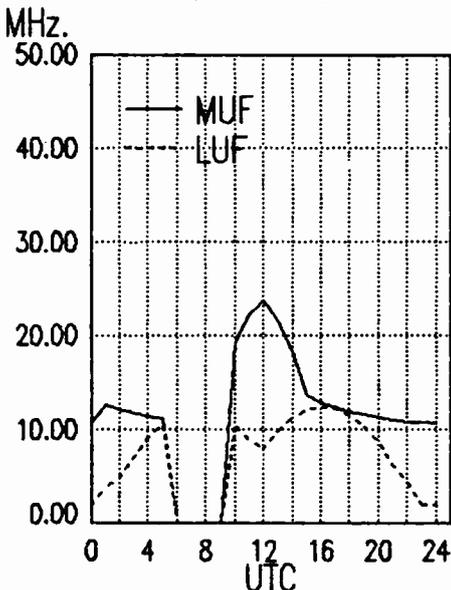
0400-0405	Radio Uganda, Kampala	4976	5026	
0400-0410	Radio Thailand, Bangkok	9655	11905	
0400-0410	RAI, Rome, Italy	6155	11905	15330
0400-0420	Radio Botswana, Gaborone	4820		
0400-0420	T-S Radio Zambia, Lusaka	3345	6165	
0400-0425	Radio Bucharest, Romania	6155	9510	9570 11830
		11940	15380	
0400-0425	Radio Netherland, Hilversum	6165	9590	
0400-0430	BBC, London, England	3955	5975	6005 6195
		7105	9410	9540 9580
		9600	9915	12095 15070
		15390	15245	15420 17815
		17885		
0400-0430	La Voz Evangelica, Honduras	4820		
0400-0430	Radio Berlin Int'l, East Germany	11785	15125	
0400-0430	SLBC, Colombo, Sri Lanka	6005	9720	15425
0400-0430	Radio Tanzania, Dar es Salaam	9684		
0400-0430	Swiss Radio Int'l, Berne	6135	9725	9885 12035
0400-0430	Trans World Radio, Bonaire	9535	11930	
0400-0430	S,M WINB, Red Lion, Pennsylvania	15145		
0400-0450	Deutsche Welle, West Germany	7150	7225	9565 9765
		15265		
0400-0450	Radio Pyongyang, North Korea	15160	15180	
0400-0455	Radio Beijing, China	11685	11840	15195
0400-0500	CBC Northern Quebec Service	6195	9625	
0400-0500	CBN, St. John's, Newfoundland	6160		
0400-0500	CBU, Vancouver, British Columbia	6160		
0400-0500	CFCF, Montreal, Quebec	6005		
0400-0500	CFCN, Calgary, Alberta	6030		
0400-0500	CHNS, Halifax, Nova Scotia	6130		
0400-0500	Christian Science World Service	9455	9870	13760
0400-0500	CKWX, Vancouver, British Columbia	6080		
0400-0500	CFRB, Toronto, Ontario	6070		
0400-0500	FEBC, Manila, Philippines	11850		
0400-0500	HCJB, Quito, Ecuador	11775	15155	15185
0400-0500	Radio Australia, Melbourne	11910	15160	15240 15320
		17715	17795	21740

0400-0500	Radio Havana Cuba	5965	9710	11760	11820
0400-0500	Radio Moscow, USSR	7290	7390	11675	11850
		15230	15415	15425	15455
		15540	17860	17880	21585
		21625	21690		
		15485	17705		
0400-0500	Radio New Zealand, Wellington	7375	13660	21565	
0400-0500	Radio for Peace, Costa Rica	5050			
0400-0500	Radio Tonga, Tonga	5050			
0400-0500	Radio 5, South Africa	4880	11880		
0400-0500	SBC Radio One, Singapore	5052	11940		
0400-0500	T-S Superpower KUSW, Utah	9815			
0400-0500	Voice of America, Washington	3980	5995	6035	6040
		7170	7200	7280	9525
		9540	9575	11835	15205
		15275			
0400-0500	Voice of Kenya, Nairobi	6045			
0400-0500V	Voice of Nicaragua, Managua	6100			
0400-0500	WHRI, Noblesville, Indiana	7315	9495		
0400-0500	WMLK, Bethel, Pennsylvania	9465			
0400-0500	WRNO, New Orleans, Louisiana	6185			
0400-0500	WYFR Satellite Net, California	5985	9520		
0425-0440	RAI, Rome, Italy	5990	7275		
0430-0455	Radio Netherlands, Hilversum	9895	13700		
0430-0500	BBC, London, England	3955	5975	6005	7185
		9410	9510	9580	9600
		9915	12095	15070	15280
		15245	15420		
0430-0500	BBC, London, England*	7210	9750	11945	
0430-0500	Radio Tirana, Albania	9480	11835		
0430-0500	S,M Trans World Radio, Bonaire	9535	11930		
0430-0500	Trans World Radio, Swaziland	3205	7205		
0432-0500	A,M FEBA, Seychelles	15325	17820	(irr)	

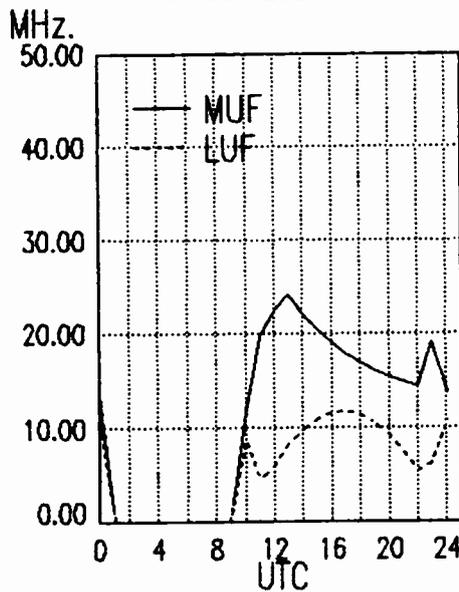
0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0510	Radio Lesotho, Maseru	4800		
0500-0510	M-A Radio Zambia, Lusaka	3345	6165	
0500-0515	GBC, Accra, Ghana	4915		
0500-0515	Kol Israel, Jerusalem	11588	15640	17575
0500-0515	Vatican Radio, Vatican City	9645	11740	15190
0500-0530	S,M Trans World Radio, Bonaire	9535	11930	
0500-0530	Trans World Radio, Swaziland	3205	5055	7210

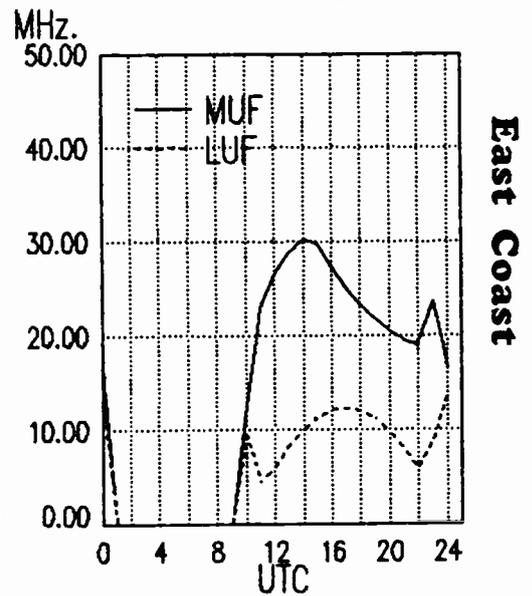
East Coast To
Central Asia



East Coast To
South East Asia



East Coast To
Indonesia



frequency

section

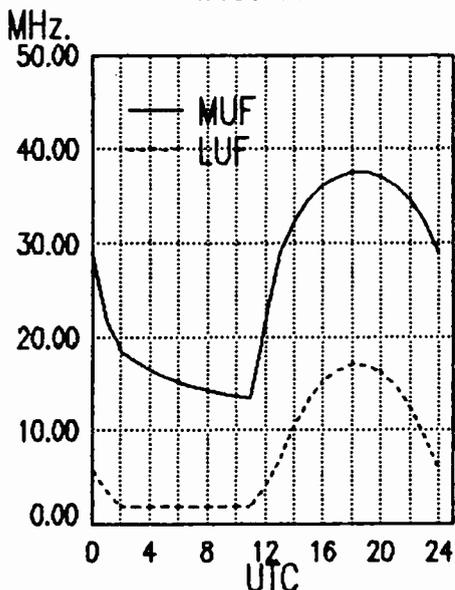
0600-0700	CFCN, Calgary, Alberta	6030			
0600-0700	CHNS, Halifax, Nova Scotia	6130			
0600-0700	Christian Science World Service	9455	9840	11980	
0600-0700	CKWX, Vancouver, British Columbia	6080			
0600-0700	CFRB, Toronto, Ontario	6070			
0600-0700	HCJB, Quito, Ecuador	9720	9745	11775	
0600-0700	King of Hope, South Lebanon	6215			
0600-0700	Radio Havana Cuba	11835			
0600-0700	Radio Jordan, Amman	9560			
0600-0700	Radio Korea, Seoul, South Korea	7275	9570	11830	
0600-0700	Radio Kuwait	15345			
0600-0700	Radio Moscow, USSR	9765	12010	12030	12050
		13605	13645	13710	15135
		15180	15405	15425	15480
		15585	17635	17665	17860
		17880	21645		
0600-0700	Radio New Zealand, Wellington	15485	17705		
0600-0700 A.S	Radio Thailand, Bangkok	9655	11905		
0600-0700	Radio Tonga, Tonga	5050			
0600-0700 IRR	Radio Zambia, Lusaka	11880			
0600-0700	Radio 5, South Africa	11880			
0600-0700	SBC Radio One, Singapore	5052	11940		
0600-0700 S	Superpower KUSW, Utah	6175			
0600-0700	Voice of America, Washington	6035	6040	6080	6095
		6125	7170	7200	7280
		7325	9530	9540	9575
		11915			
0600-0700	Voice of Asia, Taiwan	7285			
0600-0700	Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0600-0700 IRR	Voice of Nicaragua, Managua	6100			
0600-0700	Voice of the Mediterranean	9765			
0600-0700	WHRI, Noblesville, Indiana	9495	9620		
0600-0700 M-A	WMLK, Bethel, Pennsylvania	9465			
0600-0700	WYFR, Oakland, California	13760	11580		
0600-0700	WYFR Satellite Net, California	5985	6065	7355	9852.5
		15566	17640		
0615-0630 M-A	Vatican Radio, Vatican City	15190	17730		
0625-0700	Trans World Radio Monte Carlo	7105			
0630-0635 M-F	RTVC, Brazzaville, Congo	15190	irr		
0630-0700	AWR, Fori, Italy	7125			
0630-0700	Radio Australia, Melbourne	11910	15160	15240	15395
		17715	17750	21740	
0630-0700	Radio Bucharest, Romania	21600			
0630-0700	Radio Finland, Helsinki	6120	9560	11755	15270
0630-0700	Radio Polonia, Warsaw, Poland	6135	7270	15120	

0630-0700	Swiss Radio Int'l, Berne	3985	6165	9535	12030
		15430	17570		
0630-0700	Trans World Radio, Swaziland	5055	6070	7210	9725
0630-0700 A.S	Voice of Kenya, Nairobi	7270			
0645-0700	BBC, London, England*	6150	7260	11945	
0645-0700	Radio Ghana, Accra	6130			
0645-0700	Radio Bucharest, Romania	11940	15250	15335	17790
		17805	21665		

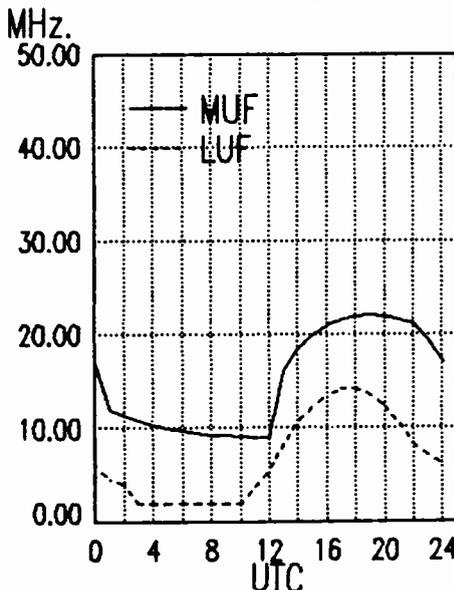
0700 UTC [3:00 AM EDT/12:00 PM PDT]

0700-0710	Radio Bucharest, Romania	11940	15250	15335	17790
		17805	21665		
0700-0710	Radio Sierra Leone, Freetown	5980			
0700-0715	Radio Ghana (HS), Accra	3366	4915		
0700-0730	BBC, London, England	3955	5975	7150	9410
		9600	9640	9760	11940
		12095	15070	15280	15360
		15400	17815	21470	
0700-0730	Burma Broadcasting Service, Rangoon	9730			
0700-0730	Radio Australia, Melbourne	9655	11720	11910	15160
		15240	15395	15425	17715
		21740			
0700-0730	Radio Bucharest, Romania	21600			
0700-0730	Radio New Zealand, Wellington	15485	17705		
0700-0730 S	Radio Zambia, Lusaka	11880			
0700-0750	Radio Pyongyang, North Korea	15340	17795		
0700-0800	ABC, Perth, Australia	15425			
0700-0800	CBU, Vancouver, British Columbia	6160			
0700-0800	CFCF, Montreal, Quebec	6005			
0700-0800	CFCN, Calgary, Alberta	6030			
0700-0800	CHNS, Halifax, Nova Scotia	6130			
0700-0800	Christian Science World Service	9455	9840	11980	
0700-0800	CKWX, Vancouver, British Columbia	6080			
0700-0800	CFRB, Toronto, Ontario	6070			
0700-0800	ELWA, Monrovia, Liberia	11830			
0700-0800	HCJB, Quito, Ecuador	6130	9610	9745	11835
		11925			
0700-0800	King of Hope, South Lebanon	6215			
0700-0800	Radio Ghana, Accra	6130			
0700-0800	Radio Havana Cuba	11835			
0700-0800	Radio Japan, Tokyo	5990	15195	15270	15325
		17765	17810	21500	21690
0700-0800	Radio Jordan, Amman	11955			

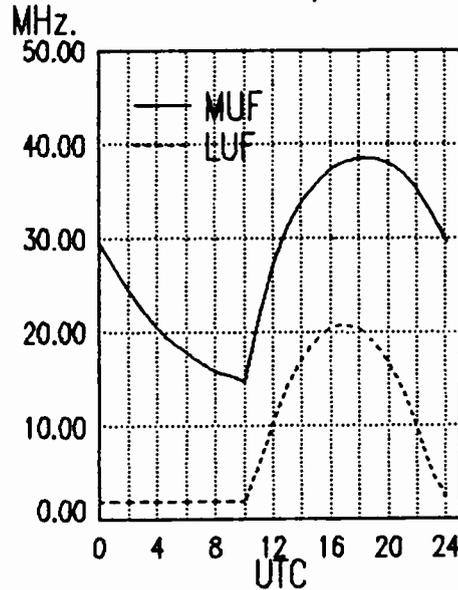
East Coast To West Coast



East Coast To Alaska



East Coast To Central America/Caribbean



East Coast

frequency

section

0700-0800	Radio Korea, Seoul, South Korea	6060	7275	9570
0700-0800	Radio Kuwait	15345		
0700-0800	Radio Moscow, USSR	9765	11845	13710 15135
		15480	15540	15585 17660
		21625		
0700-0800 A,S	Radio Thailand, Bangkok	9655	11905	
0700-0800	Radio Tonga, Tonga	5050		
0700-0800	Radio 5, South Africa	11880		
0700-0800	SBC-1, Singapore	5052	11940	
0700-0800	Soloman Islands Broadcasting Corp	9545		
0700-0800 S	Superpower KUSW, Utah	6135		
0700-0800	Trans World Radio, Monte Carlo	9485		
0700-0800	Trans World Radio, Swaziland	6070	9725	
0700-0800	Voice of America, Washington	6020		
0700-0800	Voice of Free China, Taiwan	5950		
0700-0800 A,S	Voice of Kenya, Nairobi	7270		
0700-0800	Voice of Malaysia, Kuala Lumpur	6175	9750 15295	
0700-0800	WHRI, Noblesville, Indiana	9495	9620	
0700-0800 M-A	WMLK, Bethel, Pennsylvania	9455		
0700-0800	WYFR, Oakland, California	6065	7355 9852.5 15566	
0700-0800	WYFR Satellite Network	13760		
0715-0730	Radio Korea, Seoul, South Korea	13670	15575	
0715-0730 M-A	Vatican Radio, Vatican City	11725	15190	
0715-0735 S	FEBA, Mahe, Seychelles	15115	17785	
0715-0800	Radio Berlin Int'l, East Germany	6040	7185 9730 21465	
		21540		
0720-0730 M-A	Vatican Radio, Vatican City	6248	9645 11740	
0730-0735	All India Radio, New Delhi	5990	6010 6020 7110	
		7205	9610 9675 11850	
		11935	15235 15250 17705	
0730-0800	ABC, Alice Springs, Australia	2310	[ML]	
0730-0800	ABC, Katherine, Australia	2485		
0730-0800	ABC, Tennant Creek, Australia	2325	[ML]	
0730-0800	Radio Australia, Melbourne	9655	15160 15395 17715	
0730-0745	BBC, London, England*	3975	6010 7230 9915	
0730-0755	Radio Austria Int'l, Vienna	6155	13730 15410 21490	
0730-0755	Radio Finland, Helsinki	6120	9560 11755	
0730-0800	AWR, Forli, Italy	7125		
0730-0800	BBC, London, England	3955	7150 7325 9410	
		9600	9640 9760 11860	
		11940	12095 15070 15280	
		15360	15400 17815 21470	
0730-0800	Radio Netherland, Hilversum	9630	9715	
0730-0800	Radio Prague, Czechoslovakia	11685	17840 21705	
0730-0800	Swiss Radio Int'l, Berne	3985	6165 9535	

0740-0750 W	Radio Free Europe, Munich*	5985	7115 9695 9725
		11895	15355
0745-0800	Radio Berlin Int'l, East Germany	6040	6115 7185 9730
		21465	21540
0755-0800	Radio Pacific Okean, USSR	12050	12070 17605

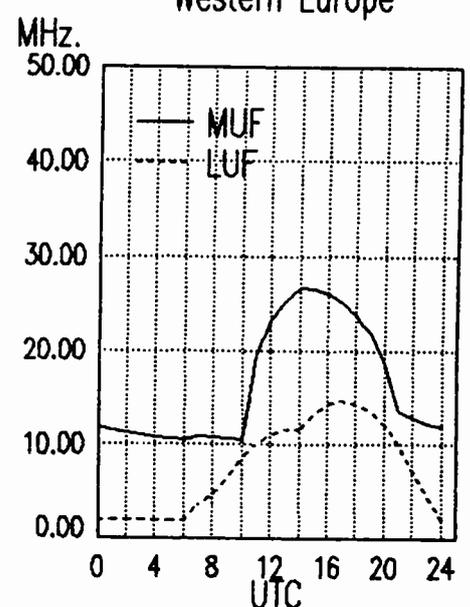
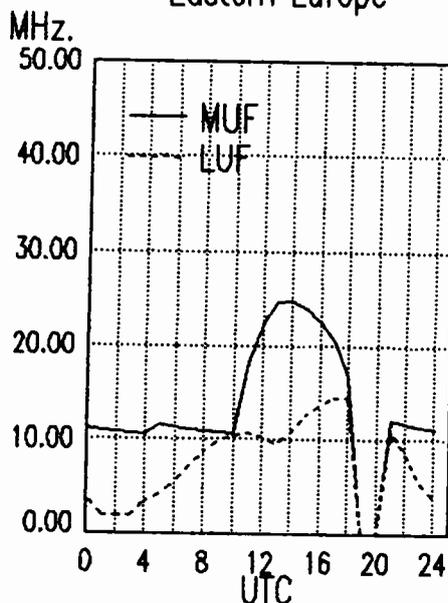
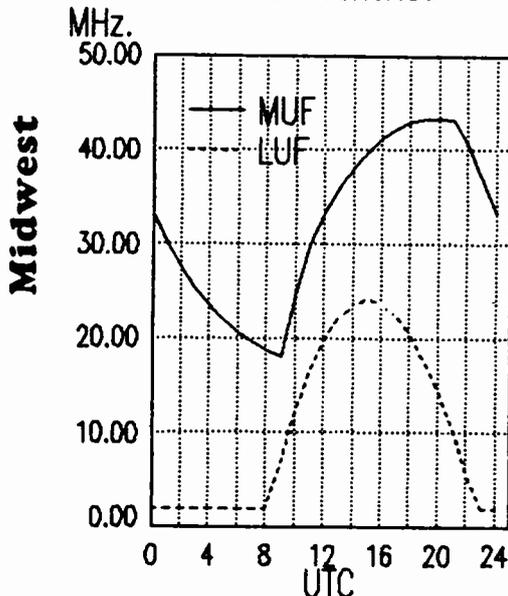
0800 UTC [4:00 AM EDT/1:00 AM PDT]

0800-0805 M-F	Port Moresby, Papua New Guinea	3925	4890 5960 5985
		6020	6040 6080 6140
		9520	
0800-0805	Soloman Islands Broadcasting Corp	9545	
0800-0815 M-A	Radio Zambia, Lusaka	6165	7235
0800-0825 M-A	Radio Finland, Helsinki	17795	21550
0800-0825	Radio Netherland, Hilversum	9630	9715
0800-0825	Voice of Malaysia, Kuala Lumpur	6175	9750 15295
0800-0830	HCJB, Quito, Ecuador	6130	9610 9745 11835
		11925	
0800-0830 S	Radio Austria Int'l, Vienna	6155	13730 15410 15450
0800-0830	Radio Bangladesh, Dhaka	12030	15525
0800-0830	Radio Berlin Int'l, East Germany	6040	6115 7185 9730
		21465	21540
0800-0830 S	Radio Norway, Oslo	15165	25730
0800-0830	Radio Tirana, Albania	9500	11835
0800-0830	Voice of Islam, Pakistan	15525	17870
0800-0835 S	FEBA, Mahe, Seychelles	15325	17785
0800-0835	Trans World Radio, Swaziland	6070	9725
0800-0840	Trans World Radio, Monte Carlo	9485	
0800-0850	Deutsche Welle, West Germany	9770	
0800-0850	Radio Pyongyang, North Korea	11830	15115 15160 15180
0800-0900	ABC, Alice Springs, Australia	2310	[ML]
0800-0900	ABC, Katherine, Australia	2485	
0800-0900	ABC, Perth, Australia	15425	
0800-0900	ABC, Tennant Creek, Australia	2325	[ML]
0800-0900	AFAN, Antarctica	6010.5	
0800-0900	BBC, London, England	7150	7325 9410 9600
		9640	9760 11860 11940
		12095	15280 15360 15070
		15400	17815 15240
0800-0900	CBN, St. John's, Newfoundland	6160	
0800-0900	CBU, Vancouver, British Columbia	6160	
0800-0900	CFCF, Montreal, Quebec	6005	
0800-0900	CFCN, Calgary, Alberta	6030	

East Coast To South America

Midwest To Eastern Europe

Midwest To Western Europe



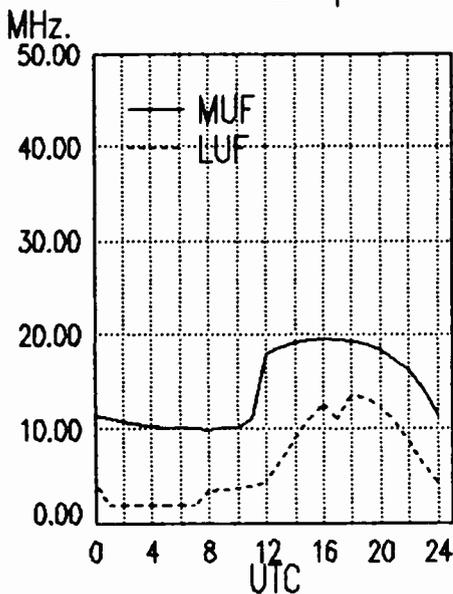
frequency

section

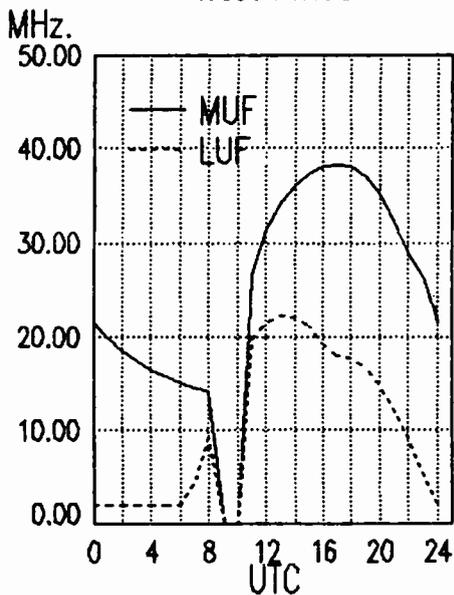
0800-0900	CHNS, Halifax, Nova Scotia	6130	
0800-0900	Christian Science World Service	9455	17855
0800-0900	CKWX, Vancouver, British Columbia	6080	
0800-0900	CFRB, Toronto, Ontario	6070	
0800-0900	King of Hope, South Lebanon	6215	
0800-0900	KNLS, Anchor Point, Alaska	11715	
0800-0900	Radio Australia, Melbourne	5995	6020 9580 9655
		9710	11770 15395 17715
0800-0900	Radio Jordan, Amman	11955	
0800-0900	Radio Moscow, USSR	15135	15535 15585 17570
		17660	21625
0800-0900	Radio for Peace, Costa Rica	12030	
0800-0900	Radio Tongo, Tongo	5050	
0800-0900	SBC Radio One, Singapore	5052	11940
0800-0900	S Superpower KUSW, Utah	6135	
0800-0900	Voice of Indonesia, Jakarta	11790	15105
0800-0900	A,S Voice of Kenya, Nairobi	7270	
0800-0900	WHRI, Noblesville, Indiana	7355	
0805-0900	KTWR, Guam	15210	
0815-0845	M-F Voice of America, Washington DC	7175	9575 9750 11710
		11915	15600 17715 21500
		[ML]	
0830-0840	All India Radio, New Delhi	5960	5990 6010 6020
		6050	6065 6100 6140
		7110	7140 7160 7250
		7280	7295 9610 11850
		15235	15250 17705
0830-0900	S Bhutan Bcating Service, Thimpu	6035	
0830-0900	FEBC, Manila, Philippines	11850	15350
0830-0900	HCJB, Quito, Ecuador	6130	9745 11925
0830-0900	Radio Beijing, China	9700	11755 15440
0830-0855	Radio Finland, Helsinki	15245	17795
0830-0900	Radio Netherlands, Hilversum	9770	17575 21485
0830-0900	Radio Prague, Czechoslovakia	11685	17840 21705
0830-0900	Swiss Radio Int'l, Berne	9560	9885 13685 17830
		21695	
0840-0850	M-A Voice of Greece, Athens	9855	15630
0840-0900	S-F Trans World Radio, Monte Carlo	7105	
0845-0900	Radio Prague, Czechoslovakia	6055	7345 9505
0850-0900	All India Radio, New Delhi	5960	5990 6010 6020
		6050	6065 6100 6140
		7110	7140 7150 7160
		7250	7280 7295 9610
		11850	15235 15250 17705
0850-0900	Radio Korea, Seoul	13670	

0900 UTC [5:00 AM EDT/2:00 AM PDT]					
0900-0910	All India Radio, New Delhi	5960	5990	6010	6020
		6050	6065	6100	6140
		7110	7140	7150	7160
		7250	7280	7295	9610
		11850	15235	15250	17705
0900-0910	S Trans World Radio, Monte Carlo	7105			
0900-0910	Voice of Lebanon, Beirut	6548			
0900-0920	ABC, Perth, Australia	15425			
0900-0920	KTWR, Agana, Guam	15210			
0900-0925	BRT, Brussels, Belgium	5915	17595	21810	26050
0900-0925	Radio Netherlands, Hilversum	17575	21485		
0900-0930	FEBC, Manila, Philippines	9800	11850	15350	
0900-0930	Nippon Broadcasting Corp.	3925			
0900-0930	Radio Beijing, China	11755	15440		
0900-0930	S Radio Norway, Oslo	21710			
0900-0930	A,S Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0945	Radio Berlin Int'l, East Germany	9770	11890	21540	
0900-0950	Deutsche Welle, West Germany	6160	9650	11785	11945
		17780	21650		
0900-1000	ABC, Alice Springs, Australia	2310	[ML]		
0900-1000	ABC, Katherine, Australia	2485			
0900-1000	ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S Adventist World Radio, Portugal	9670			
0900-1000	BBC, London, England	9410	9740	9750	11750
		11845	11860	11955	12095
		15070	15280	15285	15360
		15400	17640	17790	21470
0900-1000	CFCF, Montreal, Quebec	6005			
0900-1000	CFCN, Calgary, Alberta	6030			
0900-1000	CHNS, Halifax, Nova Scotia	6130			
0900-1000	Christian Science World Service	9455	17855		
0900-1000	CKWX, Vancouver, British Columbia	6080			
0900-1000	CFRB, Toronto, Ontario	6070			
0900-1000	HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000	King of Hope, South Lebanon	6215			
0900-1000	KNLS, Anchor Point, Alaska	6065			
0900-1000	Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000	Radio Australia, Melbourne	5995	6080	9580	9655
		9760	11800	15415	
0900-1000	Radio Korea, Seoul, South Korea	7550	13670		

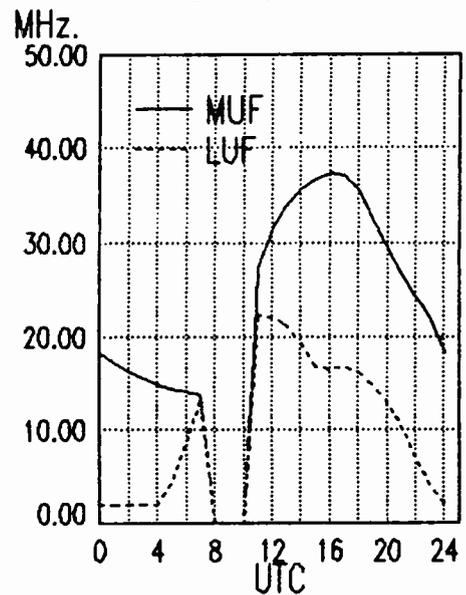
Midwest To Arctic Europe



Midwest To West Africa



Midwest To Central Africa



Midwest

frequency

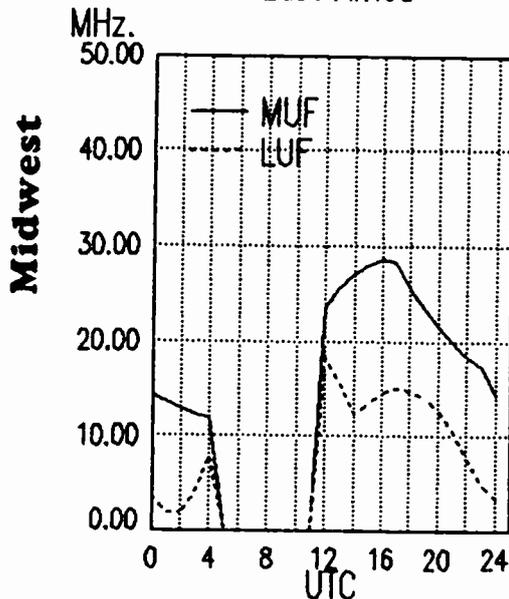
section

0900-1000	Radio Moscow, USSR	15135 15535 15540 15580	1000-1100	All India Radio, New Delhi	11860 11915 15130 15335
		15607 17570 17660 21585			17387 11785
0900-1000	Radio New Zealand, Wellington	9850	1000-1100	BBC, London, England	9410 9740 11750 12095
0900-1000	Radio for Peace, Costa Rica	13660			15070 15360 17640 17790
0900-1000 S	Radio Prague, Czechoslovakia	6055 7345 9505 [ML]	1000-1100	CBN, St. John's, Newfoundland	21710 25750
0900-1000	Radio RSA, South Africa	11805	1000-1100	CFCF, Montreal, Quebec	6160
0900-1000	Radio Tanzania, Dar es Salaam	7165	1000-1100	CFCN, Calgary, Alberta	6005
0900-1000	Radio Tonga, Tonga	5050	1000-1100	CFCN, Calgary, Alberta	6030
0900-1000	SBC Radio One, Singapore	5010 5052 11940	1000-1100	CHNS, Halifax, Nova Scotia	6130
0900-1000 S	Superpower KUSW, Utah	6135	1000-1100	Christian Science World Service	9455 9495
0900-1000	Voice of Kenya, Nairobi	7270	1000-1100	CKWX, Vancouver, British Columbia	6080
0900-1000	WHRI, Noblesville, Indiana	7355 9495	1000-1100	CFRB, Toronto, Ontario	6070
0915-0930	Radio Korea, Seoul, South Korea	9570	1000-1100	FEBC, Manila, Philippines	11850
0915-0950 M-A	Radio Ulan Bator, Mongolia	9615 12015	1000-1100	KSDA, Guam	13720
0920-1000	ABC, Perth, Australia	6140	1000-1100	KTWR, Agana, Guam	11805
0925-1000	KTWR, Guam	11805	1000-1100	Radio Afghanistan, Kabul	4405 6085 15435 17720
0930-0935	All India Radio, New Delhi	5960 5990 6010 6020	1000-1100	Radio Australia, Melbourne	5995 9580 9655 9770
		6050 6065 6100 6140			15415
		7110 7140 7160 7250	1000-1100	Radio Moscow, USSR	9600 15405 15420 15520
		7280 7295 9610 11850			15535 17570 17660 17775
		15235 15250 17705			17830 21625 21690 21800
0930-0940	Radio Canada Int'l, Montreal	5960 9755	1000-1100	Radio New Zealand, Wellington	25780
0930-0945	BBC, London, England*	9725 11955	1000-1100 S	Radio Prague, Czechoslovakia	9850 11780
0930-1000	CBN, St. John's, Newfoundland	6160	1000-1100	Radio RSA, South Africa	6055 7345 9505 [ML]
0930-1000	Radio Beijing, China	9700 11755 15440	1000-1100	SBC Radio One, Singapore	11805
0930-1000	Radio Sweden Int'l, Stockholm	15390	1000-1100 S	Superpower KUSW, Utah	5010 5052 11940
0945-1000	BBC, London, England*	5995 7180 9725 11955	1000-1100	Voice of America, Washington	6135
0945-1000	Radio Berlin Int'l, East Germany	6115	1000-1100		6030 5985 9590 11915
0945-1000 M-A	Radio Prague, Czechoslovakia	6055 7345 9505			15425
			1000-1100	Voice of Kenya, Nairobi	7270
			1000-1100	WHRI, Noblesville, Indiana	7355
			1000-1100	WYFR, Oakland, California	5950 17530
			1005-1010	Radio Pakistan, Islamabad	15606 17660
			1030-1040	Voice of Asia, Taiwan	5980
			1030-1045 A	Radio Budapest, Hungary	7220 9585 9835 11910
					15160 15220
			1030-1055	Radio Austria Int'l, Vienna	15450 21490
			1030-1100	BBC, London, England*	7180 9660 9725
			1030-1100	HCJB, Quito, Ecuador	6130 9745 11925
			1030-1100	Radio Netherlands, Hilversum	6020 9675
			1030-1100 A,S	Radio Tanzania, Dar es Salaam	7165
			1030-1100	SLBC, Colombo, Sri Lanka	11835 15120 17850 [ML]
			1030-1100	UAE Radio, United Arab Emirates	15320 15435 17775 21605
			1030-1100	Voice of America, Washington*	11965

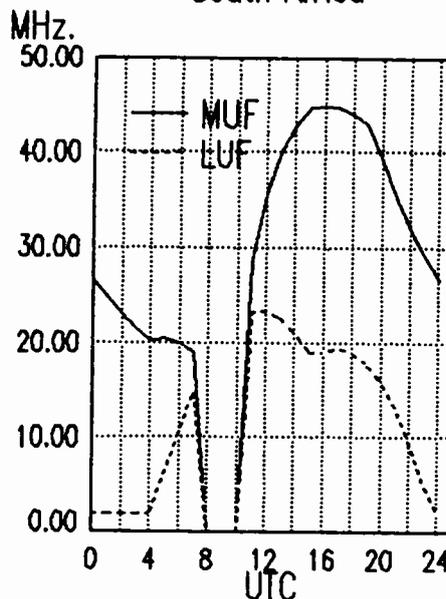
1000 UTC [6:00 AM EDT/3:00 AM PDT]

1000-1030	HCJB, Quito, Ecuador	6130 9745 11925
1000-1030	Radio Beijing, China	11755 15440 17710
1000-1030	Radio Berlin Int'l, East Germany	6115
1000-1030	Radio Tanzania, Dar es Salaam	7165
1000-1030	Swiss Radio Int'l, Berne	9560 13685 17670 21695
1000-1030	Voice of Ethiopia, Addis Ababa	9560
1000-1030	Voice of Vietnam, Hanoi	9840 15010
1000-1055 A	Trans World Radio, Monte Carlo	7105
1000-1100	ABC, Alice Springs, Australia	2310 [ML]
1000-1100	ABC, Katherine, Australia	2485
1000-1100	ABC, Perth, Australia	9610
1000-1100	ABC, Tennant Creek, Australia	2325 [ML]

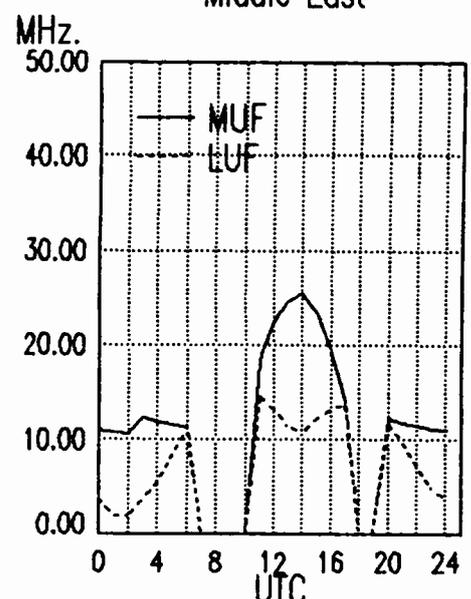
Midwest To East Africa



Midwest To South Africa



Midwest To Middle East



frequency

section

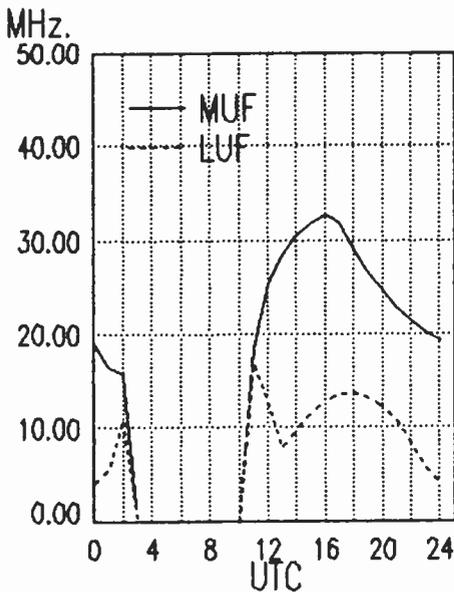
1040-1050	H	Radio Free Europe, Munich*	7115	9695	9725
			11895	15355	
1040-1050	M-A	Voice of Greece, Athens	11645	15630	
1045-1100	S	Radio Budapest, Hungary	7220	9585	9835 11910
			15160	15220	
1045-1100	M-A	Radio Prague, Czechoslovakia	6055	7345	9505
1055-1100		Trans World Radio, Bonaire	11815	15345	
1055-1100	S	Trans World Radio, Monte Carlo	7105		

1100-1200		Radio Australia, Melbourne	5995	6060	6080	7215
			9580	9645	9710	9770
			11800			
1100-1200		Radio Japan, Tokyo	6120	11815	11840	
1100-1200		Radio Moscow, USSR	9600	15135	15220	15585
			17645	17660	17815	17830
			17890	21690	21800	
			6100	9850		
1100-1200		Radio New Zealand, Wellington	11805	11900	21590	
1100-1200		Radio RSA, South Africa	7165			
1100-1200	A,S	Radio Tanzania, Dar es Salaam	11880	[IRR]		
1100-1200	S	Radio Zambia, Lusaka	5010	5052	11940	
1100-1200		SBC-1, Singapore	9850			
1100-1200	S	Superpower KUSW, Utah	11815	15345		
1100-1200		Trans World Radio, Bonaire	5985	6030	9590	9660
1100-1200		Voice of America, Washington	9760	11720	11745	11915
			15425			
1100-1200		Voice of Asia, Taiwan	5980	7445		
1100-1200		Voice of Kenya, Nairobi	7270			
1100-1200		WHRI, Noblesville, Indiana	9465	11790		
1100-1200		WRNO, New Orleans, Louisiana	6185			
1100-1200		WYFR, Oakland, California	5950	11580		
1110-1120	M-F	Radio Botswana, Gaborone	4820	5955	7255	
1115-1130		Radio Korea, Seoul, South Korea	11740			
1115-1130		Vatican Radio, Vatican City	17840	21485		
1115-1145		Radio Nepal, Kathmandu	5005			
1130-1145	A	Radio Budapest, Hungary	7220	9585	9835	11910
			15160	15220		
1130-1155		Radio Austria Int'l, Vienna	6155	13730	15430	21475
1130-1200		BBC, London, England*	15115	15390	17695	
1100-1200		HCJB, Quito, Ecuador	11740			
1130-1200		Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1130-1200		Radio Netherland, Hilversum	5955	9715	17575	21480
			21520			
1130-1200		Radio Thailand, Bangkok	9655	11905		
1130-1200		Radio Tirana, Albania	9480	11855		
1130-1200		Voice of Islamic Republic Iran	7215	9575	11715	11790
1135-1140		All India Radio, New Delhi	6065	7110	9610	9675
			11620	11850	15320	
1140-1145	M-A	Vatican Radio, Vatican City	6248	9645	11740	
1145-1200		Radio Prague, Czechoslovakia	6055	7345	9505	

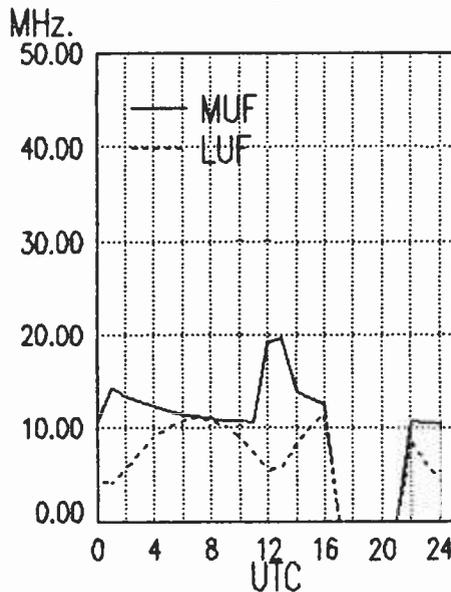
1100 UTC [7:00 AM EDT/4:00 AM PDT]

1100-1105	Radio Pakistan, Islamabad	6090	7290
1100-1120	Radio Pakistan, Islamabad	15606	17760
1100-1125	Radio Netherland, Hilversum	6020	9675
1100-1130	BBC, London, England*	7120	
1100-1130	HCJB, Quito, Ecuador	6130	9745 11925
1100-1130	KTWR, Guam*	9820	11665
1100-1130	Radio Finland, Helsinki	15400	21550
1100-1130	Radio Mozambique, Maputo	9525	11818 11835
1100-1130	SLBC, Colombo, Sri Lanka	11835	15120 17850 [ML]
1100-1130	Swiss Radio Int'l, Berne	13635	15570 17830 21770
1100-1130	Voice of Vietnam, Hanoi	9840	15010
1100-1145	Radio Berlin Int'l, East Germany	6115	9665 17775
1100-1150	Deutsche Welle, West Germany	15410	17765 17800 21600
1100-1150	Radio Pyongyang, North Korea	9600	9977 11735
1100-1155	Radio Beijing, China	9660	15540 17855
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	BBC, London, England	5965	6195 7180 9410
		9515	9740 11750 11775
		15070	15420 17790 21470
		21710	25750
1100-1200	CBC Northern Quebec Service	6065	9625 11855
1100-1200	CBN, St. John's, Newfoundland	6160	
1100-1200	CFCF, Montreal, Quebec	6005	
1100-1200	CFCN, Calgary, Alberta	6030	
1100-1200	CHNS, Halifax, Nova Scotia	6130	
1100-1200	Christian Science World Service	9455	9495
1100-1200	CKWX, Vancouver, British Columbia	6080	
1100-1200	CFRB, Toronto, Ontario	6070	

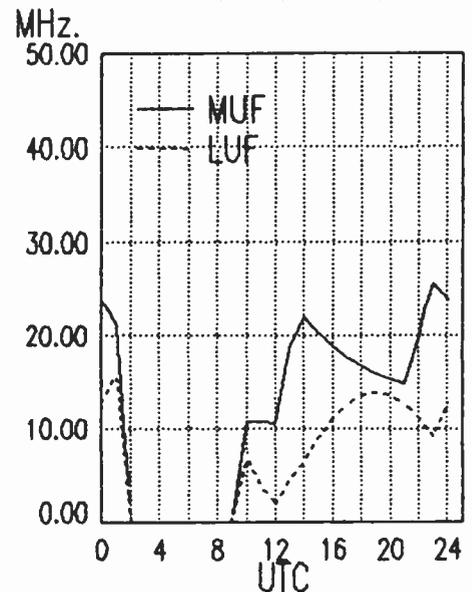
Midwest To Indian Ocean



Midwest To Central Asia



Midwest To Southeast Asia



Midwest

frequency

section

1200 UTC [8:00 AM EDT/5:00 AM PDT]

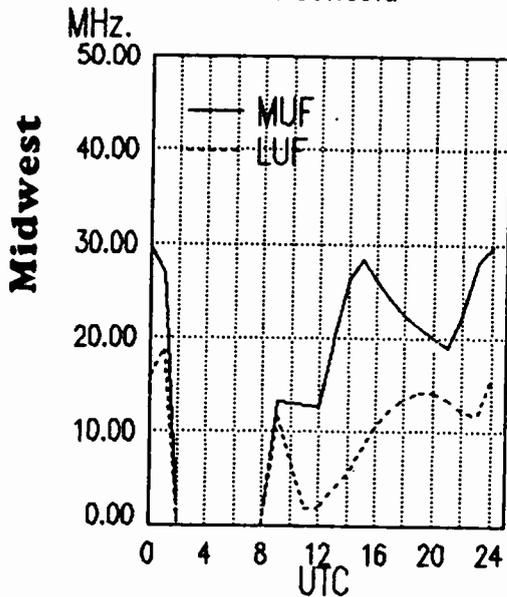
1200-1215	BBC, London, England*	3915	6065	7275
1200-1215	Radio Berlin Int'l, East Germany	15440	17880	21465 21540
1200-1215	Vatican Radio, Vatican City	17865	21515	
1200-1215	Voice of Kampuchea, Phnom-Penh	9693	11938	
1200-1220	Radio Bucharest, Romania	17720	21665	
1200-1225 M-F	Radio Finland, Helsinki	15400	21550	
1200-1225	Radio Polonia, Warsaw, Poland	6095	7285	
1200-1225	Voice of Islamic Republic Iran	7215	9575	11715 11790
1200-1230	Radio Netherland, Hilversum	5955	9715	17575 21480
		21520		
1200-1230 S	Radio Norway, Oslo	15165		
1200-1230	Radio Somalia, Mogadishu	6095		
1200-1230	Radio Tashkent, Uzbek, USSR	9540	9600	11785 15460
1200-1230	Radio Thailand, Bangkok	9655	11905	
1200-1230	Radio Yugoslavia, Belgrade	17740	21555	25795
1200-1230 S	Radio Zambia, Lusaka	11880	[IRR]	
1200-1230	Swiss Radio Int'l, Berne	6165	9535	12030
1200-1235 M-A	Radio Ulan Bator, Mongolia	9615	12015	
1200-1255	Radio Beijing, China	11600	11660	15400 15540
		17855		
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 S	Adventist World Radio, Africa	17890		
1200-1300	AFAN, Antarctica	6012		
1200-1300	Adventist World Radio, Costa Rica	9725	11870	
1200-1300	BBC, London, England	6195	9510	9740 11750
		11775	11940	12095 15070
		17640	17705	17790 21470
		21710	25750	
1200-1300	CBC Northern Quebec Service	6065	9625	
1200-1300	CBN, St. John's, Newfoundland	6160		
1200-1300	CFCF, Montreal, Quebec	6005		
1200-1300	CFCN, Calgary, Alberta	6030		
1200-1300	CHNS, Halifax, Nova Scotia	6130		
1200-1300	Christian Science World Service	9495	9530	11930
1200-1300	CKWX, Vancouver, British Columbia	6080		
1200-1300	CFRB, Toronto, Ontario	6070		
1200-1300	HCJB, Quito, Ecuador	11740	15115	17890

1200-1300	Radio Australia, Melbourne	5995	6080	7205	7215
		9580	9710	9770	11800
1200-1300	Radio Canada Int'l, Montreal	9635	11855	17820	
1200-1300	Radio Moscow, USSR	7370	9600	15135	15220
		15320	15490	15540	15550
		15585	17660	17815	17830
		17850			
1200-1300	Radio RSA, South Africa	9585	11805	21590	
1200-1300 A.S	Radio Tanzania, Dar es Salaam	7165			
1200-1300	SBC Radio One, Singapore	5010	5052	11940	
1200-1300 A.S	Superpower KUSW, Utah	9850			
1200-1300	Trans World Radio, Bonaire	11815	15345		
1200-1300	Trans World Radio, Sri Lanka	11920			
1200-1300	Voice of America, Washington	6110	9760	11715	15155
		15160	15425		
1200-1300	Voice of Kenya, Nairobi	7270			
1200-1300	WHRI, Noblesville, Indiana	9465	11790		
1200-1300	WYFR, Oakland, California	5950	6015	11580	11830
		13695	15215	15255	
1215-1245	Radio Korea, Seoul, South Korea	7275	11740		
1215-1300	Radio Berlin Int'l, East Germany	11705	15240		
1215-1300	Radio Cairo, Egypt	17595			
1230-1235	All India Radio, New Delhi	3905	4800	4920	7280
		9565	9615	11620	11735
		15120	15250	17620	
1230-1255 M-A	BRT, Brussels, Belgium	17555	21815		
1230-1255	Voice of Turkey, Ankara	15255			
1230-1300	BBC, London, England*	6125	7255	6195	9635
		9660	11780	12040	15270
		15390	15435	17695	
1230-1300	Radio Bangladesh, Dhaka	15195	17710		
1230-1300	Radio Sweden, Stockholm	17740	21610		
1230-1300	Sri Lanka Broadcasting Corp.	9720			
1235-1245	Voice of Greece, Athens	11645	15630	17550	
1240-1250 M	Radio Free Europe, Munich*	5985	7115	9695	9725
		11895	15355		
1245-1300	Radio Berlin Int'l, East Germany	15440	17880	21465	21540
1245-1300	Radio France Int'l, Paris	9805	11670	15155	15195
		15365	17650	21635	21645

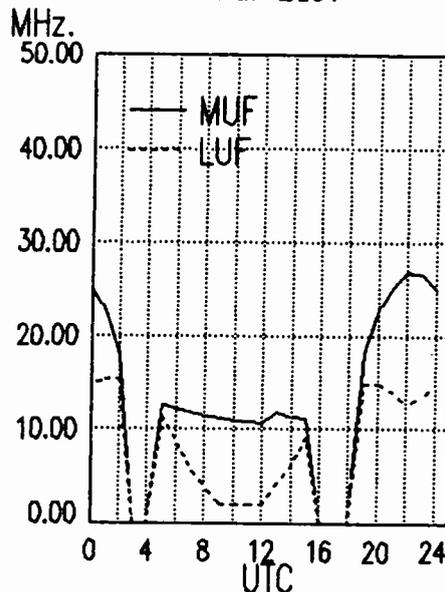
1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1310	Radio France Int'l, Paris	11670	15155	15365	17650
		21635	21645		

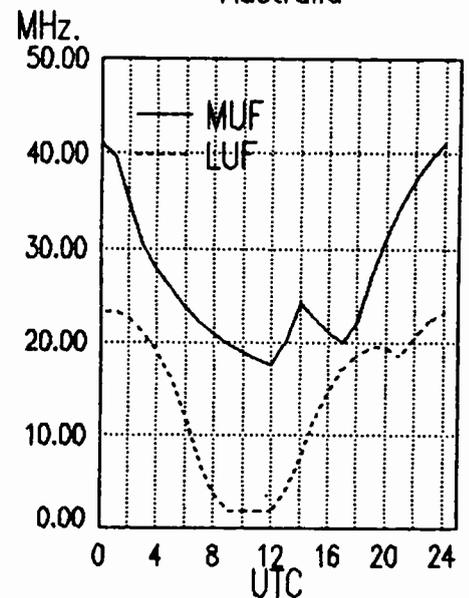
Midwest To
Indonesia



Midwest To
Far East



Midwest To
Australia



frequency

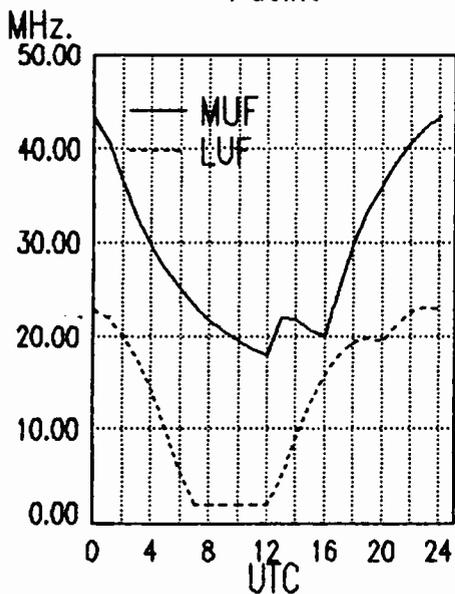
section

1300-1325	Radio Bucharest, Romania	9690 11940 15405 17750	1300-1400 A,S	Radio Tanzania, Dar es Salaam	7165
1300-1330	BBC, London, England	5995 6195 7180 9515	1300-1400	SBC Radio One, Singapore	5010 5052 11940
		9740 11750 11775 11940	1300-1400 A,S	Superpower KUSW, Utah	9850
		12095 15070 15310 15420	1300-1400	Voice of America, Washington	6110 9760 11715 15155
		17640 17790 21470 21710			15160 15425
1300-1330	Radio Berlin Int'l, East Germany	15440 17880 21465 21540	1300-1400	Voice of Malaysia	7295
1300-1330	Radio Cairo, Egypt	17595	1300-1400	WHRI, Noblesville, Indiana	9465 11790
1300-1330	Radio Finland, Helsinki	15400 21550	1300-1400 IRR	WWCR, Nashville, Tennessee	15690
1300-1330	Radio Ghana, Accra	4915 7295	1300-1400	WYFR, Oakland, California	5950 6010 9680 11580
1300-1330 S	Radio Norway Int'l, Oslo	9590			11830 13695 15055 15215
1300-1330	Trans World Radio, Sri Lanka	11920			15365
1300-1330	Voice of Kenya, Nairobi	7270	1330-1345	Radio Korea, Seoul, South Korea	7275 11740
1300-1332 A,S	Trans World Radio, Bonaire	11815 15345	1330-1400	BBC, London, England	5995 6195 7180 9410
1300-1350	Radio Pyongyang, North Korea	9325 9345 9555 9600			9515 11750 11775 12095
		11335 11735			15140 15310 17640 17790
1300-1355	Radio Beijing, China	11600 11660 11855 15280			17885 21470 21710 25750
		15455	1330-1400	All India Radio, New Delhi	9545 10330 11810 15335
1300-1400	ABC, Alice Springs, Australia	2310 [ML]	1330-1400	Laotian National Radio	7113
1300-1400	ABC Brisbane, Australia	9660	1330-1400	Radio Australia, Melbourne	15430
1300-1400	ABC, Katherine, Australia	2485	1330-1400 S	Radio Finland, Helsinki	15400 21550
1300-1400	ABC, Perth, Australia	9610	1330-1400	Radio Tashkent, Uzbek, USSR	5945 9540 9600 11785
1300-1400	ABC, Tennant Creek, Australia	2325 [ML]			15460
1300-1400	CBC Northern Quebec Service	9625 11720	1330-1400	Swiss Radio Int'l, Berne	9620 11695 13635 15570
1300-1400	CBN, St. John's, Newfoundland	6160			17830 21695
1300-1400	CBU, Vancouver, British Columbia	6160	1330-1400	UAE Radio, United Arab Emirates	15435 17775 21605
1300-1400	CFCF, Montreal, Quebec	6005	1330-1400	Voice of Islamic Republic Iran	9525 9685 9770
1300-1400	CFCN, Calgary, Alberta	6030	1330-1400	Voice of Kenya, Nairobi	6100
1300-1400	CHNS, Halifax, Nova Scotia	6130	1330-1400	Voice of Vietnam, Hanoi	12010 15010
1300-1400	Christian Science World Service	9495 9530 11930	1332-1400 A	Trans World Radio, Bonaire	11815 15345
1300-1400	CKWX, Vancouver, British Columbia	6080	1345-1400	Radio Berlin Int'l, East Germany	9730
1300-1400	CFRB, Toronto, Ontario	6070			
1300-1400 S	ELWA, Monrovia, Liberia	11830			
1300-1400	FEBC, Manila, Philippines	11850			
1300-1400	HCJB, Quito, Ecuador	11740 15115 17890			
1300-1400	KNLS, Anchor Point, Alaska	9725			
1300-1400	Radio Australia, Melbourne	5995 6060 6080 7205			
		9580			
1300-1400 S	Radio Canada Int'l, Montreal	9625 11720 11955 17820			
1300-1400	Radio Jordan, Amman	9560			
1300-1400	Radio Korea (South), Seoul	9750 15575			
1300-1400	Radio Moscow, USSR	7315 7370 9640 9650			
		9655 9755 12050 15220			
		17655 17830 17870			
1300-1400	Radio Peace and Progress, USSR	11870 11900 15180 17635			
1300-1400	Radio RSA, South Africa	11805 17730 21590			

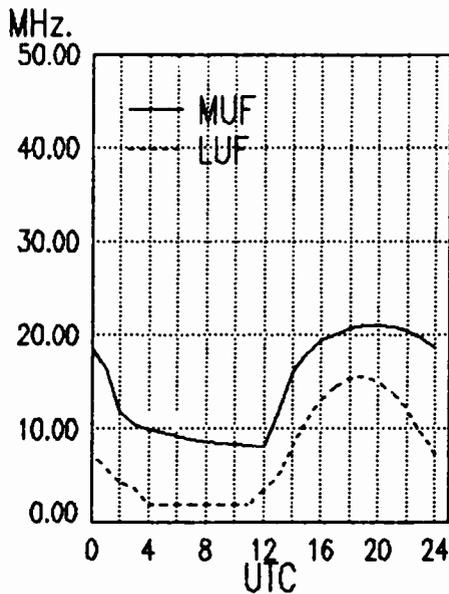
1400 UTC [10:00 AM EDT/7:00 AM PDT]

1400-1430	ABC, Alice Springs, Australia	2310 [ML]
1400-1430	ABC, Tennant Creek, Australia	2325 [ML]
1400-1430	Radio Finland, Helsinki	9560 11715 11925 15185
		17800
1400-1430	Radio France Int'l, Paris	21770
1400-1430 S	Radio Norway Int'l, Oslo	21710
1400-1430	Radio Polonia, Warsaw, Poland	6095 7285
1400-1430	Radio Sweden Int'l, Stockholm	17740 21610
1400-1430	Radio Tirana, Albania	9500 11985
1400-1430	Voice of Ethiopia, Addis Ababa	9550 11710

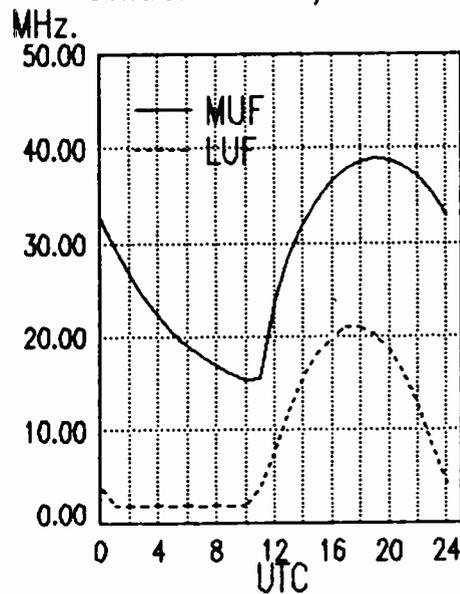
Midwest To
Pacific



Midwest To
Alaska



Midwest To
Central America/Caribbean



Midwest

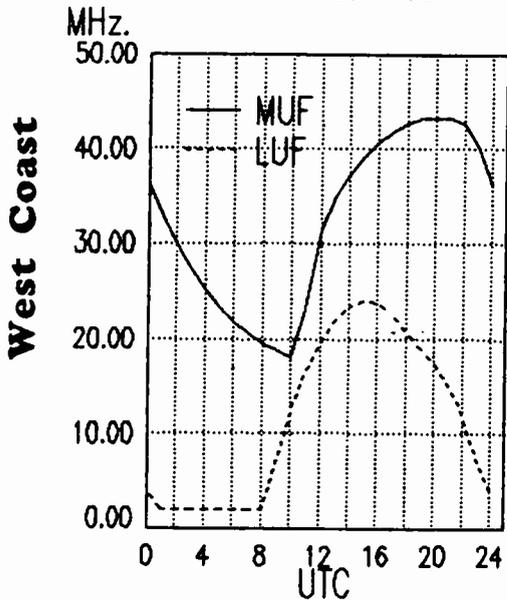
frequency

section

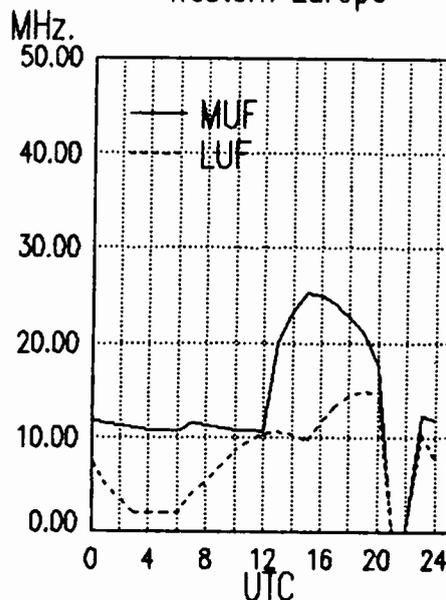
1400-1450	T	Radio Free Europe, Munich*	5985 7115 7695 9725	1400-1500	WHRI, Noblesville, Indiana	9465 15105
1400-1450		Radio Pyongyang, North Korea	11895 15355	1400-1500	WVCR, Nashville, Tennessee	15690
1400-1455		Radio Beijing, China	6576 11735	1400-1500	WYFR, Oakland, California	5950 11580 11830 13695
1400-1500		ABC, Katherine, Australia	7405 11600 11855 15165			15130 15215 15580
1400-1500		ABC, Perth, Australia	2485	1415-1420	Radio Nepal, Kathmandu	3230 5005
1400-1500		Adventist World Radio, Italy	9610	1430-1500	F ABC, Alice Springs, Australia	2310 [ML]
1400-1500		All India Radio, New Delhi	7275	1430-1500	F ABC, Tennant Creek, Australia	2325 [ML]
1400-1500		BBC, London, England	9545 11810 15335	1430-1500	Burma Broadcasting Service	5985
			5995 6195 7180 9740	1430-1500	King of Hope, Southern Lebanon	6280
			9750 11750 12095 15070	1430-1500	KTWR, Agana, Guam	9780
			15140 15310 15400 17640	1430-1500	Radio Austria Int'l, Vienna	6155 11780 13730 21490
			17790 17840 21710 21470	1430-1500	Radio Netherland, Hilversum	5955 13770 15150 17605
			25750	1430-1500	Radio Prague, Czechoslovakia	9605 11685 13715 15110
1400-1500		CBN, St. John's, Newfoundland	6160			17705 21505
1400-1500		CBC Northern Quebec Service	9625 11720	1430-1500	Radio Sofia, Bulgaria	7245 9740 11735
1400-1500	M-A	CBU, Vancouver, British Columbia	6160	1445-1500	Radio Berlin Int'l, East Germany	15240 17880
1400-1500		CFCF, Montreal, Quebec	6005	1445-1500	Radio Canada Int'l, Montreal	11935 15160 15305 15325
1400-1500		CFCN, Calgary, Alberta	6030			17795 17820 21545
1400-1500		CHNS, Halifax, Nova Scotia	6130	1445-1500	M-A Radio Ulan Bator, Mongolia	9575 15305
1400-1500		Christian Science World Service	13760 17555 21780			
1400-1500		CKWX, Vancouver, British Columbia	6080			
1400-1500		CFRB, Toronto, Ontario	6070			
1400-1500	S	ELWA, Monrovia, Liberia	11830			
1400-1500		FEB, Manila, Philippines	9670 11850			
1400-1500		HCJB, Quito, Ecuador	11740 15115 17890			
1400-1500		KNLS, Anchor Point, Alaska	9725			
1400-1500		Radio Australia, Melbourne	5995 6035 6060 6080			
			7205 9580 15140 15245			
1400-1500	S	Radio Canada Int'l, Montreal	9625 11720 11955 17820			
1400-1500		Radio Japan, Tokyo	9505 9695 11865 11815			
			15410			
1400-1500		Radio Korea, Seoul	9570 9750 15575			
1400-1500		Radio Moscow, USSR	9640 9755 11840 11900			
			12010 12065 15135 15295			
			15320 15490 15540 15585			
			17660 17815 21630			
1400-1500		Radio RSA, South Africa	11925 21535 21590 25790			
1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165			
1400-1500		SBC Radio One, Singapore	5010 5052 11940			
1400-1500		Superpower KUSW, Utah	9850			
1400-1500		Voice of America, Washington	6110 9760 11920 15160			
			15205 15245 15410 15425			
1400-1500		Voice of Kenya, Nairobi	6100			
1400-1500		Voice of Malaysia, Kuala Lumpur	4950			
1400-1500		Voice of Mediterranean, Malta	11925			
				1500-1505	Africa No. 1, Gabon	7200 17630
				1500-1510	Vatican Radio, Vatican City	11955 15090 17870
				1500-1600	BBC, London, England	5995 6155 6195 7180
						9410 9740 11750 11775
						11940 12095 15070 15140
						15260 15400 17640 17705
						17740 17790 21470 21660
						21710 25750
				1500-1515	FEBA, Mahe, Seychelles	15325
				1500-1520	Radio Ulan Bator, Mongolia	9575 15305
				1500-1525	Radio Bucharest, Romania	9510 9690 11775 11940
						15250 15335
				1500-1525	Radio Netherland, Hilversum	5955 13770 15150 17605
				1500-1530	Radio Berlin Int'l, East Germany	15240 17880
				1500-1530	Radio Sofia, Bulgaria	9560 11735 15310
				1500-1530	A,S Radio Tanzania, Dar es Salaam	7165
				1500-1530	Radio Veritas Asia, Philippines	9525 9770 15445
				1500-1550	Deutsche Welle, West Germany	9735 11965 17810 21600
				1500-1550	Radio Pyongyang, North Korea	6576 9325 9345 9640
						9977 11740
				1500-1555	Radio Beijing, China	7405 11600 11795 15165
				1500-1600	F ABC, Alice Springs, Australia	2310 [ML]

1500 UTC [11:00 AM EDT/8:00 AM PDT]

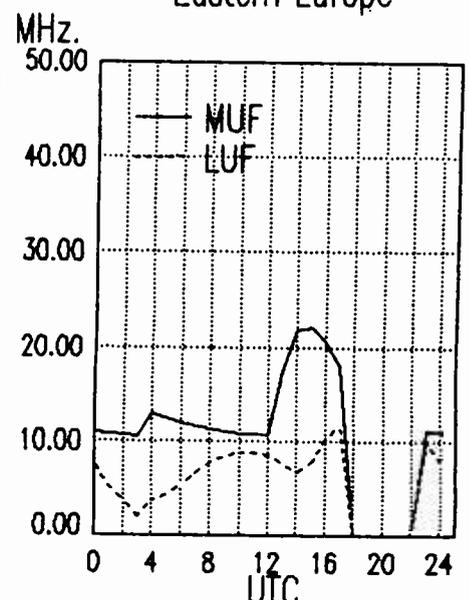
Midwest To South America



West Coast To Western Europe



West Coast To Eastern Europe

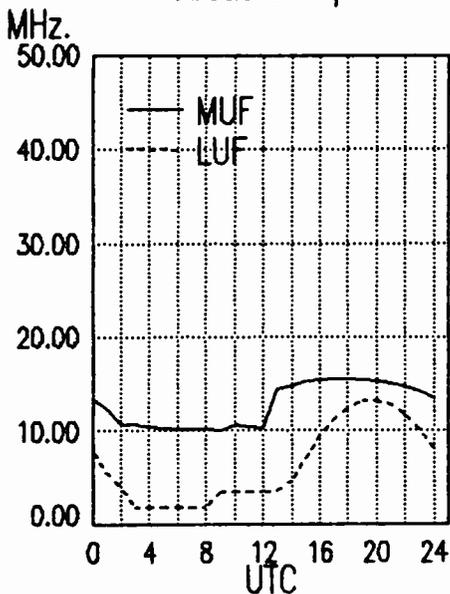


frequency

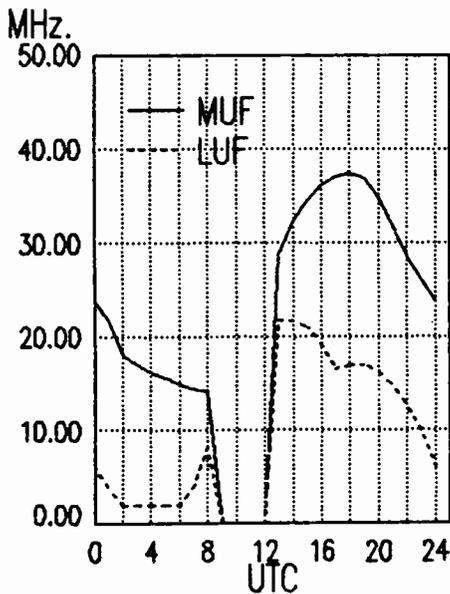
section

1500-1600	ABC, Perth, Australia	9610	1500-1600	WYFR Satellite Net	11830 13695 15215
1500-1600	F ABC, Tennant Creek, Australia	2325 [ML]	1515-1530	M-H Radio Budapest, Hungary	7220 9585 9835 11910
1500-1600	Adventist World Radio, Guam	11980			15160 15220
1500-1600	AWR, Alajuela, Costa Rica	15460	1515-1600	FEBA, Mahe, Seychelles	11865 15325
1500-1600	Burma Broadcasting Service	5985	1515-1600	Radio Berlin Int'l, East Germany	6115 7295 9730 15255
1500-1600	CBC Northern Quebec Service	9625 11720	1530-1545	All India Radio, New Delhi	3905 3925 4860 6160
1500-1600	CBN, St. John's, Newfoundland	6160			7160 7412 9545 9950
1500-1600	CBU, Vancouver, British Columbia	6160	1530-1555	BRT, Brussels, Belgium	17595 21810
1500-1600	CFCF, Montreal, Quebec	6005	1530-1600	Radio Prague, Czechoslovakia	6055 7395 9605 11685
1500-1600	CFCN, Calgary, Alberta	6030			11990 13715 15110 15155
1500-1600	CHNS, Halifax, Nova Scotia	6130			17705 21505
1500-1600	Christian Science World Service	13760 17555 21780	1530-1600	Radio Sweden, Stockholm	17880 21610 21675
1500-1600	CKWX, Vancouver, British Columbia	6080	1530-1600	Radio Tanzania, Dar es Salaam	9684
1500-1600	CFRB, Toronto, Ontario	6070	1530-1600	Radio Tirana, Albania	9480 11835
1500-1600	S ELWA, Monrovia, Liberia	11830	1530-1600	Radio-Television Morocco, Rabat	17595
1500-1600	FEBC, Manila, Philippines	11850	1530-1600	Swiss Radio Int'l, Berne	13685 15430 17830 21630
1500-1600	HCJB, Quito, Ecuador	11740 15115 17890	1530-1600	Voice of Asia, Taiwan	5980 7445
1500-1600	King of Hope, Southern Lebanon	6280	1530-1600	Voice of Nigeria, Lagos	15120
1500-1600	KNLS, Anchor Point, Alaska	11700	1530-1540	M-A Voice of Greece, Athens	15630 17550
1500-1600	KTWR, Agana, Guam	11650	1545-1600	Radio Berlin Int'l, East Germany	7295 9730 15340 17775
1500-1600	Radio Australia, Melbourne	5995 6035 6060 6080	1545-1600	Vatican Radio, Vatican City	15120 17730 21650
		7205 7215 9580 15140	1545-1600	Voice of Vietnam, Hanoi	10011 11750
1500-1600	S Radio Canada Int'l, Montreal	9625 11720 11955 17820	1550-1600	H-S KTWR, Agana, Guam	9780
1500-1600	Radio Japan, Tokyo	11815 11865 15195 21700			
1500-1600	Radio Jordan, Amman	9560	1600 UTC [12:00 PM EDT/9:00 AM PDT]		
1500-1600	Radio Korea (South), Seoul	9870	1600-1605	SBC Radio One, Singapore	5010 5052 11940
1500-1600	Radio Moscow, USSR	9640 9755 11840 11900	1600-1610	FEBA, Mahe, Seychelles	11865 15325
		11995 12010 12065 15135	1600-1610	Radio Lesotho, Maseru	4800
		15295 15490 15540 15585	1600-1625	Radio Budapest, Hungary	6110 9585 9835 11910
		17660			15160
1500-1600	Radio RSA, South Africa	11925 21535 21590 25790	1600-1625	Radio Prague, Czechoslovakia	6055 9605 11665 11685
1500-1600	SBC Radio One, Singapore	5010 5052 11940			11990 13715 15110 15155
1500-1600	SLBC, Sri Lanka	9720			17705 21505
1500-1600	Superpower KUSW, Utah	15650	1600-1630	ELWA, Monrovia, Liberia	11830
1500-1600	Voice of America, Washington	6110 9575 9645 9700	1600-1630	HCJB, Quito, Ecuador	15115 17890
		9760 15205 15260	1600-1630	Radio Berlin Int'l, East Germany	7295 9730 15355 17780
1500-1600	Voice of Ethiopia, Addis Ababa	7165 9560	1600-1630	S Radio Norway Int'l, Oslo	17840 17780 21605
1500-1600	Voice of Indonesia, Jakarta	11784 15150	1600-1630	Radio Pakistan, Islamabad	7365 9465 9785 11615
1500-1600	Voice of Kenya, Nairobi	6100			11625 15125
1500-1600	Voice of Malaysia, Kuala Lumpur	4950	1600-1630	Radio Polonia, Warsaw, Poland	6135 9540
1500-1600	Voice of Mediterranean, Malta	11925	1600-1630	M-F Radio Portugal, Lisbon	15120
1500-1600	WHRI, Noblesville, Indiana	15105 21840	1600-1630	SLBC, Colombo, Sri Lanka	6075 9720
1500-1600	WRNO, New Orleans, Louisiana	11965	1600-1630	Trans World Radio, Swaziland	5055 9525
1500-1600	IRR WWCR, Nashville, Tennessee	15690			
1500-1600	WYFR, Oakland, California	5950 11580			

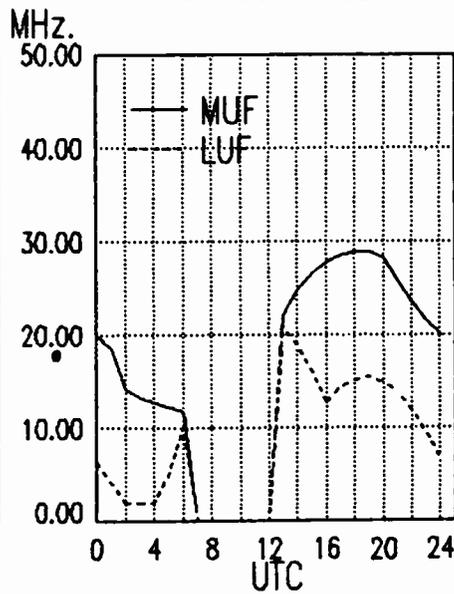
West Coast To
Arctic Europe



West Coast To
West Africa



West Coast To
Central Africa



West Coast

frequency

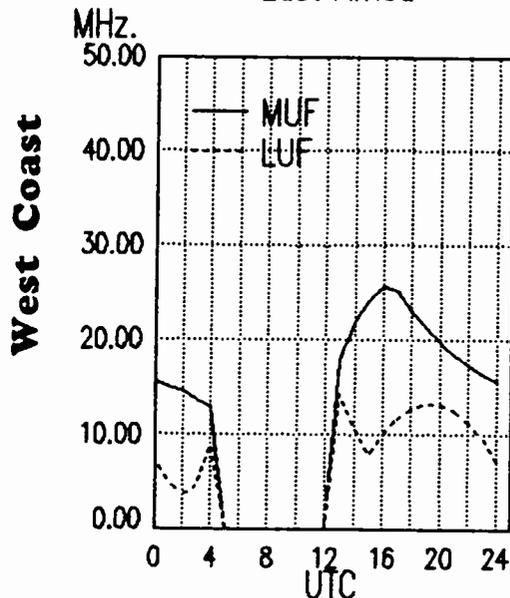
section

1600-1630	Voice of Asia, Taiwan	5980	7445						
1600-1630	Voice of Vietnam, Hanoi	12020	15010						
1600-1645	Radio Nacional Angola, Luanda	7245	9535	11955					
1600-1645	UAE Radio, United Arab Emirates	15435	17865	21605					
1600-1650	Deutsche Welle, West Germany	6170	7200	9745	15105				
		15595	17825	21680					
1600-1655	Radio Beijing, China	9570	11600	11715	15110				
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	AWR, Alajuela, Costa Rica	15460							
1600-1700	BBC, London, England	5975	5995	6195	7180				
		9740	9410	11640	11750				
		11775	11810	12095	15070				
		15260	15400	17640	17705				
		17880	21470	21710	25750				
1600-1700	CBC Northern Quebec Service	9625	11720						
1600-1700	CBN, St. John's, Newfoundland	6160							
1600-1700	CBU, Vancouver, British Columbia	6160							
1600-1700	CFCF, Montreal, Quebec	6005							
1600-1700	CFCN, Calgary, Alberta	6030							
1600-1700	CHNS, Halifax, Nova Scotia	6130							
1600-1700	Christian Science World Service	21640							
1600-1700	CKWX, Vancouver, British Columbia	6080							
1600-1700	CFRB, Toronto, Ontario	6070							
1600-1700	KNLS, Anchor Point, Alaska	12025							
1600-1700	KSDA, Guam	11980							
1600-1700	KTWR, Guam	11650							
1600-1700	Radio Australia, Melbourne	5995	6035	6060	6080				
		7205	7215	9580	15245				
1600-1700	Radio Beijing, China	15130							
1600-1700	Radio France Int'l, Paris	6175	12015	15360	17620				
		17795							
1600-1700	Radio Jordan, Amman	9560							
1600-1700	Radio Korea, Seoul, South Korea	5985	9870						
1600-1700	Radio Malawi, Blantyre	3380	5995						
1600-1700	Radio Moscow, USSR	9655	11840	11900	11995				
		12010	12050	15135	15295				
		15425	15540	15585	17685				
1600-1700	Radio for Peace, Costa Rica	21565	25945						
1600-1700	Radio Riyadh, Saudi Arabia	9705	9720						
1600-1700	Radio Tanzania, Dar es Salaam	9684							
1600-1700	Superpower KUSW, Utah	15650							
1600-1700	Voice of America, Washington, DC	9575	9645	9760	11920				
		15205	15410	15445	15580				
1600-1700	WHRI, Noblesville, Indiana								15600 17785 17800 17870
1600-1700	WINB, Red Lion, Pennsylvania								15105 21840
1600-1700	WRNO, New Orleans, Louisiana								15295
1600-1700	IRR WWCN, Nashville, Tennessee								11965
1600-1700	WYFR, Oakland, California								15690
1600-1700	WYFR Satellite Network								11580 15345 17845 21525
1600-1700	Radio Zambia, Lusaka								13695 15170 15215
1605-1700	F,A SBC Radio One, Singapore								9580
1615-1630	Radio Canada Int'l, Montreal								5052 11940
									11935 15305 15325 17820
									21545
1615-1630	A Voice of Vietnam, Hanoi								10011 11750
1630-1700	Radio Austria Int'l, Vienna								6155 11780 13730 21490
1630-1700	Radio Netherlands, Hilversum								6020 15570
1630-1700	Radio Peace & Progress, USSR								9830 11670 11695 11910
									11775 12055 17595 17615
1630-1700	RTM Morocco								17595 17815
1645-1700	Radio Canada Int'l, Montreal								11935 15305 15325 17820
1645-1700	Radio Korea (South), Seoul								5975 7275 9870

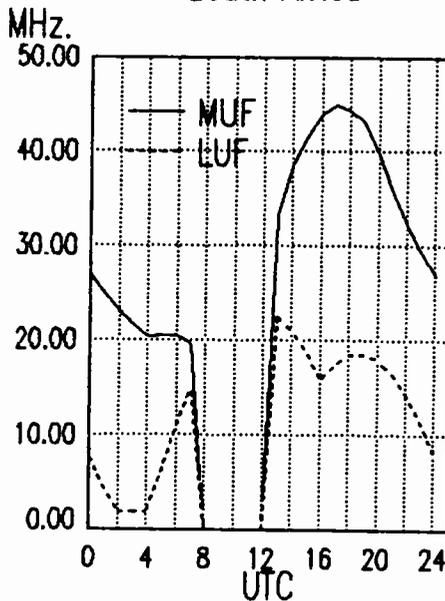
1700 UTC [1:00 PM EDT/10:00 AM PDT]

1700-1705	Radio Uganda, Kampala	4976	5026						
1700-1715	Kol Israel, Jerusalem	9385	11585	13750					
1700-1715	M-A Voice of Namibia (Angola)	11955							
1700-1725	Radio Netherland, Hilversum	6020	15570						
1700-1730	Radio Australia, Melbourne	5995	6060	6080	7205				
		9580	15140	15245					
1700-1730	S Radio Japan, Tokyo	9695	11815	11865					
1700-1730	Radio Norway Int'l, Oslo	17840	25730						
1700-1730	Radio Sweden Int'l, Stockholm	6065	9655						
1700-1730	SLBC, Colombo, Sri Lanka	11800							
1700-1745	BBC, London, England	9410	9740	11750	11775				
		11940	12095	15070	15245				
		15260	15400	17640	17695				
		17880	21470						
1700-1750	Radio Pyongyang, North Korea	7290	9345	9640	9977				
		11760							
1700-1755	Radio Beijing, China	9570	9750	11575					
1700-1800	F ABC, Alice Springs, Australia	2310	[ML]						
1700-1800	ABC, Tennant Creek, Australia	2325	[ML]						
1700-1800	AWR Africa, Gabon	9625							
1700-1800	CBC Northern Quebec Service	9625	11720						
1700-1800	CBN, St. John's, Newfoundland	6160							

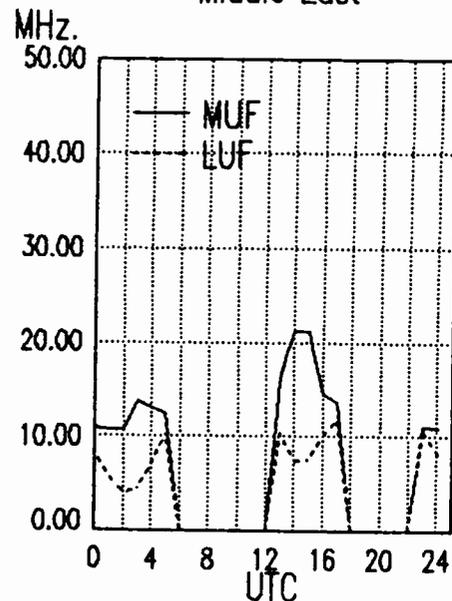
West Coast To East Africa



West Coast To South Africa



West Coast To Middle East



frequency

section

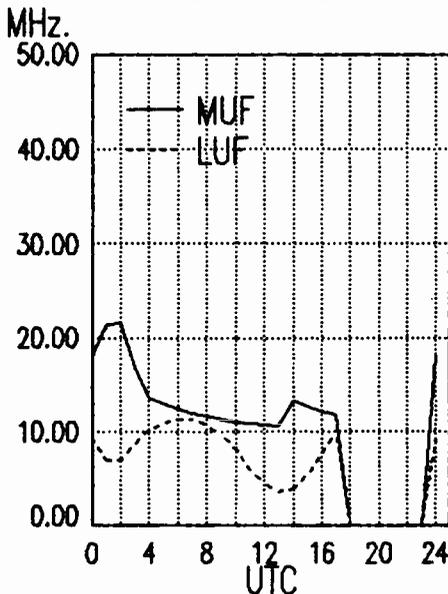
1700-1800	CBU, Vancouver, British Columbia	6160			
1700-1800	CFCF, Montreal, Quebec	6005			
1700-1800	CFCN, Calgary, Alberta	6030			
1700-1800	CHNS, Halifax, Nova Scotia	6130			
1700-1800	Christian Science World Service	21640			
1700-1800	CKWX, Vancouver, British Columbia	6080			
1700-1800	CFRB, Toronto, Ontario	6070			
1700-1800	Radio Havana Cuba	11920			
1700-1800	Radio Jordan, Amman	9560			
1700-1800	Radio Korea, Seoul, South Korea	5975	9870	15575	
1700-1800 M-F	Radio Malabo, Equatorial Guinea	9553	[ML]		
1700-1800	Radio Moscow, USSR	9655	9755	9795	9825
		9895	11730	11840	11940
		11995	12010	12030	12080
		15135	15245	15295	15540
		15585	15615	17570	17595
1700-1800	Radio for Peace, Costa Rica	21565	25945		
1700-1800	Radio Riyadh, Saudi Arabia	9705	9720		
1700-1800	Radio Tanzania, Dar es Salaam	9684			
1700-1800	Radio Zambia, Lusaka	9580			
1700-1800	RTM Morocco	17815			
1700-1800	SBC Radio One, Singapore	5052	11940		
1700-1800	Superpower KUSW, Utah	15650			
1700-1800 A,S	Swaziland Commercial Radio	6155			
1700-1800	Voice of Africa, Egypt	15255			
1700-1800	Voice of America, Washington	6110	9575	9645	9760
		11760	11920	15205	15410
		15445	15580	15600	17785
		17800	17870		
1700-1800	Voice of Kenya, Nairobi	6100			
1700-1800	WHRI, Noblesville, Indiana	13760	15105		
1700-1800	WINB, Red Lion, Pennsylvania	15295			
1700-1800 S-F	WMLK, Bethel, Pennsylvania	9465			
1700-1800	WRNO, Louisiana	15420			
1700-1800 IRR	WVCR, Nashville, Tennessee	15690			
1700-1800	WYFR Satellite Net	13695	15170	15215	
1700-1800	WYFR, Okeechobee, Florida	11580	13770		
1715-1730 M-F	Radio Canada Int'l, Montreal	5995	7235	15325	17820
1715-1745	BBC, London, England*	3975	6185	7165	
1718-1800	Radio Pakistan, Islamabad	6210			
1725-1740	Radio Suriname Int'l, Paramibo	17835v			
1725-1800	Radio New Zealand, Wellington	11780	15150		
1730-1735	All India Radio, New Delhi	4840	4860	4920	6160
		7412	9950		
1730-1755	BRT, Brussels, Belgium	5915	11695		

1730-1755	Radio Austria Int'l, Vienna	5945	6155	12010	13730
1730-1755	Radio Bucharest, Romania	7105	9530	9685	11790
		11940	15270	15340	17860
1730-1800	Radio Australia, Melbourne	5995	6035	6060	6080
		7205	9580	15245	
1730-1800	Radio Berlin Int'l, East Germany	9665	13610	15145	15255
1730-1800	Radio Polonia, Warsaw, Poland	6135	9540		
1730-1800	Radio Prague, Czechoslovakia	9605	11685	11990	13715
		15110	21505		
1730-1800	RAE, Buenos Aires, Argentina	15345			
1730-1800	Swiss Radio Int'l, Berne	3985	6165	9535	
1734-1800	FEBA, Mahe, Seychelles	11810			
1745-1800	BBC, London, England	9410	9740	11750	12095
		15070	15310	15400	17640
		17695	17880	21470	

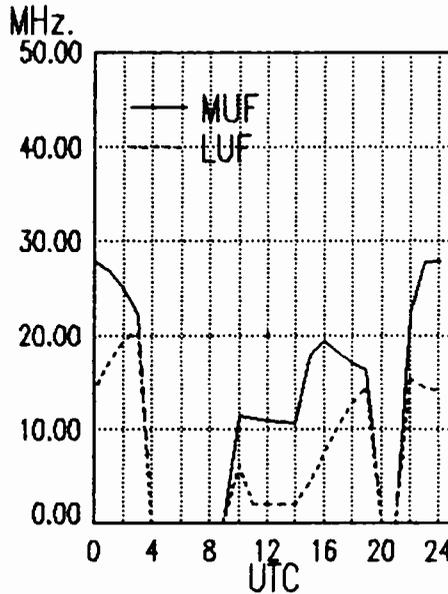
1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805 A	SBC Radio One, Singapore	11940			
1800-1815	Kol Israel, Jerusalem	11588			
1800-1815	Radio Cameroon, Yaounde	3970	4750	4795	4850
		5010			
1800-1815	SLBC, Colombo, Sri Lanka	11800			
1800-1825 A,S	FEBA, Mahe, Seychelles	11760			
1800-1825	Radio Prague, Czechoslovakia	5930	7345	9605	11685
		11990	13715	15110	17840
		21505			
1800-1825	RAE, Buenos Aires, Argentina	15345			
1800-1830	BBC, London, England	7325	9410	9740	11750
		12095	15070	15310	15400
		15420	17640	17695	17830
		17880			
1800-1830 S	Radio Bamako, Mali	4835	5995		
1800-1830 M-F	Radio Canada Int'l, Montreal	15260	17820		
1800-1830	Radio Kiev, Ukrainian SSR	7150	7250	7240	9600
1800-1830	Radio Mozambique, Maputo	3265	4855	9618	
1800-1830 S	Radio Norway, Oslo	15235			
1800-1830	Voice of Africa, Egypt	15255			
1800-1830	Voice of Vietnam, Hanoi	12020	15010		
1800-1845	Radio Abidjan, Ivory Coast	11920			
1800-1845	Trans World Radio, Swaziland	9525			
1800-1850	Radio Bras, Brasilia, Brazil	15265			
1800-1856	Radio RSA, South Africa	17765	21535	21590	
1800-1900 F	ABC, Alice Springs, Australia	2310	[ML]		

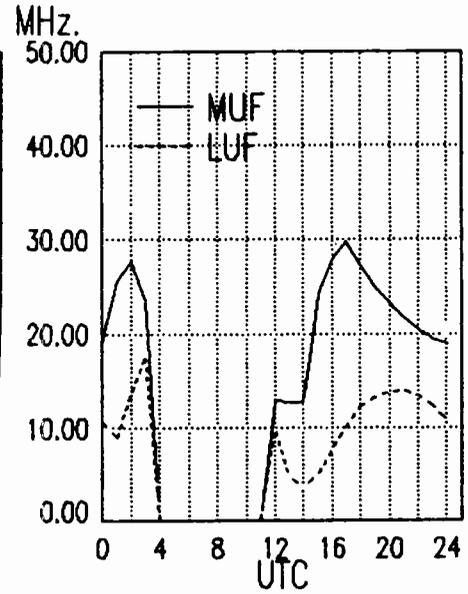
West Coast To Central Asia



West Coast To Southeast Asia



West Coast To Indian Ocean



West Coast

frequency

section

1800-1900	F	ABC, Tennant Creek, Australia	2325 [ML]				
1800-1900		All India Radio, New Delhi	11935	15360			
1800-1900		CBC Northern Quebec Service	9625	11720			
1800-1900		CBN, St. John's, Newfoundland	6160				
1800-1900		CBU, Vancouver, British Columbia	6160				
1800-1900		CFCF, Montreal, Quebec	6005				
1800-1900		CFCN, Calgary, Alberta	6030				
1800-1900		CHNS, Halifax, Nova Scotia	6130				
1800-1900		Christian Science World Service	21640				
1800-1900		CKWX, Vancouver, British Columbia	6080				
1800-1900		CFRB, Toronto, Ontario	6070				
1800-1900		KNLS, Anchor Point, Alaska	11945				
1800-1900		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	7215	9580	15245	
1800-1900	A,S	Radio Canada Int'l. Montreal	15260	17820			
1800-1900		Radio Jamahiriya, Libya	15450				
1800-1900		Radio Jordan, Amman	9560				
1800-1900		Radio Kuwait, Kuwait	11665				
1800-1900		Radio Malabo, Equatorial Guinea	9553v	[ML]			
1800-1900		Radio Moscow, USSR	9755	9825	9895	11730	
			11840	11940	11995	12010	
			12080	15135	15245	15265	
			15295	15405	15425	15585	
			15475	17570			
1800-1900		Radio New Zealand, Wellington	11780	15150			
1800-1900		Radio for Peace, Costa Rica	21565	25945			
1800-1900		Radio Riyadh, Saudi Arabia	9705	9720			
1800-1900		Radio Tanzania, Dar es Salaam	9684				
1800-1900		Radio Zambia, Lusaka	9580				
1800-1900		Superpower KUSW, Utah	15650				
1800-1900	A,S	Swaziland Commercial Radio	6155				
1800-1900		Voice of America, Washington	9575	9760	11760	11920	

1900-1930		Kol Israel, Jerusalem	11605	15640	13750	17590	
			17630				
1900-1930		Radio Afghanistan, Kabul	7160	7310	9640		
1900-1930		Radio Berlin Int'l, East Germany	9665	11920	15255		
1900-1930	M-F	Radio Canada Int'l, Montreal	15260	17820			
1900-1930		Radio Japan, Tokyo	9695	11850	11865	15270	
1900-1930	S	Radio Norway Int'l, Oslo	15235				
1900-1930	M-F	Radio Portugal, Lisbon	11740	11870	15250		
1900-1930		Radio Sofia, Bulgaria	7245	9560	11735	15310	
1900-1930		Voice of Vietnam, Hanoi	9840	12020	15010		
1900-1950		Deutsche Welle, Koln, W. Germany	11810	13790	15390	17810	
1900-1955		Radio Beijing, China	6860	9470			
1900-2000		All India Radio, New Delhi	7412	11620	11935	15360	
1900-2000		BBC, London, England	9410	9740	11750	12095	
			15070	15140	15400	17695	
			17880				
1900-2000		CBC Northern Quebec Service	9625	11720			
1900-2000		CBN, St. John's, Newfoundland	6160				
1900-2000		CBU, Vancouver, British Columbia	6160				
1900-2000		CFCF, Montreal, Quebec	6005				
1900-2000		CFCN, Calgary, Alberta	6030				
1900-2000		CHNS, Halifax, Nova Scotia	6130				
1900-2000		Christian Science World Service	21640				
1900-2000		CKWX, Vancouver, British Columbia	6080				
1900-2000		CFRB, Toronto, Ontario	6070				
1900-2000		HCJB, Quito, Ecuador	15220	15270	17790		
1900-2000		Radio Algiers, Algeria	9509	9685	15215	17745	
1900-2000		Radio Australia, Melbourne	6035	6060	6080	7205	
			7215	9580	15140		
			6130				
1900-2000		Radio Havana Cuba	15340				
1900-2000		Radio Jordan, Amman	9560				
1900-2000		Radio Kuwait, Kuwait	11665				
1900-2000	M-A	Radio Malabo, Equatorial Guinea	9553 [ML]				
1900-2000		Radio Moscow, USSR	11840	11995	12010	12050	
			13605	15135	15295	15540	
			17605				
1900-2000		Radio Moscow British Service	7240	7350	9450	9695	
1900-2000		Radio New Zealand, Wellington	11780	15150			
1900-2000		Radio Prague, Czechoslovakia	5930	7345	11855		
1900-2000		Radio Riyadh, Saudi Arabia	9705	9720			
1900-2000		Radio RSA, South Africa	17765	21535			
1900-2000		Radio Zambia, Lusaka	9580				
1900-2000		Spanish Foreign Radio, Madrid	11790	15280	15375	15395	
1900-2000		Superpower KUSW, Utah	15650				

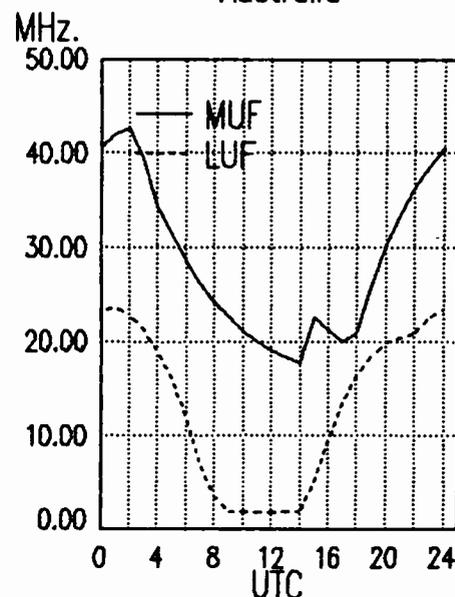
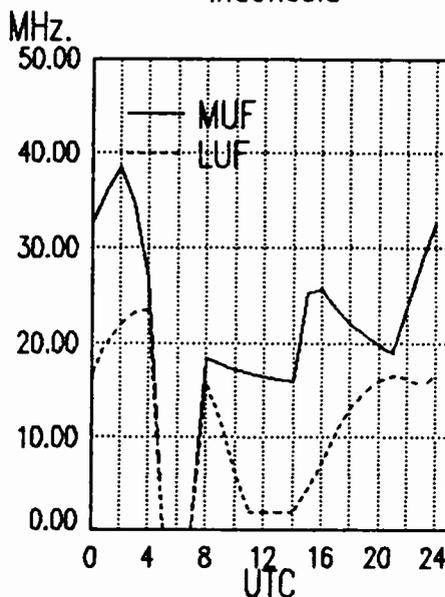
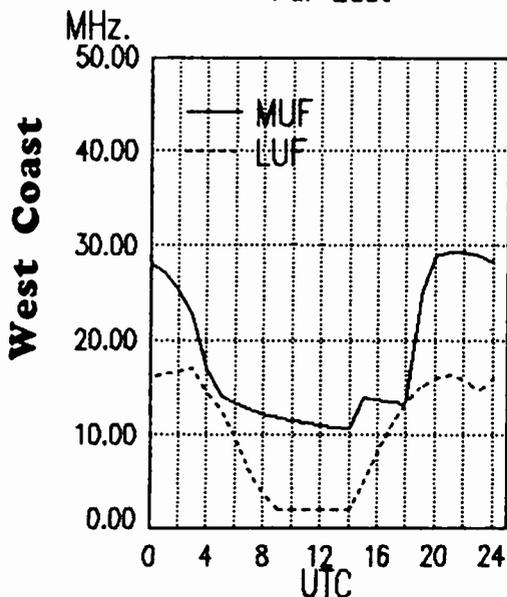
1900 UTC [3:00 PM EDT/12:00 PM PDT]

1900-1903		Africa No. 1, Gabon	15475				
1900-1905	M-A	Vatican Radio, Vatican City	6190	6248	7250	9645	
1900-1915		Radio Bangladesh, Dhaka	6240	7505	11510		
1900-1915		Radio Tanzania, Dar es Salaam	9684				
1900-1925		Radio Netherland, Hilversum	6020	15560	17605	21685	
1900-1925		Voice of Islamic Republic Iran	9695				
1900-1930	F	ABC, Alice Springs, Australia	2310 [ML]				
1900-1930	F	ABC, Tennant Creek, Australia	2325 [ML]				

West Coast To Far East

West Coast To Indonesia

West Coast To Australia



frequency

section

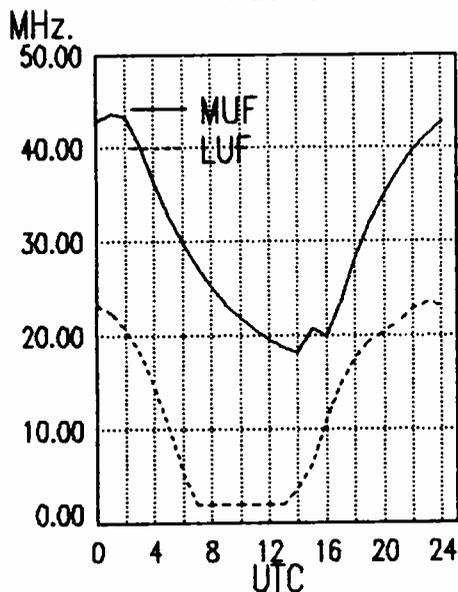
1900-2000 A,S	Swaziland Commercial Radio	6155			
1900-2000	Trans World Radio Swaziland	3205			
1900-2000	Voice of America, Washington	9525	9700	9760	11760
		11870	15180	15205	15410
		15445	15580	15600	17740
		17785	17800	17870	
		9595			
1900-2000	Voice of Ethiopia, Addis Ababa	6100			
1900-2000	Voice of Kenya, Nairobi	7255	11770		
1900-2000	Voice of Nigeria, Lagos	13760	17830		
1900-2000	WHRI, Noblesville, Indiana	15295			
1900-2000	WINB, Red Lion, Pennsylvania	9465			
1900-2000 S-F	WMLK, Bethel, Pennsylvania	15420			
1900-2000	WRNO, New Orleans, Louisiana	15690			
1900-2000 IRR	WWCR, Nashville, Tennessee	15215	15566	21615	
1900-2000	WYFR, Oakland, California	11830	13695	15170	
1900-2000	WYFR Satellite Net, California	3356	4820		
1910-1920	Radio Botswana, Gaborone	9665	13610	15255	
1915-2000	Radio Berlin Int'l, East Germany	7430	9395	9425	
1920-1930 M-A	Voice of Greece, Athens	5047			
1930-1940	Radio Togo, Lome	2485			
1930-2000	ABC, Katherine, Australia	6955	7480	9440	
1930-2000	Radio Beijing, China	5945	6155	12010	13730
1930-2000	Radio Austria Int'l, Vienna	7145	9690	9750	11940
1930-2000	Radio Bucharest, Romania	9870	15575		
1930-2000	Radio Korea, Seoul, South Korea	6030	9022		
1930-2000	Voice Islamic Republic Iran	15185			
1930-2000	WINB, Red Lion, Pennsylvania	7275	7290	9575	
1935-1955	RAI, Rome, Italy	9575	11870		
1940-2000 M-A	Radio Ulan Bator, Mongolia	9755	11860		
1945-2000	All India Radio, New Delhi	6190	7250	9645	
1950-2000	Vatican Radio, Vatican City				

2000-2030	Kol Israel, Jerusalem	15640	17575	17630	
2000-2030	Radio Australia, Melbourne	6035	7205	7215	9580
		9620			
		6115			
2000-2030	Radio Berlin Int'l, East Germany	6110	7220	9585	9835
2000-2030	Radio Budapest, Hungary	11910	15160		
		3366	4915		
2000-2030	Radio Ghana, Nairobi	6480	7550	15575	
2000-2030	Radio Korea, Seoul	7125	7145	9525	
2000-2030	Radio Polonia, Warsaw, Poland	6155			
2000-2030	Swaziland Commercial Radio	6030	9022		
2000-2030	Voice of Republic of Iran	7412	9755	9910	11620
2000-2045	All India Radio, New Delhi	11860			
		6576	9345	9640	9977
2000-2050	Radio Pyongyang, North Korea	9795			
2000-2050	Voice of Turkey, Ankara	2310	[ML]		
2000-2100 M-A	ABC, Alice Springs, Australia	2485			
2000-2100	ABC, Katherine, Australia	2325	[ML]		
2000-2100 M-A	ABC, Tennant Creek, Australia	5975	9410	11715	11750
2000-2030	BBC, London, England	11820	12095	15070	15140
		15260	15400	17695	17760
		17755	17880		
		6955	7480	9440	9745
2000-2055	Radio Beijing, China	15110			
		9625	11720		
2000-2100	CBC Northern Quebec Service	6160			
2000-2100	CBN, St. John's, Newfoundland	6160			
2000-2100	CBU, Vancouver, British Columbia	6005			
2000-2100	CFCF, Montreal, Quebec	6030			
2000-2100	CFCN, Calgary, Alberta	6130			
2000-2100	CHNS, Halifax, Nova Scotia	15390	17555	15610	
2000-2100	Christian Science World Service	6080			
2000-2100	CKWX, Vancouver, British Columbia	6070			
2000-2100	CFRB, Toronto, Ontario	6280			
2000-2100	King of Hope, Southern Lebanon	17775			
2000-2100	KVOH, Rancho Simi, California	13660			
2000-2100	Radio Baghdad, Iraq	11800			
2000-2100	Radio Havana Cuba	9560			
2000-2100	Radio Jordan, Amman	11665			
2000-2100	Radio Kuwait, Kuwait	9553v			
2000-2100	Radio Malabo, Equatorial Guinea	9865	11730	11820	11840
2000-2100	Radio Moscow, USSR	12030	12050	13605	15425
		17605	17850		
		12050	15150		
2000-2100	Radio New Zealand, Wellington	21565	25945		
2000-2100 A,S	Radio for Peace, Costa Rica				

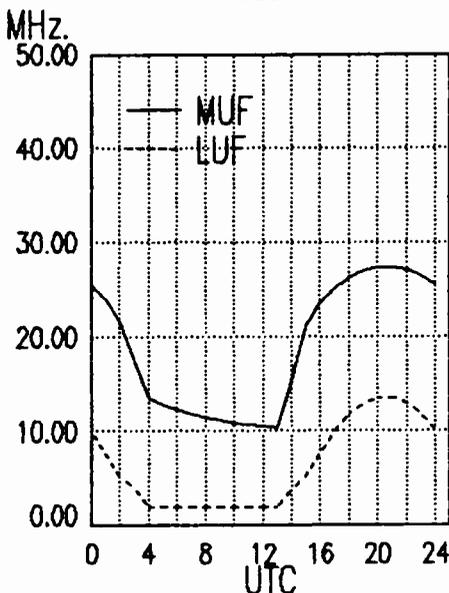
2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005	Radio Zambia, Lusaka	3345	6165		
2000-2010 A	Radio Zambia, Lusaka	3345	6165		
2000-2010	Voice of Kenya, Nairobi	6100			
2000-2015	Radio Togo, Lome	3220	5047		
2000-2015 M-A	Radio Ulan Bator, Mongolia	9575	11870		
2000-2015	Trans World Radio, Swaziland	3205			
2000-2025	Radio Beijing, China	6955	7480	9440	9745
		11715			
2000-2025	Radio Bucharest, Romania	5990	6105	7145	7195
		9750	9690	11940	

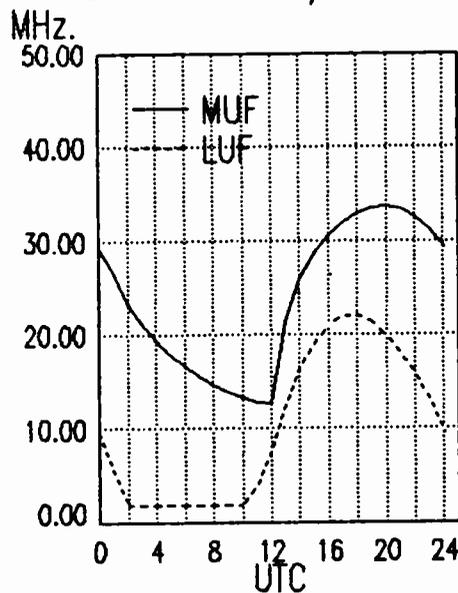
West Coast To Pacific



West Coast To Alaska



West Coast To Central America/Caribbean



West Coast

frequency

section

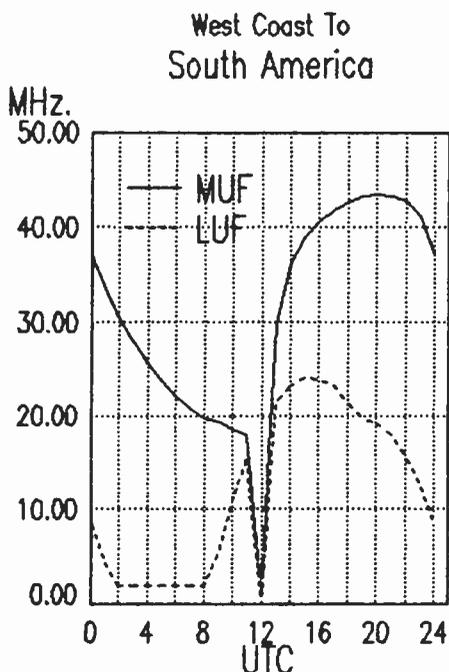
2000-2100	Radio Riyadh, Saudi Arabia	9705	9720
2000-2100	Radio Tonga, Tonga	5050	
2000-2100	Radio Zambia, Lusaka	9580	
2000-2100	Superpower KUSW, Utah	15650	
2000-2100	Voice of America, Washington	9700	9760 11760 15205
		15410	15445 15580 15600
		17785	17800 17870
2000-2100	WHRI, Noblesville, Indiana	13760	17830
2000-2100	WINB, Red Lion, Pennsylvania	15185	
2000-2100 S-F	WMLK, Bethel, Pennsylvania	9465	
2000-2100	WRNO, New Orleans, Louisiana	15420	
2000-2100 IRR	WWCR, Nashville, Tennessee	15690	
2000-2100	WYFR, Oakland, California	11580	15215 15566 17845
		21525	21615
2000-2100 M-A	WYFR Satellite Net, California	13695	15170
2005-2100	Radio Damascus, Syria	15095	17710
2010-2100 A,S	Voice of Kenya, Nairobi	6100	
2015-2100	ELWA, Monrovia, Liberia	11830	
2025-2045	RAI, Rome, Italy	6165	9575
2030-2055	Radio Polonia, Warsaw, Poland	6095	7285
2030-2100	BBC, London, England	5975	7325 9410 11715
		11920	12095 15070 15160
		15260	15400 17695 17755
		17760	
2030-2100	Radio Australia, Melbourne	9580	9620
2030-2100	Radio Korea, Seoul, South Korea	6480	7550 15575
2030-2100	Radio Netherland, Hilversum	9860	13700 15560
2030-2100	Radio Sofia, Bulgaria	7115	7155 9700 11720
		15290	15330
2030-2100 M	Radio Tallin, Estonian SSR	5925	
2030-2100	Radio Tirana, Albania	9480	11835
2030-2100	Voice of Africa, Cairo, Egypt	15375	
2030-2100	Voice of Vietnam, Hanoi	9840	12020 15010
2045-2100	All India Radio, New Delhi	7412	9550 9910 11620
		11715	
2045-2100	IBRA Radio, Malta	7110	
2045-2100	Vatican Radio, Vatican City	9625	11700 11760 15120

2100-2115	IBRA Radio, Malta	7110	
2100-2125	BRT, Brussels, Belgium	5915	9925
2100-2125	Radio Beijing, China	6955	7480 9440 9745
		11790	
2100-2125	Radio Bucharest, Romania	5990	6105 7145 7195
		9690	9750 11940
2100-2125	Radio Finland, Helsinki	6120	11755 11845
2100-2125	Radio Netherland, Hilversum	9860	13700 15560
2100-2130	Radio Japan, Tokyo	11800	11765 15230 15270
		17810	17890
2100-2130	Radio Korea, Seoul, South Korea	6480	7550 15575
2100-2130	Radio Peace & Progress, USSR	7340	7420 9550 9820
		11980	15240
		9655	11705
2100-2130	Radio Sweden, Stockholm	9885	13635 15525
2100-2130	Swiss Radio Int'l, Berne	11830	
2100-2135	ELWA, Monrovia, Liberia	11830	
2100-2145	Radio Berlin Int'l, East Germany	9730	
2100-2145	Radio Yugoslavia, Belgrade	7215	9620 11735 15105
2100-2150	Radio Baghdad, Iraq	13660	
2100-2200	WYFR, Oakland, California	11580	13695 15170 15215
		15566	17845 21525 21615
2100-2150	Deutsche Welle, West Germany	9765	13780 15435
2100-2155	Radio Beijing, China	9860	11500
2100-2200 M-A	ABC, Alice Springs, Australia	2310	[ML]
2100-2200	ABC, Katherine, Australia	2485	
2100-2200 M-A	ABC, Tennant Creek, Australia	2325	[ML]
2100-2200	All India Radio, New Delhi	7412	9910 11620 11715
2100-2200	BBC, London, England	3995	5975 6005 6175
		6180	7325 9410 11750
		12095	15070 15260 15400
		17755	17760 17880
2100-2200 M-F	CBC Northern Quebec Service	9625	11720
2100-2200	CBN, St. John's, Newfoundland	6160	
2100-2200	CBU, Vancouver, British Columbia	6160	
2100-2200	CFCF, Montreal, Quebec	6005	
2100-2200	CFCN, Calgary, Alberta	6030	
2100-2200	CHNS, Halifax, Nova Scotia	6130	
2100-2200	Christian Science World Service	15390	15610 17555
2100-2200	CKWX, Vancouver, British Columbia	6080	
2100-2200	CFRB, Toronto, Ontario	6070	
2100-2200	King of Hope, Southern Lebanon	6280	
2100-2200	KSDA, Agat, Guam	7365	15125
2100-2200	KVOH, Rancho Simi, California	17775	
2100-2200	Radio Australia, Melbourne	15160	15240 15395 17795
2100-2200 A,S	Radio Canada Int'l, Montreal	15325	17875

2100-2200	Radio Jordan, Amman	9560	
2100-2200	Radio Moscow, USSR	9865	11675 11730 11820
		11840	11940 11980 12030
		12050	13605 15295 17605
		17700	17850
2100-2200 A,S	Radio Malabo, Equatorial Guinea	9552.5	
2100-2200	Radio Tonga, Tonga	5050	
2100-2200	Radio for Peace, Costa Rica	21565	25945
2100-2200 A,S	Radio Zambia, Lusaka	9580	
2100-2200	Spanish Foreign Radio, Madrid	11790	15280
2100-2200	Superpower KUSW, Utah	15650	
2100-2200	Voice of Africa, Cairo, Egypt	15280	
2100-2200	Voice of America, Washington	9700	9760 11760 15205
		15410	15445 15580 15600
		17785	17800 17870
2100-2200	WHRI, Noblesville, Indiana	13760	17830
2100-2200	WRNO, New Orleans, Louisiana	13720	
2100-2200 IRR	WWCR, Nashville, Tennessee	15690	
2103-2200	WINB, Red Lion, Pennsylvania	15185	
2110-2200	Radio Damascus, Syria	15095	17710
2110-2200	VOA Pacific Service	9525	11965 15185
2115-2200	Radio Cairo, Egypt	9900	
2125-2155 S	Radio Austria Int'l, Vienna	9870	
2130-2145	BBC, London, England*	5965	7160
2130-2200	BBC, London, England*	6030	7230 9635
2130-2200	HCJB, Quito, Ecuador	15270	17790 21470
2130-2200 A,S	Radio Canada Int'l, Montreal	11880	15150 17820
2130-2200 M-F	Radio Canada Int'l, Montreal	13660	15325 17875
2130-2200	Radio Sofia, Bulgaria	11660	15330
2130-2200	Radio Vilnius, Lithuanian SSR	6100	
2130-2200	Swiss Radio Int'l, Berne	6190	
2135-2150 S-F	ELWA, Monrovia, Liberia	11830	

2100 UTC [5:00 PM EDT/2:00 PM PDT]

2100-2105	Radio Damascus, Syria	15095	17710
2100-2105	Radio Zambia, Lusaka	3345	6165
2100-2110 A,S	Voice of Kenya, Nairobi	6100	



frequency

section

2145-2200 Radio Berlin Int'l, East Germany 5965 9730
2150-2200 M-F ELWA, Monrovia, Liberia 11830

9915 11785 11945 12095
15070 15260 15400 17755

2200 UTC [6:00 PM EDT/3:00 PM PDT]

2200-2205 M-F ELWA, Monrovia, Liberia 3993 11830
2200-2205 Radio Damascus, Syria 15095 17710
2200-2210 Radio Sierra Leone, Freetown 5980
2200-2215 M-A ABC, Alice Springs, Australia 2310 [ML]
2200-2215 M-A ABC, Tennant Creek, Australia 2325 [ML]
2200-2215 BBC, London, England* 5965 7160
2200-2215 M-F Voice of America, Washington 9640 11740 15120
2200-2225 RAI, Rome, Italy 5990 9710
2200-2225 Vatican Radio, Vatican City 9615 11830 15105
2200-2230 ABC, Katherine, Australia 2485
2200-2230 All India Radio, New Delhi 7412 9550 9910 11620
11715
2200-2230 CBC Northern Quebec Service 9625 11720
2200-2230 S KGEI, San Francisco, California 15280
2200-2230 Radio Beijing, China 3985 6165
2200-2230 Radio Berlin Int'l, East Germany 5965 9730
2200-2230 Radio Canada Int'l, Montreal 5960 9755 11905
2200-2230 Radio Jordan, Amman 9560
2200-2230 S Radio Norway Int'l, Oslo 15265
2200-2230 Radio Prague, Czechoslovakia 6055
2200-2230 Radio Sofia, Bulgaria 11660 15330
2200-2230 Radio Vilnius, Lithuanian SSR 9610 11675 15180 17690
2200-2245 BBC, London, England 3955 5975 6005 6175
7325 9410 9590 9915
11920 12095 15070 15260
15400 17755 17760
9900
2200-2245 Radio Cairo, Egypt 9445 9685 17760
2200-2250 Voice of Turkey, Ankara 11710 15345
2200-2300 RAE, Buenos Aires, Argentina 6160
2200-2300 CBN, St. John's, Newfoundland 6160
2200-2300 CBU, Vancouver, British Columbia 6005
2200-2300 CFCF, Montreal, Quebec 6030
2200-2300 CFCN, Calgary, Alberta 6130
2200-2300 CHNS, Halifax, Nova Scotia 9465 15300 17555
2200-2300 Christian Science World Service 6080
2200-2300 CKWX, Vancouver, British Columbia 6070
2200-2300 CFRB, Toronto, Ontario 6280
2200-2300 King of Hope, Southern Lebanon 17775
2200-2300 KVOH, Rancho Simi, California 15160 15240 15320 15395
2200-2300 Radio Australia, Melbourne 17795 21740
17955 25945
2200-2300 Radio for Peace, Costa Rica 7140
2200-2300 Radio Havana Cuba 12025 12050 17570 17700
2200-2300 Radio Moscow, USSR 7165 9720 9865 9530
9765 11710 11750
2200-2300 Radio Tonga, Tonga 5050
2200-2300 SBC Radio One, Singapore 5010 5052 11940
2200-2300 Superpower KUSW, Utah 15580
2200-2300 Voice of America, Washington 11880 15185 15290 15305
15320 17735 17740 17820
18157 USB
2200-2300 Voice of Free China, Taiwan 9955 15345
2200-2300 Voice of the UAE, Abu Dhabi 9595 11985 13605 17612.5
2200-2300 WHRI, Noblesville, Indiana 13760 17830
2200-2300 WINB, Red Lion, Pennsylvania 15185
2200-2300 WRNO, New Orleans, Louisiana 13720
2200-2300 WWCR, Nashville, Tennessee 15690
2200-2300 WYFR, Oakland, California 11580 13695 15170 15215
17845 21525
2215-2230 BBC, London, England* 11820 15390
2230-2300 A,S CBC Northern Quebec Service 9625 11720
2230-2300 Kol Israel, Jerusalem 11588 11605 15615 15640
17575 17630
2230-2300 Radio Mediterran, Malta 6110
2230-2300 Radio Polonia, Warsaw, Poland 5995 6135 7125 7270
2230-2300 Radio Tirana, Albania 7215 9480
2245-2300 All India Radio, New Delhi 6055 7215 9535 9910
11715 11745
2245-2300 BBC, London, England 3955 5975 6005 6175
7325 9410 9570 9590

2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2330 Radio Canada Int'l, Montreal 9755 11730
2300-2330 Radio Mediterran, Malta 6110
2300-2330 S Radio Norway, Oslo 11785
2300-2330 Radio Prague, Czechoslovakia 13715
2300-2345 WINB, Red Lion, Pennsylvania 15145
2300-2345 WYFR, Oakland, California 5985 11580 15170
2300-2350 Radio Pyongyang, North Korea 13650
2300-0000 All India Radio, New Delhi 6055 7215 9535 9910
11715 11745
2300-0000 Adventist World Radio, Costa Rica 9725 11870
2300-0000 BBC, London, England 3955 5975 6110 6175
7325 9410 9590 9915
11945 12095 15260
2300-0000 M-F CBC Northern Quebec Service 6195 9625
2300-0000 CBN, St. John's, Newfoundland 6160
2300-0000 CBU, Vancouver, British Columbia 6160
2300-0000 CFCF, Montreal, Quebec 6005
2300-0000 CFCN, Calgary, Alberta 6030
2300-0000 CHNS, Halifax, Nova Scotia 6130
2300-0000 Christian Science World Service 9465 15300 17555
2300-0000 CKWX, Vancouver, British Columbia 6080
2300-0000 CFRB, Toronto, Ontario 6070
2300-0000 KVOH, Rancho Simi, California 17775
2300-0000 Radio Australia, Melbourne 15160 15240 15320 15395
17795 21740
2300-0000 Radio Canada Int'l, Montreal 5960 9755
2300-0000 Radio for Peace, Costa Rica 21565
2300-0000 Radio Japan, Tokyo 11765 15195 17810
2300-0000 Radio Luxembourg 6090
2300-0000 Radio Moscow 11845 12025 12055 17620
17850 21690 21790
2300-0000 Radio Moscow, (N. American Srv) 9530 9765 11710 11730
11750 15290
2300-0000 Radio Polonia, Warsaw 5995 6135 7125 7270
2300-0000 Radio Sofia, Bulgaria 11660 15330
2300-0000 Radio Thailand, Bangkok 9655 11905
2300-0000 Radio Tonga, Tonga 5050
2300-0000 SBC Radio One, Singapore 5010 5052 11940
2300-0000 Superpower KUSW, Utah 15580
2300-0000 Voice of America, Washington, DC 15290 17735 17820 18157
USB
2300-0000 Voice of the UAE 9595 11985 13605
2300-0000 WHRI, Noblesville, Indiana 13760 17830
2300-0000 WRNO, New Orleans, Louisiana 13720
2315-2330 BBC, London, England* 11820 15390
2330-0000 M-A Radio Budapest, Hungary 6110 9520 9585 9835
11910 15160
2330-0000 Radio Kiev, Ukrainian SSR 9610 9800 11675 15180
17665 17690
2330-0000 Radio Korea, Seoul, South Korea 15575
2330-0000 Radio Tirana, Albania 9760v
2330-0000 Voice of Vietnam, Hanoi 9840 15010
2330-2355 M-A BRT, Brussels, Belgium 9925
2335-2345 M-A Voice of Greece, Athens 9395 9420 11645
2345-0000 BBC, London, England* 3915 6080 7180 9580
2345-0000 Radio Berlin Int'l, East Germany 6080 11890
2348-0000 WINB, Red Lion, Pennsylvania 15145

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The Production Satellit 500



Several months back we had the pleasure of testing a prototype of Grundig's new Satellit 500 portable.

To sum up what we found with the '500 prototype, it is a mid-sized portable that's notable for its stylish appearance, high-tech circuitry and ease of operation. Its performance was in some respects outstanding, but occasionally was only fair. For example, we found the pre-production prototype to be insensitive in the 90 meter tropical band. It had some problems, but by and large it was quite a performer.

Since then, the '500 has come into production. So, as we promised back then, we've retested the unit -- this time fresh from the factory box -- to see how it stacks up in real life.

Tests with the production model show that the '500 is still stylish, still has high-tech circuitry, and still is easy to operate.

In our earlier report, we warned that the production version of the '500 might perform differently than the prototype we had tested. In fact, this has turned out to be the case.

Especially noticeable is that spurious signals from local AM, FM and television stations sometimes bleed into the shortwave spectrum, sometimes causing interference to the world band station you're trying to hear.

If you live well away from local broadcasting stations and do not tune the tropical frequencies below 5 MHz or so, this is all pretty much beside the point. Under these favorable circumstances, the '500 might be an excellent choice.

If you're not sure how the '500 might fare at your location, the best thing to do is to buy the '500 on a money-back basis...if you can find a dealer to go along with this.

The set also lacks sensitivity -- especially in the tropical bands. In the 90 meter band, for example, using the built-in antennas and fresh batteries, Sony's ICF-2010 picks up signals quite nicely. However, when we turn on the '500 it barely receives a thing.

To some extent, we noticed this on the prototype, too. But instead of having been remedied before going into production, it's been made worse. This, of course, is bad news for DXers.

Otherwise, though, the set is pretty much as we found it six months ago. Its synchronous detector acts like a synchrophase, or quasi-synchronous, detector. What this means is that it helps reduce interference from stations on adjacent channels, but it does not eliminate selective-fading distortion the way the true synchronous detector does on the Sony ICF-2010 and ICF-2001D.

On the other hand, the synchronous feature is much easier to operate on the '500 than it is on the Sony models.

We've also found that, in some respects, the production version performs quite well. Its ultimate selectivity, for example, is the best of any portable we have measured -- and even better than that of many tabletop models. And the '500's choice of bandwidths is excellent. Its sound quality is also pretty good.

Charger Reportedly Causes Overheating

One cautionary note: According to reports from industry sources, the '500's built-in battery charger can cause certain makes of nicad cells to overheat. They tell me that Grundig has stopped promoting this feature, but our sample arrived with a label in the battery cavity that cautioned only against trying to charge non-nicad batteries. That label states in bold letters that nicad cells are acceptable.

So if you buy a '500, before you attempt to use the charger check with the manufacturer to see if it's safe. Until you get an answer, though, don't use the '500 as a battery charger.

Improvements Promised by Grundig

When Sony first introduced the ICF-2010 and ICF-2001D, there were bugs aplenty. As time progressed, these were winnowed out and now that model is quite a performer for a portable.

Already Grundig has indicated that future production -- notably, after serial number "2000," presumably meaning number 802000 -- will result in a better set. The chapter may not yet be closed on this unfolding story.



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. For North, tune in at 8:10 PM ET on 5960 and 9535 kHz. The program is repeated Tuesday at 8:30 AM ET on 9635, 11855 and 17820 kHz.

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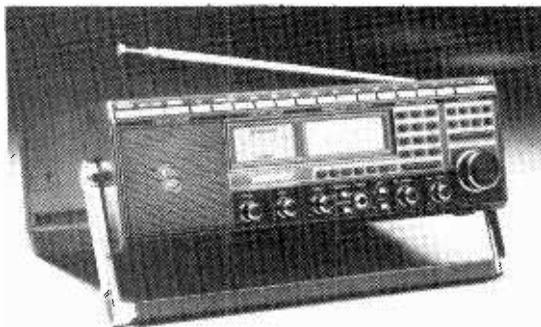
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AOR AR950 Scanner

Many scanning enthusiasts will remember the ill-fated Regency HR4000/4200 scanner, a battery-operated portable with 800 MHz reception. Made by AOR, this little unit had a number of aggravating problems, but it was small and had wide frequency coverage.

AOR's new AR950 is virtually in the same compact box as its predecessor (but without internal batteries), yet offers an enormous improvement in performance. It measures a scant 2-1/8" x 5-7/8" x 7-1/4" and comes with a mobile mounting bracket and all accessory hardware including a fused DC cord for automotive installations.

A 120VAC wall adaptor is provided for home or office use as well as a plug-in, telescoping whip antenna. For 800 MHz purists, a separate short antenna is supplied for monitoring that range. A BNC antenna connector permits the use of an outside antenna for maximum range.

The 950 covers 26-54, 108-174, 406-512 and 830-950 MHz, including cellular mobile telephone. Up to 100 non-volatile memory channels (no backup battery required for memory retention) may be stored in five 20-channel banks. An additional five temporary-storage memory locations may be loaded with frequencies discovered during the search routine.

Other features include channel one priority, selectable all-channel delay, keyboard lockout, a rear-panel external speaker (or earphone) jack, 10 dB attenuator switch (distant/local), selectable AM or narrowband FM mode on any frequency, and an edge-lighted LCD display.

Let's Check it Out

The 950 is tiny but powerful. The rubber keys are easy to read and have good tactile "feel" when pressed. The manufacturer recommends using the mobile mounting bracket as a tilt bracket for desktop installations.

Even though the scanner has rubber feet to lift its bottom-mounted speaker off the tabletop, the extra tilt provides enough audio to blast you out of the room! The additional angle also provides better visibility of the LCD.

Programming is a little different from Bearcat and Radio Shack, but easy to get used to. The edge-lighted LCD is not as uniformly illuminated as some competitive products, but it is easy to read nonetheless.



Lightweight, compact, quality reception - at a bargain price

The Specs

Since no specifications come with the AR950, we decided to compare it side by side with the standard of comparison: ICOM's R7000 VHF/UHF general coverage receiver. Since that radio costs over \$1000, the 950 was going to have to work pretty hard!

The first question anyone has about a new scanner's performance is sensitivity, and here came the shocker -- on every frequency range the AOR equalled or outperformed the ICOM! In fact, on some frequencies barely intelligible signals received on the ICOM were easily understood on the AOR!

Adjacent channel selectivity was identical, as was AM rejection in the FM mode. Not often addressed, AM rejection is the ability of an FM circuit to prohibit amplitude modulation from being detected, reducing some forms of interference.

A 21.4 MHz intermediate frequency (IF) means that interference-causing images will be displaced by 42.8 MHz, well out of band for the majority of listening situations.

So what's the bad news? For one thing, the delay holds for an aggravating six seconds after a transmission before resuming the scan sequence, and there is no individual channel delay selection -- it's all or none. Worse yet, the delay works only once on a channel; scan resumes

immediately following the return transmission!

While the search increments are automatically set to the appropriate 30 kHz between 870 and 890 MHz, if either limit is set beyond that range, all increments are to 25 kHz. The AC power adaptor is skimpy and overheats considerably during use.

Priority sampling is too infrequent and, during the sampling, the sluggish change-over results in missed words on the active channels. At power-on, all banks are activated, even those that were locked out previously. A prominent oscillator "spur" ("birdie") prevents reception on the common medical channel 462.950 MHz.

The unshielded plastic cabinet is susceptible to electrical interference in noisy environments like mobile installations. This is easily improved by removing the plastic cabinet and spraying several light coats of silver/aluminum aerosol or other conductive paint on the inside of the plastic covers.

In a quiet room some circuit noise will be heard through the speaker even though the radio is squelched.

If you can live with these irritations, the AR950 will provide quality reception at a reasonable price. Its list price is \$299 from Ace Communications, 10707 106th St., Indianapolis, IN 46256; phone 1-800-445-7717.

Waiting in the Wings

Not every scanner made in the orient is presently on the American market. While Uniden, Regency, Radio Shack, AOR and GRE products have been seen, other names like Pal-Com, Fairmate and Yupiteru have yet to be discovered by the American consumer.

Among names that are known, the AOR AR3000 super scanner has been in European distribution for many months, but has never surfaced domestically.

A report from Australia reveals that the 3000 has met with some problems and has been withdrawn from the market for redesigning. Our Australian informant suggests that frequency drift and microprocessor lockup might have been causes for the recall.

Another Japanese product is the Yupiteru MVT5000, a handheld programmable scanner with continuous 25-550, 800-1300 MHz frequency range.

The 5000 boasts 100 memory channels in 10 banks, AM/FM modes, 20 channel-per-second scan/search speed, excellent sensitivity 90.5 uV FM, 12 dB SINAD) and search increments of 5, 12.5, 25 and 30 kHz. Its 4.8 V battery pack can be charged directly from 12 VDC.

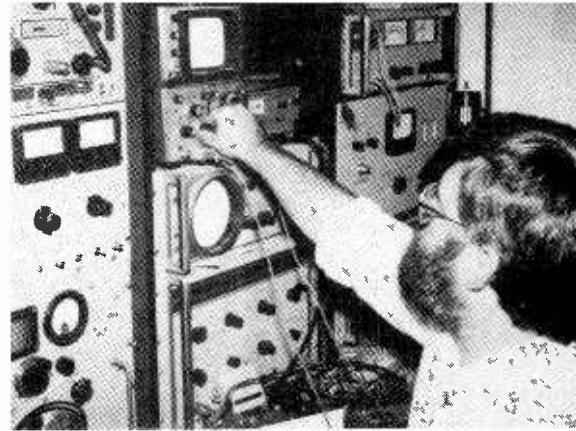
Although the radio's controls are all labeled in English, company spokesmen in Tokyo told us that the MVT5000 will never be available in the United States due to a licensing agreement with Uniden.

Yet another scanner is expected to be released to the European market this fall from Fairmate. It is difficult to say at this writing what changes and delays in proposed scanners will be brought by the Uniden patent suit or the proposed American tariff against the Japanese consumer electronics.

Meanwhile, back in the United States, design of the long-awaited Grove SR1000 Spectrum Surveillance Receiver is nearing completion. A lab prototype of the 100 kHz-1000 MHz spectrum-displaying all-mode receiver was on display at the Dayton Hamvention.

Grove expects the projected \$2995 selling price to hold firm in spite of additional features being designed into the radio. It is expected that pre-production prototypes will undergo extensive field tests this fall with full production to follow.

A complete set of updated specifications is available by writing Grove Enterprises, P.O. Box 98, Brass-town, NC 28902.



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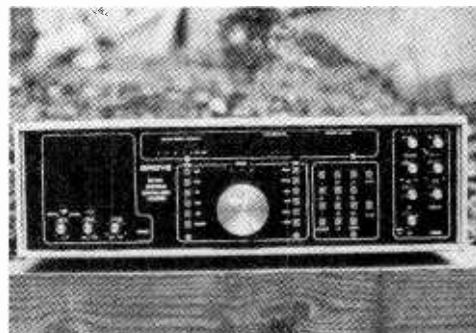
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Software engineer Al Taylor and RF design engineer Tom Dawson step up the pace as the Grove SR-1000 nears completion



consumer electronics

Hello, Dick Tracy

The day of the clumsy, belt-hanging pager may soon be gone. Two major American-based companies, Motorola and Timex, have joined forces to produce the world's first Wrist Watch Pager.

Yes, America can now tell time and know who is trying to get in touch with them, both at the same time.

The user-friendly wrist



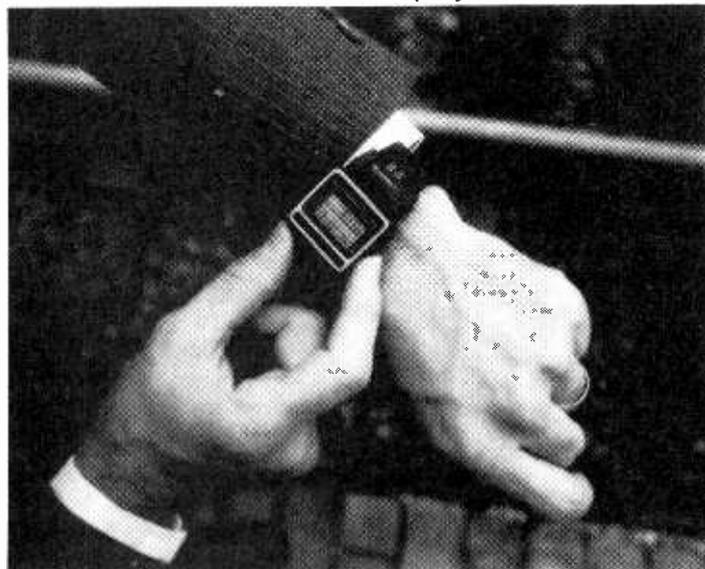
watch features separate controls for timekeeping and pager functions in a unit that fits the wrist, weighs less than two ounces and provides more than forty days of continuous operation on one battery.

Some of the features of this "revolutionary" (so says the manufacturer) new paging product include a non-volatile memory which stores messages even when the pager is turned off. The message erase function allows the user to delete all read messages without affecting unread and protected messages.

A message timestamping feature records the time that a message is received. The Wrist Pager was designed to be compatible with current Radio Common Carrier (RCC) paging systems.

Motorola is one of the

Pager shown with time, date and day display.



Motorola Wrist Watch Pager features a two line LCD.

world's leading manufacturers of electronic equipment. Timex is the manufacturer of the nation's best-selling watches as well as a wide variety of electronic products for industrial use.

Homing Device for Cars

A new, \$700.00 device is helping New Jersey police track down stolen cars. The result may be lower insurance premiums for Garden State drivers.

According to State Police Superintendent Col. Clinton Pagano, the "LoJack Tracker" is actually a state-of-the-art transceiver designed to act as a homing device.

The unit, which the press has dubbed, "the gadget," is the size and shape of a chalkboard eraser. Once a vehicle is reported stolen, police punch the vehicle's identification number into a computer, which activates a statewide radio system.

The radio system then activates the homing devices in the stolen car which in turn send out their own signal. The homing device can then be tracked by monitors located in State Police cars.

Auto Recovery Systems, the manufacturer of the

LoJack Tracker, estimate that the system will save motorists between 15 and 35 percent on insurance premiums. In fact, they're so confident about their system that they donated \$1.75 million worth of computer hardware, software and training services to the state.

The LoJack system is not new to the United States. Already in operation in Massachusetts since 1986, LoJack reportedly has increased the success rate there for recovering stolen cars to 95 percent.

Says the New Jersey State Trooper who tested the system recently, "It sure makes life easier for us."

TV for the Blind

Boston's WGBH-TV (Channel 2), which developed closed captioning for the hearing impaired, is now proposing to make watching TV less frustrating for those who are visually impaired.

According to the Boston *Globe*, the TV station will soon begin regularly broadcast Descriptive Video Services (DVS) using stereo TV technology.

WGBH, which was among the first stations in the nation to broadcast stereo TV, plans to transmit DVS on the second audio program or "SAP" channel. The SAP channel will carry narrated descriptions of a television program's key visual elements and can be picked up by any TV or VCR with a built-in MTS decoder.

Narrators describe the actions and settings on screen, deftly inserting their descriptions during pauses in the dialogue.

"Imagine," says Brian Charlson, a blind computer



Pager shown with its first numeric message in memory.

instructor and avid TV watcher, "watching 'Star Wars' without at least some idea of what C3PO or all of the other fantastic creatures looked like."

It has been more than 15 years since WGBH pioneered the closed captioning of TV programs for the hearing impaired. Today, captions are available on nearly all shows broadcast on PBS and during prime time on the commercial networks.

But according to industry sources, although there are more than 20 million Americans whose hearing is slightly to profoundly impaired, no more than 275,000 decoders have been purchased nationwide since 1980. Twenty percent of those that were sold were bought by people who are not hearing impaired.

Se Habla Espanol?

Should Spanish be your mother tongue, the Electronic Industries Association is offering three free consumer education pamphlets that you may want to read.

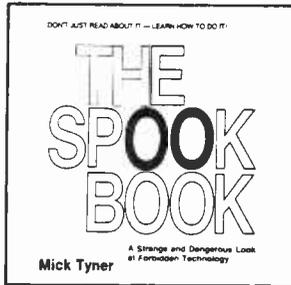
These include "Consumers Should Know: How to Buy, Use and Care for VCR, Camcorders and Tape Recorders"; "Consumers Should Know: About Service Contracts"; and "About Repair Service."

To get your copy send a self-addressed business envelope with a 25-cent stamp for each pamphlet you want. (A listing of all available pamphlets, including those in English, may be obtained the same way.) Write to EIA/CEG, P.O. Box 19100, Washington, DC 20036.

Special thanks to Bill Bastian, Miami, Florida; R.F. DiCorcia, Franklin Park, New Jersey; Kent Freeman, New Orleans, Louisiana.

If you see a gadget that catches your attention, we'd like to hear about it. Send it to Larry Miller, Consumer Electronics, P.O. Box 98, Brasstown, NC 28902.

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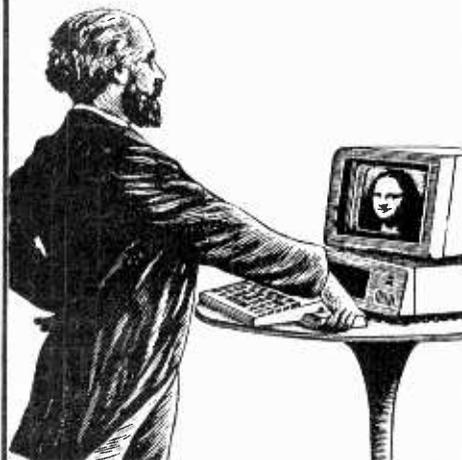
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Pizazz for Your Random-Wire Antenna

A great many shortwave listeners string up a random length of wire for their receivers. One end of the wire is attached to the receiver antenna post, and away they go in quest of elusive DX stations.

This is an acceptable approach if you don't care to have optimum antenna performance. A wire of random length can present a variety of impedances at the receiver end, depending upon the selected listening frequency.

Most quality communications receivers are designed to have a 50-ohm input impedance. On some frequencies, a random-length wire may present an impedance of a few thousand ohms to the receiver.

What is wrong with having so large a disparity in impedances? Well, a fundamental rule of radio is that maximum power or signal transfer occurs only when unlike impedances are matched. In other words, a significant mismatch between the receiver and the antenna can rob your receiver of maximum available incoming signal. This is particularly noteworthy when you attempt to copy weak signals.

Is there a simple and inexpensive way to deal with this problem? Yes, and we will discuss the matter now.

Adding a Tunable Preamp

A tuned circuit between your hank of receiving-antenna wire and the receiver can be used for two purposes: 1. To create an impedance match between the wire and the receiver and 2. To help discriminate against strong commercial shortwave stations that are near your listening frequency.

The addition of a high-Q tuned circuit adds selectivity at the front end of your receiver. The higher the Q the greater the tuned-circuit selectivity, and the better the rejection of unwanted signals that are spaced away from your frequency of interest.

All tuned circuits introduce some losses, however minor. A small preamplifier (gain stage) may be used after the tuned matching circuit to compensate for losses through the tuner. The additional gain may be helpful if your receiver is old and tired, or suffering from poor sensitivity. Too much gain is as bad as too little gain, so the amplifier should have only a modest amount of amplification capability.

A Practical Preamp/Matcher

L1, in combination with tuning capacitor C2 (Figure 1) forms a high-Q tuned circuit

that covers 4.0 to 20.0 MHz — the frequency spread where most shortwave listening occurs. L2 is a link that couples the antenna energy to the input (source) of the JFET (junction field-effect transistor) amplifier. The input impedance of this amplifier is on the order of 200 ohms. The L2 link is wound to provide a 200-ohm match for Q1.

Q1 operates as a common-gate (grounded gate) amplifier. It has a maximum gain of 10 dB in this circuit. Too great a preamp gain can cause receiver overloading from strong signals, especially if you have a "hot" receiver to begin with! Therefore, I have kept the gain low for this circuit. It will give weak signals a needed boost, but the amplified louder signals will not spoil the receiver performance.

The output of Q1 is a broadband circuit. It needs no tuning. T1 is a toroidal broadband transformer that matches the Q1 output impedance to the 50-ohm input of your receiver. As you can see, we have converted the high antenna impedance to the low input impedance of your receiver via the Figure 1 circuit. We also added 10 dB gain in the process.

Potential Circuit Improvements

I have tried to keep the circuit as simple and inexpensive as possible without sacrificing performance. However, you may want to use a 100-pF compression trimmer or air variable in place of the 10-pF fixed-value capacitor at C1 in Figure 1. This will permit you to accommodate a wide range of antenna impedances by adjusting both C1 and C2 for maximum signal strength.

Also, the operating voltage for Q1 may be increased to +18 for additional amplifier gain. A +12-V power supply is a good compromise for midrange performance. The 9-V battery is okay, but the stage gain is lower than it would be if operated from 12 or 18 volts.

Construction Details

Figure 2 is a pictorial diagram that shows how the parts connect to one another. As is the case with all RF circuits, the leads must be kept as short and direct as practicable. If long leads (more than, say, 1/2 inch) are used, the amplifier can become unstable (oscillate) and the gain will be low. It is especially important that the gate (G) lead of Q1 be no longer than 1/4 inch (transistor body to

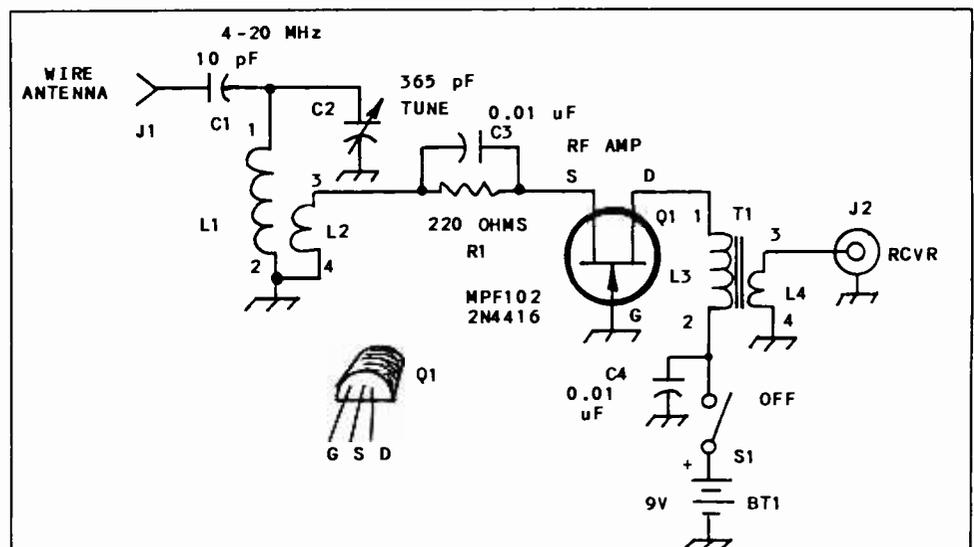


Figure 1 -- Schematic diagram of the preamp/matcher.

Capacitors other than C2 are disc ceramic or polystyrene. C2 is a 365-pF air variable from a junked AM broadcast-band radio, or it may be a surplus unit. L1 is a 4.5-uH coil consisting of 36 turns of No. 20 enam. wire (closewound) on a 1-1/2 inch length of 3/4 inch PVC pipe (7/8" OD). L2 has 8 turns of no. 20 enam. wire over the grounded end of L1. The L3 winding of T1 uses 15 turns of no. 26 enam. wire on an Amidon Assoc. FT-37-43 ferrite toroid or equivalent. Core has a mu of 850 and is 0.37 inch in diameter. L4 is 3 turns of no. 26 enam. wire. J1 is a binding post and J2 is an RCA phono jack. R1 is a 1/4-W carbon-film or carbon composition resistor. Use a standard 9-V transistor radio battery for BT1. S1 is an SPST toggle switch. Any high-frequency or VHF JFET is suitable for Q1.

ground).

I suggest that you build this circuit on a piece of single-sided PC board. The copper surface can then serve as the circuit ground. This will help you to keep all ground leads short. You may use miniature multilug terminal strips as tie points for the above-ground components and wiring.¹

Note that the heavy wire shown for the input coil and output toroid is L2 and L4, respectively. The leads are numbered to show their relationship to the Figure 1 circuit.

L1 may be wound on a piece of 3/4 inch PVC tubing or any other insulated form that has a 3/4 or 7/8 inch OD (not critical). The L1 and L3 windings are placed on the forms first (close wound). The links are wound over the grounded ends of the main (L1 and L3) windings. If you wish to add a professional touch to your coils, you may coat them with polyurethane or spar varnish.

Using Your Preamp/Matcher

Connect your random-length wire antenna to J1 of Figure 1. Use coaxial cable to join J2 to your receiver antenna terminal. Turn S1 to the ON position. Find a weak signal and adjust C2 for maximum signal strength. Readjust C2 if you change your receive frequency by more than 100 kHz.

If you use a 100-pF variable for C1, adjust both C1 and C2 for maximum signal. Try several settings for C1 and C2 until you arrive at the combination that yields maximum signal strength. You may want to log these settings for future use, respective to the receive frequency.

It is a good idea to connect a quality earth

ground (metal cold-water pipes or ground rod) to the receiver chassis and the preamp/matcher common ground circuit. This will often improve the performance of your wire antenna by giving it a proper ground reference. The earth ground is essential for safety purposes also (prevent shock hazard).



Reference:

1. The terminal strips and many other parts used in this circuit are available by mail from Oak Hills Research, P.O. Box 250, Luther, MI 49656. Send a self-addressed, stamped business-size envelope for a free catalog.

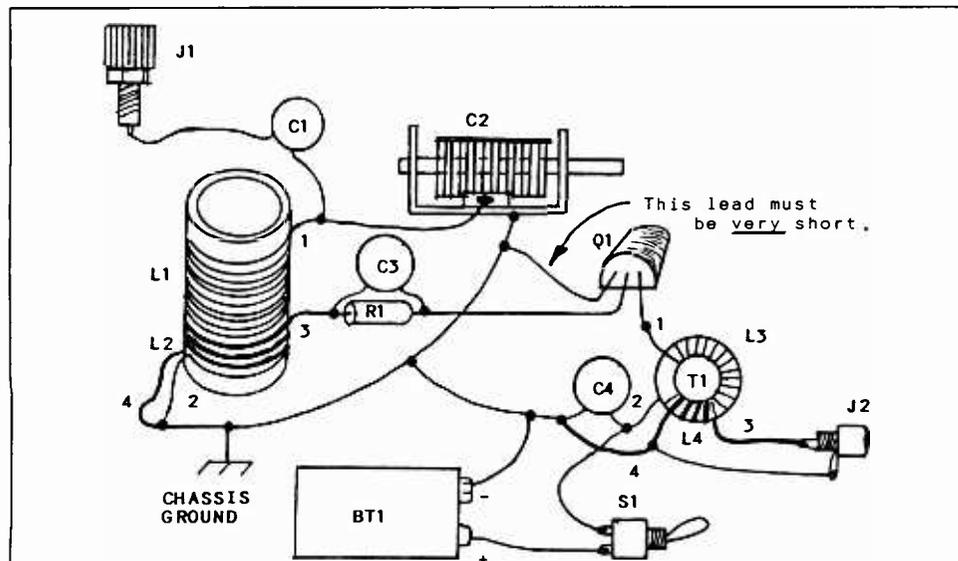
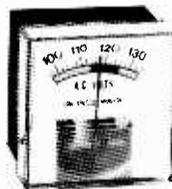


Figure 2 -- Pictorial diagram

of the preamp/matcher that shows how the parts interface. Perf Board may be used as a chassis if leads are kept short. See text.



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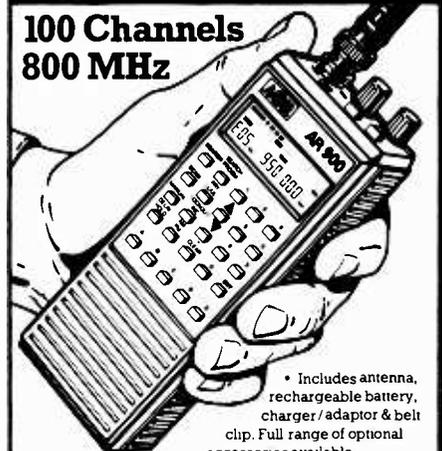
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Converting to Shortwave

Welcome back!! In the immortal words of Monty Python's John Cleese: "And now for something completely different!"

Probably nothing over the last few years has been as revolutionary to the RF experimenter as the Signetics NE602N "receiver on a chip." Well, actually it's not really a whole receiver on a chip. It's more like the mixer/oscillator portion of a receiver in one package.

The NE602 is a neat little device that, when used with a few external components, can quickly become a very compact receiver. (Note: details of the NE602 are contained in "The Neophyte Receiver" by John Dillon, WA3RNC, in February '88 *QST*.)

I promised you something different, so here it is. This month's "Experimenter's Workshop" project is a shortwave converter for the 31 meter international shortwave band. D.A. "Mike" Michael (W3TS) has written your scribe and included a great weekend project that will provide many hours of operating fun.

How would you like to have an SW receiver in your car, so you could keep up with your favorite shortwave stations while traveling to and from work? How about a spare SW receiver for the shop or den, that will let you listen in on the world without having to be tied to the shack?

Mike has been experimenting with the NE602 for the past few weeks and has put together a nifty little converter that, when coupled to a standard AM broadcast band radio, provides access to the 31 meter SW band, including 10 MHz WWV broadcast.

Since AM broadcast is on its last legs here in the U.S., I can't think of a better project than adding an SW converter to an AM broadcast receiver and enjoying the fun on SW.

How do converters work? Simply, converters are RF receivers that lack detector and audio stages. Their output is an intermediate frequency (IF) that is coupled (either directly or via inductive loop) to another receiver which acts as a tunable IF strip and provides detection and audio amplification.

In the case of this month's project, the NE602 receives signals in the 9-10 MHz range and converts them down to the AM broadcast range (540-1620 kHz). The AM receiver then takes this IF input and detects and amplifies these signals for listening.

Here's Mike to tell us how to build this converter: Figure 1 shows just how simple the converter is. Just one NE602 IC, a 9 MHz crystal and an old 10.7 MHz IF can (from an old FM radio) plus a few resistors and capacitors make up a very sensitive converter. The crystal can be purchased or it can come from an old 9 MHz crystal filter or from an old CB set that used 9 MHz third overtone crystals for the transmitter.

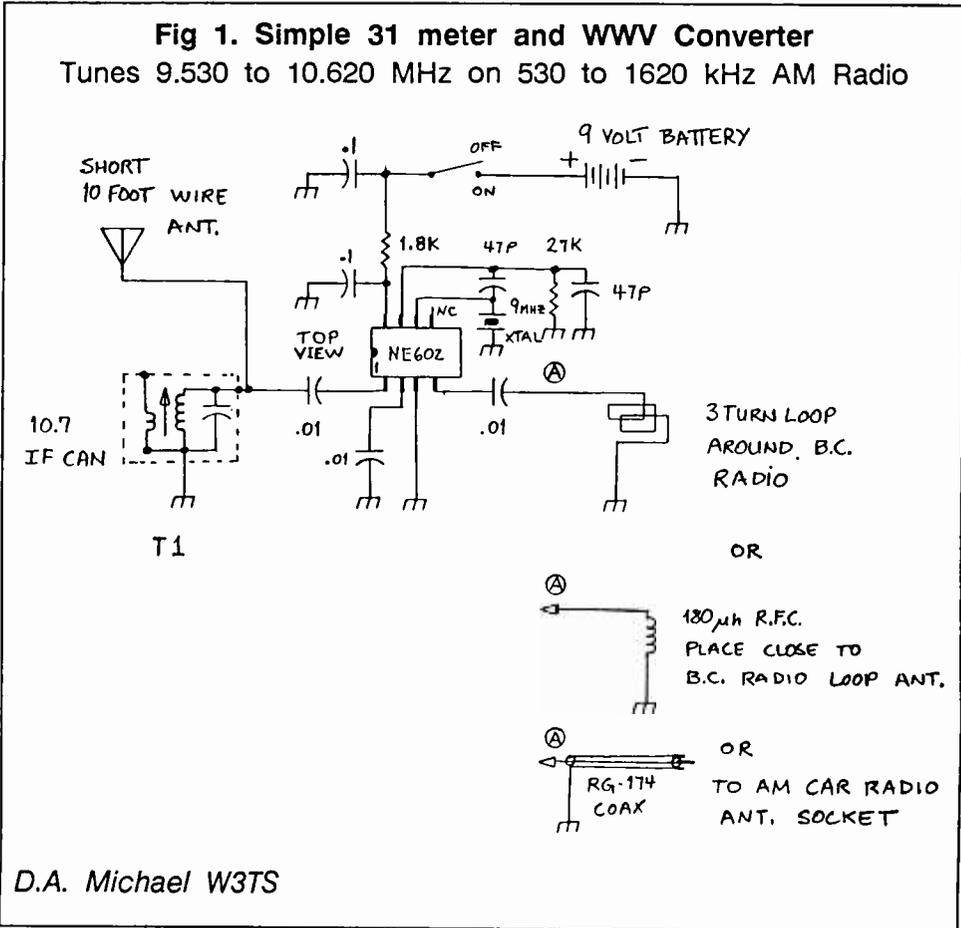
The prototype converter was built using "sky wiring," a form of bread board "ugly construction" where the components that go to ground are soldered to a blank piece of copper clad board (try Radio Shack). The opposite end is stuck up in the "sky" and other components are bridged across these leads and soldered.

This method saves time and money required to etch a PC board for a project. Also, since there is a very good ground plane (the copper clad board) this type of construction makes it easier to get the project working.

To mount the NE602, bend all the pins out to the side of the EC package, except pin 3, which goes to ground. Solder pin 3 to the ground plane and continue with the other parts (i.e. .1mf cap from pin 8 to ground plane, etc.). When a tie point is needed for an external connection, use the solder tag strips found in old tube radios (just solder them to the board where needed). This negates the need to stop and punch or drill holes in the PC board for external connections.

There are three ways to couple the output of the converter to the AM receiver (see Figure 1). The cheapest (and easiest) way is to inductively couple the output of the converter to the BC radio using a three turn loop around the body of the BC radio. This method not only couples the converter output to the AM BC radio but helps reduce the AM station leakage (the tendency for local AM stations to appear in the middle of the SW band).

The second method uses a small (180 uH) RF Choke (RFC) which is placed close to the



AM BC radio's loop antenna (note: you might want to go inside the receiver case and actually mount this RFC on the AM BC loop antenna using some "gorilla snot" silicone sealant). The RFC could be placed on the end of a short length of RG-174 coaxial cable from point "A" on the converter for additional shielding.

Finally, the third method illustrated can be used with car radios and places the output of the SW converter directly into the antenna input of the car radio.

Tune up of the converter is simple. Set the AM BC receiver to 1000 kHz (which should be the frequency of WWV if you are using a 9 MHz crystal). With a nonmetallic tuning tool, peak the core in the 10.7 MHz IF can on the converter board for maximum signal. That's all there is to it; now start tuning the band and enjoying some SW stations instead of all-Elvis and talk format AM BC stations.

Some additional notes: a long antenna on the converter input is not needed and may result in AM BC station breakthrough (leakage) and poor SW reception due to the powerhouse signals present on the 31 meter SW band. If AM BC leakage is a problem, try wrapping the AM BC receiver in aluminum foil after the converter output loop has been placed around the radio. Another method would be to use a large box for the converter and place the AM BC radio inside the box with the converter which should drastically reduce local AM BC leakage.

My thanks to Mike Michael, W3TS, for this excellent weekend project. I have built several NE602 based receivers including John Dillon's Neophyte Receiver from *QST*. Results have been really outstanding considering the simplicity of the designs.

There is no reason that different crystals could not be substituted for the 9 MHz crystal in this month's project to provide coverage on other SW bands. The 10.7 MHz IF can might have to be replaced with some other type of tuneable inductor to get the desired sensitivity.

I'd like to hear from any of you who try this converter project, especially if you decide to alter the 9-10 MHz tuning range to accommodate some other SW band. Remember, experimentation is FUN!

The R-7000 Revisited:

The influx of mail concerning the mods we performed on the R-7000 a couple of months ago indicate that some people actually read this column. Many of the inquiries concerned the mods on the DC-to-DC converter.

The most frequently asked question was "Why was this mod done?" The DC-to-DC mod was an ICOM service bulletin modification. The bulletin did not go into any details as to why, but several ideas crossed my mind as to the need for this mod:

1. ICOM found that there was a high failure rate on the original transistors.
2. The original transistors were found to generate excessive noise which affected receiver performance. (Note: the DC-to-DC converter board furnishes a variety of DC voltages to other boards inside the receiver. If noise was generated by the transistors, then this could be inadvertently coupled into other receiver stages).
3. The new transistors were more efficient and tended to reduce the overall power consumption of the receiver.

Tony Bernasome of Middlesbough, England, telephoned to say that ICOM UK had provided the mod on the additional 100 channels to people who purchased the receiver in the UK (Must be nice). Shortly after this mod was made public, it was noted that the lithium battery life was cut by about 40 percent. This was not good.

Tony says instead of connecting the top end of the 47K resistor to the PC board as shown in Figure 2 (page 94 July 89 *MT*), the top end of this resistor should be run to the anode end of diode D-9 (check your service manual). This will stop the lithium battery drain.

Several people encouraged me to undertake more mods to the R-7000. So, I'll open it up to the multitude . . . how about it, gang. Anyone have any mods for increasing scan speed, etc.? If you do and you have DONE these mods on your R-7000 with success and you think that others would benefit from your work, send me detailed information on your mods.

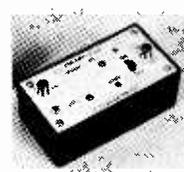
Monitoring Times invites you to submit your favorite projects for publication. For more information, contact Rich Arland, 25 Amherst, Wilkes-Barre, PA 18702

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New Subject:

I have recently procured a Yaesu FRG-7700 SW receiver. Unfortunately, it has some digital display problems. On the 0, 1, and 2 MHz positions on the Band selection switch, the LCD will read 39.545 MHz and the display does not change when the main tuning dial is rotated.

The receiver still works fine (indicating that the VCDs are not coming out of lock), and I can use the analog dial to find my way around. As the receiver warms up, this problem gradually moves up through the 6 MHz position on the Band switch. The display problem does not affect the operation of the receiver; it's just annoying.

I have tried some "freeze-it" on different areas of the PC boards with intermittent success; however, I cannot seem to locate the component that is causing the display to malfunction. Anyone out there experienced similar problems? If so, do share your solution.

Wanted:

MU-7700 12 channel memory unit for a Yaesu FRG-7700 receiver. According to Dr. Harold (Dr. DX) Cones of Newport News, Virginia, this memory unit can be modified to provide 120 memory channels for the FRG-7700 (this mod will be provided as soon as I can get the info from the good doctor).

So, how about it? Anybody have an MU-7700 that they want to part with? Also needed are the FRT-7700 antenna tuner and the FRV-7700 VHF converter for the FRG-7700. If you have any of these optional extras for the FRG-7700 receiver, please contact me directly.

Well, that's a wrap for this month, gang. Till next month, 73 es gud DX. Questions/comments/mods, write: Rich Arland, K7YHA, 25 Amherst Avenue, Wilkes-Barre, PA 18702.



Reflections on a Half-Wave

"One of the simplest directive antennas is a single half-wave dipole associated with a reflecting screen..." This statement, which comes from a classic text¹ on antenna engineering, should intrigue everyone who uses antennas.

Another respected radio engineering text² puts it this way: "...a flat conducting sheet...is often placed near an antenna system to modify the field pattern and increase the gain."

We can express the same thought in yet a different way by saying that, if you have a simple antenna (i.e., not a beam) you can probably make it act like a beam by simply putting a sheet of conductive material (like a flat metal screen or metal sheet) in an appropriate position near your half-wave antenna.

The resulting antenna system will not only have a directional pattern, which will allow you to concentrate your monitoring on signals from one direction at a time, but will also give you a signal gain on the order of 6 dB.

That much gain is equivalent to a four-fold increase in the power of the transmitter to which you are listening. The result is a worthwhile increase in signal strength for weak signals.

Let's Make One

The reflector is usually used with a half-wave dipole antenna, but any half-wave antenna should be fine for this approach. You will utilize your present antenna, and supplement its performance with the reflector as described below.

You have several options for the materials you will use: sheet metal, wire screening, and aluminum foil which is the easiest of all. I use aluminum foil, as it is the easiest to work with, the lightest, the most easily obtainable, and the most economical in cost.

One thing to keep in mind is that, for good performance, there is a minimum length for the reflector. This minimum length for the reflector should be about 1-

1/2 wavelengths long for the frequency in use.

As you can imagine, at frequencies below the UHF band the dimensions for this reflector can be sizable. This means that the most practical portion of the RF spectrum for utilizing this approach is the UHF band. To determine the size for your reflector, use the following formula:

Equation 1:

$$\text{LENGTH (in feet)} = 1.5 (936/\text{frequency [MHz]})$$

For example: length at 587 MHz is 2.4 feet, or 2 feet 5 inches.

The amount of spacing of the reflector away from the antenna is also important. Although different spacings may be used, theory says that the most gain is had with the antenna and reflector separated by about .1 wavelength. This distance can be computed by the following formula:

Equation 2:

$$\text{SPACING (in feet)} = .1 (990/\text{frequency [MHz]})$$

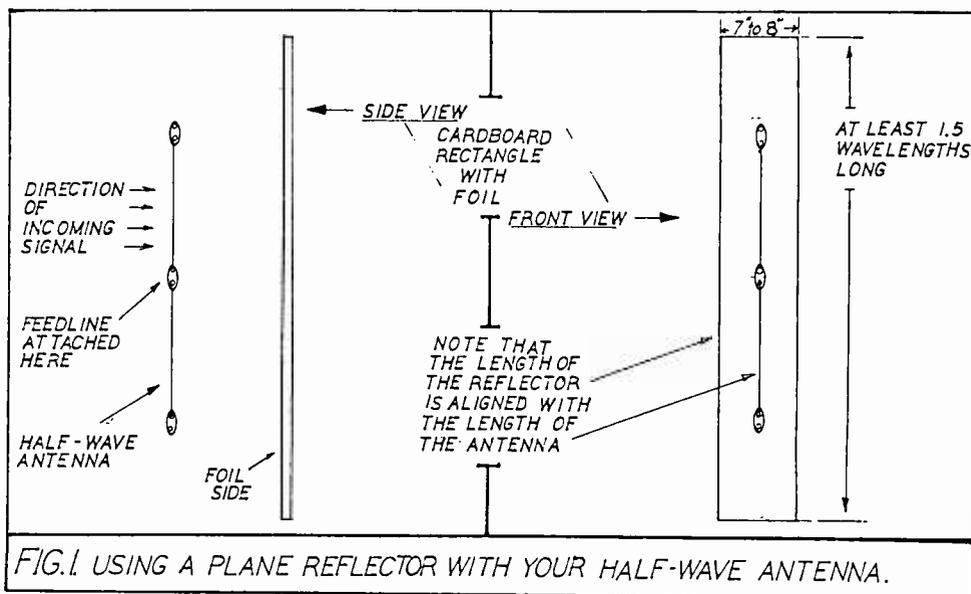
For example: at 587 MHz, spacing is .17 foot or 2 inches

Steps in Construction

1. Find the appropriate length from Equation 1 above.
2. Cut a cardboard rectangle using the length dimension obtained in step one as its length. Make it seven to eight inches wide.
3. Cover one side of the rectangle with aluminum foil. Tape or glue the foil in place. Your reflector is now ready to use.
4. Tune in a weak signal and monitor the S-meter (if your receiver has one) as you move the foil about. If your receiver has no S-meter, monitor the audible signal strength as you move the foil. Use a continuous signal for this, as it is more difficult to notice the changes with intermittent transmissions.

The foil reflector should be placed on the side of the antenna which is farthest away from the station being received. If you don't know that direction, just try all possible positions for the foil till you get results.

If your antenna is near your receiver, you can monitor the output of the receiver while you move the foil about to find the



best placement for it. Start with the spacing you get from Equation 2, but move the foil rectangle back and forth, up and down, side to side, and even slant it back and forth until you get the best reception possible. Try all possible positions for the foil.

If your antenna is not accessible from your receiver's location, try having a friend move the foil rectangle about at the antenna location while you monitor the receiver's output. If you cannot shout directions between the two locations, try using a pair of CB walkie-talkies to report progress to each other.

On UHF-TV Too!

A good way to get the hang of this technique is to make a foil reflector for a UHF-TV channel which you can receive only weakly when you use the TV set's rabbit ears antenna. The ears should point out horizontally, not up in a "V." Then use the foil, as described above, to improve the picture quality.

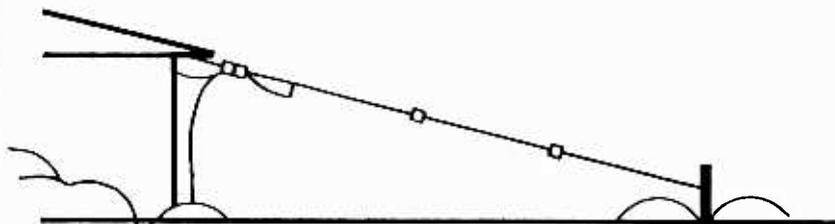
Usually, you will be able to make the picture more "watchable" by moving the foil until the picture is at its best. This technique won't change a poor-quality picture to a great-quality picture, but it will improve the picture noticeably. On moderate-quality pictures, it can help take out the snow, which improves the picture quality also.

5. Once you find the best position for the foil rectangle, you may want to mount it so that it can be left in this position when you want the beam or the gain characteristics which it gives to your antenna.

How you mount it is up to you. Some ways that can be used are: hanging it from the ceiling by strings, making a stand of a couple of dowels fitted into holes drilled into a board base to support it, making a cardboard stand from a box, or making a plastic support bracket which connects the cardboard to the antenna itself.

Happy listening!

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RADIO RIDDLES

Last month: I asked where the design for the groundplane antenna came from. Most radio communications historians would probably credit George Brown, along with RCA co-workers Lewis and Epstein, as the inventors of the groundplane.

Brown has written that the antenna was developed by this team in response to a request for a simple and efficient antenna for base stations of vehicle-fleet radio systems.

On the other hand, a note in the October 1987 issue of *Ham Radio* reports that a Frenchman invented this antenna prior to Brown's work. And I seem to recall a different reference to a German inventor of the groundplane, preceding Brown's claim.

So, in the USA, Brown is the name associated with inventing the groundplane, but in France and Germany you may hear a different story!

This month: This month we've dealt with the idea of using a reflector for

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improving signal strength in antennas. Who made the first antenna system which utilized a reflector, and where did they get the idea?

Find the answer to this month's riddle, and much more, next month in your copy of *Monitoring Times*. Til then, Peace, DX, and 73.



1 *Radio Antenna Engineering*, Edmund A. Laport, McGraw-Hill Book Company, 1952, New York. Pp 258.

2 *Radio Engineering*, First edition, Frederick Emmons Terman, McGraw-Hill Book Company, 1943, New York. Pp 818.

Q. My Sony ICF2010 synchronous detector seems to switch from USB to LSB one or two kHz lower or higher than I think it should. Is it defective? Should it be realigned? (John Healy, Syracuse, NY)

A. This is very common on the 2010; it doesn't affect performance at all and is a simple alignment procedure -- if you have a service manual. If it doesn't bother you, simply ignore the slightly-offset reading.

Q. In the December 1988 issue there was an article about using VCR batteries to power scanners. Are there makes or models to choose from? Can they cause damage due to their excessive current capability? (Randy Ruzicka, Cedar Rapids, IA)

A. If the voltage of the battery is correct for the scanner, no damage will occur. A scanner will only draw as much current as it needs. Since all tabletop scanner operate from 12 VDC, you can't go wrong using any of several 12 volt VCR batteries now on the market.

Don't forget, however, that you will still have to recharge the battery. Since it's 12 volts, you can use a simple automotive cigarette-lighter accessory if you wish. AC wall adaptors can also be used if set for proper voltage and current.

An excellent source of VCR batteries -- and thousands of other parts as well -- is MCM Electronics, 858 E. Congress Park Drive, Centerville, OH 45459-4072. They have a \$25 minimum order, and a VCR battery will take care of that! Send for their giant, free catalog of electronic equipment and parts -- and tell them you heard about them in *Monitoring Times*!

Q. Is UTC the same as Greenwich Mean Time? (Ed Martin, Cleveland, OH)

A. The very same. There is a fractional variation due to switch-over to laboratory precision, but it doesn't affect your clock or mine! Greenwich Mean Time has been abandoned officially.

Q. Can TV antennas be used for scanner reception? (Paul De Witt, Pine Bluff, AR)

A. Absolutely. TV frequencies are interspersed among land mobile frequencies, therefore, a broadband TV antenna can't help hearing two-way communicators as well.

The first step taken by Grove Enterprises in designing their Scanner Beam antenna was to turn a Radio Shack log-periodic TV antenna over on its side to make it vertically polarized. It worked great!

Naturally, the system can be improved upon, as done by Grove, to scale the antenna's dimensions for the communications portion of the VHF/UHF spectrum.

Q. How can I hook up an outside FM antenna to my FM portable with a telescoping whip antenna? (Vince Porto, Chicago, IL)

A. Bring down the signal from the antenna with either coax or 300 ohm twinlead, whichever the antenna is designed to use. The coax center wire (or either wire from the twinlead) is attached to the base of the whip (which should be fully compressed) and the remaining lead is attached to any exposed metal part, such as an earphone jack, which is connected to the chassis of the radio.

Q. Is there any accessory I can add to my Sangean ATS803A shortwave receiver to reduce signal fading and accompanying fluctuating volume? (Judy Hill, Yakima, WA)

A. Signal level fluctuations are caused by shifts in the ionosphere, the electrically-charged upper atmosphere responsible for reflecting distant signals back to the earth. Solar effects constantly change the layer, resulting in erratic conditions from time to time.

One ambitious way to overcome the shift in signal propagation is known as dual diversity, whereby two receivers are utilized in tandem to adjust for best reception. Another is called antenna diversity; here, two antennas, separated by several feet, combine their shifting signal strengths for more stable reception.

Ideally, a receiver has automatic gain control (AGC), adjusting itself by offering more amplification during signal fading and

less at stronger peaks, averaging out the volume to a more constant level.

There are accessory volume compressor/expanders available which plug into a receiver's earphone or speaker jack to do the same thing with volume changes. One such unit presently on the market is the VoiceGate, an MT advertiser. For more information send an SASE to JABCO Electronics, Rt. 1, Box 386, Alexandria, VA 46001.

There is a possibility, of course, that off-frequency powerhouse stations are causing the receiver's AGC to reduce amplification even though they aren't tuned in. This is common and the effect would be noticed on the weak signal to which you are listening.

The addition of a good frequency-adjustable preselector will cure that condition. The Grove TUN3 MiniTuner, coupled to an outside wire antenna, is a popular choice for shortwave and mediumwave installations.

Q. Recently, while on a cross-country trip aboard an airline, I was amazed that my little Sony portable couldn't hear a thing. How come? (Robert Bell, Pacific Palisades, CA)

A. It's not the Sony or the altitude; it's the airplane. You were effectively shielded by an all-metal enclosure; the only signals that can get through the tiny windows are those of shorter wavelength -- VHF and UHF.

To bear this out, keep in mind that long-distance air-to-ground airline communications are conducted on shortwave frequencies, but using outside antennas!

Q. Are there any companies who specialize in upgrading shortwave receivers like my Kenwood R2000? (William Kiely, Co. Cork, Ireland)

A. Yes, indeed there are, although shipping would be expensive for Europeans. Send an IRC for a reply from International Radio and Computers, 751 South Macedo Blvd., Port St. Lucie, FL 34983; Universal Shortwave Radio, 1280 Aida Dr., Reynoldsburg, OH 43068; Electronic Equipment Bank, 137 Church St. N.W., Vienna, VA 22180; and Radio West, 850 Ann's Way Dr., Vista, CA 92083.

Q. In a review of the BC200XLT, I read that this scanner is the best hand-held on the market, yet its 800 MHz image rejection is poor. Can we expect a better model soon? (Stephen A. Fattel, Boca Raton, FL)

A. No. Uniden claims to own all basic scanner patents and controls over 80% of the scanner market. Since they private-label their own products for their "competitors" (Radio Shack, Cobra, others) and control licensing of scanning techniques used by independents (AOR/Ace), it is hard to see how scanners will substantially improve in the near future without outside competition.

Uniden spokesmen told *MT* that a start-up company faces approximately \$1 million in initial costs to have Uniden tool up and produce an initial 5000 pieces for them and, even then, if it looks as though serious competition to Uniden products may result, Uniden would probably deny the request.

Uniden recently initiated legal action against manufacturers who use scanning in their receivers in an effort to reduce the competition even further as well as recover punitive costs for patent infringement.

Q. Now that AFRTS broadcasts on shortwave have been discontinued, is there a converter available for me to pick up their satellite downlinks on INMARSAT frequencies 1536.95 and 1537.0 MHz? (John Moran, Tempe, AZ)

COSPAS/SARSAT search and rescue satellites listen for emergency beacons on 131.5 and 243.0 MHz. Is there any way to hear their downlinks on 1544.5 MHz? (Stan Kilgore, Thornton, CO)

A. These services can be monitored using converters designed for GOES weather satellite reception on 1691 MHz, retuned to the frequency of interest. While AFRTS voice programming would be readily recognizable, SAR beacons would comprise meaningless data tones.

You would need a high-gain antenna pointed at the correct satellite, a converter and a communications receiver with adequate sensitivity, selectivity and the proper reception mode and bandwidth.

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The book *Communications Satellites* by Larry Van Horn is an excellent start for those who wish to learn more about monitoring the birds; it is available from a number of *MT* advertisers including Grove Enterprises.

For additional information on satellite monitoring (especially weather imaging), along with pertinent ads from equipment manufacturers in this specialty, try *The Journal of the Environmental Satellite Amateur Users' Group* (\$24 per year from the publisher, Gregory P. Mengell, 2685 Ellenbrook Dr., Rancho Cordova, CA 95670; ph. 916-364-1572).

Other sources include the National Environmental Satellite, Data, and Information Service (NESDIS, NOAA, Room 3308, FB-4,

Washington, DC 20233) and articles by Grant Zehr and Ralph Taggart which occasionally surface in amateur radio magazines.

Finally, some amateur radio equipment and accessories for the 1296 MHz band can be modified for use in the 1500 MHz region. Check the ham magazines (*73*, *CQ*, *Ham Radio*, *QST*) for articles and advertisers.

Questions or suggestions sent to Bob Grove are printed in this column as space permits. If you prefer a reply by return mail, you must include a self-addressed, stamped envelope.

LETTERS

continued from page 3

The author cites recent studies of members of the American Radio Relay League (ARRL) and they reportedly show much higher incidences of cancer than anyone expected. He also discusses the more than double incidence of leukemia among people living two houses or less from pole-mounted step-down transformers; the effects of 147 MHz and 450 MHz ELF [Extra Low Frequency] signals on our nervous systems, embryos and immune systems.

Mr. Wolfink is interested in building a meter to monitor 60 Hz magnetic fields in milli-gauss "but I'm not exactly sure how to go about it, especially the calibrating. I would appreciate any help. Perhaps we could prepare an article. I would love to assist in any way I could."

All right. Let's hear from some of our more technically skilled readers. We'll put you in touch with Fred. You know, folks, there's a product -- and a darned good selling one, I'll wager -- just waiting to be developed for this. Thanks also to James Tunnell of El Sobrante, California, for his input on the subject as well.

Did I mention that we're still waiting to

hear from readers who want more fiction in *Monitoring Times*?

"I'm interested in joining a shortwave radio club. I'm not interested in going into mortal combat with super DXers every month. This is a hobby for me, not a way to prove my worth in life. How about a friendly little club somewhere that would appreciate my modest loggings?" So says reader Karl Willis of Eastmont, Tennessee.

Try the American Shortwave Listener's Club, Karl. It's run by Stew MacKenzie and is this year celebrating its 30th anniversary. Each issue includes some chatty-style notes on the club and industry, a propagation forecast, member's loggings grouped by region of the world, shortwave news, a QSL Corner, utilities and more.

ASWL is non-profit, independent (it's the second group to drop out of ANARC in recent months) and best of all, fun. It never takes itself too seriously -- I noticed that it hasn't even published its membership rates in several months -- and doesn't try to commandeer the world of shortwave.

We're impressed by its progressiveness, as well, using terms like "worldband" to make

shortwave sound more attractive to potential listeners.

If you're interested in a club, send Stew a couple of dollars and he'll be more than happy to send you a sample. Or you can subscribe for 12 months by sending \$18.00 to American Shortwave Listener's Club, 16182 Ballard Lane, Huntington Beach, CA 92649. Tell 'em *Monitoring Times* sent 'ya!

We'll let you know about some other clubs -- there's FRENEX (pronounced "friend-ex"), SPEEDX (which stands for "Society to Preserve the Engrossing Enjoyment of DXing") and ADXR ("Association of DX Reporters"), among others -- in future months.

"Subject: Article 'DXing the Balkans' in *Monitoring Times* for August 1989, page 18." So starts a letter from reader T. Krecic of Arcadia, California. According to Mr. Krecic, DXing the Balkans "contains several historical inaccuracies which reflect insufficient research."

I'll attempt to summarize some of the errors: that World War II did not start on Balkans, rather when Germany attacked Poland; that World War II did not start in

Monitoring Post Pin-Up



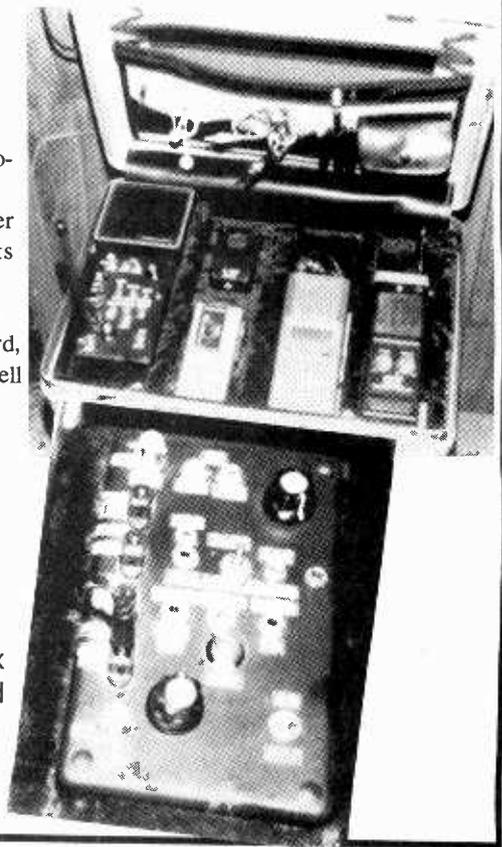
John Johnson, KWV8BP, of Barboursville, West Virginia, admits he's a scanner nut. His modified PRO2004 is hooked into an LXI tape recorder and external speakers throughout the house. Several other scanners, handhelds and CBs keep him in touch with his portable monitoring post. An Apple computer helps him keep track of his hundreds of nationwide frequencies.

John's mobile unit is a beauty, housed in a metal briefcase, and consisting of a PRO32 (a PRO34 is in lay-away) an external speaker and micro-cassette recorder. The control panel contains a preamp, a descrambler, power inputs for all devices and antenna inputs for scanner and CB.

The panel also has switches for any function he may want to monitor, record, or descramble, and (wisely) a light to tell him if the unit has been left on.

Well, as John himself says, "Nifty, eh?!"

Do you have a favorite picture of you and your monitoring post? Send it to MONITORING POST, P.O. Box 98, Brasstown, NC 28902, and show it off. We know you're proud!



Yugoslavia -- Yugoslavia wasn't created until the end of the war and even then did not take the name Yugoslavia until several years later in 1929; Turkey is not a Balkan state; most of its territory is in Asia Minor and not on the Balkan Peninsula; that Serbo-Croat is orthographically correct and not Serbo-Croate as printed in the article.

We thank Mr. Krecic for sharing his obviously extensive knowledge of the area and its history. And we've taken the liberty of forwarding his letter to the author, Charles Sorrell.

John Johnson, KWV8BP, of West Virginia, featured in this month's Monitoring Post, also passes along an invitation for file-sharing via a couple of local bulletin boards. On The Thieves Den 1-304-733-1917, is a scanner bulletin section; leave e-mail to Topol and John will give you access for uploads. "Or," he says, "call Scotland Yard 1-304-453-6748; Scanner files here on vol. 1 general files. I have near a hundred files on here, and there is plenty of room for your uploads."

John also reminds readers that Compuserve has a section called Hamnet dedicated to radio nuts, and Genie Network has a section called The Radio Room. For those possessing the equipment and knowledge to access such files, it's like an electronic *Monitoring Times!*

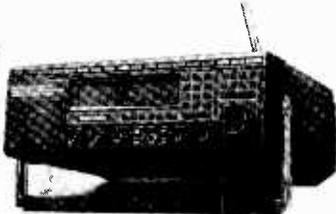
Letters should be addressed to *Letters to the Editor*, *Monitoring Times*, P.O. Box 98, Brasstown, NC 28902 and should include the sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted. Because of the volume of mail received, personal replies are not always possible.

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Sep30-Oct1	Louisville, KY	KY Section Conv/ Mike Doerhoefer WB4AJZ P.O. Box 34232, Louisville, KY 40232
Sep30-Oct1	Wichita, KS	Kansas State Conv/ Gary Vreeland ND0T 1920 S. Santa Fe, Wichita, KS 67211
Oct 1	Benson, NC	Johnston Co ARS/ David Belcher 1205 Crescent, Smithfield, NC 27577
Oct 1	O'Fallen, MO	St. Peters ARC/ Walt Franzer KB0BCH 4 Eagle View Ct, St. Peters, MO 63376
Oct 1	W.Liberty, IA	Muscatine-IA City ARC/ Thomas Kramer KE0Y 905 Leroy St, Muscatine, IA 52761
Oct 1	Yonkers, NY	Yonkers ARC/ John Costa WB2AUL 195 Woodlands Ave, Yonkers, NY 10703
Oct 6-8	San Jose, CA	Pacific Div Conv/ Emmett Freitas, AE6Z 481 Fenley Ave, San Jose, CA 95117
Oct 7	CO Springs, CO	Tucson Amateur Packet Radio Assoc 8th ARRL Computer Net Conf, CO Springs, CO
Oct 7	Huntington, WV	Tri State ARA/ Charlie Callicot KB8CJB P.O. Box 4120, Huntington, WV 25729
Oct 7-8	Biloxi, MS	Miss State Conv/ Ed Byrd KA5VFU 18316 Landon Rd, Gulfport, MS 39503
Oct 8	Maysville, NC	Maysville, ARC/ Jo Ann Taylor WD4JUR 220 Anita Fort Dr, Swansboro, NC 28584
Oct 8	Lima, OH	NW Ohio ARC/ Jo-an Yoakam WB8VCO Rt 4, 5206 Norfolk St, Lima, Ohio 45806
Oct 8	Huntington, IN	Huntington Co ARS/ Mike Brooker WD9JFC 3341E - 722N, Huntington, IN 46750
Oct 14	Syracuse, NY	RA of Gtr Syracuse/ Vivian Douglas WA2PUU 213 Monticello Dr, S Syracuse, NY 13205 Talk-In 146.91 & 147.30 MHz
Oct 14-15	Memphis, TN	Mid-South ARA/ Wayne Gregory KB4GFK 3243 Tena Ruth Cove, Memphis, TN 38118
Oct 14-15	W Palm Bch, FL	Palm Beach RA/ Jame Schoech WD4LHF 129 Dayton Rd, Lake Worth, FL 33467
Oct 15	Queens, NY	Hall of Science ARC/ Stephen Greenbaum P.O. Box 131, Jamaica, NY 11415 Talk-In 144.300/223.6 & 445.225 rpt
Oct 15	W Friendshp, MD	Columbia ARA/ Art Goldman WA3CVG 5071 Beatrice Way, Columbia, MD 21044
Oct 15	Wall Twp., NJ	Jersey Shore ARC/ Paul Danieczyk N2HYG 579 Dutchess Ct, Toms River, NJ 08753
Oct 21	Smithfield, NC	Triangle East ARA/ Andrew Singer WK2F 10 Berkshire Place, Smithfield, NC 27577
Oct 21-22	WarnerRobins, GA	Central GA ARC/ Jese Kirkham WB4KQA 110 Brown Dr, Warner Robins, GA 31093
Oct 22	Bensalem, PA	Penn Wireless Assoc/ Howard Rubin N3FEZ 5890 Hudson Rd, Bensalem, PA 19020
Oct 28	Brooklyn Pk, MN	Twin City FM Club/ Mike Segelman K0BUD 35 Kentuck Ave So, Golden Valley, MN 55426
Oct 28-29	Chattanooga, TN	Chattanooga ARC/ Violet Cook N4EYJ P.O. Box 12, Wildwood, GA 37350
Nov 2-3	Regina, Sask.	Electronic Expo '89/ Radio Supply & Service 3033 Saskatchewan Dr/ Regina Sask S4T 1H5
Nov 3-5	Houston, TX	Texas State Conv/ Alan Cross WA5UZB 13918 Lilija Rd, Houston, TX 77037
Nov 4	W.Monroe, LA	Twin City Ham Club/ Benson Scott AE5V 107 Contempo, West Monroe, LA 71291
Nov 5	Southfield, MI	Oak Park ARC/ Alan Quirle KA8ZRR 4324 Mandalay, Royal Oak, MI 48073
Nov 11-12	Fl.Lauderdale, FL	Broward ARC/ Jim Lorah WB4KOB 2407 Flamingo Lane, Fl.Lauderdale, FL 33312
Nov 12	Fl. Wayne, IN	Allian Co ARTS/ Vic Berko P.O. Box 10342, Fl. Wayne, IN 46851
Nov 18-19	Tampa, FL	So FL Conv/ Frank Ziegler Jr K4EUK 8316 Stillbrook Ave, Tampa, FL 33615
Nov 19	Washington, PA	Wash Am Comm/ Walt Piroth N3BKW 225 W. Pike St #4, Houston, PA 15342
Nov 26	N.Olmsted, OH	North Coast ARC/ Chuck Early K8RSH P.O. Box 30529, Cleveland, OH 44130 Talk-In 145.29 & 224.84 rpters

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.

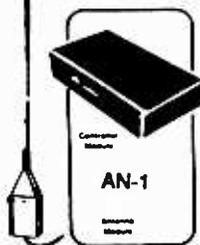
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Our present "stable" of writers is recognized internationally for its quality; yet, as *MT* grows, so does our need for more good writers in all fields. We aren't alone in this quest for additional talent; even the electronic trade and engineering magazines constantly bait their readers to become writers.

Many subscribers regard writing as a closed profession, populated by those few lucky stars who happened to be in the right place at the right time. I know I did before I decided to take a crack at it. It's not that way at all. If you have an interesting subject and can present it well, someone out there wants it.

Take *MT* for example; we are always on the lookout for topics of interest to our readers. Even the briefest glance through our 104 pages reveals the breadth of interest -- scanning and shortwave equipment and accessories, international broadcasters' station profiles, interviews with prominent hobbyists and professionals, unusual incidents and anecdotes which are fun to read, and countless other stories just waiting for you to write.

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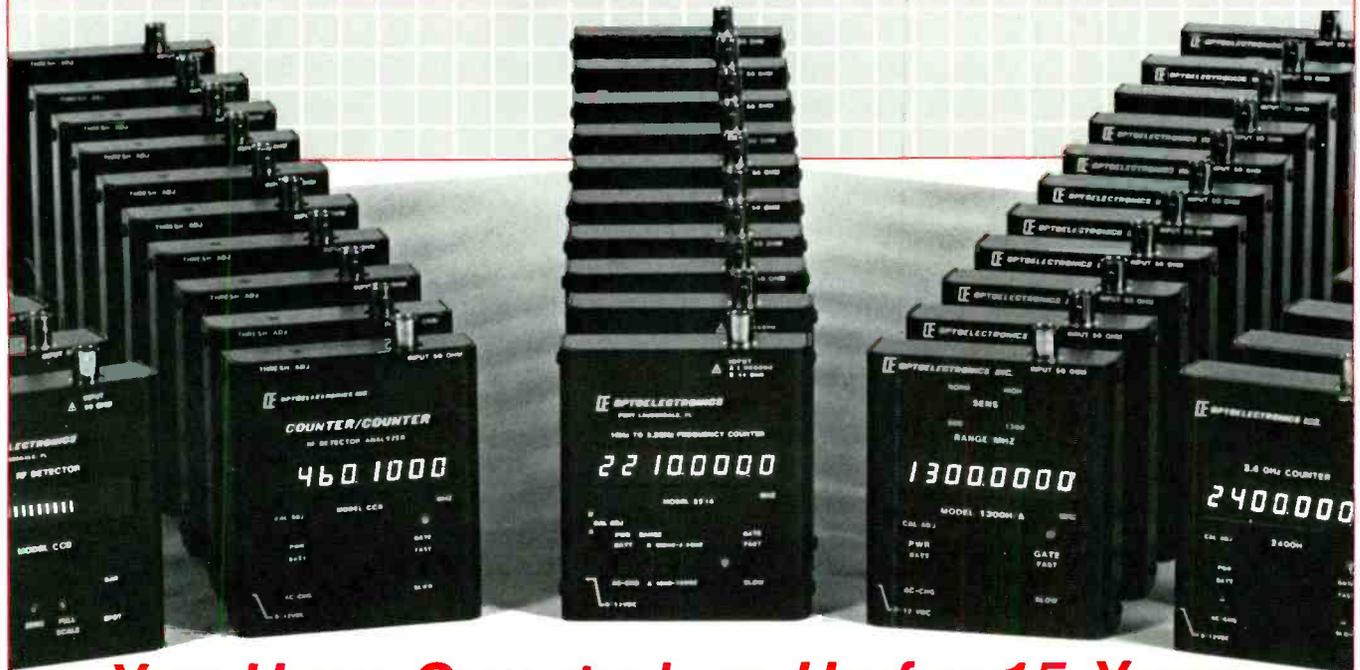
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