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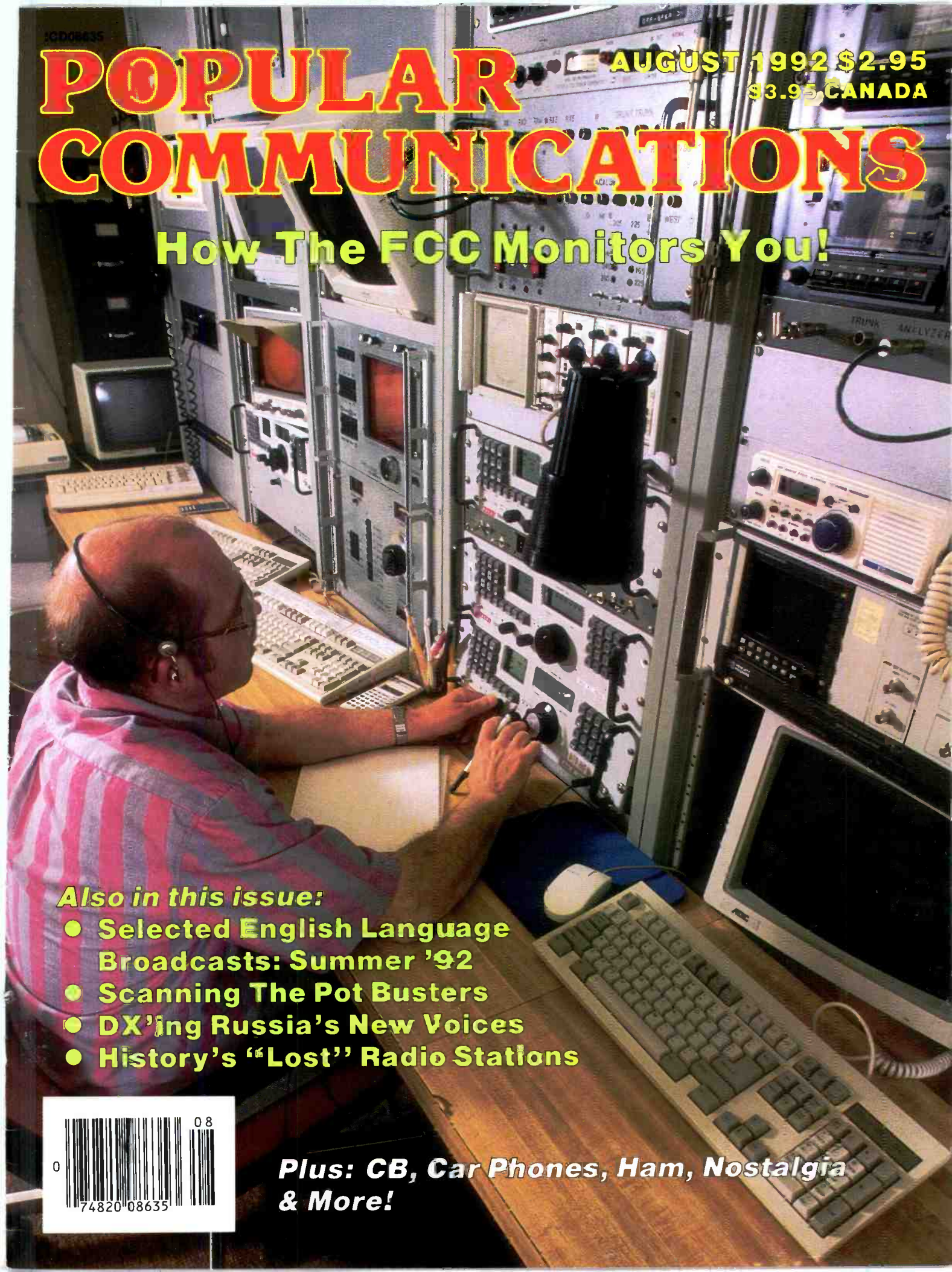

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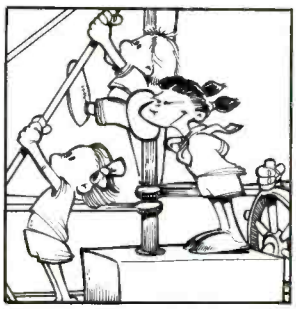
AUGUST 1992 **VOLUME 10, NUMBER 12**



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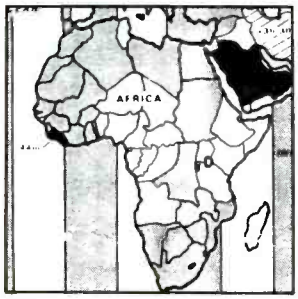

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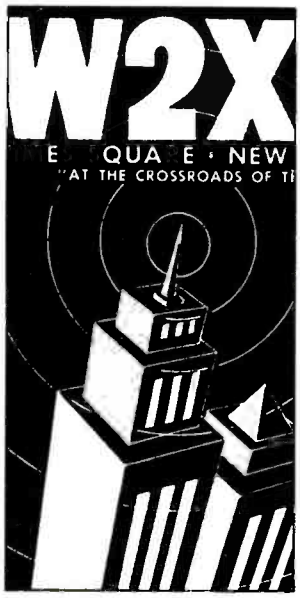

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FEATURES

COLUMNS

DEPARTMENTS

This month's cover: *FCC engineer Dave Davenport listens at the equipment console at the FCC monitoring station in Belfast, Maine. Photo by Larry Mulvehill.*

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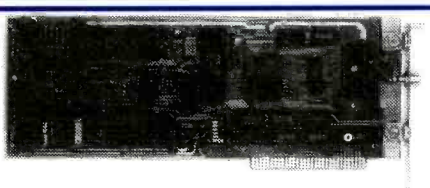

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BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Striving For The Heights

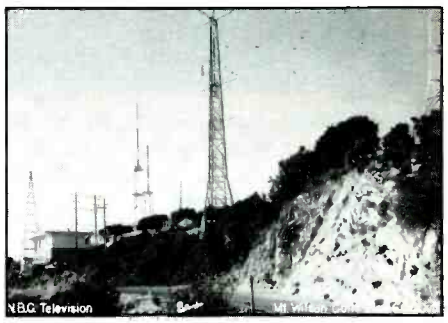
At least once every summer, I drive over to a spot on Route 7A, just south of Manchester, Vermont. That's the location of Mt. Equinox, an awesome 3,816 ft. mountain. Locals there like to tell you that from the summit you can see five states. If you're a VHF/UHF radio nut, it's worth a trip to the summit of Big Equinox, as the area residents call it. Of course, you've got to first get to the top of this monster of a mountain.

Getting up and down Mt. Equinox means driving a privately owned two-lane (toll) road that zig-zags along the side of the mountain for almost 6 miles. No rational person would want to attempt to drive this road in rain or fog, what with its steep grades and blind hairpin turns. Maybe I'm too skittish, but even in good weather I'd classify this drive as being best accomplished slowly and carefully in a 4WD vehicle, and with the hope that you don't meet too many vehicles heading in the other direction. I said the same thing when I white-knuckle drove the Apache Trail in Arizona. Of course, the locals routinely hot-dog along that winding backwoods road at 40 m.p.h. in Hyundai Excels and Honda CRX's, sometimes towing boat trailers.

Let me explain that I consider "backwoods" as being any location where it might take more than an hour to get to a Sheraton, a Hilton, or a Marriott. In such a places, I feel a visceral need to be driving a Land Rover equipped with a compass, survival rations, and a flare gun.

At the top of Mt. Equinox, there's a spacious parking lot and also the *Skyline Inn*, a picturesque and cozy little stone motel and restaurant with a great view. Every time I've been to Equinox, the parking lot has had several radio hobbyists spending the day up there, just sitting in and by their cars enjoying the long range groundwave DX benefits of 2, 6, and 10 meter mountaintopping, CB radio, or scanning, from the 3,800 ft. altitude. Line of sight from 3,800 ft. is about 88 miles, much of it well populated (which is important if you expect to have any QSO's). You can probably even raise a little hell with a cellular phone from Mt. Equinox. I've tried other mountains, but Equinox has a lot going for it, all things considered.

Equinox has a paved road (such as it is), a paved parking lot, a pleasant inn with creature comforts, and it has no interference-causing VHF/UHF broadcast antenna farms. It is definitely part of civilization. A bear won't try to turn your foot into an *hors d'oeuvre* during your QSO. Taller (4,800 ft.) Mt. Moosilauke, on State Rt. 118, southwest of North Woodstock, New Hampshire, calls for a woodland trek (by foot) of almost 3 miles up the steep Gorge Brook Trail from the Moosilauke Ravine Lodge to get to its pristine, wilderness peak and 98 mile line of sight vantage point. Some rugged hams have felt this backpack hike is well worth the trouble.



The good road to the summit of California's 5,700 ft. Mt. Wilson would make it a great place to have some fun with a ham or CB rig, or a scanner. But all those interference-causing FM and TV broadcast transmitters atop Mt. Wilson make the idea less than fully appealing.

Spruce Knob, the highest point in West Virginia (4,800 ft.), offers a beautiful panoramic view and great VHF DX. There's a crummy road up the side of Spruce Knob. At its desolate summit, a barren patch of hard-packed dirt serves as a parking area. The drive to the top of Spruce Knob is enhanced by glimpses of numerous rusting hulks of cars that drove off the narrow backwoods road and had to be forever left against the trees where they stopped tumbling. This does not inspire confidence. California's 5,700 ft. Mt. Wilson (near Altadena) is a 107 mile line of sight vantage point. Los Angeles is truly at your feet. The road is decent enough, but the summit is a mass of dozens of high powered TV and FM broadcast transmitters/antennas used by most of the stations serving Los Angeles. Not so good.

Afton Mountain, near Waynesboro, Virginia, is rather lofty. Nice road? You betcha! Interstate 64 goes right there, and you can't find roads better than *superslabs*. But it gets powerful foggy up on Afton Mountain. Last April, the pea soup there got so thick that it caused a horrific 50-vehicle chain reaction pileup on I-64. Unless you enjoy worrying about seeing an 18-wheeler's front grill looming out of the fog towards you at 70 m.p.h.,

(continued on page 74)

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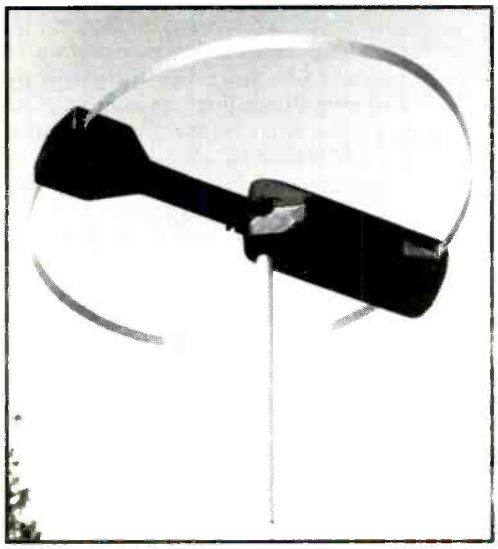

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MAILBAG

LETTERS TO THE EDITOR

Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons. All letters submitted for consideration must be signed and show a return address. Upon request, we will withhold sender's name should the letter be used in Mailbag. Address letters to Tom Kneitel, Editor, Popular Communications Magazine, 76 North Broadway, Hicksville, NY 11801.

Not A Phone-y Idea

In the April issue, a letter to the *Mailbag* mentioned using the finger stop of a rotary dial antenna as a shortwave antenna, and how people told the writer it was a dumb idea. Some 30 years ago when, I was the Manager of one of our largest discount appliance stores, I used to hook the antenna wire to the telephone when demonstrating a shortwave radio. When I sold a receiver, I always included a piece of wire with an alligator clip on each end so that the customer could use this hookup at home. My demonstration sold receivers every time. The idea works fine. I have been in ham radio since 1931. I enjoy your magazine very much.

O. F. Dedrick, W6NGK,
San Pedro, CA

Fame, At Last!

Tom, you might have heard your name mentioned over the pirate *Voice of Pancho Villa*. I was listening because the rumor was that Pancho was at last going to come out of hiding. Sure enough, there he was, and talking about "Little Tommy Kneitel." Thanks for your excellent magazine!

Marie Lamb,
Brewerton, NY

I had to start out somewhere. How far a hop can it be from "The Voice of Pancho Villa" to being talked about on A Current Affair or Geraldo? This was the one break I've been waiting for all of these years. Before you know it, I might make it all the way to America's Most Wanted. —Editor.

Here's Proof It Was A Good Idea

The April issue *Beaming In* told about the time the empty beer cans were mailed to the FCC as a protest. I liked this editorial a lot. By the time I had finished reading it, I had tears of laughter streaming down my face. On the serious side, you did get the attention of the agency. Would that idea work with Congress or the White House? Recyclable empties could at least be sold for scrap and help to reduce the national debt, and the postage fees spent would help to prop up the postal service revenues. As a subscriber to *POP'COMM*, and also magazines in the boating and private pilot fields, it does seem that there are always laws being created intended to kill or at least put a crimp in many hobbies. I'm not sure that voting helps, but I'll keep trying. We need other approaches, too, like the one you discussed in April. Even though you made light of it, it seems an effective approach to letting these people know that people are unhappy.

Stephen R. Hays
(no return address)

Now, now, Steve—let's not get carried away with this idea. It was one thing to have suggested sending empty brewskie cans as a goof on the FCC in the kooky, protest-laden 1960's, but it would be quite something else to try this bit on the 1992 White House. Would you want your poor old Uncle Tommy to be the next secret weapon dropped on Saddam Hussein from a CIA satellite? —Editor.

Communications Security

In the April *Mailbag*, Mr. Volpe complained about violations of what he felt was his Constitutional right to privacy on his cordless and cellular phone calls. I would like to point out that from my experience in government service, and from being raised in a military family, one thing has always been drilled into me concerning radio communications. It's simple, always assume that there is someone listening in. After all, if a military mission were to fail due to poor radio security, the enemy would be considered clever for having discovered the mission, and the people on our side who breeched security would be held responsible for the mission's failure. Therefore, personal business should be treated with the same care. If one is so careless as to broadcast a message that shouldn't have been broadcast, then they should take the responsibility for the results.

James E. Hall,
Corpus Christi, TX

A good point, Jim. —Editor. ■

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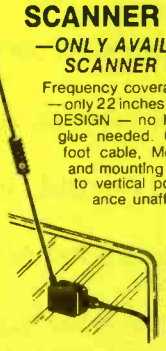

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Zeroed In . . .

We Visit An FCC Monitoring Station!

BY TERRY O'LAUGHLIN, WB9GVB

Would you like to be paid for monitoring the airwaves? As you read this, the staff of the thirteen FCC field monitoring stations are doing just that—tuning the bands for a living. This month *POP'COMM* visits the FCC monitoring post north of Allegan, MI to see them in action. In addition to monitoring duties, Allegan is home to the national training center for the FCC field staff.

The Allegan Monitoring Station is located on highway M40 in rural southwestern Michigan, roughly 100 miles northeast of Chicago. This remote location was chosen because it has good ground conductivity and is electromagnetically quiet. The monitoring post was moved to Allegan from the Great Lakes Naval Base on the north side of Chicago in 1941. Navy space requirements and interference from the base radio transmitters precipitated the move.

Allegan was built in the early days of World War II. Its original purpose was to detect and locate radio transmitters involved in suspected espionage activities. At that time the site was completely fenced and had two military guards, one at the gate and one at the front door.

Today the monitoring post is housed in the original building, a modest two story frame house. The fences are gone. Bristling with antennas, it looks like the home of an avid ham operator or SWL. The surrounding antenna farm covers 216 acres. The technical staff consists of five technicians and four engineers, including the Engineer in Charge, Melvyn Hyman. Mr. Hyman, assisted by Jim Roop, a senior field engineer, gave me an exhaustive and informative tour.

The Allegan facility has one fixed monitoring position and two mobile trucks. A technician or engineer is on duty 24 hours every day, holidays included. During each shift operators have some assigned casework but the listening schedule is left to their discretion. Typical casework includes doing a frequency survey or tracking jamming signals. Ample time is allowed for responding to immediate requests for assistance and for general band scanning. When I arrived, the operator was monitoring a Cuban HF RTTY signal.

The equipment lineup is impressive. The room contains ten racks of gear, capable of monitoring, locating, analyzing and recording any transmission mode on any frequency from 10 KHz to over 1 GHz. Included are three RACAL LF/HF receivers, one R-6790 and two R-6793s, and a Watkins-Johnson WJ-9026A for VHF/UHF. A complete HF RTTY station rests in the end rack. It was used as the main link between monitoring posts but now serves only as a backup for the telephone lines in current use.

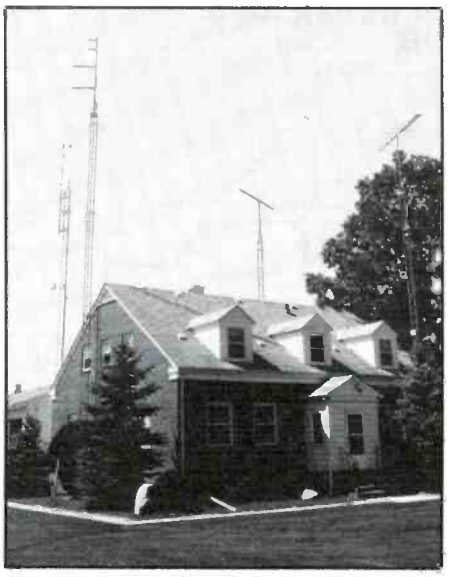
I noticed an ICOM R-7000 receiver upended on the floor. The operator told me that it was not part of the official station but that they had found it useful and almost as good as the mil-spec gear in the racks.

A listening post is only as good as its ears and the antenna farm at Allegan is, by the average listener's standards, awesome. From the highway, two conical monopoles, each capable of handling 50 Kw, dominate the landscape. One is designed for 2–7 MHz and the other for 5–30 MHz. Towers next to the building support two sets of stacked log periodics, one pair for 150–170 MHz and the other for 450–470 MHz, a wideband yagi that is flat from 30-1000 MHz, and several TV and FM antennas. But the real story lies out back, where the HF antennas sprawl over 216 acres.

The heart of the Allegan monitoring post is a circularly disposed array. This antenna consists of sixty elements in a 450 foot circle and a goniometer building in the center. It is capable of determining the direction of an incoming signal within 6 degrees on any frequency from 300 kHz to 40 MHz. The design is similar to the famous Wullenweber DF array used by the military. It was designed by Art Leudtke of the FCC Powder Springs, GA Construction and Installation Branch and built entirely in house. Despite its narrow beamwidth, Leudtke's antenna has no gain.

To ferret out weak HF signals, the operator has two innocuous looking but incredibly effective wire antenna arrays. A set of three high gain beverage antennas stretches 1600 to 2000 feet back to the lot lines. Each beverage antenna can be switched to receive off either end. They are aligned to cover the horizon in 60 degree increments. Sixty feet overhead, a rosette of five rhombics, all of which can be switched to reverse their receiving direction, provide wideband high gain coverage in 36 degree increments. All of these antennas are remote controlled from the monitoring post.

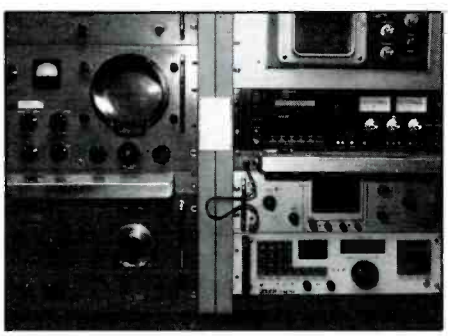
Currently, the main duties of the monitoring post are resolving interference complaints and doing frequency surveys. Military stations sometimes call the FCC for DF work on jamming signals. These usually turn out to be a mike left accidentally keyed on one of their own ships or planes. Occasional requests from the FAA or the Coast Guard for assistance on search and rescue missions can spice up an operator's shift. When the expansion of the AM band into the 1605-1705 KHz was proposed, the FCC logged all activity in that band to determine what was there.



FCC Allegan Monitoring Station.

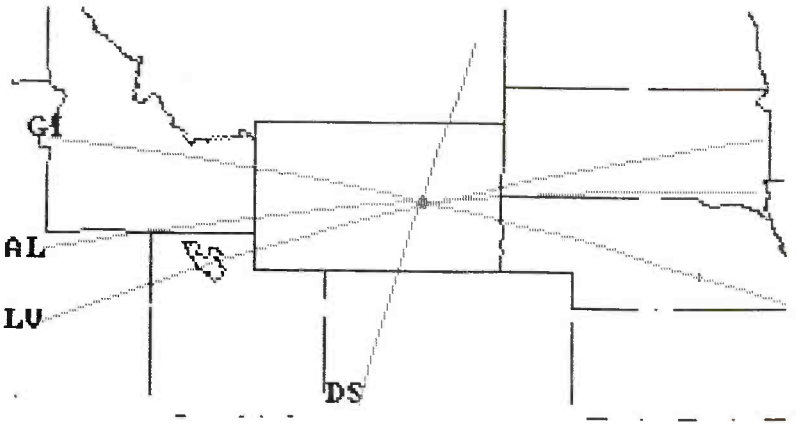
Pirate radio has been garnering a fair amount of press these days. Mr. Hyman told me that, at Allegan, pirates are not a high priority, despite the publicity. They are more likely to be pursued for their interference to legitimate services than for their ideology.

When an FCC monitoring post operator latches onto a signal that he wishes to locate, he puts out a call on the network for assistance. Other posts that can receive the signal call in with bearings. This data is fed into a computer which compares the information



HF-DF monitoring position with RACAL R-6793 receiver and directional indicator for circularly disposed antenna array.

```
CASPER WYO  16:04:06  08-20-1989
Calculating Fix...

FIXM BASIC VERSION 4.2 - MFIXM VERSION 2.1

  NR  ID  Bearing  Class

   1  AL   278.0     A
   2  DS    12.0     A
   3  LV    62.0     A
   4  GI   291.0     A

 FIX      Latitude       Longitude   S-maj axis  S-min axis  Orien   Ellipse Area
 BPE     42 50 50N     106 19 25W       15.9         9.5      84.1        477.0

Equivalent Circular Radius =   13.3 nautical miles.

CASPER WYO
```



Computer generated ellipse of possible transmitter locations.

and generates an ellipse of probable locations.

Engineer Roop demonstrated the system with bearings from Allegan, MI, Douglas, AZ, Livermore, CA, and Grand Island, NE (see Fig. 1). The computer placed the transmitter location within an ellipse 15.9 by 9.5 miles near Casper, WY. The computer grades the bearing reports and ranks them. Class A readings have a 95% probability of being within 2 degrees of the correct direction. Thus, in this example, an FCC mobile unit dispatched near the center of this ellipse of probable locations would have an excellent chance of being within 13-20 miles of the transmitter. Repeated loggings can improve the accuracy of a fix.

The Allegan monitoring post has seen many changes in its 50 years of operation. Up to the mid sixties, two identical monitoring posts were housed in the building. The mobile units used to be on the road for 30 weeks every year. Now Allegan has one monitoring station and the trucks sit in the garage most of the year. One truck officially doesn't exist and there are no funds to upgrade or replace it. The circularly disposed antenna is decades old and still has nuvistor tubes in the preamps and a motor driven goniometer with selsyns. One RACAL receiver is so old that the paint around the tuning knob has worn through to reveal the aluminum underneath. Federal funding cuts have taken their toll on the FCC.

(continued on page 76)

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Radio: The Lost Stations

We Look At Some Forgotten Stations, & Others!

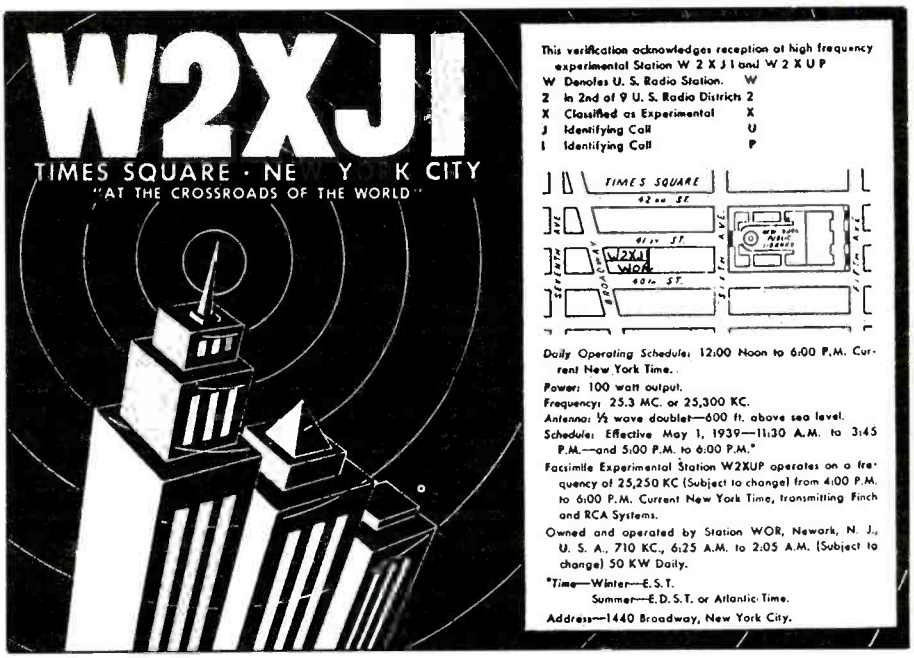
BY ALICE BRANNIGAN

What treasures the mail has been bringing in! For instance, Earl Bedford, Jr., of Chappaqua, New York wrote to tell us that when he was going through the papers that had belonged to his late father, he came across some QSL cards. He passed these along to us, and they're really beauties.

Earl writes that he's aware that his dad had amassed a very large collection of QSL's, but most seem to have gotten lost or thrown out over the passing years. The cards that Earl managed to find were mostly 1939-1940 vintage, and were in excellent condition. We will be sharing them all with you in the months to come.

From this fine assortment, we quickly noticed an oversized yellow and blue 1939 QSL from Experimental W2XJI/W2XUP, New York, NY. Although little remembered today, during the late 1930's, W2XJI was the 100 watt shortwave relay transmitter of 50 kW mediumwave station WOR/710, 1440 Broadway, New York, NY. This station used a half-wave doublet located 600 ft. up, atop WOR's studios, just south of Times Square. It transmitted between the hours of 1700 and 2300 UTC on 25.300 MHz, simulcasting WOR's programs.

W2XUP, the other station mentioned on this QSL, was one of the spate of late 1930's experiments in sending FAX by radio. This station operated on 25.250 MHz from 2100 to 2300 UTC, transmitting both the RCA and Finch FAX systems. Although this QSL doesn't mention it, during this era, WOR, itself, sent FAX newspaper transmissions after the station's regular programming schedule ended at 0705 UTC on 710 kHz.



W2XJI was a HF relay station on 25.30 MHz in 1939. This was their QSL, which also verified for FAX station W2XUP. (Courtesy Earl Bedford, Jr., NY.)

Updates

Last February, we wrote about WCOA, Jacksonville, Florida. After that ran, we received a letter from Shirley Kilgore Weber, of Northfield, New Jersey. Mrs. Weber told us that, in 1943, she was hired as the first woman announcer at WCOA. This was when Shirley was 22 years old and fresh out of college. It was during WWII when there was a shortage of male announcers.

As fate would have it, almost immediately after Mrs. Weber joined the WCOA staff, the staff went on strike. After the strike was settled, she was assigned to the early morning shift. The entire staff of WCOA, in those days, was young, talented, and high-spirited. Working there was fun, but when Shirley tried to get a salary raise to equal her pay to that of the male announcers, she was turned down. Soon after, she resigned and went to work for WDSU, New Orleans, Louisiana.

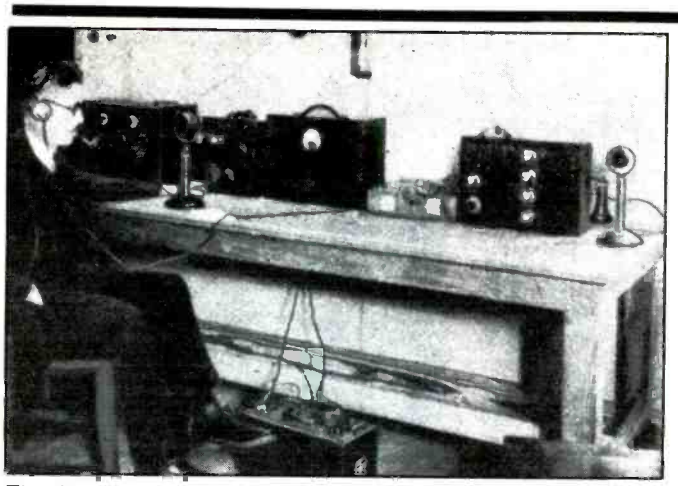
WDSU turned out to be lucky on several levels. It was the station where she progressed into a career in broadcasting, and also where she met and married pioneer broadcaster Fred Weber.

Mrs. Weber would love to hear from any of the other WCOA people who were there during WWII. Her address is: Mrs. Shirley Kilgore Weber, 704 W. Mill Rd., Northfield, NJ 08225.

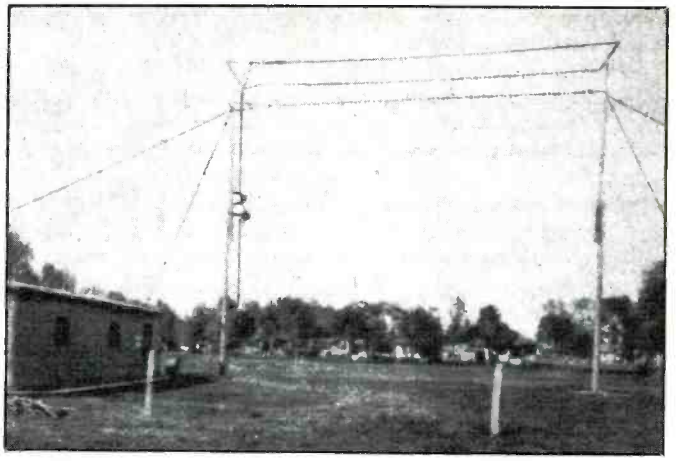
Our April mention of WCAO/600, in Baltimore, attracted several letters of interest. You may recall that we reported that WCAO, which was once one of the great East Coast "boss" rockers, then became a country music station, most recently became a gospel station.

One who wrote in was Johnny Dark, who had been with WCAO from April of 1961 until its gospel programming began last November. That's a 30 year stint there, during which time he was the station's leading deejay and air personality, and one of the best known radio voices in Baltimore. Johnny was also the Program Director at this award winning station.

Johnny added his comments to our recap of WCAO, writing, "During the last 2-1/2 years (before it became a gospel station), we received no corporate support and were forced to make-do with no promotional or advertising budget. In today's radio, especially on the AM band, that is an impossibility. The termination of an entire air staff on November 22nd of last year is the only such happening in my memory of this market. WCAO is Maryland's oldest radio station, and would have celebrated its 70th anniversary on May 8th. Under its new gospel format, the call letters are only aired for the legal I.D. at the top of each hour. At all other times, they just call the station *Heaven 600*. A great radio station has become history."



The shortwave receiver at KFKX, Hastings, Nebraska. In 1924, this equipment picked up the shortwave signals from Pittsburgh's KDKA so they could be retransmitted.



The shortwave receiving antenna used at KFKX in 1924.

In addition to his years at WCAO, Johnny's broadcasting career covers earlier on-the-air stints at WMEX, WEAM, and WHIL. For six years during the WCAO era, he was also an Assistant Professor in the Department of Mass Communications at Towson State University, Maryland. We hope that some sharp broadcaster takes advantage of Johnny's talent and experience. We will be pleased to put any interested broadcaster in contact with Johnny Dark (just drop us a note on the station's letterhead).

Further comment regarding WCAO came in from Charles S. Fitch, P.E., W2IPI, of Avon, Conn. He remembers WCAO from the 50's and 60's when he was growing up in Baltimore, noting that "a young person would have to be culturally disconnected not to have listened to and been greatly affected by WCAO."

Charles passed the WCAO transmitter site nearly every day to and from Loyola while in school. In 1961, while he was a freshman, he was able to arrange to tour the facility. The transmitters were set up in the customary inverted "U" fashion, with the main rig (Westinghouse 5 kW) on the left, as it replaced what he was told was the original (later standby) RCA unit which was directly ahead of the operator's console. Racks of other equipment and the phasing unit were located between this equipment.

On the right was what Charles describes as "an extraordinary" transmitter, being a 5 kW Westinghouse FM unit. Most AM and FM transmitters tend to be tall, broad, and deep multi-cabinet units. This unit had a low profile design, being just above waist height. The large meters were tilted at a 45 degree angle along the front for easy viewing.

Basically, this FM unit had three large, coffin-like cabinets. These were a self-contained exciter and a 1 kW IPA (really a complete transmitter), an equal size and style final power supply, and a 5 kW final amplifier (from left to right, respectively). The tubes were in the lower front in each cabinet behind viewing windows.

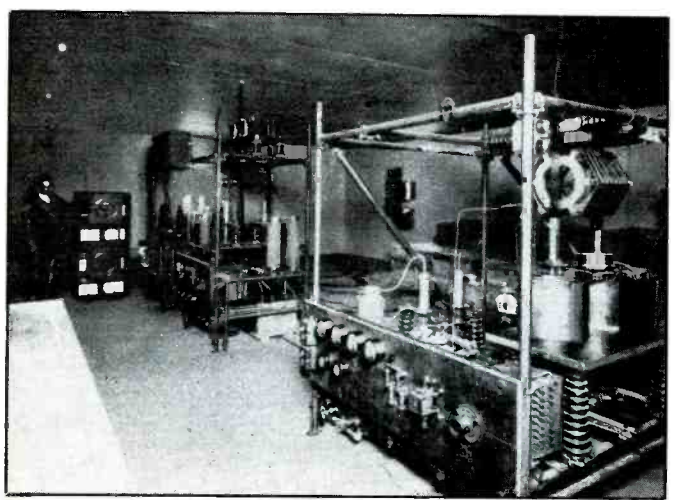
Charles says that during his career as a broadcast consultant engineer, he has seen only two examples of this unusual rig, the one at WCAO, and a 1 kW at Baltimore's WCBM-FM. He said that the layout of this transmitter was so unusual and unique, that seeing it was one of the handful of imagination stimulating experiences that directed him towards his line of work.

If any of our readers have information about this transmitter, or a photo, or an instruction book, Charles would really like to hear more. He may be contacted at: Charles S. Fitch, P.E., 45 Sarah Drive, Avon, CT 06001.

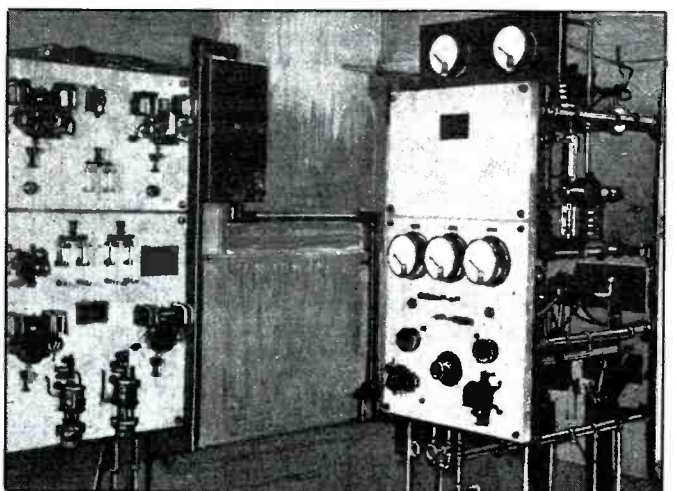
Charles recalls WCAO deejay Kerby Scott (Kerby Confer), who had style and flair when he worked there in the 1960's. These days, Kerby owns a group of radio stations (Keymarket Communications) that are equal in stature to what WCAO was during that great 60's era. Keymarket, reports Charles, is one of the most significant progressive radio operations going, both creatively and technically.

A Couple Of Questions

A letter from Douglas H. Stingley, Salem, Oregon, extols the exceptional help that the book *Radio Station Treasury* has been in helping him research historic radio and wireless stations. Still, the information it contains



Westinghouse's KFKX used this transmitting plant in 1924 for its rebroadcasting experiments.



Shortwave transmitting equipment in 1924 used at Station 8XS, which was operated by KDKA, Pittsburgh, Penna.

did bring up several questions that Douglas would like to see addressed.

For instance, there is a 1926 listing of shortwave stations. Douglas writes that he could pick out those that were operated by the US Navy, and those that were experimental in nature. Other stations, however looked to have commercial call letters and the question arose about the nature of such stations at that early point in the evolution of shortwave communications.

In particular, stations KFKX, Hastings, Nebr., on 5354 kHz; and KDC, Casper, Wyo., on 5100 kHz, were cited as being typical puzzlers.

We should like to point out that what might be termed as "ute" stations were well entrenched in radio by 1926, and stations that had previously used low frequencies started shifting to higher frequencies as shortwave technologies developed commercially.

Station KDC, in Casper, was operated by the Illinois Pipe Line Company. In 1924, KDC was authorized on 177 kHz. A mere two years later it was in the shortwave vanguard when it moved upwards in frequency to 5100 kHz.

The great KFKX, in Hastings, was actually licensed on shortwave as 9XW (and later as W9XW). KFKX was a famous (in its day) experimental station that was established after brief tests in Cleveland first tried in March of 1923 by Westinghouse Manufacturing. Those early tests in 1923 used shortwave transmissions over 8XG sent out by Westinghouse's Cleveland mediumwave (1110 kHz) broadcasting station, KDPM. On November 23, 1923, KFKX was put on the air from Hastings, Nebr. to further explore shortwave relay broadcasting. In addition to 5354 kHz (and other shortwave frequencies), KFKX operated with 1 kW on 1050 kHz.

The basic concept was for the Nebraska station to receive (by direct off-the-air pickup) the signals from Westinghouse station KDKA, in Pittsburgh, and then simulcast them (as 9XW) on shortwave and also locally for midwest listeners on mediumwave. KDKA's signals were sent to KFKX from Pittsburgh via KDKA's own shortwave relay transmitter, 8XS. The idea was to see if the concept was practical for extending the coverage of broadcasters, and for linking up stations in different cities. It was also to find out what problems might be encountered regarding static, interference, fading, and sound quality. Results of the KFKX tests were so encouraging that they led to what must have been one of the most dramatic early broadcasting experiments demonstrated to the public.

With the KFKX facilities operational, by early 1924, broadcasters were anxious to try different and novel things in order to explore the potentials of the idea. A special Mass. Institute of Technology Alumni Dinner at the Waldorf Astoria Hotel was broadcast over RCA's 500 watt WJZ on 660 kHz in New York City. These signals were received 125 miles away at GE's station WGY, Schenectady, New York.

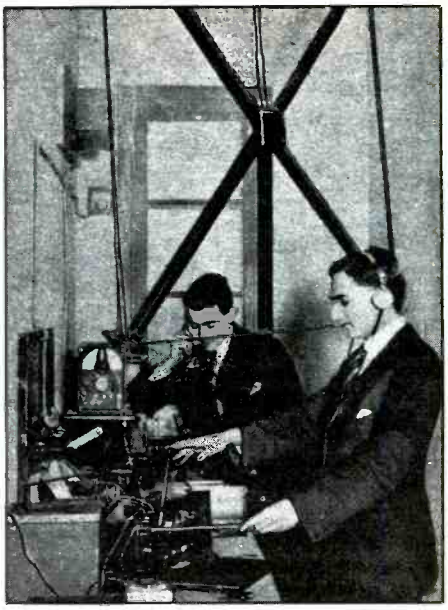
WGY rebroadcast the WJZ program via its regular 790 kHz transmitter, and also over WGY's shortwave transmitter, 2XI on 3000 kHz. The shortwave signal was picked up by KDKA in Pittsburgh, which rebroadcast it on 920 kHz, and also over KDKA's shortwave relay, 8XS on 3061 kHz. KDKA's shortwave signal was picked up and rebroadcast by KFKX in Hastings on mediumwave, and also via KFKX's relay 9XW on 2885 kHz. The KDKA shortwave signal was also received by 2LO in London, England. The program was broadcast by 2LO with 3 kW of power on 822 kHz, then rebroadcast by stations in Bournemouth, Cardiff, Birmingham, Manchester, Sheffield, Newcastle, Glasgow, and Aberdeen. These stations either relayed 2LO directly, or picked up from one another.

That's not all. The shortwave signals from KFKX (9XW) were received by GE's 1 kW station, KGO in Oakland, Calif., which rebroadcast them on 960 kHz for reception on the West Coast. Listeners from the British Isles to California heard everything. Congratulatory telegrams poured in to the Waldorf throughout the evening. One listener with a 10-tube superhet reported that he could pick up WJZ, then used a receiver in another room to bring in WGY, KDKA, KFKX, and KGO in succession. He was amazed that there was absolutely no time differential between any of the relay stations and primary station WJZ, with each word and note of music being "absolutely synchronized."

This audacious, live, in-your-face, off-the-air, broadcast hookup came off without a hitch. Maybe today it doesn't seem like much of a trick, but 68 years ago, it was as impressive to those who made it happen as it was to those who tuned it in.

What became of noble KFKX? It changed its name and eventually retired to Philadelphia. Soon after the KFKX shortwave relay experiments ended, Westinghouse moved KFKX to Chicago and operated it as a regular 2.5 kW broadcasting station on 570, later 1000, then 1020 KHz. In 1930, KFKX was absorbed into the operations of Westinghouse's big 10 kW Chicago station, KYW, also on 1020 kHz. KYW shifted to 990 kHz, then, in early 1935, Westinghouse packed up KYW (callsign, frequency, and all) and moved it to Philadelphia. That's where it still exists. These days KYW runs 50 kW on 1060 kHz.

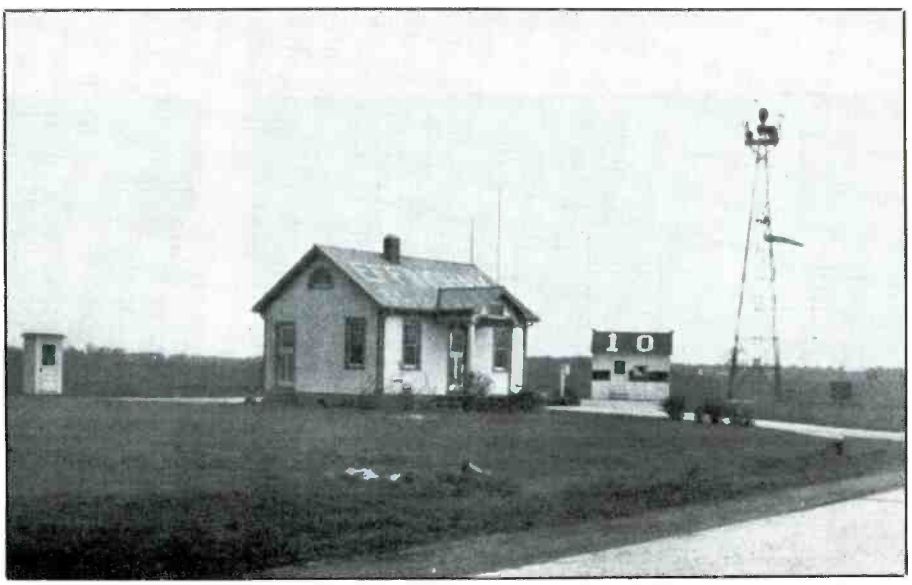
KFKX, a most interesting, important, and historic station, has just about gotten lost during the passing years. Our aim is to keep such gems from fading into obscurity.



Technicians at 2LO, London, tune in on shortwave signals from Pittsburgh for the big 1924 relay test.

Long Waves?

Douglas Stingley also questions American longwave (low frequency) station listings shown in several places in *Radio Station Treasury*. He says that books on radio history say that there has never been longwave



In North America, longwave stations have always meant "utes." This longwave radio station operated at an emergency airport during the 1940's at Effingham, Illinois.

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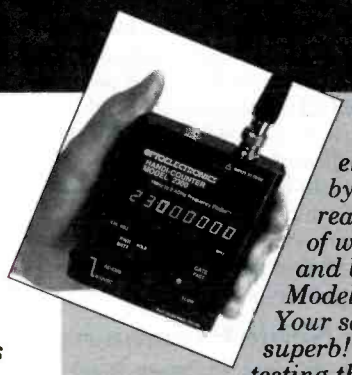

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Of Maryland

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Display	10 Digit LCD w/Function Annunciators	10 Digit LCD w/Function Annunciators	10 Digit LCD	10 Digit LCD	10 Digit LCD	8 Digit LED	8 Digit LED
RF Signal Strength Indicator	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	16 Segment Adjustable Bargraph	•	•	•	•
Hold Switch	Yes	Yes	Yes	Yes	Yes	No	Yes
Price	$579.	$375.	$325.	$259.	$225.	$179.	*$99.

Sensitivity: <1 to <10mV typical. Time Base: ± 1.ppm.; ±.2ppm add $100. - LCD Models only. Nicads & AC charger/adapter included except for 2300. *For 2300, available with NiCad installed & AC charger/adapter, complete package $128.
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broadcasting in the USA, but these listings alongside broadcasters in other parts of the world do cast some doubt on those claims. If not doubt, at least they inject some confusion.

While broadcasters in Europe and Asia have used longwave for many decades, it really is true that frequencies below 535 kHz have not been used in the Western Hemisphere for broadcasting news, music, and entertainment to the public.

That doesn't mean the frequencies used for broadcasting overseas were not put to use in this hemisphere. The band from 200 to 400 kHz, which includes the frequencies that Douglas meant, was the original place pilots tuned for navigational beacons, weather information, and even instructions from airport control towers.

As VHF radio was developed, control towers and aviation weather services tended to move out of the longwave band. The old longwave "A-N" radio range beacons went off the air and were replaced by VHF omniranges. Today there are maritime beacons to be monitored in the longwave band, as well as many aeronautical beacons, other navigational facilities, communications stations, overseas broadcasters, and more. Some American and Canadian stations carry weather information voice broadcasts. In North America, though, this is not a band that could have ever been thought of in the same sense as the band usage of elegant 1930's broadcasting stations like the one on 207.5 kHz in the Eiffel Tower, or the 150 kW station on 230 kHz that was in Luxembourg. In North America, below 535 kHz has always been active "ute" territory.

There has always been a keen interest in monitoring worldwide radiobeacons and various other stations operating on all frequencies below 550 kHz. Readers sharing this interest belong to the Longwave Club of America, 45 Wildflower Road, Levittown, PA 19057. Dues are $18 per year ($19 in Canada). Membership includes a subscription to *The Lowdown*, which is the LWCA's newsy monthly publication containing plenty of station listings and longwave loggings.

Another Noble Experiment

On February 6, 1932, an Experimental station was put on the air to serve several purposes. This was CBS' station W2XDV, a 50-watt station operating from the 23rd floor of the CBS Building at 485 Madison Avenue, New York City.

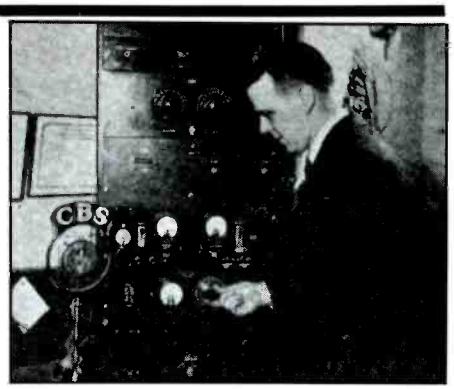
For several years, W2XDV conducted an active program of experimentation and scheduled broadcast transmissions. Then, on November 3, 1935, W2XDV went on the air with a daily program schedule on 31.60 MHz as an Experimental High Frequency Broadcast Station. It became one of the first stations to undertake the pioneer development of a new local broadcast service being considered for establishment between 25.95 and 41.80 MHz. By 1938, the frequencies set aside for this between 31.00 and 41.80 MHz were being proposed for relocation to 40.00 MHz and above (40 kHz channel separation).

This proposed radio service is undoubtedly the mysterious new "ultra high fidelity" 31.1 to 40.0 MHz service referred as the *Apex Band* in McMurdo Silver radio receiver ads of 1937. Last year, a reader asked us about the *Apex Band* (pages 18 and 19 of the October issue). W2XDV, itself, made no claims of transmitting "ultra high fidelity" signals, nor did it refer to its operating frequency as being in an *Apex Band*.

W2XDV sent out CBS network programs daily from 2200 to 0200 UTC, plus 1900 to 2100 UTC on weekends.

Among the phenomena studied were the shadow effects that the steel frames of the tall buildings had on broadcast signals at these frequencies. Besides determining signal distortion, information was being sought on local signal coverage and attenuation characteristics of vertically polarized signals at these frequencies. The hope was to establish a community, or short range (average 20 mile coverage) AM local broadcast service. Secondarily, the W2XDV test results were being applied to research being conducted with reference to TV signal propagation at these frequencies.

Extensive field surveys were taken on signal strength and signal-to-noise ratio, as well as the general sound and stability of the equipment. Signal coverage turned out to be too good at times, as skip reports came in from listeners in Michigan, California, Nova Scotia, Quebec, and Ireland. A similar 50 watt station on 31.60 MHz in Minneapolis received DX reports from Ireland, Scotland Germany, and Australia.



CBS technician Bob Moe checks out the transmitter at W2XDY, a 1930's radio experiment intended to develop a new radio broadcasting service that never became a reality.

The W2XDV installation was comprised of three sections, each contained on an individual rack. The control rack contains the crystal-controlled heterodyne frequency monitor, the mike amp, the volume indicator panel, the transmitter stop/start control panel, and key switches for switching from the "announce" to the "program" circuit, and from the audio to the radio monitor circuit.

The audio rack contained the Class "B" modulator, the driver amp, the monitor amp, together with associated power supplies and control relays. The RF section employed a type 304-B modulated final Class "C" amplifier. By the late 1930's, the station was using 50 ft. of coaxial transmission line to feed a half-wave vertical mounted on the building's rooftop water tank (275 ft. above street level).

The proposed local AM radio service on these frequencies that W2XDV was working towards was never opened. In 1938, W2XDV was still conducting its tests. By January, 1938, the Yankee Network had started building W1XOJ, a 50 kW FM station on 44.80 MHz located on Mount Wachusett, Princeton, Mass. That year, Major Edwin Armstrong built W2XMN, his 50 kW FM station on 42.80 MHz, just outside of New York City.

With FM starting to catch on, and offering better fidelity, plus static-free reception, there seemed no reason for CBS to spend any more time or money trying to develop a local AM service in this frequency range. By the following year, CBS filed applications to build its own FM stations. W2XDV was soon forgotten; its concept had become a footnote to history.

For August, we have become history, too. W2XDV will not return, but we hope to do so in the next issue. Special thanks to Chris Daniel, KB5JBS, of Station KENA, Mena, Ark., for sending us a beautiful 1927 broadcast station directory listing called *The Green Radio Log*. And thanks to all who so generously provided us with old QSL's (originals or good photocopies), old photos, radio postcards, stories or questions about old stations, and old station directories. ■

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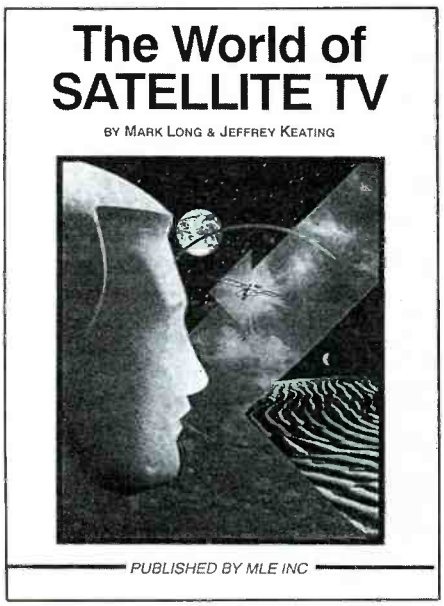
BY R.L. SLATTERY

For Satellite Enthusiasts

The most successful consumer guide to the satellite industry has been *The World of Satellite Television*, by Mark Long and Jeffrey Keating. The first five editions sold more than 185,000 copies. Now there's a totally rewritten 6th Edition that reflects the many new and exciting developments in home satellite TV technology.



This is a field that has been expanding rapidly, as evidenced by an increasing number of satellite TV dish antennas popping up in suburban backyards, urban rooftops, rural fields, and even atop mobile homes. New consumer products are flooding onto the market, new technologies are being established, and new satellite services are constantly being planned or put into service.

For the average person who wants to select, install, operate, maintain, and enjoy a satellite TV system, it's now become too complicated to deal with without the help and advice of experts. Enter Long and Keating, two specialists in the world of satellite communications, and authors of many books and magazine features on the subject. Both have written for *POP'COMM*.

The World of Satellite Television is a 300 page illustrated (photos, charts, etc.) book written for the consumer. It is virtually devoid of technical mumbo jumbo, being written in a straightforward, chatty, down-home, style that is very enjoyable and easy to follow. Best of all, it manages to cover many bases, like DBS, HDTV, digital developments, home satellite theatre, and many other innovations.

The book explains each component in a home satellite TV system, what it does, and the way to use it to best advantage. It explains scrambling, satellite radio, troubleshooting, interference problems, and so much more. They have covered everything here, and done a good job of it, too. Whether you are thinking of getting a satellite TV system, or if you already have one, this book will be of interest to you.

The 6th Edition of *The World of Satellite Television* is $24.95, and available from MLE Inc., P.O. Box 159, Winter Beach, FL 32971.

Guess Who's Looking?

It's no secret that there are innumerable ways to investigate the details of someone's life, and Uncle Sam knows them all. Fact is, he wrote the book, and how you can obtain a complete and exact reprint of the book.

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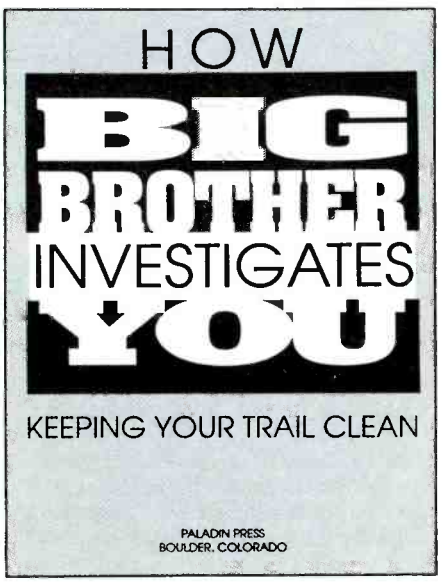


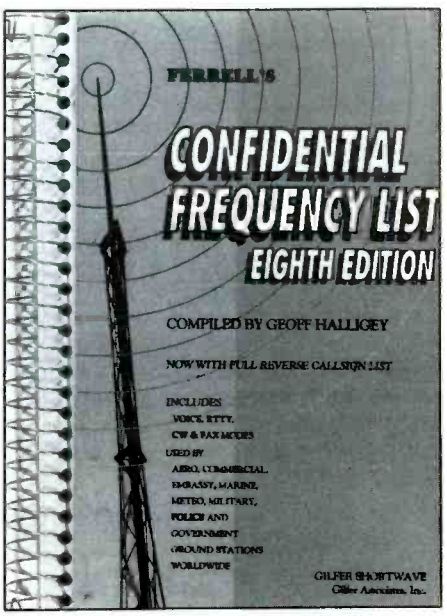
usefulness. These range from the obvious (banks, FBI, etc.), to the insidious (informants, motel records, etc.), and the obscure (pharmacies, sidewalk photographers, etc.). The various sources are discussed as to what information they can be expected to provide.

Knowing the chilling extent of the efforts that can be put into hunting a person down and carefully examining each and every morsel and crumb of their life is awesome, fascinating, and somewhat frightening. As if it weren't annoying enough to think that the government can access all of this information, one can only think about the ramifications of the fact that private investigators, employers, credit companies, insurance companies, and probably just about anybody else who is sufficiently interested can also access most of these same sources. All they need is this book to point them out.

How Big Brother Investigates You is $10.00, plus $4.00 for 4th Class Book Rate mailing, from Paladin Press, P.O. Box 1307, Boulder, CO 80306. Residents of Colorado, please add 3.7 percent tax.

New Confidential Frequency List, 8th Edition

Gilfer's popular ute frequency guide, *Ferrell's Confidential Frequency List* is now available in its expanded, revamped, and revised 8th Edition. This chunky 562 page edi-



tion contains listings of SSB/CW/RTTY/FAX stations operating within the 1605 kHz to 28 MHz frequency range, worldwide. This includes aero, commercial, feeders, time signals, channel markers, military, embassy, maritime, weather, police, standard frequency, government, and other communications services.

The new edition is made easier to use with its sturdy metal spiral binding system. This edition has other new features, too, like the full cross referencing of call letters to frequencies. There's a section on international call letter prefix allocations, a listing of single letter beacons, a special section listing numbers transmissions, a listing of ICAO location identifiers, and also location identifiers used for telexes (RFFVA, RPTIN, RFQP, etc.). There are maps and time charts.

The main listings, which occupy more than 400 pages, cover about 35,000 stations. These listings are a frequency-sort, indicating transmission mode, call letters, location, type of service offered, plus relevant comments about the station.

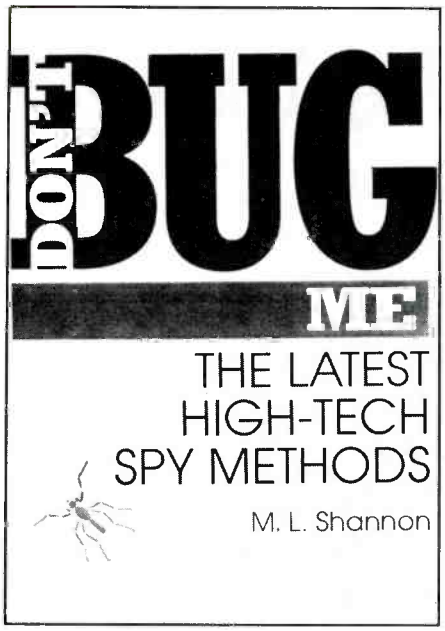
We have said it here before, and it still holds true, if you're monitoring the HF bands for voice or non-voice communications, the *Confidential Frequency List* is definitely a reference source you'll definitely want to have at hand. The 8th Edition easily maintains the tradition established in earlier editions.

A big plus is that the *CFL* reflects that it is prepared primarily as an aid to North American ute monitors. We have seen European ute guides costing several times more than the *CFL*. They are compiled with the intention of primarily being centered on the interests and DX capabilities of European listeners. As such they are fine, but for North American monitors, they're very costly for reference information that we think is less useful to Americans and Canadians than the *CFL*.

The 8th Edition of *Ferrell's Confidential Frequency List* is $19.95, and it's available from many leading shortwave suppliers. It's also available directly from the publisher, Gilfer Shortwave, 52 Park Ave., Park Ridge, NJ 07656. Add $3 postage for USA and Canada.

What's Bugging You?

Many conversations are overheard, and not only those in restaurants and ones that are broadcast over the radio, such as via unscrambled cellular or cordless phones. But private business and personal conversations that take place behind locked doors of homes, offices, and cars, and over telephones. Conversations intended only for certain ears, but which are deliberately intercepted, recorded, and used for the benefit of someone else.



Some people in government, and those in certain businesses, and also some individuals can—and sometimes do—observe what you and your family say or do in moments you believe are private. But they don't respect that privacy. These are the same people who would certainly prefer that you also don't have the information in the book, *Don't Bug Me: Latest High-Tech Methods*, by M. L. Shannon.

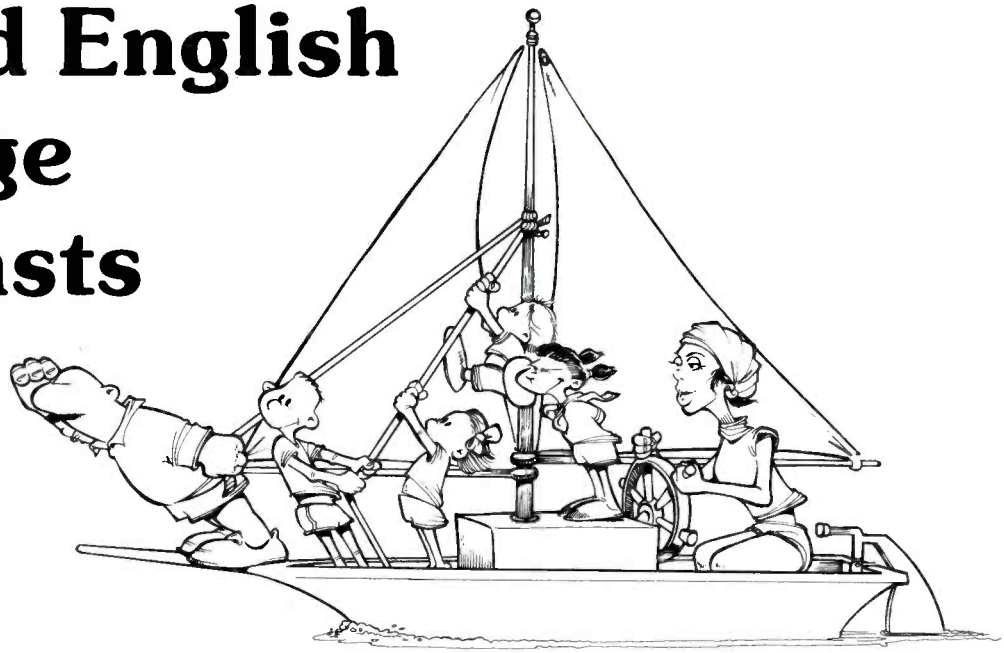
Don't Bug Me is a big 152 page book, filled with photos and scanner frequencies, that shows you how to protect yourself from the surveillance and countersurveillance experts who prey on uninformed citizens. The comprehensive study discusses every kind of spying and snooping device from inexpensive transmitters used by amateurs and often hidden in potted plants and stereos, to supersophisticated systems favored by governments and big business. It includes the technologies that allow snooping to be accomplished or aided by TV sets, VCR's, computers, tape recorders, answering machines, intercoms, baby monitors, and other commonplace and seemingly innocuous devices.

Lots of good information, too, on scanners and their many effective applications in several areas of snooping.

Really quite a fine book that will fascinate everybody interested in privacy, scanners, and communications. You'll see how easy it is for them (or for you—*heh, heh*) to eavesdrop on conversations in homes, offices, and cars.

Don't Bug Me is $19.95, plus $3.50 for UPS shipping (sent First Class Mail to military addresses, AK, HI, PR, VI, GU, and Canada) from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. Residents of New York State, please add $1.88 tax. ■

Selected English Language Broadcasts



Summer – 1992

Note: There are hundreds of English language broadcasts aired every day on shortwave. This is a representative listing and is not intended to be a complete guide. While every attempt is made at making the list as up-to-date as possible, stations often make changes in their broadcast hours and/or frequencies with little or no advance notice. Some broadcasters air only part of a transmission in English or may run the English segment into the next hour or more. Some stations have altered schedules on weekends. Numbers in parenthesis indicate an English start time that many minutes past the hour. All times are in UTC.

Time	Country/Station	Frequencies
0000	VOIRI, Iran (30)	9022, 9765, 15260
	HCJB, Ecuador (30)	9745, 15135, 21455
	R. Havana Cuba	11970
	R. Netherlands (30)	6020, 6165, 11835
	R. Norway (Sat/Sun)	15165
	R. Yugoslavia	11870
	R. Czechoslovakia	7345, 9540, 11990
	R. Pyongyang, N. Korea	13760, 15115
	Lithuanian Radio	7400, 11605, 17690
	SRI, Switzerland	6135, 9650, 9885, 12035, 17730
	RCI, Canada	5960, 9755
	Spanish Foreign Radio	9530
	R. Nacional, Venezuela (40)	9540
	BRT, Belgium (30)	9930
	Radio Beijing	9770, 11715
0100	Radio Japan	5960
	R. Norway (Sat/Sun)	9615
	R. Yugoslavia (30)	11870
	R. Czechoslovakia	5930, 7345, 9540
	Deutsche Welle, Germany	6040, 6055, 6085, 6145, 9515, 9565, 9610, 9640, 9770, 11865
	Voice of Greece (30)	9395, 9420, 11645
	RAI, Italy	9575, 11800
	R. Kiev, Ukraine	4825, 7240, 7400, 9860, 17605, 17690
	R. Austria Int'l (30)	9875, 13720
	RAE, Argentina	11710
0200	R. Norway (Sat/Sun)	11930
	R. Cairo, Egypt	9475, 9675
	R. Budapest, Hungary	6100, 9835, 11910
	R. Philipinas, Philippines	17840
	MBC, Malawi (55)	3380v
	R. Tirana, Albania (30)	9760
	SRI, Switzerland	6135, 9650, 9885, 12035
	R. Sweden	9695, 1705
	R. Portugal (30)	9570, 9600, 9705, 11840
	V of Free China, Taiwan	5950, 9680
	Vatican Radio (50)	7305
0300	Radio Netherlands (30)	6165, 9590
	Deutsche Welle, Germany	6045, 6055, 6085, 6120, 9535, 9545, 9640, 9705, 9770
	Voice of Greece (40)	9395, 9420, 11645
	R. Cultural, Guatemala	3300, 5955
	HRVC, Honduras	4820
	TWR, Bonaire	9535, 11930
	R. Austria Int'l	9875, 13720
	R. Botswana	7255
	Radio Beijing, China	9690, 9770, 11715
	UAE Radio (30)	11945, 15435
0400	R. RSA, S. Africa	7270, 11900, 15440
	Radio Czechoslovakia	5930, 7345, 9540
	Radio Japan	17825
	R. Norway (Sat/Sun)	9560, 11865
	SLBC, Sri Lanka (45)	9720, 15425
	R. Namibia	3270
	R. Sofia, Bulgaria	11720, 11765
	SRI, Switzerland	6135, 9885, 12035, 13635
	BBC	5975, 6175, 7325, 9410, 9915, 12095
	R. Beijing, China	11685
	TIFC, Costa Rica	5055
0500	Kol Israel	11588
	R. New Zealand	17700
	HCJB, Ecuador	9745, 15155
	Deutsche Welle, Germany	5960, 6045, 6120, 6130, 9535, 9670, 9690
	Voice of Nigeria	7255
	R. Romania Int'l (30)	11840, 15380, 17720, 17745, 17790, 21665
	R. Austria Int'l (30)	6015
	Spanish National Radio	9530
	Vatican Radio	9695, 11675
	R. Beijing, China	11840

Time	Country/Station	Frequencies
0600	R. Georgia, Georgia	11800v
	R. Havana Cuba	11760
	GBC, Ghana	4915
	IRRS, Italy	7125, 7290, 7300, 9815
	R. Kiribati	14918
	TWR, Monaco (40)	9480
	WJCR, Kentucky	7490
	Vatican Radio	6245, 7250
0700	AWR, Russia	11855
	R. Centras, Lithuania	9710 (last Sat/Month)
	Wings of Hope, Lebanon	11530
	ELBC, Liberia	7275
	BRT, Belgium (30)	11695, 13675
	VOFC, Taiwan	5950
0800	R. Australia	15160, 15240, 17630, 17750, 21775
	BBC	12095, 15070
	R. Pyongyang, N. Korea	15180, 15230
	Voice of Greece (40)	15625, 17535
	SIBC, Solomon Is.	5020, 9545
	RFPI, Costa Rica	7375, 15030
0900	Croatian Radio, Croatia	9830
	TWR, Monaco (55)	9480
	HCJB, Ecuador	9745, 15115
	R. Japan	11840, 15270, 17860, 21610
	CFRX, Canada	6070
	CFCX, Canada	6005
1000	V of Vietnam	9840, 12020, 15010
	Radio Japan	6120
	R. Korea, S. Korea (30)	11715
	R. Moscow	9855, 9875, 12010, 15465, 15470, 15475, 17700, 17880
	Radio Australia	9580, 15240
1100	TWR, Bonaire	11815, 15345
	VOIRI, Iran (30)	7215, 9575, 9696, 11715, 11790, 11930
	Kol Israel	17545
	NBC, Papua New Guinea	4890
	R. Yugoslavia (30)	17710, 17740, 21605
	R. Finland Int'l (30)	15400, 21530
	R. Jordan	13655
	R. Pyongyang, N. Korea	6576, 9977, 11335
1200	R. Japan	11865
	HCJB, Ecuador	15115, 17890, 21455, 25950
	R. Finland Int'l (30)	15400, 21550
	R. France Int'l (30)	9805, 11760, 15155, 15195, 21635, 21645
1300	AWR, Russia	11855
	R. Finland Int'l	15400, 21550
	R. Jordan (20)	9560
	R. Pyongyang, N. Korea	9335, 9345, 9640, 13650, 15320
	KNLS, Alaska	7355
	Polish Radio Warsaw	6135, 7145, 9525, 11815
	FEBC, Philippines	11995
	UAE Radio (30)	21605
	V of Vietnam (30)	9840, 12020, 15010
	AWR, Costa Rica	9725, 11870
1400	Kol Israel	11587, 11605, 17590
	R. France Int'l	11910, 17650, 21535, 21770
	BRT, Belgium	21810
	R. Nacional, Venezuela (40)	9540
	R. Beijing, China	7405, 11815, 15165
	R. Japan	9535, 11815, 11865
	R. Moscow	11840, 13705, 15210, 15480, 15535, 17610, 17655, 17860
	V of the Mediterranean, Malta	11925
1500	Voice of Greece (30)	11645, 15565, 15650, 17525
	RTM, Morocco (30)	17595
	FEBA, Philippines	9810, 11685, 15330
	R. Sweden	17870, 21500
	BBC	9740, 12095, 15070, 17840
1600	HCJB, Ecuador (30)	21480, 25950
	R. France Int'l	6175, 11705, 11845, 12015, 15530, 17620, 17795, 17850
	AWR, Guam	11980
	UAE Radio	13675
	BSKSA, Saudi Arabia	9705, 9720
	R. Pakistan	11570, 13665, 15515, 17555, 17725, 21480
	Polish Radio Warsaw	7285, 9525, 11840
	R. Portual (30)	21515
1700	BBC	9515, 12095, 15070, 21660
	R. Algiers, Algeria	9535, 17745
	R. Moscow	11840, 13705, 15210, 15480, 17610, 17655, 21615, 21785
	HCJB, Ecuador	15270, 21455, 21480
1800	Kol Israel	11587, 11675, 15640, 17575
	R. Kuwait	15505
	All India Radio (45)	7412, 11620
	R. Afghanistan	6145, 7215, 9645
	R. Cote d'Ivoire, Ivory Coast	11920
	RAE, Argentina	15345
	R. New Zealand	15120
	R. Nacional, Venezuela (40)	9540
	R. Luxembourg	15350
1900	HCJB, Ecuador	15270, 17790, 21455, 21480, 25950
	VOIRI (30)	6140, 9022
	R. Havana Cuba	17705
	All India Radio	11620
2000	Kol Israel	7465, 9435, 11587, 11605, 17575
	R. Havana Cuba	17835
	R. Luxembourg	15350
	R. Damascus, Syria (05)	12085
	Vatican Radio	9645, 11625, 15090
	R. Algiers, Algeria	11715
	R. Netherlands (30)	7285, 98670, 9895, 11660, 13700
	R. Sofia, Bulgaria (45)	11735, 15160, 15370
2100	R. Damascus, Syria (10)	15095
	BBC	5975, 9590
	All India Radio	7410, 9910, 9950, 11620, 11715, 15265
	SRI, Switzerland	9885, 12035, 13635, 15525
	RCI, Canada	9755, 15325
2200	R. Moscow	5920, 6045, 7295, 7400, 9775, 9890, 11700, 11735, 11770, 11860, 11950, 12070, 15130, 15395, 15470, 15480, 15515, 17570, 17605, 17655, 17690, 21480
	Kol Israel (30)	7465, 9435, 11585, 11605, 11675, 17575
	R. Havana Cuba	11930
	R. Jamahiriya, Libya (30)	11815
	V of the UAE	7215, 9600, 11965
	Polish Radio Warsaw	5995, 6135, 7270
	V of Free China, Taiwan	9852.5, 11580
	Lithuanian Radio	9710
2300	R. Nacional, Colombia (30)	11822.5, 17865
	R. Norway (Sat/Sun)	11795
	SLBC, Sri Lanka	15425
	All India Radio (15)	11715, 11745, 15110, 15135, 17830
	R. Pyongyang	11700, 13650
	R. Iraq Int'l (15)	11830
	V of Turkey	9445, 11710
	V of Vietnam (30)	9840, 12020, 15010 ■

Scanning The Pot Busters

As The Feds Step Up Their War On Pot, You Can Tune In On The Action!

BY CHUCK ROBERTSON

The weed—pot—marijuana, it's growing everywhere. Plants are springing up all over the place, and law enforcement personnel are busily chopping it down as quickly as it can be discovered. Throughout summer and early fall, the skies are filled with the sounds of surveillance aircraft, just as the airwaves vibrate with their communications as officers zero-in on the illegal cash crop. You can hear it on your scanner.

Because of our government's crackdown on marijuana smuggling across the US-Mexican border, the interest in domestic farming of the plant has been spurred on, aided by the fact that a lot of discouraged unemployed people seem to have decided it's a way of earning a living until the economy improves. Furthermore, U.S. pot farmers use more sophisticated growing techniques than their foreign counterparts, employing special hybrid seedless plant seeds purchased from seed companies in Europe. The result is a high quality, high-priced, completely illegal domestic product.

The government has responded with a stepped-up, if not all-out, war on domestic marijuana growing. Right now, this war is in high gear. With a scanner and some frequency information, you can tune in on the pot-busters. Here are some thoughts and monitoring pointers.

Tuned In

Law enforcement personnel trained to spot marijuana fields are experts at their job. From the vantage point of a surveillance aircraft or helicopter, the distinctive coloration of the plantings stands out from surrounding vegetation. When plants are spotted, the air spotter usually radios the location to a standard land mobile frequency. In Illinois, for instance, such comms can be monitored on the State Detective frequency, 154.95 MHz, or (secondarily) on the interagency channel (155.46 MHz). If the grower spots the aircraft and makes a run, the action may switch over to the nationwide law enforcement emergency frequency, 155.475 MHz.

The Pot Buster emblem. Who ya' gonna call? Pot Busters!

When two or more aircraft are in use, they may be in contact with one another regarding progress reports, accounts of the day's harvest, and plans for the next day. In Illinois, where I live, the State Police aircraft use 122.975 MHz, which is the high-altitude Unicom channel. Other areas may use the same, but check out all Unicom and Multicom frequencies. Search/ scan the 122.7 to 123.575 MHz range.

If the DEA is involved, their own frequencies may be in use, too. That means you'll

TABLE 1

Marijuana farmers noted using (or most likely to use) these bands and frequencies.

26.00 to 26.96: Remote Broadcast, Federal, Outbanders.
26.965 to 27.405: CB Radio.
27.43 to 27.995: Business, Federal, Outbanders.
28.00 to 29.70: Amateur Radio.
29.71 to 29.995: Forest Prods., Outbanders.
30.84, 33.12, 33.14, 33.40, 35.02, 42.98: Low power Business & Industrial.
49.67 to 49.97: Low power walkie talkies.
144.00 to 148.00: Amateur Radio.
151.505: Itinerant Special Industrial.
151.625: Itinerant Business.
154.57, 154.60: Low power Business.
156.275 to 157.425: Marine.
222 to 225: Amateur Radio.
420 to 450: Amateur Radio.
451.025 to 452.9875: Industrial, etc. (12.5 kHz steps).
456.025 to 457.9875: Industrial, etc. (12.5 kHz steps).
460.65 to 462.525: Business, etc. (12.5 kHz steps).
462.55 to 462.725: GMRS (12.5 kHz steps).
462.75 to 464.9875: Business (12.5 kHz steps).
465.65 to 467.525: Business, etc. (12.5 kHz steps).
467.55 to 467.725: GMRS (25 kHz steps).
467.75 to 467.925: Business (12.5 kHz steps).
468.20 to 469.9875: Business (12.5 kHz steps).

TABLE 2

Unlicensed Police Bands (2 watts max.) (Stakeouts, Surveillance, Raids)

30.85 to 32.00	158.715 to 159.465
33.00 to 33.07	166.25
33.41 to 34.00	169.00 to 172.00
37.00 to 37.43	453.0125 to 453.9875
37.89 to 38.00	458.0125 to 458.9875
39.00 to 40.00	460.0125 to 460.5125
42.00 to 42.95	462.9375 to 462.9875
44.61 to 46.60	465.0125 to 465.5125
47.00 to 47.41	465.5625 to 465.6375
72.00 to 76.00	467.9375 to 467.9875
150.995 to 151.49	806.00 to 824.00
153.74 to 154.445	851.00 to 869.00
154.635 to 155.195	928.00 to 930.00
155.415 to 156.25	
157.05 to 157.11	

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CIRCLE 31 ON READER SERVICE CARD

The Wulfsberg WMC-130 is a popular 138 to 174 MHz transceiver offering 15 programmable channels, plus any frequency can be dialed-up manually. It's made in Overland Park, Kansas.

want to search/scan the 414.0 to 420.0 MHz range (25 kHz steps), with special attention to the 418 to 419 MHz area.

In recent years, the National Guard has been an effective participant in the marijuana wars. In Illinois, air-to-air comms take place on 47.00 MHz (WFM mode), and 246.8 MHz (AM). At times, the frequencies are used duplex. For National Guard frequencies in other areas, check them in Kneitel's *Top Secret Registry*.

Special Frequencies

You may well know the active FCC-licensed frequencies used in your area for state, county, and local task force activities used by law enforcement agencies. What you may not know is that during a stakeout or surveillance operation, you can check out all of those frequencies and not hear that operation going down!

They might be using low power short-range transceivers in the 49.67 to 49.97 MHz walkie-talkie band, or they could be using cellular telephones. Or they could switch to any of many unlicensed frequencies. Discovering those unlicensed frequencies could take some detective work on the part of the listener.

Today's programmable multi-channel transceivers make access to many different frequencies very simple, although the cheaper the radio, the narrower the frequency range it can cover. In my area, many public safety agencies use cheap ten-channel VHF high-band radios with a 4 MHz bandspread. It's a good bet that any offbeat frequencies programmed into these radios will show up within a few MHz of the main base dispatch frequency.

For example, a nearby city dispatches on 154.965 MHz. They run stakeouts and surveillance operations on unlicensed frequencies 154.515, 154.54, and 154.695 MHz. These are right on top of the main dispatch channel. Note that 154.515 and 154.54 MHz are Business Radio Service frequencies!

More frequencies? Don't forget the VHF-FM marine band. A reader requesting anonymity claimed that the police in Elkhart, Indiana, have used 1-watt handhelds on marine Channel 14 (156.70 MHz) for raids. One police agency in New York state uses Channel 71 (156.575 MHz) in its patrol boats. That's probably OK, but it also said to use that frequency in at least some of its vehicles performing non-maritime functions.

The FCC does not require licenses for low power (2 watts or less) handhelds or wireless microphones used during a stakeout, surveillance, or raid. Any frequencies lying between 42 and 952 MHz may be used so long as they're allocated to public safety radio services (police, fire, highway maintenance, forestry conservation, or local government). Even some telemetry frequencies may be used.

Tracking transmitters ("bumper beepers") and wireless microphones will most likely turn up in the 138 to 174 MHz portion of the spectrum, especially in the federal band above 162.60 MHz.

In some areas, the 851 to 869 MHz band is producing activity related to the marijuana wars. In my own area, trunked channels between 861.4875 and 865.4875 MHz carry calls from drug agents, attorneys, and others.

The Secret Garden

Farmers who harvest the illegal marijuana crop rely on comms, too. Marijuana is sometimes grown interwoven with legit crops, such as corn in order to make it difficult to spot. Or, it is grown right in a person's back yard, their greenhouse, apartment, roof, or basement.

The high tech marijuana farmer puts two-way radio to any number of uses in connection with his growing operations, and the security thereof. Besides the possibility of the crop being discovered and ripped off by thieves, there's the constant fear that the law may show up. Radio comms may be employed as part of a perimeter security system. With zero-tolerance drug laws in effect, a marijuana farmer who gets caught with plants growing on his property is in jeopardy of having his house, land, vehicle(s), money, and all earthly possessions confiscated. That's why approximately one third of the national marijuana crop in the USA is being grown in National Forests and other public lands.

Best-bet frequencies to listen for the marijuana farmers using is shown in Table 1. Frequencies assigned to a number of other authorized radio services have been reported, although the growers don't have licenses to use the frequencies. Every frequency shown here hasn't yet been reported in use by growers, but, based on equipment availability and reported usage patterns, we would estimate these as offering the best chances for such activity. Frequencies used are changed often.

Harvest Those Signals

Scanners will be smokin' this summer as drug and other law enforcement agents cut and burn a trail across the USA in search of what promises to be a bumper crop of marijuana. Plug in those frequencies, scan those bands, and listen in on this war as it is taking place—maybe right in your own county! ■

DX'ing Russia's New Voices

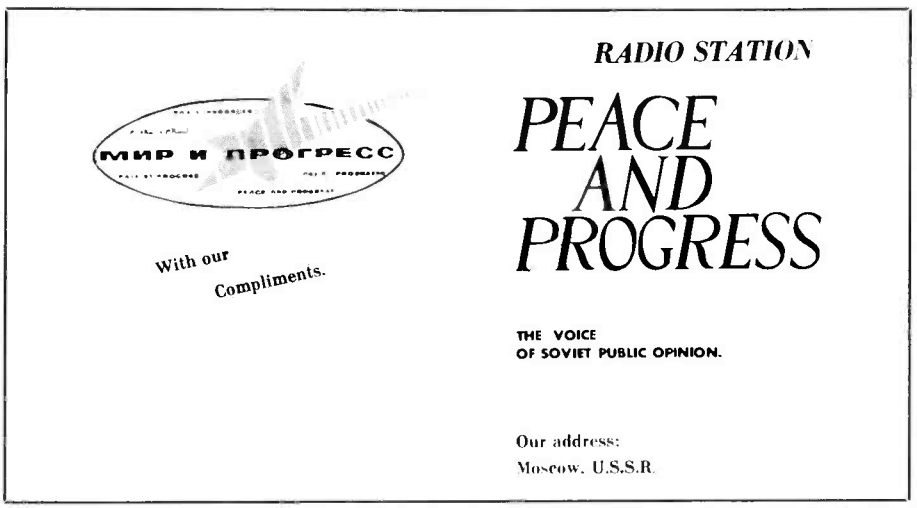
Exciting New Stations Arise From The Remains of the Old USSR

BY GERRY L. DEXTER

That old line "the times, they are a-changin'" has never been applied more accurately than to describe the changes in the periods leading to and following the collapse of the Soviet Union and birth of a sickly Confederation of Independent States, still struggling to keep a hold on life.

The changes have affected radio broadcasting, in Russia as much as any other activity and perhaps more than most. In the Soviet Union broadcasting was under the heavy boot of the state. It wasn't a matter of meeting a zillion stringent prerequisites or of even being able to afford the money for frequency surveys, buy land and equipment and engage lawyers to petition for a license, as is the case here. The Soviet government didn't grant any licenses or any other permissions, other than to itself or representative thereof.

But the new Russian government changed the rules of the broadcasting game. In the relatively brief time since the end of the Soviet Union and Russia's new, democratic government, any number of new stations have come on the air. The mediumwave and FM bands in Russia are home to many new sounds and voices. But there have been considerable changes on shortwave as well. Over the past year or so a number of new Russian broadcasters have arrived on the higher frequencies and many are being logged by DX'ers in other parts of the world. We're going to take a look at this new crop of stations and give you some times and frequencies to check out.



Radio Station Peace and Progress was taken off the air even before the Soviet Union fell apart.

The broadcasting situation in Russian is, to put it mildly—fluid. Shortwave's innate changeability is tripled in this instance. Trying to accurately, completely predict what will be on and when and where to look for it at the time you read this has a lot in common with trying to walk across the surface of a swimming pool full of Jello. It can't very easily be done! Still, we'll have a go at it and hope you'll have success in logging at least some of these new outlets.

Radio Alva was one of the first of the new Russian voices to go on the air. There's still some confusion over the station's name. Some say the station takes its name from that of a popular Russian female singer—Alla Pugacheva. Other reports say the name comes from the initials of the owner. It is an independent station with a format consisting largely of Russian folk music. The schedule seems to be 24 hours a day, or very close to that. The most recently reported frequencies

The headquarters of Radio Moscow where workers these days are not happy campers.

As might be expected, many of the new stations are in Moscow but other major Russian cities are also home to new shortwave voices.

Radio Rodena was also an early casualty.

Almost no mail is reaching Radio Moscow these days.

are 5040 and 6015. The studios are in St. Petersburg (Leningrad) but a Moscow address is announced—Postbox 159, Moscow 125047.

Adventist World Radio—More astounding than the opening up of broadcasting in Russia was opening it to religious broadcasters—and foreign based ones at that! AWR-Russia is a part of the worldwide Adventist World Radio group which also has stations in Guam, Italy, Guatemala, Costa Rica, etc.). It went on the air from Novosibirsk around the 14th of March using a 100 kW transmitter which was formerly used by the Soviet government. AWR plans to add a 250 kW unit later. The programming is produced at a new AWR studio near Moscow and then sent to the transmitter site. The schedule is 0000-0100 Burmese on 9845, 0100-0700 on 11835 with hour long broadcasts in English, Hindi, various Indian languages and Russian. AT900 to 1600 on 11855 with one hour each of Mandarin, Burmese, English and Indian languages; then 1700-1900 on 9835 with one hour each in Russian and English and from 2100-2300 in Mandarin on 9835. Reports should be sent to AWR-Europe at PO Box 383, Forli, Italy.

Deutsche Welle—The Voice of Germany has an agreement with the Russian government which allows the use of Russian-based transmitters as part of DW's relay station mix. The purpose of the Russian sites is to provide better coverage of South Asia and the Far East. In the typical DW broadcasting pattern, most of the broadcasts run for 50 minutes. English is aired at 9299, Pashto at 0300 and Dari at 0800, all on 17620. German airs at 1000-1400 on 155606, Japanese at 1100 on 15560, Urdu at 1400-1515 on 9875, Hindi at 1515-1600 on 9875, English again at 1600 on 9875, German 2200-0000 on 11975. Send reports to the usual Deutsche Welle/ Voice of Germany address: PO Box 10 04 44, 5000 Cologne 1, Germany. Normally DW does not indicate transmitter sites on its QSL cards but you can always ask!

Dvizheniye (Traffic Radio) is based in Ekaterinburg (formerly called Sverdlovsk) and uses a 50 kilowatt transmitter. The most recent information we have is that it operates from 1200 to 1400 on 7200 on Tuesdays, Thursdays and Saturdays. However, another schedule has the station operating from 0200-1300 on 6200 and 1300-1700 on 6090. The station's address is care of Sergei Biryukov, Post Restante, Main Post Office, Ekaterinburg 620000.

Echo of Moscow (Ekho Moskvy) is said to be active only on the weekends, using 6035 and 9535 at 0400-0700 and 1500-1700. It identifies as "Radiostansiya Echo" and carries pop and rock, brief new segments and some jazz.

Far East Christian Broadcasting—This station appears to be part of the US-based Far East Braodcasting Company (KGEI, FEBC, FEBA). It operates from Khabarovsk at 0900-1030 on 4060 (upper sideband), 5965 and 9560. These were frequencies formerly used by the independent station Dalny Vostok Radio, which now seems to be off the air. All of the programming is in Russian except for English language station identification announcements, including "You Are Listening To Far East Christian Broadcasting, FEBC Russia." The address is FEBC-Russia, Box 21-18, Kharbovsk 20, 680020, Russia. AWR? FEBC? Can Family Radio (WYFR) be far behind?

Radio Galaxy—is a new, commercial station in Moscow being beamed to Western Europe and encouraging communication and business development between Russia and the west. It was on the air briefly with—believe it or not—a 700 kW shortwave transmitter. But the use of this transmitter was soon ended after differences with Radio Moscow which apparently saw it as competition. Galaxy later reached an agreement which gave it the use of two transmitters of 150 kW for service intended just for the Moscow area. Galaxy is airing programs in Russian on 9880 between 2000-2300 with commercials and Russian rock. By now the station should also be airing some English language programs, possibly within the above time block. The address is announced as PO Box 7, Moscow.

Radiostansiya "Long Play" is reported active from 1500 to after 2000 on 11735, presumably in Russian.

New Wave Radio International (Radiostansiya Novaja Volna) airs broadcasts as a part of Radio Moscow's World Service in Russian. It is scheduled at 0700—8000 and 1700-1800 on Tuesdays, Wednesdays, Fridays and Sundays. The address is given as 19 Academician Korolev Street, Moscow. The broadcasts include announcements in English. Some DX'ers have noted a single sideband broadcast from this station, apparently a feeder service, on 5755 at various hours. New Wave presents itself as an "artist's channel," offering a varied selection of music and cultural programs, as well as at least one religious programs.

Radio Pamyat (memory). This station is run by a right wing, royalist organization and is beaming to Europe at 1430-1600 on 12040, to the Moscow area from 1600 to 1900 on 12060 and to Siberia form 2300-0030 on 6145. The program is called "the Fatherland, Memory and You" and reception reports are invited to this address: Radio Pamyat, c/o Yuri Milolyubov, Flat 4, Volovaj St. 32 Moscow 113054. The transmitter is said to be at Ekaterinburg (formerly Sverdlovsk).

Radio Polyus is a western style commercial rock station broadcasting from St. Petersburg (formerly Leningrad). Programs are scheduled from 0330 to 0730, but are reported in Europe as late as 1500 on 6045. The station shares transmitter time with Radio SNC (see below).

Radio Rezonas is another station aimed at

the business community. It comes complete with multilingual commercials and is scheduled on 11850 at 0500-0700, 1300-1400 and 2000-2200. The station's address is Ul. Koroleva 19, 127427 Moscow.

Radio Rodonezh is a station of the Russian Orthodox Church. It airs Russian religious programming from 1128 sign on, using 11675.

Radio SNC ("Stas Nanin Center") is on the air on 11735 between 1300 and 2000 in Russian. The station takes its name from a well known Russian Rock promoter and plays a mixture of Russian and Western rock.

Radio Space uses a 20 kW transmitter at Balashika formerly used for jamming foreign broadcasts. This site, incidentally, was seemingly never in use as a regular Soviet broadcast source. The station operates on a rather limited schedule—1500-1545 on 11945. It is asking for reports to be sent to Radio Space, Butirskaya 23, 125015 Moscow, Russia.

Radio Vedo—This Volgograd station on the air at 1500 to 1900 Monday, Tuesday and Wednesday on 11760 and 13710, 1600 to 1900 on Thursdays and Fridays on the same frequencies and 0700-1000 on 5915 and 7125 on Saturdays and Sundays. It programs brief segments in English but, otherwise, is in Russian. The program feature pop/rock and commercials. Letters to the station should be addressed to PO Box 1940, Volgograd 400123.

Radio Without Borders International is a 100 watt pirate station, reportedly located some distance east of Moscow. It operates from 1000-1200 and 1400-1830 on 6235, but it's impossible to say how safe such an operation is these days or how long it will last. The station says it will rebroadcast tapes of European pirate stations. Reports are requested to: PO Box 55, 119633, Moscow, Russia. They do not want you to make any mention of the station name on the envelope.

Meanwhile, back at the ranch, Radio Moscow is in trouble. It's like that old sci-fi movie "The Incredible Shrinking Man" only in this case it's a radio station. Radio Moscow has been losing access to many of its transmitter sites, as the former republics take charge of broadcasting facilities located within their now independent countries meaning to use them for their own broadcast services. In addition, some of the new stations within Russia are taking time on sites which used to be used by Moscow. Considering Castro's disenchantment with Moscow one has to wonder about the Cuban relay and how much longer before Radio Moscow loses that one, too.

By mid-summer the station was to become at least partly independent from the state body controlling broadcasting (Ostankino) and will then have to look for "independent sponsorship." Perhaps as part of that change the Radio Moscow World Service is expected to be renamed Radio Moscow International sometime this year, if it has not been already. The station has been telling listeners to anticipate "very substantial changes" in Radio Moscow's frequency and program line up in the coming months. As of the spring there were no printed frequency or program schedules—even for use by station personnel!

The nation's money problems have affected broadcasting in many ways. So much mail is being stolen in the postal system that the long-running "Moscow Mailbag" program had to be cancelled because so little mail is getting to the station. Keep that in mind—you may want to hold off on sending reception reports until things improve. In any event, it's certainly not a good idea to send dollar bills.

Even before the coup attempt and the crash of the communist government the Kremlin had already discontinued such radio relics as Radio Peace and Progress and Radiostansiya Rodina (Homeland). In addition Radio Moscow was already cutting back or dropping language services. The relays of Radio Afghanistan have recently ceased as has the daily half hour which aired Lao National Radio, although both of these moves are as much a political decision as anything else.

It seems more than likely that Radio Moscow and the other state broadcasting services haven't yet hit bottom as far as the shakedown in their organization, facilities, programs and services are concerned. It's also a very safe bet that there will be more new Russian voices on the air so keep an ear out. These days you never know what you may hear coming out of Russia on the shortwave bands. ■

SATELLITE VIEW

BY DONALD E. DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

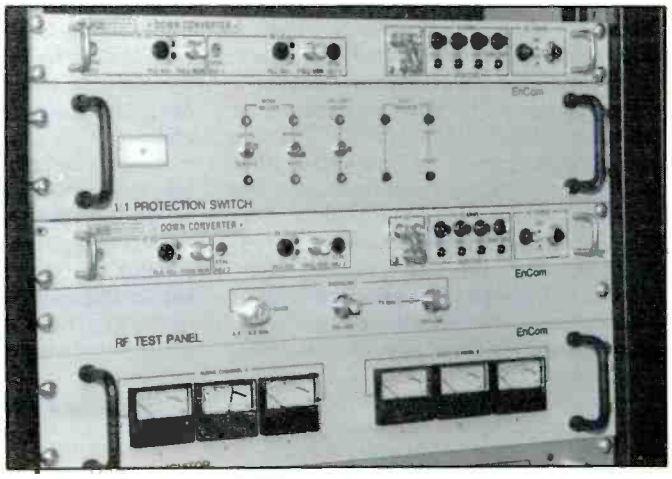
CSM By Satellite

American Public Radio, Radio Monitor and the Christian Science Monitor are just a few of the well-known communication and broadcast entities of the Christian Science empire. Perhaps the most well-known programs produced by Christian Science are Monitor and American Public Radio (APR). These programs are usually carried by your local Public Broadcasting Station. Being a news junkie, these are the first two programs I listen to in the morning on our local PBS station.

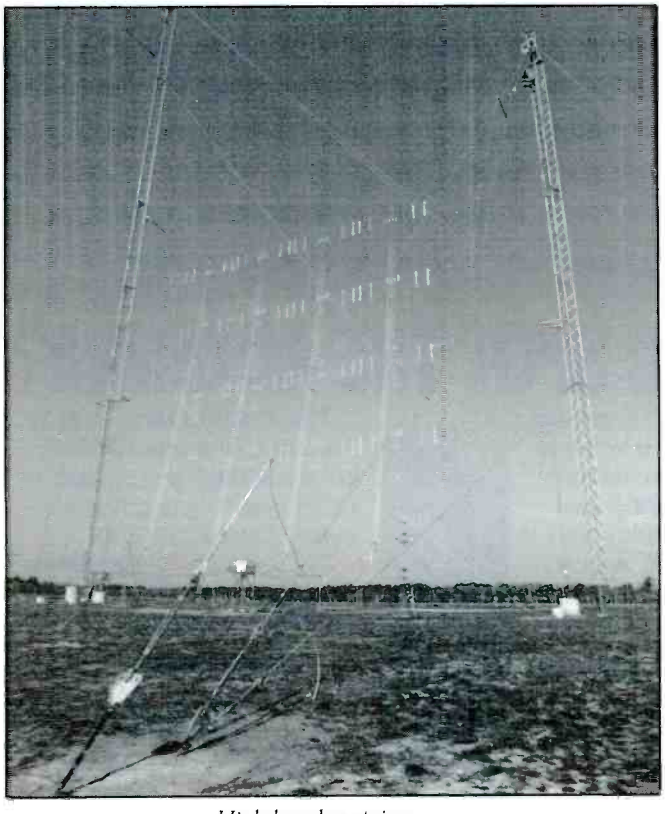
Our interest in Christian Science is not their domestic programming, but rather their World Service, and specifically, how they distribute the programming to their three shortwave outlets: WSHB, in Cypress Creek, South Carolina; WCSN, Scotts Corners, Maine; and KHBI, in Saipan, North Mariana Island in the Pacific. Of course, this is done by satellite.

The Boston studios of the Monitor are responsible for producing all the programming used on domestic and shortwave outlets. This includes production of the Monitor newspaper. The paper is layed out in Boston and it is then sent by satellite to Phoenix and Lon-

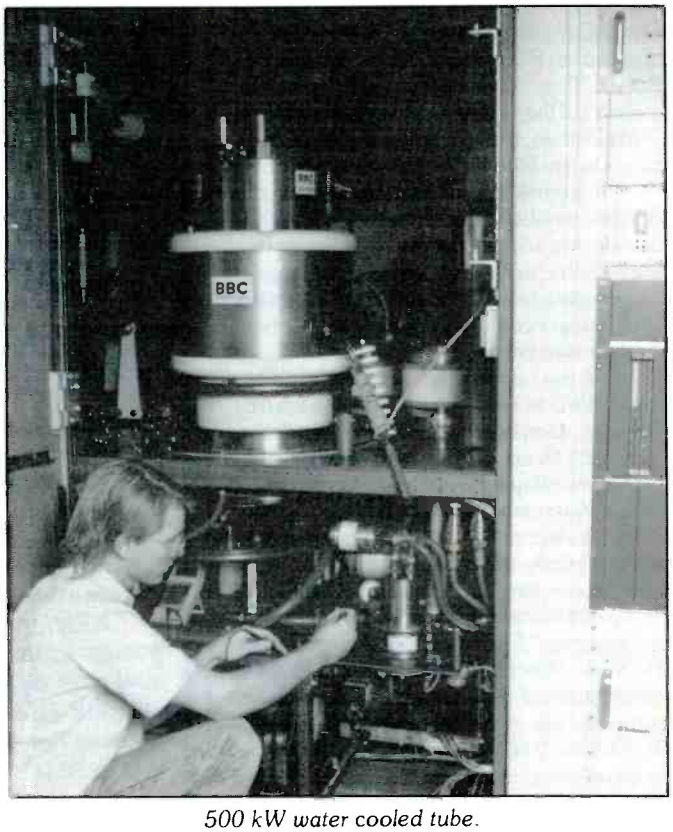
WSHB downlink antenna.



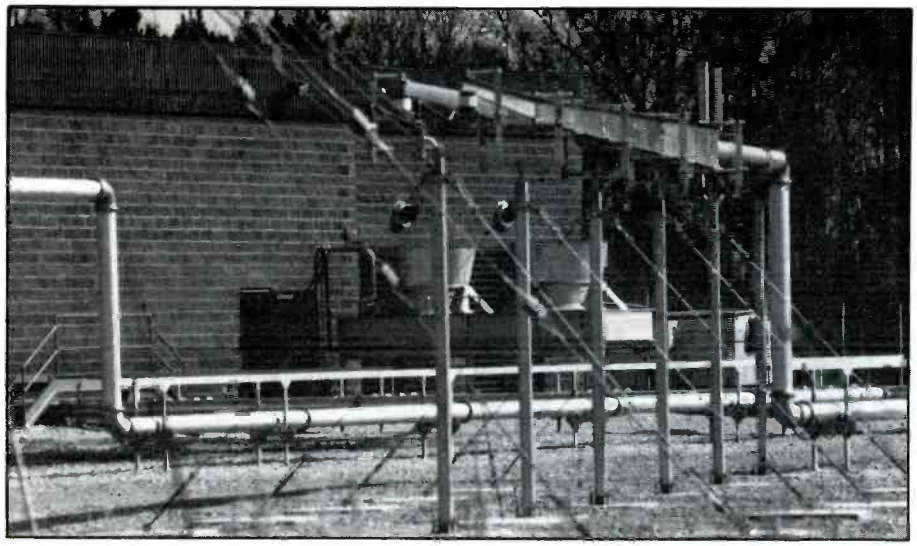
LNR down converters.



High band curtains.



500 kW water cooled tube.



Balun from 50 ohm hardline 300 ohm open feedline.

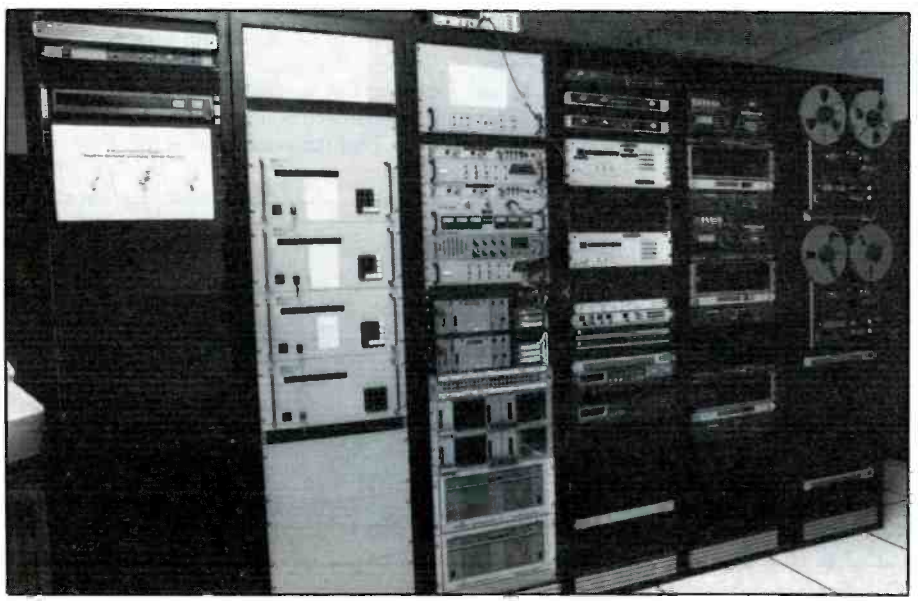
don to be printed.

All the programming used by WSHB, WCSN and KHBI is uplinked simultaneously to Satcom 2R. From there the signals, consisting of 5 channels that are multi-plexed to the satellite, are relayed to satellite ground stations at each of the three shortwave transmitter sites. Amid all the audio programs that are sent to the transmitter sites via satellite you will find that the newspaper is multi-plexed at the same time. The Monitor's ground station in Ft. Reyes California is used to uplink programs to an Intelsat 174 satellite. These programs are downlinked to KHBI in the Pacific. The link between Boston and Ft. Reyes is a fiber optic line. Domestic programs are routed through Westar 4.

As with most broadcasters today automation plays a large role in the operation of the Monitor's broadcast network. Too many programs in too many languages need to go to too many different locations for a manual, labor intensive system to handle. For this reason, digital tape machines are used to route up to 60 programs simultaneously.

WSHB runs two 500 kW Swiss built transmitters from its location in South Carolina. The antenna consists of a single 16 element curtain array. It has four pairs of 4 dipole antennas. Four vertical and four horizontal. There are an additional 5 pairs of curtains for high band and low band use. WCSN in Maine has a single 500 kW transmitter and a single pair of curtain dipoles. It uses the same Swiss transmitter. KHBI in Saipan has a single 100 kW continental transmitter and uses two separate pairs of curtain antennas.

The Christian Science news and information service is unique in Broadcasting. It provides over 100 domestic stations with the latest news and commentary as well as producing hundreds, perhaps thousands, of hours of programming for international consumption every week.



Downlinked equipment.

CB SCENE

27 MHz COMMUNICATIONS ACTIVITIES

BY BILL SANDERS, SSB-295

For those who complain that most modern CB rigs are of the mobile variety, let's take a look at Cobra's Model 90-LTD base station. With its wood grain finish and sloped front panel, this good looking unit is intended to end any possible objections to the appearance of communications equipment in a home or office.

With the exception of the channel knob, all controls are slide or butterfly switch type. The channel read-out is an oversized green LED, and there's a real meter to show the S/RF readings. Other features include separately switchable NB and ANL circuits, an "Instant Channel 9" access, mic gain control, and RF gain control.

This unit comes with a handheld dynamic mic, but an optional accessory we like is the CA-61 desktop amplified power mike. The MSRP of the Cobra Model 90-LTD is $179.95. For more information on this and other fine Cobra CB equipment, contact Cobra Electronics Group, Division of Dynascan Corp., 6500 W. Cortland St., Chicago, IL 60635. Please tell them you found out about it here!

Magic Memories

In June, we discussed the old Demco modular base station that was available in the 1960's. Yet another deluxe modular base station was put on the market in 1963 by The Sampson Company, of Chicago. It was similar in many ways to the Demco station, consisting of a separate transmitter, receiver, speaker, and in-line RF/SWR meter, all in metal cabinets. In 1963, this bold-looking package was sold as *The Sampson CB1A Modular Base Station*.

The receiver was a dual conversion type with 0.1 uv sensitivity cascode amplifier. It could be tuned across the entire band and also had five fixed-tuned positions, each of which could be tuned 5 kHz above or below the channel. The AVC system had a front panel switch that would ground it for additional gain on weak signals. A receive compression circuit would automatically reduce speaker volume at times when the audio level was cranked up to hear a weak signal and a strong signal came on. The S-meter could be calibrated by a front-panel knob.

The transmitter had a pi-net output that could be peaked on each channel by using the front panel controls and meter. Also provided was a vacuum tube modulation indicator that displayed two white bars moving and nearly meeting in the center at full modulation. There was a front panel mic gain, too.

This was certainly one of the most extravagant and hairy-chested units to come out of CB radio's early years.

The Cobra Model 90-LTD is styled to fit into the decor of any home or office without looking too out-of-place.

From Down Under

If you have ever heard that skip rolling in from Australian CB'ers, you may have wondered about activity there. Australia happens to be one of the most active CB nations going, and with the most *gung-ho* operators to be found. A letter from Aussie reader Gregg Lucas provided some details of the current status of things there.

Gregg tells of the early days when CB was an all-pirate activity on 23 channels. After those were legalized, the government tried to cut the band down to 18 channels. After all of the mess got sorted out, the band ended up with 42 channels between 26.965 and 27.405 MHz, AM and SSB, and 10 kHz channel spacing. Later, an additional band was opened for NFM mode, 25 kHz spaced channels between 476.425 and 477.400 MHz. Many repeaters are in use in the UHF band. Gregg notes that one of the most popular UHF rigs is the handheld 5-watt ICOM IC-40G.

In the 27 MHz band, Channel 9 is designated for emergencies. General usage is for Channel 8 on the highways, Channel 11 for calling, Channels 1 to 7, 10, and 12 to 15 for AM use, Channels 16 to 40 for SSB use. In the UHF band, 477.400 MHz (which is UHF Channel 40) is used on the highways for chit-chat.

Language Barrier?

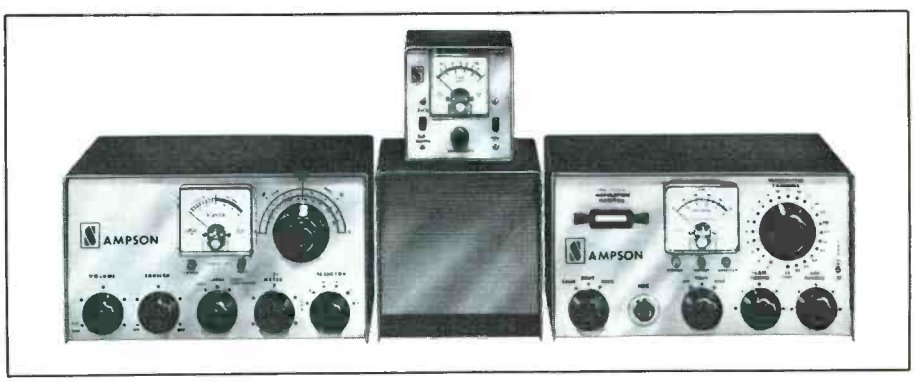
Louis Long, of Wheeling, West Virginia, wrote to say that he tuned in Channel 19 during a severe storm to hear what was going on there. Yes, he heard a lot of chatter about the road and weather conditions, but he wanted to let us know that he also heard a lot of "four letter words" and uncalled-for X-rated references to various bodily functions. He was under the impression that language like that was forbidden on the airwaves. He wrote that one particular station had a vocabulary in which "every other word" fit into this category. Another driver was angry because he wasn't going to break any speed records.

Louis asks who he can report this activity to, and he hopes we will mention it in *POP' COMM*. Well, Louis, you have reported it to us, so you can rest easy from here on in. Also, it's being mentioned here in the column.

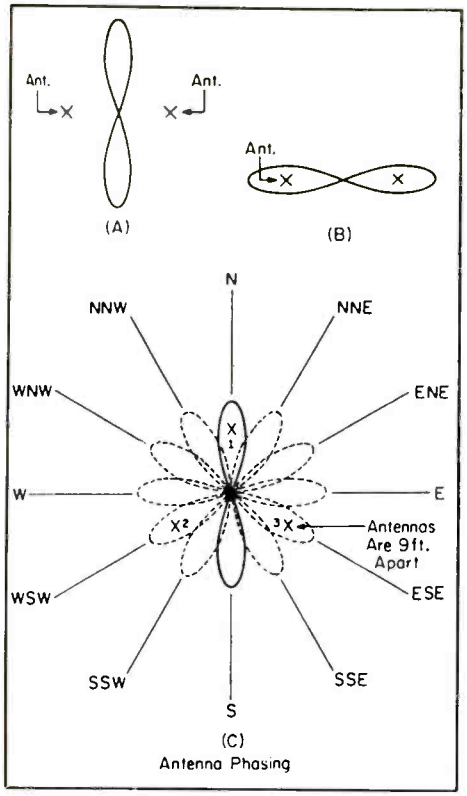
Which specific language is and isn't allowed to be used on CB is a matter of somewhat vague FCC regulations and standards on the topic, although one would assume that there are undoubtedly several choice words that they would frown upon. But the chances of the FCC ever being able to catch up with a mobile operator heard on Channel 19 to enforce such a regulation lie somewhere between nil and zero.

Beyond the FCC regulations, you might say good taste, good manners, or maybe common sense might deter many people from delivering a lot of this language on CB, and maybe even anywhere else. But it doesn't. We hear it all the time—in films, on TV, on the job, and from friends.

To be honest, it's neither anything very new on CB, nor should it be very surprising to encounter this language on some CB channels. That may not make it any more plea-



This Sampson Modular Base Station was a dream base station from 1963. Still looks rather appealing, doesn't it?



Three approaches to phased antennas, as described in the text.

sant to tolerate if you're a person who is especially sensitive to this type of talk. I don't usually hear it from any SSB operators, though, so I wouldn't go so far as to say that it pervades 27 MHz through and through, or on a level more pronounced than many non-CB places.

Certainly, if one wanted to seek out the most intensive displays of salty language on CB, the first place to try would be Channel 19—and during a severe storm. This is what Louis did. Most of the comms he heard were from long-haul truckers, since they're about the only people foolhardy enough to drive in that kind of weather. During a storm, they're putting their lives on the line pushing those big rigs under the worst possible conditions while trying to maintain the schedules required for them to earn a living. The language these guys use while talking to one another under pressure is hardly going to meet the approval of someone with tender sensitivities sitting comfortably at home while listening in.

What can be done about it? The answer is simple. Do the same thing you'd do if you heard it on TV. There's a knob that lets you change to other channels, and a switch that lets you shut off the set when things get so bad that even changing channels doesn't help.

Ola de Espana

Francisco J. Garcia, in Spain, observes that CB there has been legal for ten years and has grown into a large hobby. He writes a column in a monthly magazine in Spain called *Correo CB*, and he belongs to the *Einstein DX Group*, P.O. Box 859, Valencia 46080, Spain. This is also Francisco's mailing address, in the event any of our readers wish to send him a card or letter.

Shut Down, But Maybe Not Shut Up

The FCC confiscated the transmitting equipment of a man in Pennrock, Michigan that the agency claimed was running 1,200 watts in the band between CB Channel 40 and the low frequency edge of the 10 Meter ham band. The man's neighbors had complained to the FCC that the signals were causing serious interference to their TV reception and landline telephone service, and that they were a mix of offensive commentaries and religious broadcast tapes. The FCC said they carted off enough equipment to start a small radio station.

Even so, neighbors said that after the big FCC raid there still seemed to be signals coming from the station, although not as powerful as before.

This was brought to our attention by Bruce A. Cabo, of Wilmington, Delaware. Thanks, Bruce!

It's Just A Phase

A note from Willie Stockman, Gold Beach, Oregon, mentions that he was told that there was a type of antenna system that didn't need to move but would have the same effect as a rotatable beam. He hopes we have heard of it, too, and that we can tell him what it is.

Our guess is that this is a reference to a phased antenna system which has been used for many years by broadcast stations and is also encountered in the CB service. This system uses several identical antennas, and gets gain from the way in which the antennas are fed.

If you place two identical antennas one-half wavelength apart (9 feet for CB use) and feed them with RF energy of the same amplitude and phase, the radiation pattern won't be the same as that of either antenna alone. If the two antennas are omnidirectional (like most CB antennas other than beams), the pattern for the pair will be a fairly sharp beam in two directions. The direction of this energy beam will be at right angles to the line between the two antennas, as shown in "A" of our diagram. This comes about because along this line, the energy from both antennas reinforces. In between, you get varying amounts of cancellation, producing the sharpness of the beam.

If the energy fed to one antenna is the same amplitude but of the opposite phase as that fed to the other, the same sharp beam will result but now it will be along the line through the antennas, with the nulls at right angles to this line. See "B" in the diagram.

Now, let's use three antennas placed at the points of a 60-degree triangle so that each is 9 feet from each of the other two (as in part "C" of the diagram) and hook up only two of them at a time. You can get the beam pointed in any one of six directions. If you set them up so that the line through antennas 2 and 3 is straight east and west, then you can get a north and south beam by feeding 1 and 3 in phase, an ENE-WSW beam by feeding 1 and 2 in phase. The other three directions are obtained by feeding out of phase.

NNE-SSW results from 1 and 2, east-west from 1 and 3, and SSE-NNW from 2 and 3. To feed the antennas in phase, make sure both feedlines are exactly the same length. To feed them out of phase, make one feedline exactly six feet longer than the other. To switch in-phase to out-of-phase feed you can use coaxial transfer switches to cut in an extra six feet of line in one feedline.

The excellent Antenna Specialists "Super Scanner" CB base station antenna is a non-moving beam that changes signal direction by the use of phasing. This antenna has been used in CB for many years and is recommended for installations where the use of a rotatable beam isn't possible.

That's it for us, and we are standing on the side until next month. Let's have your photos, news clippings, QSL's, and questions.

One last item. A broadcast engineer wrote to say that he recommends against the use of the CB/TV duplexor we ran on page 55 in the May issue. He feels it could damage some late model TV sets. ■

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

You're about vacationed out, right? You've taken the scanner to the amusement park, the state park and the race track. You've found all kinds of new things to listen to this summer. Aren't handheld scanners great? Now, take those notes and send them into *Scanning VHF/UHF*. Your fellow scanner buffs would love to know what frequencies are active when they hit your favorite summer retreat next year.

Edward D. Paul of Marion Heights, Pennsylvania, writes in asking where he can get a directory of frequencies for just the state of Pennsylvania. There was such a guide put together several years ago, but I haven't run across it lately. Actually, it was published in two editions—one for the eastern part of the state and one for the western half of the commonwealth. In any event, there is a directory published for the Philadelphia area (available through Scan Communications, Co., PO Box 974-SM, Burlington, IA 52601-0974.

From Green, OH, Dale Miracle writes in with some of his favorite frequencies for his small city near Akron: 33.86, fire F-1; 33.68, fire F-2; 154.160, fire F-6 for medics; 460.100, Summit County sheriff F-1; 460.175, sheriff F-2; 460.250, sheriff F-3; 460.425, sheriff F-4; 123.0505, 123.200, 123.250, Goodyear Blimp operations; 151.625, Goodyear Blimp ground crew.

In addition, Dale says he likes to listen to space shuttle retransmissions during flights on a local amateur repeater, 147.330. Many ham clubs transmit the shuttle audio and mission control commentary during flights; try tuning through the ham 2-meter band (144-148 MHz) during the next shuttle flight to see if a local club is involved.

Dale also heard what appears to be telephone conversations in Spanish during skip season on low-band VHF frequencies. These communications you are hearing are indeed telephone calls, usually, and can be either relays from rural points or mobile phone service. You never know what you may hear when the skip is rolling in from Central or South America.

Burt Steinberg of Monsey, New York, says he reads this column in *POP'COMM* every month. He has a Uniden Bearcat 200XLT and 800XLT and hopes to acquire an Icom R7000 or R7100 soon. He now uses a GRE super amplifier to help the rubber duck antenna perform better, and he's considering upgrading to an active outdoor antenna such as the Dressler ara-1500. He wants to know more about such a setup.

First, Burt, you say you live in a densely populated area. Because of that, I assume you also are near several radio transmitters or towers. Because you are near towers that carry communications for services such as cellular, two-way radio, paging or broadcast stations, an amplified active antenna could possibly cause you problems. If you are occasionally plagued with intermod and other unwanted signals when you do your scanner listening now, an outside amplified antenna will intensify the problem. If you are not experiencing problems now, it's possible an active antenna may still cause some problems, but they may be minimal if you are willing to let the many other benefits outweigh any drawbacks. For instance, you may want to be able to tune in a particular fire department on VHF high band that's off in the distance and the active antenna may help you accomplish that task. However, you may very well experience no problems whatsoever. The nice thing about an amplified antenna is that you can mount the antenna inside your home or apartment if you wish and get almost the same performance as if it was mounted outside on the roof.

During a visit to the United States by Prince Charles and Princess Diana, Andrew Burns of the British Embassy's Information Department uses a cellular phone while the royal couple shops at a mall in Virginia.

Frank Bronkar, KA8LJS, of Colombus, OH asks what frequencies are allocated by the Federal Communications Commission for the BETRS (Basic Exchange Telephone Radio Service) rural phone service. BETRS allows telephone service to be extended to remote rural areas via radio signals. Typically BETRS uses conventional mobile telephone frequencies and might be found interspaced between normal mobile telephone frequencies (not cellular).

Garnett H. Martin, KB2CAE, of Staten Island, New York, writes in saying that often when monitoring 800 MHz frequencies, the conversation switches to another cell and frequency just when it becomes interesting. Garnett wonders whether there was a trick in following calls from one cell to another.

First, if you know all the frequencies of a particular trunked system, you can try following a call. Systems can run from five to 40 channels in a given system. In a five-channel system, the frequencies are exactly one megahertz apart, i.e., 861.9875, 862.9875, 863.9875, 864.9875 and 865.9875.

In the 935-940 MHz trunked band used in many major metropolitan areas now, frequencies are all 12.5 kilohertz apart, so you'll find a trunked system's cluster of frequencies fairly easy. For instance, a system might operate on the following frequencies: 939.2625, 939.275, 939.2875, 939.300 and 939.3125. Program in all known frequencies for the trunked system you wish to monitor, but don't use the delay feature. That way, if the conversation switches frequencies in the middle of the communication, your scanner will quickly go to the next channel. You may have to hit the scan button once or twice to pass over other channels that may be in use and of no interest. Remember what the voices sounded like and you'll latch onto the new frequencies fairly easy. While most trunked systems can change frequencies each time the microphone is keyed up, some systems will lock onto a given channel for as long as the conversation is taking place. Too bad all trunked system don't operate that way!

If you're trying to monitor cellular calls, there is no real trick to following a call. First, you should identify all the frequencies used by cells sites in your general vicinity. If you

scan through the control (data) channels from 880-880.62 and 879.39-879.99, you'll find what sites are on in your neighborhood.

For the data channels above 880 MHz, take each data channel and add 660 kilohertz to the frequency several times, right up through 894 MHz. By writing down the frequency resulting each time you add 660 kilohertz (i.e., 880.02, 880.68, 881.34, etc), you'll uncover each frequency used in a given call cell site. For data channels below 880 MHz, just subtract 660 kilohertz, right through 869 MHz, i.e., 879.99, 879.33, 878.67, etc. Do that for each data channel you hear on an every day basis. By doing such, you can make a list of all cellular frequencies in use in your area. That way, you don't have to search through all the frequencies from 869-894 MHz when you are trying to follow a call. Try the frequencies in neighboring cell sites and you'll have better luck, unless of course, the call gets switched off to a cell site you can't hear at your monitoring post.

Garnett also asks what advice can be given to those monitors who don't have the patience to try to find new and hidden frequencies. He says that unless someone gives him a frequency to monitor, he finds it next to impossible to uncover new frequencies on his own. While patience finds all kinds of frequencies, I recognize that not everyone is patient. For instance, there are radios available that will search out frequencies for you and store what it finds in memory (like the late Uniden Bearcat 250XLT that also recorded the number of times a frequency was active, or the Realistic PRO-2006, which will search and store 10 frequencies in memories to be viewed later). In addition, if you have a computer, there are programs available that will do all the leg work on searching out new frequencies and making a list. All you need to do is view the list and determine what frequencies you already know about and what frequencies possibly might be new and of interest. In any event, no matter whether you are patient or not, you've got to keep a log or list of frequencies to refer to. When you stumble across a new frequency, you must first determine whether it is indeed a new frequency. Without a list, it's just not possible. We're open to any other ideas for the impatient monitor.

Finally, Garnett inquires as to whether there is a publication that caters to the New York City area. Again, we refer you to earlier in this column as to the address for *Northeast Scanning News*, which covers Virginia to Maine, with several editors for New York, New Jersey and Pennsylvania alone.

What are you hearing on your scanner? If you've uncovered some new and interesting frequencies, please pass them along for your nearby fellow monitors. We also welcome photos of your listening posts and antenna farms as well as those of dispatch points and communications towers. Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N Broadway, Hicksville, NY 11801. ■

EMERGENCY

COMMUNICATIONS FOR SURVIVAL

BY GORDON WEST, WB6NOA

Marine Emergency Calls May Go Digital

The marine VHF radio band is centered around 156.800 MHz, the international and distress calling frequency. Here are some additional VHF safety channels: Channel 6 (156.300), Intership safety; Channel 15 (156.750), Class C EPIRB; Channel 22 (157.100, simplex), Coast Guard liaison; Channel 83 (157.175, simplex), Coast Guard auxiliary.

Out on the high seas, VHF communications are beyond line-of-sight distances from ship to shore. Mariners will rely on Emergency Position Indicating Radio Beacons (EPIRB) for a one-way, 48-hour distress call to orbiting satellites, and they may also use marine single sideband to call out for help.

The international distress and safety frequency on marine single sideband is 2182 kHz, upper sideband. These are some additional marine SSB safety frequencies: 4125 kHz; 6215 kHz; 8291 kHz; 12,290 kHz; and 16,420 kHz.

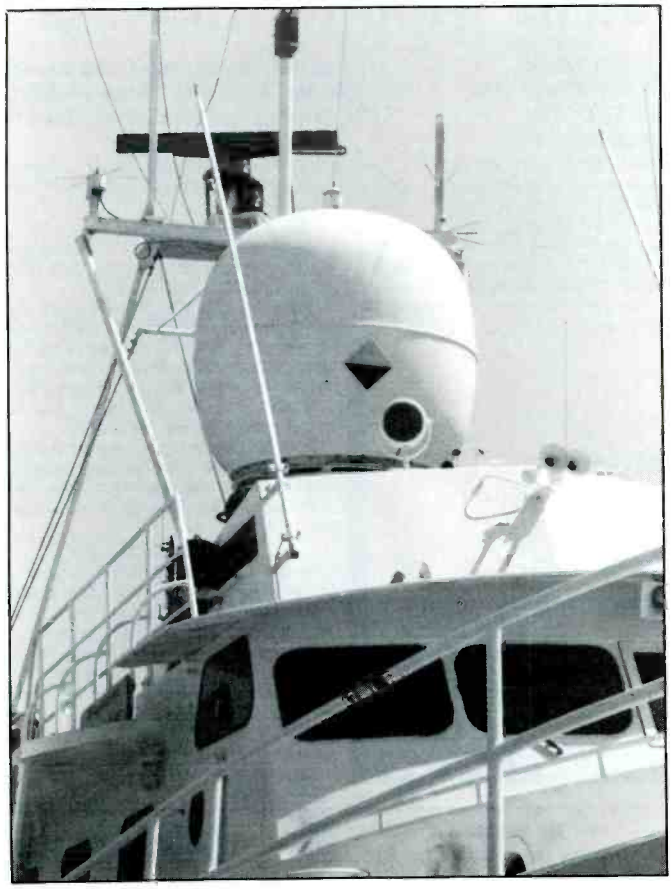
The United States Coast Guard may operate on single sideband, using duplex on the following frequencies: 4426 kHz, ship receive; 4134 kHz, ship transmit; 8764 kHz, ship receive; 8240 kHz, ship transmit; 13,089 kHz, ship receive; and 12,242 kHz, ship transmit.

Sending and receiving distress calls and safety calls on single sideband is risky. If ionospheric conditions are disturbed, calls could be missed. If the operator should dial in a 4 MHz channel, instead of a 16 MHz channel, the skip might not be long enough. Conversely, if the operator dials in 12 MHz, when they should have dialed in 8 MHz, the skip will shoot right over the Coast Guard station, and the distress call may be missed.

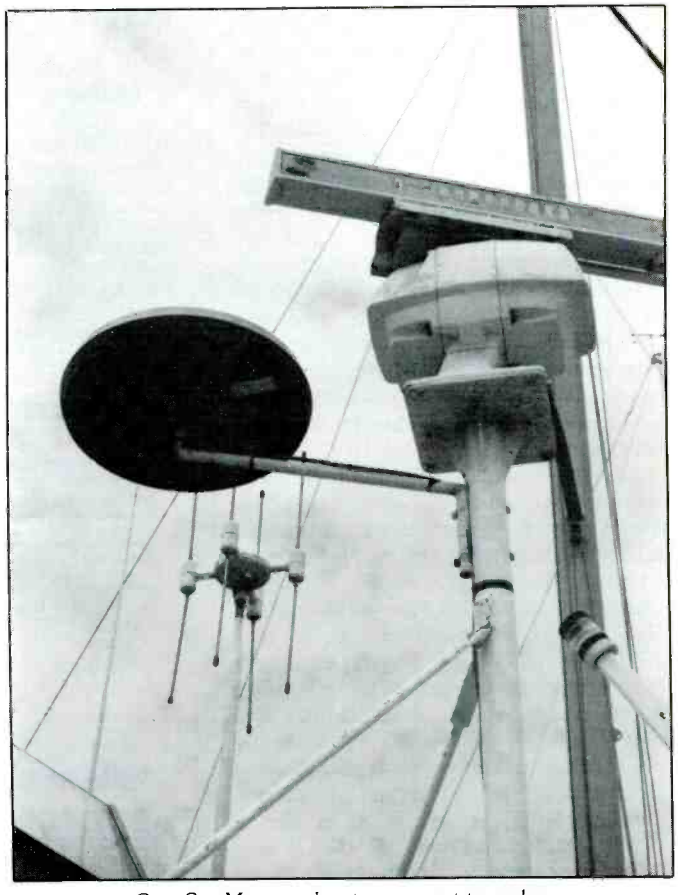
For the big ships, they abandoned the SSB system years ago, and have gone to COMSAT satellite communications. COMSAT provides satellite service to big vessels at sea virtually anywhere in the world through two U.S. Coast Guard earth stations located in Santa Paula, California, and Southbury, Connecticut. The big ships may use a COMSAT system called INMARSAT-A, and any type of telephone call, telex, data, or distress call goes through, loud and clear, instantly. But the antenna requirements for an INMARSAT-A system would sink any small boat. The radome for the standard "A" is much too large for the smaller boat.

Small boats could install INMARSAT standard "C". Here the antenna is not much larger than a traffic cone, and it is omnidirectional which would not require stabilization of a dish. But standard "C"—"C" for computer—only allows for keyboard communications with shore when far out at sea.

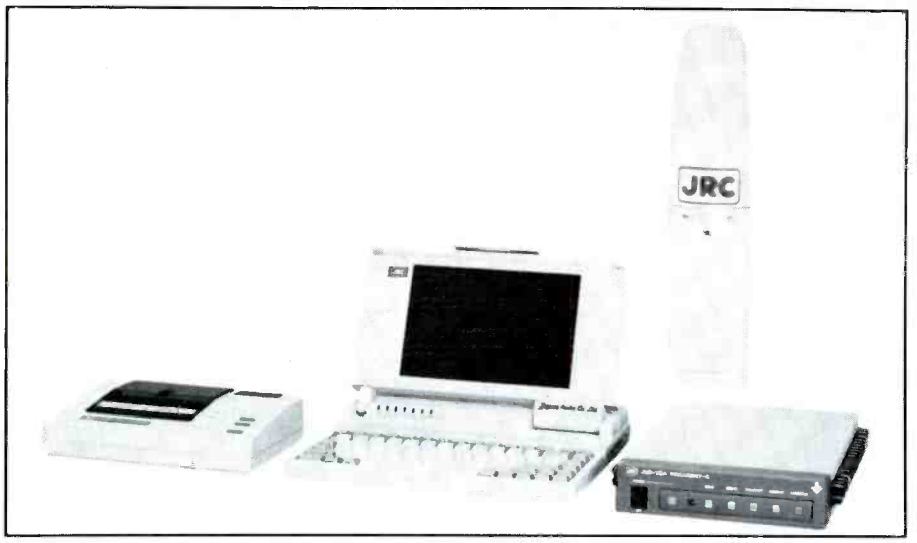
Finally, after years of experimentation, COMSAT introduces INMARSAT-M—"M" for miniature. The INMARSAT-M mobile link system allows for voice transmission from a relatively tiny dish antenna, out at sea, anywhere you may go. For search and rescue vessels, voice communications are instantaneous with a shore station—well, after a one-second delay after traveling through the geostationary INMARSAT system. The new standard "M" has sounded the death knell for traditional single-sideband radiotelephone service. The rate for COMSAT voice service through standard "M" is $5.50 per minute,



ComSat A INMARSAT phone and distress service.



ComSat M, round antenna next to radar.



INMARSAT C.

which compares to the basic rate of traditional SSB radiotelephone service. And best of all, your calls will be crystal clear, and you won't end up sounding like Donald Duck next time you call up a friend or the U.S. Coast Guard.

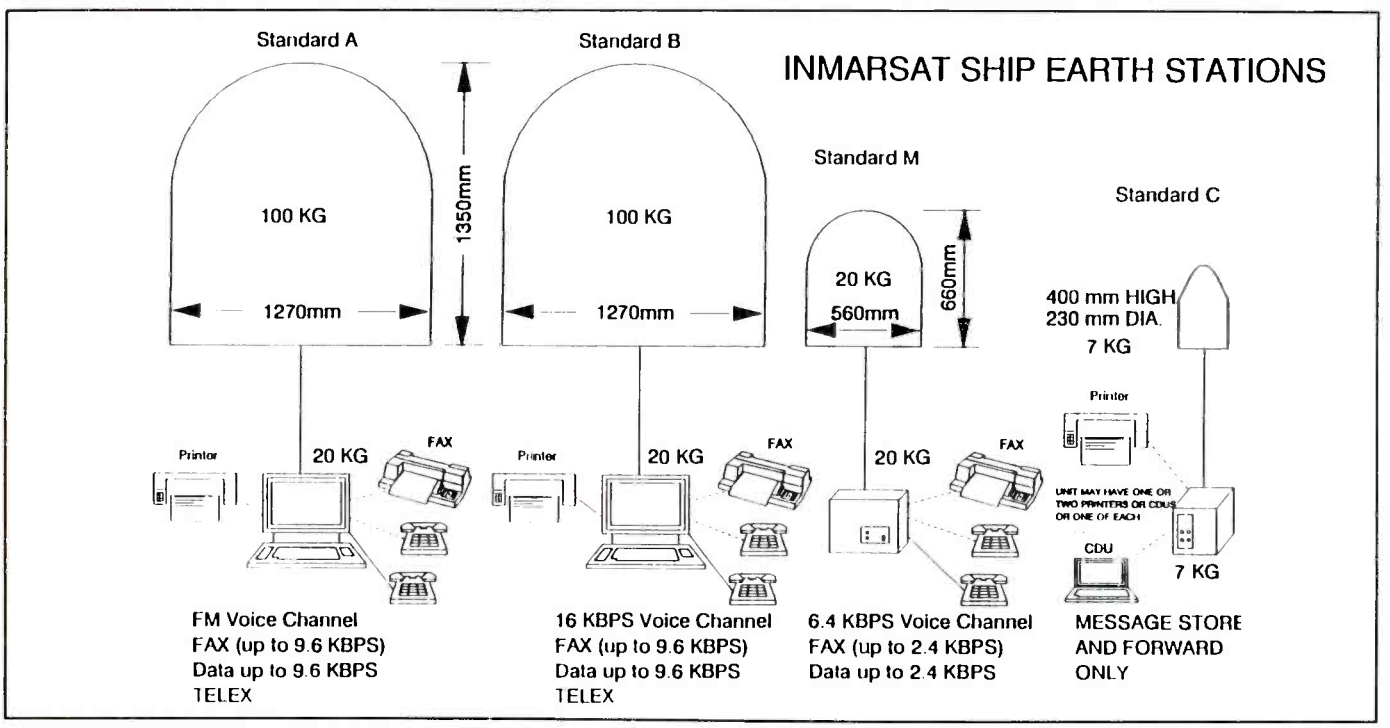
"Efficient digital technology allows the satellite signal to be compressed into an acceptable voice quality over the small terminals, and allows both the cost of the equipment and the fee for using the service to be reduced to approximately half the cost of other existing satellite communications services currently on the market," comments Ron Mario, President of COMSAT Mobile Communications. "Satellites have a significant advantage over other forms of mobile communications, such as single sideband radio and cellular telephone," adds Mario. "But until now, those advantages were only available to the mega-yacht owner and those with large commercial marine interests. Now, even small boat owners will be able to take advantage of the features that only satellite service can provide—global connectivity, reliability regardless of weather or ionospheric conditions, and the ability to provide private communications and immediate link to the U.S. Coast Guard."

The key to the small-sized system is the digitizing of your voice. Your briefcase-sized transponder digitizes your voice, and sends it up through the satellite, and the shore station at the other end of the circuit un-digitizes it, and turns it back into your old self. Same thing on the return trip—everything is digital through the satellite, but converted back to regular voice at the speaker. This is the same technology that cellular telephones will be going to in the near future.

For emergency "jump teams" that must go to a remote part of the world where land-based communications are poor or non-existent, COMSAT standard "M" may be allowed on land. COMSAT-M could also be used, in an emergency, anywhere in the country where a disaster has disrupted regular communications. Just as long as you have a view of the sky, your briefcase-sized satellite communications system puts you in touch. But talk fast—$5.50 a minute adds up!

The antenna system is only 24 inches tall, 24 inches wide, and weighs under 40 pounds. It sets up like an umbrella, and needs only to be aimed in the general direction of the satellite. The actual equipment is 16 inches wide by 6 inches high and 10 inches deep, and works quite nicely off a self-contained battery system. The INMARSAT-M ties in with the Global Marine Distress and Safety System (GMDSS) to provide every operator around the world with the essential communications tools to provide for the safety of a boat's crew, passengers, and cargo. When a distress signal is received, authorities and ships in the area will be alerted in order to expedite search and rescue operations. INMARSAT-M will also provide for urgency and safety communications, including the distribution of navigation and meteorological warnings.

If you are part of a global rescue organization, or handle marine emergency calls, you may wish to find out more about the COMSAT satellite communications systems for small boats. The public relations council for COMSAT is Laurie Gerstley, COMSAT PR, World Trade Center, Baltimore, Maryland 21202; 410/539-5400. More and more mariners and emergency communicators are looking to the sky for better distress-call coverage. ■



YOU SHOULD KNOW

BY HARRY HELMS, AA6FW

INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

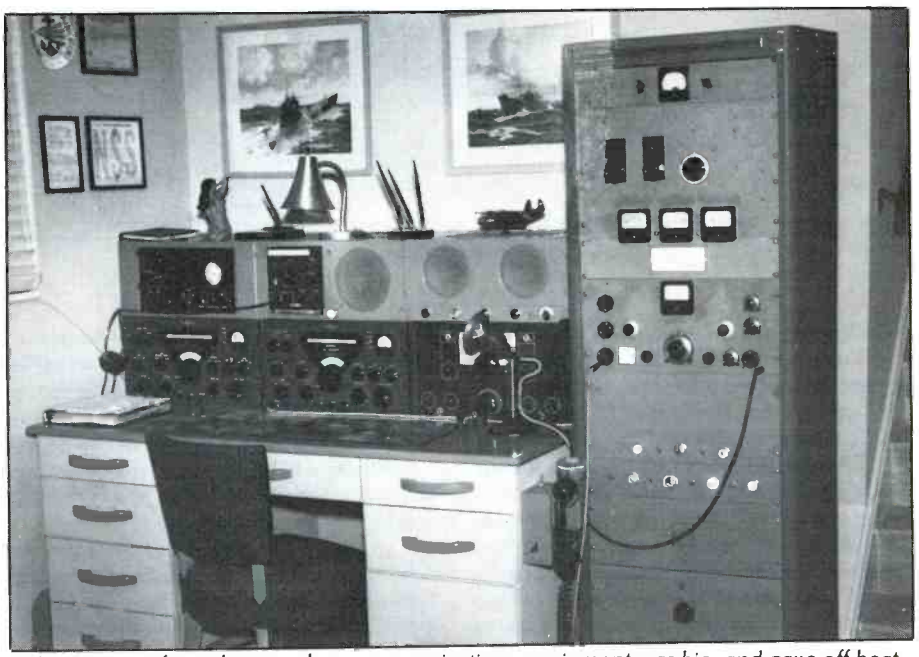
Confessions Of A Boat Anchor Junkie

You had to have been there.

It was the mid-1960's. Every self-respecting SWL had their monitor certificate on the wall. There was no *POP'COMM*. For SWL'ing information, we had to rely on *Electronics Illustrated* and the columns by C.M. Stanbury and some young turk named Kneitel.

But there were compensations. There were shortwave radios with now-strange names like Hallicrafters and Hammarlund.

The shortwave radios of the 1960's were not sleek, solid-state gizmos with digital dials accurate to the nearest Hertz. No sir! These were behemoths filled with vacuum tubes that gave off enough heat to keep your listening post warm on a cold winter night. Their dials were accurate to the nearest 50 kHz (if that), they drifted, and SSB reception was usually something of an adventure. And I loved them! Each month I would carefully check out the ads in the radio magazines of the day and look in awe at the impressive shortwave receivers offered. But the prices—$500 for a top-of-the-line Hammarlund HQ180! That was back when gold was $35 per ounce and gasoline was 22 cents a gallon, so something like the HQ180 was clearly beyond my early teenage means.



A ham station from the era when communications equipment was big, and gave off heat. Two Collins 51J-2 receivers are at the left on top of the desk.

So what's the point of these nostalgic rantings of an aging baby-boomer? Well, I'm not going to try and tell you that the shortwave receivers of that era were better than those of today. Nope, today's receivers give you more performance per dollar than those of the mid-1960's and they're a lot easier to use, with the digital dials being a big help in locating specific frequencies. Today's receivers are more reliable, too. No, today's stuff is clearly better.

However, I am going to tell you that the old stuff was—and is—a lot of fun! In fact, they actually have some advantages for certain situations. For one thing, many older receivers were optimized for AM mode reception. They might be lousy performers for SSB and RTTY, but they can deliver outstanding results on AM mode broadcast signals. They have some interesting features, such as Q-multipliers and variable crystal filters, that aren't found on current solid-state receivers. Vacuum tube receivers usually perform better on the AM broadcast band than all but the most expensive solid-state receivers, since they handle signals from powerful local stations without overloading. And the audio from many vacuum tube receivers sounds great!

To be honest, using a classic vacuum tube radio from the 1950's or 1960's isn't for everyone. They are more difficult to use, particularly in determining which frequency you're tuned to, and take up a lot of space (that's why they're called "boat anchors"). You'll need another receiver with a digital frequency readout or a signal generator/frequency counter combo to tell precisely where you're tuned to. They fail much more often than modern solid-state models , and locating replacement vacuum tubes can be a big pain. But if some of the excitement of your solid-state rig has worn off, or if you're looking for a lot of performance for not too much money, then you ought to look into obtaining a "classic" shortwave radio from the past as your second radio. Let's take a look at what's available out there.

The Big Names

In the 1950's and 1960's, there were far more different manufacturers offering shortwave radios to the public than there are today. Among the now-extinct companies were Allied Radio, Eico, Gonset, Lafayette, and National. Some manufacturers, such as Collins and Heath, are still around but no longer make shortwave receivers for the consumer market. But for many SWL's, the two biggest names were two we mentioned earlier—Hallicrafters and Hammarlund.

Hallicrafters was founded by William Halligan, W9AC, an active ham. They started operating in Chicago back in 1932. Their philosophy was to use inexpensive, widely-available components intended for AM broadcast band radios whenever possible instead of custom or specialized parts. This kept the prices of their receivers down, although it also meant they were often not as state-of-the-art in features and performance as those of other manufacturers. The first Hallicrafters receiver,the S-1 Skyrider, made its debut in 1934. The last, the SX-133, was taken out of production in 1973. In that four decade interval, Hallicrafters produced dozens of modes. Many SWL's of the 1950s and 1960s had a Hallicrafters model as their first receiver (that was the case with me; mine was a S-119 Sky Buddy II model). Among the most popular Hallicrafters receivers were the S-38 series, the S-120, the SX-71, the S-85, and SX-110. Not all Hallicrafters receivers were discount specials, however, the SX-100, introduced in 1955, still remains an impressive performer even by today's standards.

Hallicrafters also produced many ham band-only receivers and matching transmitters, and a lot of hams got started with an item or two of Hallicrafters gear in their shack.

Hallicrafters was bought by the Northrup

Corporation in the 1960's, and it gradually shifted its efforts out of shortwave equipment and into defense electronics. Hallicrafters disappeared as a separate business unit in the late 1970's and the name vanished as well. (Fortunately, Bill Halligan is still with us in retirement.).

Hammarlund was founded by Oscar Hammarlund a couple of years before Hallicrafters. Unlike Hallicrafters, Hammarlund's receivers stressed performance and often carried price tags to match. Hammarlund is best remembered today for the general coverage receivers they introduced after World War II, such as the HQ129X, HQ150, HQ160 and HQ180 models. Their beginner's sets, such as the HQ100 and HQ145, were real status symbols for new SWL's in the 1960's. They also produced the well-regarded SP-600 "Super Pro" line of receivers for the U.S. military from 1950 to 1972.

Hammarlund also manufactured several ham band-only receivers, but just one ham transmitter.

Unfortunately, Hammarlund's technological innovations basically ceased with the introduction of the HQ180 in 1959; they were caught unprepared by the solid-state revolution of the 1960's and the shift of ham radio operators to transceivers instead of separate transmitter/receiver units. Eventually, Hammarlund shut down all receiver manufacturing in 1972 and today the company no longer exists.

There are other receivers from the 1950's and 1960's that were noteworthy. Collins produced the 51J4 (R388A, in its military version) and R390A receivers. These were originally intended for the military market, and were right on the cutting edge of receiver technology in that era. Both have frequency readout better than 1 kHz, along with outstanding selectivity and sensitivity. These two are still used as main receivers by some top DX'ers today! Heathkit's SB-310 was a SWL version of their popular SB-300 ham band receiver. At $250, it was the first affordable shortwave broadcast receiver that featured frequency readout to better than 1 kHz along with outstanding SSB performance.

Finally, a currently active communications receiver manufacturer—R.L. Drake—was also producing receivers back then. In fact, it's not too much of an exaggeration to say the Drake's line of compact, innovative receivers were some of the biggest nails in the coffins of Hallicrafters and Hammarlund. While not cheap, Drake's receivers were within the pocketbooks of many SWL's and featured frequency readout to 1 kHz and superb SSB reception. Drake's receivers covered only the ham bands, but had provision to cover other bands just by plugging crystals "cut" for the desired bands.

Among the most popular Drake models were the 2B, 2C, and R4 series of ham receivers and the unique SW4A, an AM mode-only receiver that came equipped with crystals for the major shortwave broadcasting bands.

Secrets of the Ancient Masters

How good was this stuff? Well, the frequency readout accuracy of the Hallicrafters and Hammarlund receivers was lousy, but pretty good on the Collins, Drake and Heath models. SSB reception depended on the model; better (that is, higher priced) units could deliver satisfactory SSB reception. On cheaper units, forget it—the receiver's beat frequency oscillator drifted all over the place, meaning you had to re-tune for clear SSB reception every few seconds. And yes, these receivers drifted. The better ones settle down after a few minutes, while the cheaper ones forced you to adjust the tuning dial every 15 minutes or so to stay on frequency. Receiver memories? Dual VFO's? Scanning facilities? Are you kidding?

But the better receivers of the 1950's and 1960's could do some things quite well. Take AM mode reception. Much to my surprise, I find that there are some situations where I can get better reception of an AM mode signal on one of my vacuum tube wonders than on one of my contemporary solid-state receivers!

How is this possible? Take a little thing like noise limiters. Noise limiters on most current receivers are designed to be most effective in the SSB mode. They don't do nearly as well on AM signals. By contrast, most noise limiters found on 1950's and 1960's receivers were designed for use in the AM mode, and

(continued on page 76)

POP'COMM'S World Band Tuning Tips *August – 1992*

Freq.	Station/Country	UTC	Notes
2310	VL8A, Alice Springs, Australia	1000	
2390	LV de Atitlan, Guatemala	0300	SS
3200	Trans World Radio, Swaziland	0300	
3210	R. Mozambique	0300	PP
3220	HCJB, Ecuador	0500	SS
3235	R. Clube Marila, Brazil	0200	PP
3240	Trans World Radio, Swaziland	0345	close
3250	R. Luz y Vida, Honduras	0230	SS
3260	R. Madang, Papua New Guinea	1100	
3270	Ecos del Oriente, Ecuador	1030	SS
3285	La Voz del Rio Tarqui, Ecuador	1000	SS
3290	R. Namibia	0400	
3300	R. Cultural, Guatamala	0200	SS
3315	SLBS, Sierre Leone	0600	
3320	R.Orion, South Africa	0245	
3366	R. Rebelde, Cuba	0300	SS
3380	R. Chortis, Guatemala	0230	SS
3377	R. Nacional, Angola	0430	PP
3395	R. Catolica, Ecuador	1030	SS
3500	LV de Guainia, Colombia	1030	SS
3880	R. Free Bougainville	0800	
3985	Print Handicapped R., New Zealand	0730	
3995	Deutsche Welle, Germany	0330	GG
4331	R. Horizonte, Peru	1100	SS
4456v	LV del Tropica, Bolivia	0100	SS
4665	R. Uno, Peru	0000	SS
4680	R. Nacional Espejo, Ecuador	0000	SS
4740	Radio Moscow	0300	
4785	Ecos del Combeima, Colombia	0100	SS
4795	LV de los Caras, Ecuador	0355	close, SS
4800	La "N," Dominican Republic	0500	
4810	R. Orion, S. Africa	0230	
4815	RTV Burkina, Burkina Faso	0600	FF
4815	Rdf. Londrina, Brazil	0130	PP
4825	R. Kiev, Ukraine	0300	
4830	R. Tachira, Venezuela	0200	SS
4845	ORTM, Mauritania	0630	AA
4850	CRTV, Cameroon	0430	FF/EE
4865	La Voz del Cinaruco, Colombia	0300	SS
4865	Gansu PBS, China	1130	CC
4870	ORTB, Benin	0457	sign on, FF
4875	Super Radio, Brazil	0235	PP
4875	La Cruz del Sur, Brazil	0235	PP
4885	Ondas del Meta, Colombia	1000	SS
4890	ORTS, Senegal	2345	FF
4895	LV del Rio Arauco, Colombia	0430	SS
4900	R. Centinela del Sur, Ecuador	1100	SS
4904.5	R. National, Chad	0427	sign on, FF
4910	Radio One, Zambia	0300	SS
4915	R. Anhanguera, Brazil	0700	PP
4920	ABC, Australia	1200	
4920	ABC, Brisbane, Australia	1100	
4940	R. Moscow	0200	
4950	R. Nacional, Angola	0400	PP
4955	R. Marajoara, Brazil	0800	PP
4976	Radio Uganda	0400	
4990	Hunan PBS, China	1230	CC
5011	Escuelas R/fonicas, Ecuador	0225	sign off, SS
5015	R. Pioneira, Brazil	0230	PP
5929	SIBC, Solomon Islands	0800	
5025	ORTB, Benin	0600	FF
5030	R. Catolica, Ecuador	0200	SS
5035	R. Aparecida, Brazil	0030	PP
5035	RTVC, Central African Rep.	0428	sign on, FF
5040	R. Ala, Russia	0330	s/on
5040	La Voz del Upano, Ecuador	0445	SS
5045	R. Cultura do Para, Brazil	0300	PP
5056	RFO, French Guiana	0630	FF
5440	Xinjiang PBS, China	1100	CC
5645	R. France Int'l	0000	FF
5905	R. Kiev, Ukraine	0300	EE
5935	R. Prague Int'l, Czechoslovakia	0100	
5935	WWCR, Tennessee	0300	
5950	GBC, Guyana	0900	
5960	R. Monte Carlo	0400	via Canada
5970	R. Miskut, Nicaragua	0300	SS
6006	R. Reloj, Costa Rica	0700	SS
6010	R. Mil, Mexico	0300	SS
6010	R. Mil Cuarenta, Venezuela	0830	SS
6010	R. Mil, Mexico	1200	SS
6015	R. Austria Int'l	0530	via Canada
6020	R. Netherlands	0030	
6045	Deutsche Welle, Germany	0130	via Antigua
6050	Caracol, Colombia	0100	SS
6050	R. Nigeria, Ibadan	2230	
6055	Spanish National Radio, Spain	0430	SS
6060	R. Nacional, Argentina	0930	SS
6090	R. Luxembourg	0800	
6105	R. Universidad, Costa Rica	0200	SS
6116	La Voz del Llano, Colombia	1000	SS
6120	R. Globo, Brazil	0900	PP
6130	R. Portugal	0700	sign off
6135	R. Santa Cruz, Bolivia	1000	SS
6135	Swiss Radio Int'l	0230	
6140	Australia Bc. Comm.	1100	
6160	CKZU, Canada	1300	
6185	R. Educacion, Mexico	0130	SS
6190	Sender Freis Berlin, Germany	0430	GG
6210	R. Japan	0300	
6210	European Christian R., Italy	0630	
6210	Croatian Radio	0000	Croatian/EE
6245	Vatican Radio	0430	
6275	Radio Patria Libre	0115	Col.cland.
6300	WYFR, via VOFC, Taiwan	2230	CC
6515	Tadzhik Radio, Tajikistan	0100	
6803	R. Ondas del Mayo, Peru	1100	SS
6840	CPBS, China	1200	CC
6910	R. Dublin Int'l, Ireland	0730	
6910	R. Russia (feeder)	0230	RR
7110	V of Ethiopia	0330	Amharic
7140	R. Australia	1130	
7185	Voice of Turkey	2300	sign on
7185	RTM, Mali	2130	FF
7190	Rep of Yemen Radio, Aden	0300	sign on, AA
7200	Somali Bc. Service, Somalia	0259	sign on
7203	R. Lubumbashi, Zaire	0430	FF
7215	Voice of the UAE	2300	
7220	All Union Radio, Russia	0100	RR
7235	Deutsche Welle, Germany	0400	AA, via Malta
7240	Croatian Radio, Croatia	0300	
7250	Vatican Radio	0630	Latin
7270	R. RSA, South Africa	0400	
7305	Vatican Radio	0250	
7315	Croatian Radio	0000	via WHRI
7355	KNLS, Alaska	1200	RR
7375	R. For Peace Int'l, Costa Rica	0200	USB
7390	Deutsche Welle	1200	via USSR
7400	R. Yerevan, Armenia	0338	
7400	R. Belarus, Belarus	0030	Byelorussian
7465	Reshet Bet HS, Israel	0100	Hebrew
7475	RTV Tunisienne, Tunisia	0400	AA
7490	WJCR, Kentucky	0300	
9022	VOIRI, Iran	0030	EE
9115	R. Continental, Argentina	0030	SS feeder
9265	Icelandic Ntl Bc Svc	0730	EE
9280	Voice of Asia, Taiwan	1000	CC
9325	R. Pyongyang, N. Korea	1300	
9395	V of Greece	1900	GG
9445	Voice of Turkey	2330	TT
9455	WCSN, Maine	0200	
9475	R. Cairo, Egypt	0200	
9480	TWR, Monaco	0645	
9486	R. Tacna, Peru	0400	SS
9495	KFBS, Saipan	1400	CC
9505	R. Yugoslavia	2230	to Europe
9520	R. Veritas Asia, Phillippes	1200	
9535	R. Omduran, Sudan	1500	EE ID
9535	Trans World Radio, Bonaire	0300	
9540	R. Nacional, Venezuela	1100	SS
9545	R. Tirana, Albania	0530	sign on
9555	R. Portugal	0230	
9560	R. Australia	0830	
9565	R. Universo, Brazil	0500	PP

Freq.	Station/Country	UTC	Notes
9570	R. Romania Int'l	0300	SS
9570	R. Korea, S. Korea	1400	
9580	R. Yugoslavia	0130	
9580	Africa No. One, Gabon	1900	FF
9585	HCJB, Ecuador	0600	German
9590	FEBA, Philippines	0130	QRM'd
9600	BBC	0400	
9600	R. Unam, Mexico	0300	SS
9610	R. Norway Int'l	0200	
9615	R. Veritas Asia, Philippines	1433	sign on
9635	R. Portugal	2200	PP
9645	R. Norway Int'l	0300	
9655	TWR, Swaziland	0256	sign on
9660	BBC relay, Cyprus	1445	
9665	R. Marumby, Brazil	2300	PP
9690	R. Beijing, China	0330	via Spain
9695	R. Sweden	0330	
9705	R. Portugal	0230	
9720	R. Galaxy, Russia	2100	RR
9720	VOIRI, Iran	0030	EE
9725	Adventist World R., Costa Rica	1250	
9735	R. Oman	1945	AA
9735	R. Nacional, Paraguay	2300	SS
9745	R. Cairo, Egypt	0200	
9746	R. Bahrain	2000	AA QRM0-HCJB
9750	R. Yerevan, Armenia	0330	Arm/EE
9750	R. Kiev, Ukraine	0300	
9755	R. Monte Carlo, Monaco	0400	AA
9765	V of the Mediterranean, Malta	0600	
9765	VOIRI, Iran	0100	EE
9770	R. Beijing, China	0000	via Mali
9800	R. Rossiy, Russia	0650	RR
9830	Croatian Radio	0600	
9840	Voice of Vietnam	1500	
9878	R. Santiago, Dom. Rep.	0300	SS
9890	KGEI, California	0400	SS
9905	BRT, Belgium	2100	
9910	All India Radio	0115	s/off
9950	R. Clarin , Dom. Rep.	0000	SS, returned
9950	All India Radio	2200	
9985	WCSN, Maine	2355	sign off
11040	CPBS, China	0200	CC
11455	R. Kisangani, Zaire	0400	s/on FF
11470	Iran's Flag of Freedom (clandestine)	0329	s/on
11530	V of Hope, Lebanon	1400	
11550	RTT Tunisia	1800	AA
11570	R. Pakistan	1700	
11620	All India Radio	2000	
11620	Vatican Radio	0145	SS
11650	KFBS, Saipan	1130	
11660	R. Horizont, Bulgaria	1330	BB
11685	R. Ala, Russia	1230	RR
11695	BRT, Belgium	0600	Dutch
11705	R. Sweden	2330	
11710	RAE, Argentina	0100	
11715	R. Beijing, China	0330	via Mali
11715	R. Korea, S. Korea	1030	via Canada
11720	R. Sofia, Bulgaria	0300	
11725	VOA relay, Botswana	0200	
11734	R. Tanzania, Zanzibar	1730	
11735	R.Japan, via Gabon	2300	
11740	R. Baghdad, Iraq	1700	AA
11755	R. Baghdad, Iraq	1930	AA
11765	R. Sofia, Bulgaria	0600	
11780	R. Nacional Amazonia, Brazil	2030	PP
11790	R. Kiev, Ukraine	0000	
11790	R. Vilnius, Lithuania	2300	
11795	UAE Radio	1600	
11800	R. France Int'l	0630	FF
11803	Georgian Radio, Georgia	0600	EE
11810	R. Korea, S. Korea	0600	
11810	R. Jordan	1400	AA
11815	R. Brazil Central	0800	PP
11822.5	R. Nacional, Colombia	0030	SS
11827	R. Baghdad, Iraq	2300	EE/NA
11830	New Wave Radio, Russia	0700	
11855	R. Beijing, China	1300	
11870	Adventist World Radio, Costa Rica	2330	
11880	R. RSA, S. Africa	1615	
11885	R. Yugoslavia	0230	
11910	R. Australia	1600	
11920	R. RSA, South Africa	0300	sign on
11920	RT Morocaine, Morocco	2000	FF
11930	R. Norway Int'l	0000	
11945	R. Space, Russia	1500	RR
11950	R. Havana Cuba	0000	
11955	Voice of Turkey	0400	TT
11960	R. Sweden	1130	
11960	RTV Malienne, Mal	0900	FF
11965	V of the UAE	1800	AA
12005	RTT Tunisia	0530	AA
12025	KTWR, Guam	2300	
12055	Deutsche Welle, via tx in ex-USSR	0156	s/on
12085	R. Damascus, Syria	2110	
12095	BBC, England	2100	
12160	WWCR, Tennessee	2300	
13605	Capital Radio, via Voice of UAE	2230	
13605	R. Australia	1600	
13630	R. For Peace Int'l, Costa Rica	0200	
13635	Swiss Radio Int'l	2130	
13650	R. Pyongyang, N. Korea	0000	
13655	BRT, Belgium	2330	
13666	Voice of Europe, Italy	0100	
13675	UAE Radio, Dubai	2000	AA
13685	Swiss R. Int'l	0700	
13700	Radio Havana Cuba	0200	
13855	INBS, Iceland	2300	Icelandic
14917.8	R. Kiribati	0600	
15020	All India Radio	1300	
15065	BSKSA, Saudi Arabia	0400	AA
15084	VOIRI, Iran	0430	Farsi
15090	R. Damascus, Syria	2115	
15100	Kol Israel	2130	EE
15110	Spanish National Radio	2000	SS
15110	All India Radio	2330	
15140	R. Nac. del Ecuador	1630	SS, via HCJB
15170	R. Beijing, via Mali	1600	
15180	R. Vilnius, Lithuania	2300	
15185	R. Finland Int'l	2300	
15195	R. Japan	0500	
15200	R. Bangladesh	1230	EE
15205	V of Palestine via R. Algiers	1700	AA
15208	R. Bangladesh	1230	
15215	V du Sahara Libre (clandestine)	2200	via R. Algiers
15235	V of Great Arab Homeland, Libya	2000	AA
15260	VOIRI, Iran	0230	sign on
15260	BBC, Ascension Island relay	0300	
15320	UAE Radio, Dubai	2300	
15325	R. Japan	1500	via Fr. Guiana
15340	R. Havana Cuba	0030	Quecha
15345	RAE, Argentina	2200	SS
15345	Trans World Radio, Bonaire	1230	
15345	RTM, Morocco	1400	Berber
15350	BSKSA, Saudi Arabia	1800	AA
15365	R. RSA, S. Africa	0330	sign on
15425	R. Portugal	1500	
15430	R. Austria Int'l	1330	
15400	Radio Finland Int'l	1500	
15445	VOA relay, Botswana	2100	
15470	R. Tashkent, Uzbekistan	1330	
15485	R. Vilnius, Lithuania	2300	
15505	R. Kuwait	2245	AA
15525	R. France Int'l, via Hungary	0630	FF
15550	Central People's Bc Stn, China	0230	CC
15565	Iran's Flag of Freedom	0329	s/on; cland.
15670	CPBS, China	0000	
15670	Brit. Forces Bcsting, via Cyprus	1400	
15750	R. Russia	1800	RR
17525	Voice of Greece	1515	
17595	RTVM Morocco	1630	
17605	R. Vilnius, Lithuania	0000	
17665	R. Kiev, Ukraine	0000	
17690	R. Minsk, Belorus	0030	
17705	R. Havana Cuba	2000	EE/FF
17725	V of the Great Homeland, Libya	2100	AA
17740	R. Yugoslavia	1200	
17740	R. Sweden	1300	EE
17745	RTV Algerienne, Algeria	2000	AA
17770	R. New Zealand Int'l	0445	
17810	R. Japan	2330	
17815	R. Cultura, Brazil	0200	PP
17850	Radio France Int'l	1600	
17860	Qatar Bc Service	1300	AA
17862	R. Nacional, Colombia	0300	SS
17870	VOA Botswana relay	0400	
17890	Spanish National Radio	1200	
21465	RFPI, Costa Rica	0130	
21500	R. Sweden	1530	
21510	V of UAE, Un. Arab Emirates	0630	AA
21515	Radio Portugal	1630	
21580	R. Pilipinas, Philippines	0230	
21605	UAE Radio	1600	
21705	R. Norway Int'l	2200	NN
25730	R. Denmark, via Norway	1255	s/on, DD

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Several months back we were tantalized by a press release from Terk Technologies announcing their new CFR900 Cellular Transceptor antenna. We ran the press release and a photo of the device here, but its somewhat unorthodox design and radically different appearance made it cry out for further attention.

Let's face it, the CFR900 doesn't look like any cellular antenna we had ever seen. Basically, it's a black module roughly the size of a pack of king-size cigarettes, but only half as thick. That's it, there's no whip, and no pigtail coil. You are supposed to mount it to the inside surface of the vehicle's rear window (or any other non-metallic surface of a car or boat). It's OK to install it near window defroster elements.

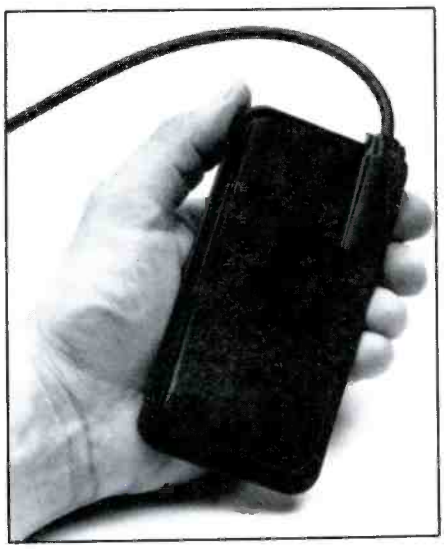
Terk Technologies sent over one of these devices for us to try, noting that they felt it performed significantly better than the currently available cellular mobile antennas. They claimed the omnidirectional, vertically polarized antenna offers less noise, fewer dropped calls, and improved transition between cell sites when compared to other antennas. Moreover, Terk claims that while most cellular antennas operate with a VSWR of 1.9:1, the CFR900 has a VSWR of 1.0:1 under ideal conditions, and will normally be 1.3:1 or better. It will resonate from 800 to 1000 MHz.

Aside from the obvious anti-theft and anti-vandalism benefits of this concept, Terk points out that it is free from mechanical whistling, and "picket fencing" due to wind. And it can't be harmed by car washes, snow, rain, ice, or other environmental influences.

The CFR900 comes with 12.5-ft. of coaxial cable, terminating in a TNC connector. The cable's length is part of the design of the CFR900 and the user should leave it uncut.

We were game, and took the Terk CFR900 out to see what it was going to deliver. When it came to mounting, best results were obtained when at least an inch of spacing was left between the CFR900 and metallic surfaces, but the further away from metal the better. Besides the window (which is probably the best spot), the plastic cowl (underbumper) of a vehicle also works well. Mounting to a non-metallic surface inside the trunk isn't a very good idea.

You can try temporarily mounting the CFR900 in several different spots until you find the one that you like best. A good way to do this is by using double stick tape. When the CFR900 is mounted, it should always be vertical, and the cable should exit away from the module either at a right angle or vertically. Don't allow the cable to cross over the module, or rest against it, as it will affect the performance.



Look at the side of the Terk CFR900 cellular antenna when compared to hand. Note that there are no whips or coils protruding.

The interesting Terk CFR900 antenna mounts on any non-metallic surface, covers 800 to 1000 MHz. Is suited to cellular, ham, or scanner applications, mobile, marine, or base.

As for what the CFR900 could do, I drove around to several of my most detested "dropped call" areas, where my calls invariably get very noisy, or have distorted audio, or become disconnected altogether. The CFR900 did better than the standard pigtail whip I had been using. In the worst of the spots, where calls always abruptly self-destruct, the CFR900 did seem to be working harder than usual to hang on, but at least it didn't let the call fizzle out completely.

In general, calls from normally good signal areas were exceptionally quiet. With the CFR900 on my boat, and heading outward bound towards an area where I knew cellular service usually ends for me, I found that the CFR900 stretched my phone's usable service area beyond where I could reach with the more traditional type of cellular antenna.

In all, we can easily say that we were impressed with the performance of the Terk CFR900 in those applications where we tried the device. The performance, along with the device's other benefits, makes it an antenna that you'd definitely want to seriously consider for cellular or 902 MHz ham band use. I might add that I found that when attached to a house window or car window, the CFR900 also makes an effective base station or mobile scanner antenna for monitoring 800 MHz through 1000 MHz.

The MSRP of the Terk CFR900 is $79.95, and it is available nationally through dealers carrying Terk's products. Terk is a leading manufacturer of indoor active FM antennas. You can get more information on the CFR900, or to find out where to buy one, call Terk Technologies, toll-free at 1-(800)-942-TERK. Make certain that you let Terk know you learned about the CFR900 in *Popular Communications*.

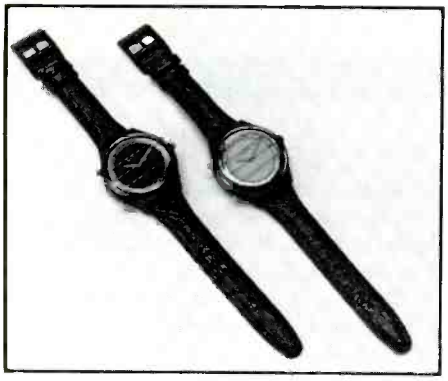
Building A Better Beeper

The National Dispatch Service (NDC) of San Diego and Beeper Plus, Inc., of Las Vegas, are now jointly offering *News Master/Front Page* service. It may be delivered to paging carriers either directly via satellite or by long distance landlines. Since this is a "common capcode" service, the airtime used is small and doesn't interfere with regular paging messages. Each type of information has its own "mailbox" in the alphanumeric pager. Information is updated to the pager throughout the day, but does not trigger the pager's alerting tone; instead, it stays available until the subscriber decides to access the information. The information is formatted for most 16 and 20 character alphanumeric pagers.

Types of information available include weather, news headlines, business/financial indicators, sports news, late breaking news, as well as infotainment (trivia, quotes, humor, entertainment news, etc.).

Paging companies seeking additional information can call NDC's Beth Walsh at 1-(800)-800-9723.

Page Listen is an enhancement to the BellSouth MobileComm nationwide paging system that allows its Nationwide Messaging subscribers to listen to and retrieve both numeric and text messages. Subscriber originally had only the option of resending messages to the pager unit for review. *Page Listen*



Watch this! Swatch combined forces with Mobilecomm to come up with these new wristwatch pagers. Sure to be popular!

Panasonic's EB-F20 transferable cellular has some good features.

lets subscribers review older messages over the phone. This new service is in addition to *Page Resend*, which allows missed messages to be resent to the pager by the user. *Page Listen* is offered to subscribers at no additional cost and can be utilized from a standard push button phone.

Additional services BellSouth offers include *Page Hold*, which holds messages for up to two weeks, also *Page Release*, which releases held messages before their holding time has expired. In addition, there is *Message Saver*, which is a voice mailbox.

For more information, contact Jean Coppenbarger at (601) 977-1648.

BellSouth MobileComm has worked out arrangements with *Swatch* to market a Swatch wristwatch with paging capabilities. It's claimed to be the smallest paging device in the world, and is being marketed in the $200 price range as The Piepser. It will be sold in department stores and other Swatch outlets, as well as at MobileComm outlets across the country.

The Piepser uses four different tones to signal the wearer. The device can be switched off so that no paging signals are received, or it can be placed in a silent mode that sounds no alert but stores incoming signals for later retrieval. The pager battery provides 450 hours of life and has a low-battery warning signal. The 3 volt lithium battery fits into the strap and can be easily replaced by the user. These are standard watch batteries sold everywhere.

The first ones offered will come in two color designs, one navy blue and one black. Both have a gold casement and leather bands. The watch itself has a shock-resistant, analog, precision quartz movement. The stripe design on the watch face is actually the pager's antenna.

Later models will display a phone number the wearer should call to reach a specific person. Even if you're not a beeper fan, Swatch watches have become highly collectible, and you might want to go out and get one as an investment!

More information on this clever and attractive new Swatch beeper is available from MobileComm's Jean Coppenbarger at (601) 977-1648.

Overseas Scraps

Motorola has a contract to supply cellular equipment to the People's Republic of China. Under the agreement, the company will supply five EMX (Electronic Mobile Exchange) switches to be installed in five cities in Zhejiang province (43 million population).

In Japan, the Nippon Telegraph and Telephone Corp. (NTT) has agreed to a joint venture with Motorola for the development of outdoor base station equipment for the company's Personal Handy Phone. This device operates in the 1900 MHz band.

Nokia Mobile Phones, of Largo, Florida, signed a cooperative agreement to design digital cellular phones for use in the IDO mobile phone network in Japan. The IDO mobile phone network serves nearly a quarter of a million subscribers in Tokyo and Nagoya.

Telemobile Inc., of Torrance, Calif., tells us that that its subsidiary, Telemobile de Mexico, recently completed installation of a complete ready-to-go Rural Radio Telephone System in the State of Sonora, Mexico. This is an analog system using VHF and UHF frequencies, with DTMF compatible signaling. Some of the repeaters located in remote areas are solar powered.

Telemobile, Inc. was also awarded a contract to supply equipment and installation for a rural telephone system in the area of Vladivostok, Russia. The system, when completed, will be operated by Cable and Wireless.

Moscow's cellular system is now operating to a limited extent. That means there are now 100 cellular phones operating and rosy projections for 59,900 more phones on-line by 1997. US West International Holdings, an American company, partly owns this system.

Transferable Phone

Panasonic's new EB-F20 is a hands-free transferable cellular. There's a speakerphone built into the handset, so the handset never has to be picked up at all. Lets you drive safely. You can keep one hand on the wheel and keep the other hand free to shake your fist and make hostile gestures at other drivers who annoy you.

You can answer an incoming call by hitting just about any key on the EB-F20. The power for this unit comes from the vehicle's cigarette lighter, so there's no battery pack to take up space or add weight. That means it may be very easily moved from one vehicle to another, or put on your boat. If you need a portable, just add a battery and a carrying strap. You can even operate the unit from an AC adapter. It has a built-in antenna.

Features include volume control, signal strength indicator, dual NAM's, 91-number memory, speed dial of numbers containing up to 30 digits each, scroll through stored numbers, last number redial, scratch pad dialing, security lock-outs, roam inhibit lockout, area code restriction codes, and high (3 watt) or low (0.6 watt) output when used with the battery pack.

The EB-F20, without accessories, is $570. It comes from The Panasonic Company, One Panasonic Way, Secaucus, NJ 07094.

Back Again Next Time

Join us next month. We always like to hear from readers with ideas, comments, opinions, and questions about mobile and marine phones, and also pagers. Let's also hear from manufacturers and service suppliers! ■

LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

Trials, tribulations and changes continue at Radio Moscow as well as other broadcasters late of the Soviet circle. Reports have it that the Radio Moscow World Service is to be renamed Radio Moscow International, a change that may well have already taken place. The Radio Moscow service in Russian has been renamed the Voice of Russia.

We are beginning to see fewer frequencies in use by Radio Moscow, too, as some of the now independent states in which Radio Moscow had transmitters take the facilities for their own use. The Ukraine, for instance, no longer airs Radio Moscow via transmitters within the Ukraine. One report notes that the giant transmitter site at Lvov, in the Ukraine, has been closed down. In our loggings this month, Larry Zamora of California notes he heard many power dropouts while monitoring one Radio Moscow frequency. Mail service into Russia is now so unreliable that very little mail ever reaches its destination. That has caused the cancellation of the popular "Moscow Mailbag" program on Radio Moscow, a feature which has to rank among the longest running anywhere on shortwave!

Meantime, Radio Moldavia in what used to be the Modavian SSR is reported to be preparing to put an international service on the air.

Radio Tirana, Albania continues to make cutbacks due to a lack of funds, with broadcasts in German the latest to be discontinued. Indeed, there's apparently some chance that Radio Tirana might even have to close down!

One other note from the former communist world: Radio Polonia also has a new name. It's now Polish Radio Warsaw (Polskie Radio Warsawa). We'd love an explanation as to why the station has opened up a South Pacific service when it is still without a North American Service!

The latest religious broadcaster added to the USA's shortwave collection of same is WJCR which came on with the first of four planned 50 kw transmitters. According to the station, programming will be about 20 hours of gospel music per day and four hours of Bible teaching. Frequencies are 7490 and 15660. Reception reports seem to be confirming quickly. The address is simply Upton, KY 42784.

The High Adventure Ministeries station, KHBN, having finally found a home on the island of Palau, was targeted for an April start up, so it may now be on the air. No schedule information was available at this writing. If you hear the station you can send your report to High Adventure Ministries, P.O. Box 93937, Los Angeles, CA 90093.

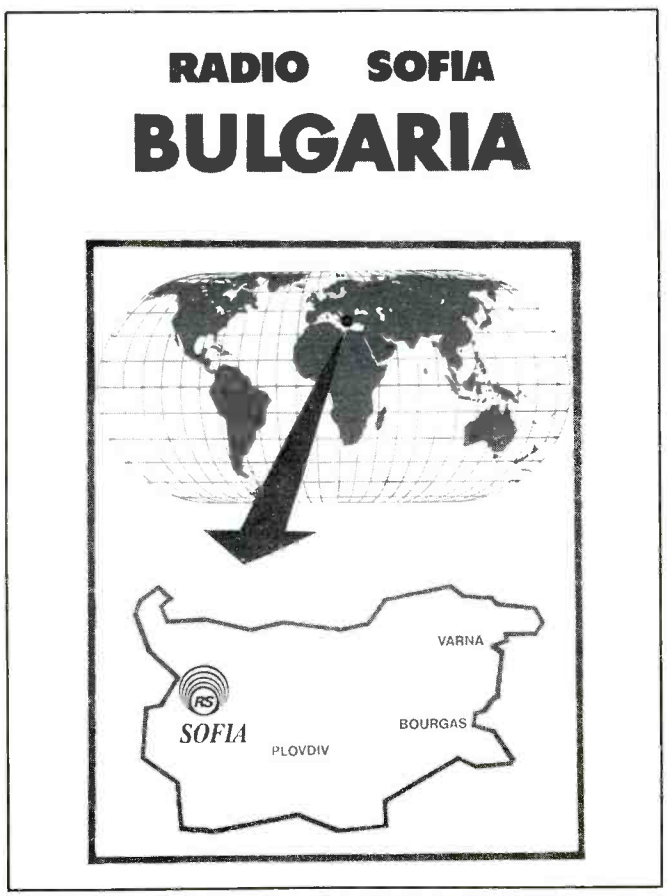
Radio Japan continues to expand and, by now, should be airing programs to Europe and the former USSR via BBC transmitters at Skelton. (And it's likely the BBC will be going out over Radio Japan's facilities at some future date).

The Dominican Republic station Radio Clarin, silent on shortwave for the last two or three years was reported heard on 9950 around 0000 but it's unclear at the moment whether this is a regular thing.

If you haven't heard Costa Rica's TIFC ("Faro del Caribe") recently it's because they haven't been there to hear. The station is relocating to a site north of San Jose. They should return to the air fairly soon. Also in Costa Rica, Radio For Peace International is now operating 'round the clock on all four of its frequencies - 7375 (usually in USB), 13630, 15030 and 21465USB.

Radio Australia has put two new 250 kilowatt transmitters into service at its Darwin site.

Radio Netherlands has started a new publication called "On Target - News and Notes



Radio Sofia, Bulgaria has English for North America at 2300 on 9700, 11720 and 17825.

Taiwan's Voice of Asia sent this nice sticker to Kevin Story in Texas.

ON TARGET

News and Notes from The Netherlands

MEETING THE DEADLINES. ON A SPRING MORNING WE MANAGED TO CATCH SOME OF THE TEAM THAT COMPILE "NEWSLINE". FROM LEFT TO RIGHT: DAVID SMITH, GINGER DA SILVA, JOHN HAMMOND, RENE POSTMA, CORINE SPOOR (HEAD OF CURRENT AFFAIRS) AND ROBERT GREEN.

We've got news for you! Welcome to the first edition of "On Target", a free publication designed to inform you about what is happening to the English language programmes from Radio Netherlands. This newsletter is sent twice a year to listeners who have registered on our mailing list. We're making a lot of changes to the format of our transmissions, bringing the presentation in line with a new style for the 1990's.

As from March 29th, three target areas now get a three-hour segment of English at least once a day. The grid shows how the programme elements are made up. The first and third hours are similar whilst the second hour carries an entirely different feature programme. In some cases this gives you a second chance to catch a popular feature later in the week (e.g. Research File on Thursdays). But we are also creating new programmes to add variety to our output.

Audience research has shown us that our regional productions such as "Rembrandt Express" and "Airtime Africa" are popular programmes well outside the target area. Events in Africa may be a long way from Australia, but we've received enough feedback to persuade us that listeners to international radio regard the world as their backyard. That's why some of our regional productions are also aired on beams outside the primary target area.

The biggest addition is the introduction of a morning service to Asia. Radio propagation at 0030 UTC allows us to use lower frecuencies than during the evening broadcasts (now at 1330, 1430 and 1530 UTC). These are more widely available on simple receivers. Our Pacific service will also get a live feed via the Bonaire relay station throughout the three-hour broadcast period. Until now this was a single hour broadcast repeated twice.

Check our programme line-up for details of new programmes such as "No Boundaries" and "East of Edam". We're also improving our news coverage to include press comment from Holland and the rest of Europe. "Newsline" built up a loyal following in the 80's. Now we're investing even more to improve the background coverage the programme offers. A news bulletin on Sundays is also being introduced.

1 1992

Radio Netherland's new semi-annual "On-Target" newsletter for listeners to its English language programming.

KINGDOM OF SAUDI ARABIA
Ministry Of Information
ENGINEERING AFFAIRS
FREQUENCY MANAGEMENT

بسم الله الرحمن الرحيم

المملكة العربية السعودية
وزارة الاعلام
الشؤون الهندسية
ادارة الاذيعات

Dated : 27/9/1988

To : MR.JOHN MILLER.

Dear Listener,

Kindly accept our thanks for your listening reports. we appreciate your cooperation and hope to hear from you again.

please find herewith enclosed our Short-wave broadcasting schedule for your information.

With regards,

Yours Sincerely,

[illegible] A. AL SAMNAN
Director,
Frequency Management.

[illegible] of Information
[illegible] 11575
P.O. BOX 61718

John Miller got this QSL letter from the Broadcasting Service of the Kingdom of Saudi Arabia.

from The Netherlands." It's a very nice four pager, in color, designed to keep listeners up to date on the station's English language programming. It's issued twice per year and contains the current program line-up and transmission schedule, complete with site notations (and we thank them for that!). You can get a copy by writing: On Target, Radio Netherlands, P.O. Box 22, 1200JG Hilversum, The Netherlands.

Patience, please! We've recently received letters from a couple of people who were frustrated because their log reports "hadn't been used" in this column. If you follow the two main reporting guidelines—leaving enough cutting room between items and putting your last name and state abbreviation after each—then it's almost certain we'll use at least some of your report. It does, however, take time for the whole process to run its course so please be patient.

Those nasty stations that "don't" QSL! A letter from John Dokulil of Grass Valley, California who bemoans the seemingly worsening QSL'ing situation and suggests we publish a list of stations which do not QSL in reponse to a correct reception report containing the basics plus program comments and return postage.

This kind of suggestion has been raised several times over the history of the hobby. We've never felt it was practical or even necessarily a good idea. For one thing, QSL policies change. For another, we've never believed there was any such thing as a station that could not be QSL'd, given enough patience and the right approach. We recently heard of a case where an enterprising DX'er QSL'd one of today's notorious non-verifiers—a station which actually has a stated, "no QSLs" policy! Indeed, many QSL fans are glad to have stations which are difficult to QSL. Their view is that if QSL'ing weren't a challenge it wouldn't be any fun.

So where's your pic? Readers enjoy seeing the shacks of other listeners, preferably with the listener also in the shot. But we can't include them if we don't get them! So how about it? We'd love to feature a shot of you and your shack (or just your shack if you're really shy).

Here are this months loggings. All times are UTC. Broadcast language is English (EE) except where noted as SS (Spanish), FF (French), AA (Arabic), etc.

Abbreviation Used In Listening Post

AA	**Arabic**
BC	**Broadcasting**
CC	**Chinese**
EE	**English**
FF	**French**
GG	**German**
ID	**Identification**
IS	**Interval Signal**
JJ	**Japanese**
mx	**Music**
NA	**North America**
nx	**News**
OM	**Male**
pgm	**Program**
PP	**Portuguese**
RR	**Russian**
rx	**Religion/ious**
SA	**South America/n**
SS	**Spanish**
UTC	**Coordinated Universal Time (ex-GMT)**
v	**Frequency varies**
w/	**With**
WX	**Weather**
YL	**Female**
//	**Parallel frequencies**

SWBC Loggings

Antigua: BBC Relay, 5975 at 0400. (Mullican, TX) 15220 at 1350. (Zamora, CA) 17840 at 1418 and 1532. (Tucker, GA)

Deutsche Welle relay on 6040 at 0128; off 0158. (Labelle, PQ) 9670 at 0516. (Tucker, GA)

Armenia: Radio Yerevan, 9750 at 0336 in Armenian, 0355 with news in EE. (Rocker, NY) 17605 at 0340. (Maywoods DXpedition)

Ascension Island: BBC relay on 11780 at 0633 in FF, with EE lesson. 15400 at 0539. (Lamb, NY)

Australia: Radio Australia, 5995 at 0384. (Mullican, TX) 6020/11720 at 0840. (Rocker, NY) 9580 at 1420. (Moser, PA) 9710 at 1206, 17795 at 0340 and 21740 at 0355. (Tucker, GA) 13605 in CC at 1407, 15240/

15425 at 0903, 15365 at 0609. (Lamb, NY) 15160 at 0628 and 15240 at 0619. (Jensen, IA) 21525 to SE Asia and //21775 to India at 0330. (Zamora, CA)

VNG time station, 8638 at 0900 with "VNG" in CW six times. (Pappas, SD)

Austria: Radio Austria International, 9875 at 0131 with news. (Moser, PA) 21490 at 1618. Into FF at 1630. (Tucker, GA)

Belgium: BRT, 9930 at 0027 with IS, ID, news, "Brussels Calling." Off 0055. (Tucker, GA)

RTBF, 7140 at 0514 in FF with pops, ID, news in FF. (Lamb, NY)

Brazil: Radio Nacional, Macapa, 4915 at 0904 in PP with presumed news, Brazilian pops, extended talks. No ID. (Lamb, NY)

Swiss Radio International, via Radiobras relay, 17730 at 0216 with "Dateline." (Carson, OK)

Bulgaria: Radio Sofia, 9700//11720 at 2310. (Moser, PA) 11720//17825 at 2305 and 11765 at 0520. (Rocker, NY)

Cameroon: Radio Garoua, 5010 at 0506 with EE news relayed from Yaounde. Into FF at 0510. (Lamb, NY) 0545 in FF with songs (Maywoods)

Canada: Radio Canada International, 5960 at 0135 to the US. (Mullican, TX) 9755 at 0230, 15325 at 1702. (Jensen, IA) 11730 at 2259 with IS, ID, "The World at Six." 17820 at 2132 "Royal Canadian Air Farce." (Tucker, GA) 11955 at 1654 and 12055 at 2013. (LaBelle, PQ) 15260 at 1842. (Moser, PA) 17875 at 2020. (Rocker, NY)

CFRX relay of CRFB, Toronto, 6070 at 2247; 0606; 0826; 1220. (Tucker, GA; Jensen, IA; Lamb, NY)

CKZN relay of CBN, St. John's, Newfoundland, 6160 at 0952 with weather, country/pop. (Lamb, NY)

CHU time station, 7335 at 0447. (Mullican, TX 14670 at 1618. (Carson, OK)

China: Radio Beijing, 9665 at 1214. (Moser, PA) 1241 with various features. (Tucker, GA) 9690 (via Spain) at 0305. (Long, WV) 9770 (via Mali) at 0358. (Jensen, IA) 11715 (via Mali) at 0247. (Labelle, PQ) 15170 at 62036. (Rocker, NY)

Colombia: Radio Nacional, 11823 with EE DX program at 2350 to 2357. Into SS at 2358. (Tucker, GA)

Costa Rica: Radio Reloj, 4831.5 at 0550 in SS with ballads, ID, time ticks. //6005. (Paszkiewicz) 4832 at 0519, ID 0530. (Maywoods)

Radio For Peace International, 7375USB at 0216 and 0703 (not USB). (Carson, OK) 1363OUSB at 0430 with mailbag. (Lamb, NY) 15030 at 0529. (Tucker, GA)

Cuba: Radio Havan Cuba, 11760 at 0615. ID and schedule. Offering first "E-mail QSLs (on Intelnet). (Pappas, SD) 11950 at 0048; new 11970 at 0446 and 17705 at 2012. (Tucker, GA) New 13700 at 0240. (Rocker, GA)

Cyprus: BBC relay, 15575 at 0901 with news. (Lamb, NY)

Czechoslavakia: Radio Prague International, 0128 with classical music. Last day with this name, now Radio Czechoslavakia. (Moser, PA) 0414. (Carson, OK)

Denmark: Radio Denmark via Norway, 17780 with EE ID "This is Radio Denmark" at 1130, frequencies and talk in Danish. (Pappas, SD)

Ecuador: HCJB, 9745 at 0740. (Carson, OK) 11925 at 0816. (Lamb, NY) 16270//17790 at 1902. (Moser, PA) 21544USB at 0300 with "Musica del Ecuador." (Tucker, GA)

Radio Luz y Vida, 4850.6 at 0300 to 0311 close in SS, talk about Ecuador, choir, ID, announcements, national anthem. (Paszkiewicz, WI)

Radio Quito, 4920 at 0213 in SS with pops, commercials, ID, news. (Lamb, NY)

Escueles Radiofonicas Populares, 5012 at 0925 in SS with IDs, frequencies, address, phone number, folk music. (Lamb, NY)

Egypt: Radio Cairo, 9900 at 2129 with time check, anthem and news. (Moser, PA) 17670 at 1818 with domestic AA servicce relay. (Lamb, NY)

England: BBC, 6175 (via Canada) at 0145. (Long, WV) 7150 at 0724 and 7295 at 0737. (Lamb, NY) 9410 at 0415. (Rocker, NY) 9915 at 0308. (Tucker, GA) 12095 at 2147. (Jensen, IA)

VOA relay (Wooferton) 9760 at 1840. (Moser, PA) 15205 at 1615. (Tucker, GA)

Finland: Radio Finland International, 15400 at 1232. (Moser, PA)

France: Radio France International, 3965 in FF at 0356. 12005 at 0523. (Lamb, NY) 11995 at 1852 and 15000 at 1910. (LaBelle, PQ) (presume FF, editor) 17620 at 1642 in FF. (Rocker, NY) 21580 at 1632 in FF; 21635 at 1230. (Tucker, GA)

French Guiana: Radio Japan relay, 9675//11875 in JJ at 0834. (Pappas, SD)

Gabon: Africa Number One, 9580 with American and African pops, mention of Libreville. FF. (Paszkiewicz, WI)

Radio Japan relay, 11735 at 2308. (Pappas, SD)

Germany: Deutsche Welle, 6020 with ID 0300. (Long, WV) 6145 at 0127. (Moser, PA) 9545 (via Antigua) at 0320 and 9670 (via Antigua) at 0546. (Jensen, IA) 11865 via Malta at 0145. (Zamora, CA) 17765 at 1140. (Tucker, GA)

VOA relay, 6060 at 0543. (Carson, OK)

Radio Free Europe, via Biblis, 3970 in Romanian at 0437. (Lamb, NY)

Ghana: Ghana Broadcasting Corp., 3366 at 0600 with EE news, //4915. (Maywoods)

Greece: VOA Kavala relay, 15205 at 0629. (Lamb, NY)

Voice of Greece, 9420 at 0132 with news. (Moser, PA) 9425 at 0400. (Rocker, NY)

Radio Macedonia, 11595 at 1935 in Greek. (Maywoods)

Guam: KSDA/Adventist World Radio, 11980 at 1600. (Bernhoffer, OH) 15610 at 2305. (Carson, OK)

KTWR, to India on 11650 at 1501 with ID and "Search For Truth." (Zamora, CA) 1635, religious show, ID, IS. (Paszkiewicz, WI)

Guatemala: TGNA/Radio Cultural, 3300 at 0330 with "Though the Bible." (Bernhoffer, OH) 0420. (Lamb, NY)

Radio Tezulutan, 4835 at 0352 with music, SS ID at 0400 and off at 0401. (Zamora, CA)

La Voz de Atitlan, 2390 at 0242 with announcer, music. (Maywoods)

Honduras: HRPC, Radio Luz y Vida, 0252 in SS/EE. "HRPC Highlights" at 0328. (Carson, OK) 0250 with segued music, ID in EE promoting a country program. (Maywoods)

Hong Kong: BBC relay, 21715 at 0503. (Lamb, NY)

Hungary: Rado Budapest, 9835 at 0330. (Rocker, NY 11910 at 2200;

O300. (Zamora, CA; Carson, OK)

Radio France International, Hungarian relay on 15530 at 0505. (Lamb, NY)

Iceland: INBS, 15570 in Icelandic, 1443. Many mentions of Reykjavik." (Maywoods)

India: All India Radio, 7412//9565 in Tibetan with traditional music at 1301. (Pappas, SD) 11620 at 1900. (Moser, PA) 11620 from Bangalore, 2100 "This is All India Radio." (Maywoods) 15020 at 1301. (Tucker, OH) 17805 at 0315 sign on with IS, announcements. (Paszkiewicz, WI)

Iran: Voice of Islamic Republic of Iran, 9022, 0030-0130 with news, "Listener's Letterbox." (Bernhoffer. OH)

Iraq: Radio Baghdad, 11740 at 2058 in AA. (Maywoods) 17740 at 0055-0106 with EE news. (Spengeman, SC)

Israel: Kol Israel, 11585//11605 at 2004 with news. (Moser, PA) 11588 at 0500 with 15 minute news. (Tucker, GA)

Italy: RAI, 9575 at 0100 sign on with news, then music 0108 to close at 0120. (Zamora, CA) Here and //11800 at 2300 with faster YL reading news. (Moser, PA) 11905 at 0238 in II, Verdi opera. (Lamb, NY)

Ivory Coast: RTV Ivoirienne, 7215 in FF. IS, ID at 0500. (Carson, OK)

Japan: Radio Tanpa, 3925 in JJ at 1355 with pops. (Zamora, CA)

Radio Japan, 5960 (via Canada) at 0350. (Mullican, TX) 0300 with news and program features (Cohen, ONT) 11865 at 1522 "Music Mix." (Lamb, NY) 17810 at 0355 with ID, news. Into JJ at 0400. (Zamora, CA) 17825 at 0500. (Tucker, GA)

Kazahkstan: Radio Alma Ata, 6060 at 2220 with Eastern Orthodox Service. (Maywoods)

Kuwait: Radio Kuwait, 15505 at 2020-2101 in AA. ID 2051. 2100 with time check, news. (Paszkiewicz, WI)

Lithuania: Radio Vilnius, 9710 at 0018 with reports from Latvia and Estonia. (Tucker, GA)

Luxembourg: Radio Luxembourg, at 2131 with announcements, rock. (Moser, PA) 0749 with 16 rock songs in one hour, ID "Radio Luxembourg, where the music never stops." Many IDs. (Pappas, SD)

Madagascar: RTV Malagasy, 5010 at 0312 in FF with news, Mozart and rock. (Lamb, NY)

Radio Netherlands relay, 9860 at 2027. (Lamb, NY)

Mali: RTV Malienne, 4783//5995 at 0622 good with

hi-life music, FF. (Paszkiewicz, WI) 4785//5995 in FF with African news, mention of Bamako. (Lamb, NY)

Malta: Deutsche Welle relay, 9565 at 0126. (Moser, PA)

Voice of the Mediterranean, 9765 at 0600 sign on with announcements, address, "Nice 'n Easy 45" program. (Paszkiewicz, WI)

Mauritania: ORTM, Mauritanie, 4845 at 0608 in AA with IDs, chants, music from "The Godfather." (Lamb, NY)

Mexico: Radio Educacion, 6185 at 0926 in SS. ID 0930, pops to 1000 then classical music. (Pappas, SD)

Monaco: Trans World Radio, 9480 at 0800 with "Insight For Living" program, several IDs. (Pappas, SD)

Netherlands: Radio Netherlands, 13700 (Madagascar) at 2049. (LaBelle, PQ) 2030-2117 to Africa. (Bernhoffer, OH) 1453. (Carson, OK) 17605 at 1850. (Rocker, NY)

Netherlands Antilles: Radio Netherlands, Bonaire relay, 9590 at 0338. (Mullican, TX) 11895 at 0751. (Rocker, NY) 15315 at 2318 in Dutch to 2325 close. (Zamora, CA) 21685 at 1833. (Jensen, IA)

Trans World Radio, Bonaire, 9535//11930 at 0330. (Carson, OK) 11815 at 1116. (Pappas, SD) Here and //15345 at 1216. (Moser, PA)

New Zealand: Radio New Zealand International, 9700 at 1200 with World Cup soccer. 17700 at 0349 with music, talk, news, special weather bulletin for Vanuatu on approaching tropical cyclone "Fran." (Tucker, GA)

Nigeria: Radio Nigeria, One, Lagos, 4990 at 0452 with Koran, "News At Dawn," ID jingle. (Lamb, NY)

Radio Kaduna, 4770 at 0556 with "Kaduna Magazine," IS, news. (Lamb, NY)

Voice of Nigeria, 7255 at 0455 sign on. (Moser, PA) 0531 with ID, news of Nigeria. (Maywoods)

North Korea: Radio Pyongyang, 9977 at 1100 sign on to 1150 off, talk to Comrade Kim, IDs, anthem. (Pappas, SD) 11335 at 1145 with ID, frequencies. (Mullican, TX) 13650 at 2320 commentary, choral music. (Carson, OK) 15230 at 1343 with schedule, anthem, sign off at 1347 (Zamora, CA)

Northern Marianas: KHBI, Christian Science Monitor, 9530 at 1400. (Bernhoffer, OH) 15665 at 0815. (Lamb, NY)

KFBS, 11650 at 1034 in RR. (Pappas, SC)

Norway: Radio Norway International, 21730USB at 1602 in NN. (Rocker, NY)

Pakistan: Radio Pakistan, 11570 at 1700 with news about Asia, ID. (Paszkiewicz, WI)

Papua New Guinea: NBC, Port Moresby, 4890 at 1356 with music, devotional, anthem, close at 1402. (Zamora, CA)

Philippines: Radio Veritas Asia, 9520 at 1429 with man and woman announcers "ping-pong" reading. (Maywoods)

Radio Philipinas, 21580 at 0230 sign on with announcements, music. (Paszkiewicz, WI)

Portugal: Radio Renascenca, 6100 at 0457 wih IS, ID. DW QRM to 0600. Then music, religious talk, pops to 0700 sign off. (Lamb, NY)

Radio Portugal on 9570 at 0238 with ID, news, weather, schedule, music. (Rocker, NY) 17745 at 1848 in PP. ID 1848. (Moser, PA)

Romania: Radio Romania International, 9510 at 0219. (Moser, PA) 11940 at 0200; 0400. (Bernhoffer, OH; Carson, OK)

Russia: Radio Moscow, 6000 (via Cuba)//7115 at 0219. 15540 at 0638. (Carson, OK) 9750 at 0645. (Rocker, NY) 11735 at 0040. (Long, WV) 0256. (LaBelle, PQ) 11745 to Africa at 1954. (Mullican, TX) 11840 (via Cuba) 1845. (Moser, PA) 13665 at 0640. (Bernhoffer, OH) 15470 at 0620 via Armavir; 21585 at 0413; 21690 via Vladivostok at 03220. (Lamb, NY) 17810 at 1825. (Jensen, IA) 21690 at 0354. Many power cuts noted. (Zamora, CA)

Saudi Arabia: BSKSA, 21505 at 1612 in AA. (Tucker, GA)

Seychelles: FEBA, 11690 at 1500 signing on to south Asia. (Zamora, CA) 15200 at 0320-0331 close with talk in Farsi, ID and IS. (Paszkiewicz, WI)

BBC Relay, 15425 at 1721, "Focus on Africa." 17885 with news at 0406. (Lamb, NY)

Singapore: BBC relay, 15380 at 0201. 17830 at 0821 (Lamb, NY)

South Africa: Radio RSA, 4810 at 0246. Into Afrikaans at 0300. 9695//7270//15230 at 0356 sign on with IS, ID, news, (Lamb, NY) 15365//17815 at 0540 in FF. (Paszkiewicz, WI)

South Korea: Radio Korea, 9750 at 1240. (Tucker, GA) 15575 at 0000. (Bernhoffer, OH)

Spain: Spanish National Radio, 6055 at 0331 in SS. (LaBelle, PQ) 9530 at 0004. (Jensen, IA)

Sri Lanka: SLBC at 0145-0200, "Back To The Bible," address in India, ID, news. (Paszkiewicz, WI)

Sweden: Radio Sweden, 11705 at 0127 with music, IS to off. (Moser, PA) 0155 in FF. (Rocker, NY)

Switzerland: Swiss Radio International, 7480 at 1315 with Alpine music. (Northrup, MO) 6135 at 0216. (Tucker, GA) 9885 at 0451 in GG. (Moser, PA) 13685 at 1602 with IDs. (Lamb, NY) Here plus//15450//17830//21630 in GG at 1510. (Pappas, SD)

Syria: Radio Damascus, 12085//15095 at 2347 in AA with music, ID 2358. Into PP at 0000. (Pappas, SD) 15095 in EE at 2100. (Maywoods)

Tahiti: Radio Tahiti, 11827 at 0530 with island vocals, FF. (Paszkiewicz, WI) 11827//15170 at 0656 in FF and TT. (Pappas, SD)

Taiwan: VOFC, 5950//9680 via WYFR at 2234 reading my reception report. (Cohen, ONT) 11745 at 1200 sign on in Mandarin, presumed ID, song and talk. Into Korean at 1300. (Pappas, SD)

Central Broadcasting System, 11905 at 1640 in CC with opera, ID, announcements, time pips, news. (Paszkiewicz, WI)

Turkey: Voice of Turkey, 9445 at 2122 with music, ID. (Maywoods) 0400 with news, Turkish Press Review, "Outlook." 15220 at 0520 in TT. (Tucker, GA)

Ukraine: Radio Kiev, 7240 at 0150, 7400 at 0250. (Carson, OK) 9685 at 0124 with Ukranian news, ID. (Zamora, CA) 9870 at 0130 sign on. (Moser, CA) 11770 at 0143. (Jensen, IA)

United Arab Emirates: Voice of the UAE, Abu Dhabi, 13605 at 2312. (Jensen, IA)

United States: Voice of the OAS, via VOA facilities, 11830 in SS at 0007. (Tucker, GA)

New WJCR, 7490 at 0621 with religious music, ID, address as Upton, KY 42784. (Lamb, NY)

Vatican: Vatican Radio 11625 at 0525, off 0528. (Tucker, GA) 11625//15050 at 0558 in FF with IS, ID, harp music, church news. (Lamb, NY)

Venezuela: Radio Tachira, 4830 at 0345 in SS with ID ". . .en la banda tropical. ." national anthem, off 0349. (Zamora, CA)

YVTO time station, 5000 at 0651 with SS time announcements, barely audible under WWV. (Mullican, TX)

Vietnam: Voice of Vietnam, 15009.5 at 2050 with songs, announcer in VV. (Maywoods) 15010 at 1903 with news. (Rocker, NY)

Yugoslavia: Radio Federal Yugoslavia, 9580 at 0145 and 17740 at 1253 to sign off at 1259. (Tucker, NY)

Zagreb Radio, 9830 0343 to 0430 with pops, 3 tones and ID at 0400, news and music. (Paszkiewicz, WI)

A deep bow of gratitude to the following reporters this month: William Moser, New Cumberland, PA; K.C. Sengeman, Mauldin SC; Cliff Mullican, Ferris, TX; Robert E. Tucker, Jr., Savannah, GA; Murray Cohen, Fonthill, Ontario; Mark A. Northrup, Gladstone, MO; Daryl Rocker, Frankfort, NY; Paul Jensen, Mason City, IA; John Spencer Carson, Jr., Norman, OK; Larry R. Zamora, Highland, CA; Louis Long, Wheeling, WV; Tony Bernhoffer, Toledo, OH; Marina Pappas, Huron SD; Christian LaBelle, St. Jerome, PQ; Sheryl Paszkiewicz, Manitowoc, WI; Marie Lamb, Brewerton, NY and the Maywoods DX Group of Eastern Kentucky University (Chuck Everman, Jim McClure, Wayne Gregory and Kenton buddy Loy W. Lee).

Thanks to all and, until next month good listening! ■

BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

New FCC Ownership Rules: The new FCC regulations allowing multiple station ownership within the same listening area are already working. One of the first examples is WAVG/970, Louisville, Kentucky, which is co-owned with WXVW/1450, in nearby Jeffersonville, Indiana. Until the new multiple station ownership regulation was passed, it looked like the owners of 5 kW WAVG would be forced to sell 1 kW WXVW, but that cloud has now passed by and made a lot of people thereabouts happy.

That information via reporter R. C. Watts, of Louisville, Kentucky.

From Alabama: Wilbur Goforth is the President of WBHY/840 and WBHY-FM/88.5, a non-commercial religious broadcaster in Mobile, Alabama. Wilbur is also a very active radio hobbyist. He sent along samples of the stations' newly designed bumper stickers, and advises that last March the main studios of both stations were moved into the third floor of the education building at Westlawn Baptist Church.

The recently opened FM outlet features religious-oriented pop and contemporary music, with a rock music program at night. The AM outlet runs MOR religious music, praise music, and hymns. WBHY-FM was first filed for in August of 1987, but a year later the application was withdrawn in deference to another religious group that wanted to use 88.5 MHz. In June of 1989, the group who had received FCC approval on 88.5 MHz offered to sell their permit to WBHY. The purchase was made and WBHY-FM arranged to put its antenna on the TV-5 tower, which had to later be changed because of a small overlap in the signal coverage area on 88.5 MHz. The station finally went on in March this year.

New Permit in California: The FCC issued a Construction Permit for KKYM-FM/100.1, Dunsmuir (Mount Shasta), California. KKYM-FM is owned by Fatima Response, a "lay Catholic" non-profit, privately owned educational group that has applied for other educational stations in California (Santa Ynez/105.9 with 6 kW and Morro Bay/94.1 with 1.4 kW). The Santa Ynez station is on the site of one of the 21 Spanish Missions built by Fr. Junipero Sera in the 19th Century.

The KKYM-FM tower on 14,000 ft. Mt. Shasta is a 250 footer and can accommodate as many as four additional FM broadcast station antennas running as much as 25 kW each. KKYM-FM is seeking to operate at the 25 kW ERP level, itself. Mt. Shasta, by the way, is an active volcano.

KKYM-FM will be rebroadcasting some programs from *Vatican Radio/HVJ*, as well as the American *Fatima Network*. The station is wholly supported by private voluntary contributions. Any commercial broadcaster that would like to assist KKYM-FM in its construction will be entitled to a tax deduction for their efforts and assistance. They can contact Kimberly Thompson, or Mike McKenna, at (310) 597-1961, or by writing to P.O. Box 90277, Long Beach, CA 90809.

Thanks to Mike McKenna, of McKenna Communications, in Ling Beach, for telling us about KKYM-FM.

Deep in The Heart of. . .: An update on the San Angelo, Texas, radio Scene arrived from Alan P. DesJardins, N5VXL. He advises that KKLK/101.9, which was *The Country Click*, is dark. It began in the Spring of 1991 and sounded good, but around the end of the year it hit financial problems it couldn't survive. It was in competition with country music market leader KGKL-FM.

KRCN/93.9 is a religious station that started up early this year using the old KTEO FM transmitter. It appears the old KTEO AM transmitter may be put to use for Spanish language religious programming.

ROC-96 is the slogan KGKL/960 began using after it dropped its adult contemporary format and changed to an AOR/classic rock blend. The new format has been very well accepted, which pleases Alan, since he works there part time (listen for him Saturdays as Alan Peters).

AFN Sez 'Bye: Last February marked the end of local *Armed Forces Network/AFN* broadcasting in Munich, Germany. The sta-

Requested Changed AM Call Letters

Now	Seeks	
WJGC	WCRJ	Jacksonville, FL
WZAL	WKKP	McDonough, GA

Changed AM Call Letters

New	Was	
KIBZ	KMXA	Lincoln, NE
KRMY	KIIZ	Killeen, TX
KRSR	KYYG	Coos Bay, OR
WEWO	WMXF	Laurinburg, NC
WJOX	WVOK	Birmingham, AL
WSFN	WSNX	Muskegon, MI
WTEM	WGMS	Bethesda, MD
WYFQ	WSOC	Charlotte, NC

Requested Changed FM Call Letters

Now	Seeks	
WSHG	WECH	Omaha, NE

Changed FM Call Letters

New	Was	
KAKQ	KAYY	Fairbanks, AK
KBRJ	KKLV	Anchorage, AK
KCLX-FM	KSDO-FM	San Diego, CA
KDAO-FM	KXGA	Eldora, IA
KDLZ	KLZZ	Deep River, MN
KDUQ	KEQF	Ludlow, CA
KFLX	KTDX	Kachina Village, AZ
KFGI	KATG	Luling, TX
KGHL-FM	KKUL-FM	Hardin, MT
KIBZ	KMXA	Lincoln, NE
KIZS	KRWR	Carson City, NV
KKCJ	KXXR	Liberty, MO
KKHU	KJZS	Conroe, TX
KKYX-FM	KMMX	Terrell Hills, TX
KMSK	KAVT-FM	Austin, MN
KORL	KAGB	Honolulu, HI
KRSR-FM	KYYG-FM	Coos Bay, OR
KSLK	KXDR	Auberry, CA
KXRK	KZOL	Provo, UT
KXXR	KCFM	Lexington, MO
KYFS	KPAC	San Antonio, TX
KYNG	KRRM	Dallas, TX
WCFR-FM	WMKS	Springfield, VT
WCSD	WXKG	Livingston, TN
WCXL	WXAI	Kill Devil Hills, NC
WDZR	WXCD	Mt. Clemens, MI
WFGI	WLMB	Lima, OH
WGLM	WXAW	W. Lafayette, IN
WILS-FM	WLYY	Lansing, MI
WJYO	WSRX	Ft. Myers, FL
WKNA	WNJC-FM	Senatobia, MS
WKNP	WJTR	Jackson, TN
WLEZ	WPFR-FM	Terre Haute, IN
WLGH	WQUH	De Funiak Spgs, FL
WMAX-FM	WOSB	Irondequoit, NY
WMXV	WNSR	New York, NY
WRCY	WMJR	Warrenton, VA
WRVV	WHP-FM	Harrisburg, PA
WVLR	WZST	Appomattox, VA
WYMZ	WMMZ	Bay Minette, AL
WYRM	WQZM	Mountaintop, PA
WZKL	WDJQ	Alliance, OH

New Shortwave Call Letters Issued

KJES	Vado, NM

New FM Call Letters Issued

KAPD	San Antonio, TX
KRVD	Rio Dell, TX
KRVF	Eudora, AR
KRVG	Eagle, ID
KSQA	Wallace, ID
KSQB	Clearwater, KS
KSQC	Otterville, MO
WKNQ	Dyersburg, TN
WRZK	Tallahassee, FL
WWDO	Vero Beach, FL
WWDP	Philadelphia, PA
WWDQ	Morehead, KY
WWUA	Inverness, FL
WWUB	Long Beach, MS
WWUC	Bridgeton, NJ
WWUD	Stamping Ground, KY

Applications Filed For New FM Stations

AK	Anchorage	90.3 MHz	100 kW
AZ	Chinle	90.5 MHz	1 kW
CA	Mojave	88.7 MHz	29 kW
CA	Redding	90.9 MHz	600 watts
CO	Vail	90.1 MHz	1.5 kW
FL	Carrabella	106.5 MHz	100 kW
FL	Key West	98.1 MHz	6 kW
GA	Lafayette	107.5 MHz	3 kW
GU	Agana	89.3 MHz	2.8 kW
HI	Hilo	88.7 MHz	740 watts
IA	Albia	96.7 MHz	25 kW
IA	New Sharon	99.9 MHz	
KS	Belle Plaine	92.7 MHz	4.6 kW
MN	Perham	98.5 MHz	3.9 kW
MO	Cuba	91.9 MHz	29 kW
NV	Reno	89.5 MHz	5 kW
NY	Rock Springs	90.5 MHz	100 kW
OH	Portsmouth	91.5 MHz	11 kW
PA	Clarendon	106.9 MHz	4.7 MHz
TX	Amarillo	99.7 MHz	6 kW
TX	Crystal Beach	101.5 MHz	
TX	Floresville	89.7 MHz	Low Power
TX	Odessa	107.7 MHz	49 kW
WA	Royal City	96.3 MHz	800 watts
WI	Kaukauna	103.1 MHz	
WV	Petersburg	89.5 MHz	1.5 MHz

Permits Granted To Build New FM Stations

AK	Dillingham	99.1 MHz	6 kW
CA	Dunsmuir	100.1 MHz	3 kW
IA	Hampton	98.9 MHz	6 kW
IL	Morris	103.1 MHz	3 kW
MI	Marquette	94.1 MHz	4.5 kW
MT	Helena	103.1 MHz	100 kW
MT	Laurel	103.1 MHz	100 kW
NH	Hanover	91.3 MHz	150 watts
NJ	Belvidere	107.1 MHz	3.9 kW
OK	Ponca City	88.7 MHz	11.5 kW

Applied For AM Facilities Changes

KDUK	Eugene, OR	1280 kHz	Drop nites to 700 watts.
KIQI	San Francisco, CA	1010 kHz	Drop days to 30 kW.
KRGO	Fowler, CA	1220 kHz	Drop days to 370 watts.
WNYC	New York, NY	830 kHz	Drop nites to 700 watts.

Changed AM Facilities

KBSG	Auburn, WA	1210 kHz	Dropped to 6.5 kW at nite.
WBUX	Doylestown, PA	1570 kHz	Increased to 950 watts at nite.
WCHP	Champlain, NY	760 kHz	Added nites at 200 watts.
WNTK	Newport, NH	1000 kHz	Increased to 10 kW.

Applied For FM Facilities Changes

KCSU	Ft. Collins, CO	90.5 MHz	Seeks move to 89.7, 40 kW.
KQEG	LaCrescenta, CA	100.7 MHz	Seeks move to 102.7.
KTSW	New Braunfels, TX	89.9 MHz	Seeks move to San Marcos.
WAIA	St. Marys, GA	93.3 MHz	Seeks move to Callahan, FL
WAVI	Christiansted, VI	94.3 MHz	Seeks move to 93.5.
WDWN	Auburn, NY	88.9 MHz	Seeks move to 89.1, 300 watts.
WEZR	Brillion, WI	96.3 MHz	Seeks move to 107.5, 6 kW.
WJAM-FM	Marion, AL	97.5 MHz	Seeks move to 97.3, 3.7 kW.
WNEK-FM	Springfield, MA	97.5 MHz	Seeks move to 105.1.
WNMB	N.Myrtle Beach, SC	105.5 MHz	Seeks move to 105.9.

Changed FM Facilities

KAAR	Medical Lake, WA	95.3 MHz	Moved to 101.9, 14.4 kW.
KOKX	Keokuk, IA	95.3 MHz	Moved to 96.3.
KQLL-FM	Mumelle, AR	94.9 MHz	Moved to Pine Bluff.
KPSA-FM	Alamogordo, NM	92.1 MHz	Moved to 103.7, 50.2 kW.
WBOX-FM	Varnado, LA	92.7 MHz	Moved to 92.9.
WCCW-FM	Traverse City, MI	92.1 MHz	Moved to 107.5.
WIUJ	St. Thomas, VI	88.9 MHz	Moved to 102.9.
WLGC	Greenup, KY	105.5 MHz	Moved to 105.7.
WMJW	Cleveland, MS	106.9 MHz	Moved to Rosedale, 107.5.

tion was part of the ten-station AFN network in Germany, but was the oldest station in the net. It began operating on June 10, 1945. The final program was three hours of memories about the station and was carried on the whole AFN network. It featured musical highlights, and live visits from former AFN staff members who dropped by for the occasion.

Thanks to David Harden, HQ USAFE, for telling us.

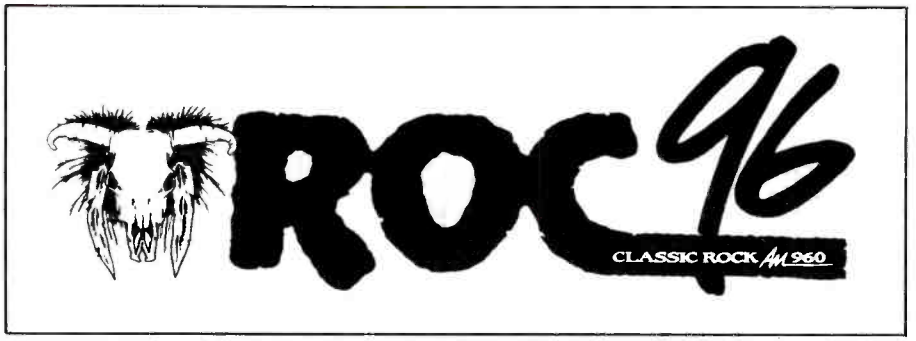
A Towering Monument: If you visited Lancaster, Penna., you couldn't miss the 140-ft. broadcasting tower that stood looking out over Penn Square from the top of a 120 ft. tall building for forty years. It served the needs of WGAL-TV, WNCE, WGAL, and WLPA over the years, but it has been out of service since WLPA switched to another antenna in 1988.

Actually, part of the Blaw-Knox tower had been put up in 1938 for WGAL's use, but it wasn't until years later that it was built up to its full height. Last March, though, the old tower was taken down because it was no longer needed there.

Have no fear, it was taken down carefully so that it might be used again by another station. It had no rust, and was in good shape, although it needed a paint job. It took six hours to take down.

This information came in from Denny Murr, Mountville, Penna.

Another Tower Story: Not quite the same end to the 11 tall antenna towers (built in 1962) once used by the VoA's Bethany Relay Station in Jacksonburg, Ohio. When the facility was discontinued by the VoA, the property was deeded over to a religious group that wants to put a summer camp for low-income teen-agers and maybe also a residence for some homeless families on the 29-acre site.



San Angelo's KGKL/960 has this great ROC-96 bumper sticker. (Courtesy Alan P. DesJardins, N5VXL).

The town would have liked to use the property for storing highway maintenance and fire fighting equipment. The fate of the towers hasn't been determined, but residents of the area are miffed that Wayne Township didn't receive the deed to the property.

This information came in from Jack Wagoner, Columbus, Ohio.

Stubblefield: Two people from Kentucky's Murray State University recently built a full working model of Nathan B. Stubblefield's wireless equipment, which had first been demonstrated in public one hundred years ago. At that time, Stubblefield transmitted music and voice. This was years before Marconi's demonstrations of a far more primitive technology.

The successful Murray State University demonstration proved that Stubblefield's invention did actually work.

Meanwhile, entertainer Troy Cory, who claims to be the grandson of Nathan Stubblefield, was demanding that old Nathan be recognized as the true inventor of radio, and also that Nathan be removed from his present (vandalized) gravesite in Murray, and reburied in Washington.

In 1991, Cory purchased Murray broadcast station WNBS and a local LPTV station. Both went dark last December when staff members either resigned or were fired when they declined to sign non-disclosure and personal-services contracts. He was later arrested in California on a Calloway Co. (Kentucky) indictment charging twenty counts of theft of services relating to the wages of station employees.

In January, Cory brought a $12.3-million suit against a man in Murray that he claims defrauded him in the sale of the radio and TV stations.

FCC Business: There are now 4,982 FCC licensed AM'ers, 6,147 FM commercial and non-commercial stations, 1,887 FM translators and boosters, 1,496 VHF/UHF TV broadcasters, 4,845 VHF/UHF TV translators, and 1,231 VHF/UHF LPTV stations.

The FCC decided that ten AM'ers have been dark for long periods of time without appropriate authorization. The FCC claims it has not been able to communicate with the licensee, or the licensee has failed to respond to FCC mail asking about its status. The stations have all been given notices to show cause why their licenses should not be revoked. These AM stations are:

KBRS, Springdale, AR; KOKY, Jacksonville, AR; KMHT, Marshall, TX; WKIJ, Parrish, AL; WFRK, Coleman, FL; WPSC, Pageland, FL; WAGF, Dothan, AL; WAPR, Avon Park, FL; WDAT, Amory, MS; WORI, Oak Ridge, TN.

Time Brokerage: We were listening to the AM one day when we heard a station advertising to sell one-hour blocks of time on the air weekday nights. They pointed out that brokers (buyers) can put on their own programming, advertise their own products, resell program or commercial time to others, and take on-the-air phone calls from listeners.

Here's a look at the new bumper sticker from WBHY/840, Mobile, Ala. (Courtesy Wilbur Goforth, WBHY).

New religious station WBHY-FM/88.5 designed this bumper sticker. Courtesy Wilbur Goforth, WBHY).

CKIK-FM/107.3, of Calgary, Alberta, Canada has a bumper sticker that's simple and good looking. (Courtesy Norm Patchett, Calgary, Alberta.)

Although time brokerage (or Local Marketing Agreements, sometimes called LMA's) have been around for many years, it looks like this is growing more popular now than ever as a way of helping radio stations out of the financial doldrums. It's been especially popular with those producing non-English language programs. The FCC has decided to survey the situation.

The FCC telephoned 284 broadcasters in various markets to inquire about LMA's. The survey identified 17 stations (6 percent of the total) as being engaged in LMA's. Six of those stations acquired at least 98 percent of their programming from a broker. One acquired 92 percent of its programming from a broker. One of the stations brokered out 100 percent of its time!

Of the 17 brokering stations, one was a TV station, while the other 16 were radio stations (9 AM, 7 FM). Two of the 16 were an AM/FM combination. Some of the brokers were other broadcasters serving substantially the same area as the station whose time they were buying. Some were serving other areas.

The time brokerage arrangements in the FCC survey ranged in duration from six months to seven years.

Broadcasters seeking additional information on the FCC's time brokerage survey can contact Amy Zoslov, FCC Mass Media Bureau, at (202) 632-3922; or James Davis, FCC Field Operations Bureau, at (202) 632-7270.

Hasta la vista, Baby: I see by the old Western Union clock on the wall that our shift at the board is over. But we hope that we'll be able to get together with you again next month. Pass along your bumper stickers, AM/FM station news clippings, station photos, thoughts, ideas, questions, comments, information on new or dark stations, format changes, and all of that good stuff. ■

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

Receiver Downconverter Converts 800 MHz Signals To 400 MHz Range

ACE Communications has announced the introduction of a new 800 MHz frequency downconverter. The unit converts the frequency range of 806MHz to 900MHz down to 406 to 500MHz.

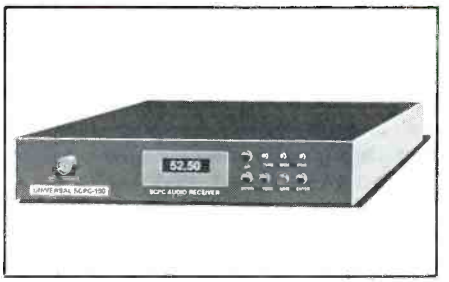
The new unit is extremely compact, measuring 3″ in height, 2″ in width, and 1½″ in depth. Frequency stability is assured by the use of a new surface mount prescaler/synthesizer referenced to a precision quartz crystal clock. BNC connectors, plus an internal battery are used to facilitate versatility; the converter can even operate on hand held receivers.

The amplifier can extend the performance of test equipment, and UHF communications receivers. A suggested retail price of $89.00 has been set for the unit, designated DC 89. Delivery is scheduled for late May. The unit is designed and manufactured in the U.S.A. by ACE Communications.

For more information, contact: ACE Communications Monitor Division, 10707 East 106th Street, Fishers, IN 46038, or circle 101 on our Readers' Service.

SCPC-100 SCPC Audio Receiver

Universal Electronics announces their SCPC satellite audio receiver. This new micro-processor controlled receiver will tune and receive the hundreds of SCPC channels on many domestic satellites. The SCPC-100 unit is easy to install, and features 50 channels of memory recall with one button, compatible with all 950-1450 MHz block systems, large LED tuning scale, will receive all C and KU band channels and does not disable video satellite receiver when in use, plus other features.



The SCPC-100 receiver was designed for easy use with all home satellite systems and is the first quality SCPC unit at an affordable price. The hundreds of SCPC services on the satellites are, sports, news services, radio nets, hometown sports, racing nets, talk shows, classical, jazz and rock music, financial programming and more.

The SCPC-100 receiver retails for under $400.00 and is available from: Universal Electronics, Inc., 4555 Groves Road, Suite 13C, Columbus, OH 43232.

2-Channel Business Band Transceiver Now Available

Radio Shack® is offering its first two-way business radio service transceiver, the Realistic® BTX-120. The 2-channel, VHF-FM handheld unit is designed specifically for business use and is ideal for construction sites, factories, warehouses, school campuses, hospitals and entertainment complexes—wherever dependable, short-range business communication is needed.

This compact, lightweight radio (less than 15 oz.) comes ready to operate on the 151.625 MHz business channel. Optional plug-in crystals permit operation on a second channel, if desired. A built-in circuit automatically adjusts for a wide variety of voice levels to ensure clear and understandable transmissions. The adjustable squelch control eliminates background noise between transmissions.

The Realistic® BTX-120 operates at 1-watt power with an effective range of up to one mile. A three-way indicator lights when transmitting, receiving or when battery power is low.

The unit comes with a removable and rechargeable nickel-cadium battery pack and UL-listed AC charger. A 150mm detachable antenna, belt clip and vinyl carrying case are also supplied.

A Federal Communications Commission license is required to operate the BTX-120. An application form is included with the owner's manual.

The Realistic® BTX-120 2-Channel VHF-FM Portable Business Band Transceiver (Cat. no. 19-1201) sells for $14.95 at nearly 7000 Radio Shack stores and participating dealers nationwide.

RTTY

BY ROBERT MARGOLIS

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

The disease spreads and it's getting out of control. It's been seen for more than a year, but, as of today, a cure hasn't been found. It has infected our military about as bad as computer viruses have attacked civilian office computers.

This disease has no name, but it has many callsigns, which are as imaginative as the formulas for various brands of toothpaste.

Most of these callsigns consist of a letter, a number, another letter, and two more numbers, such as "A1B23." Their births apparently occurred after packet radio was set up at many of the nation's military bases. The callsigns are a longer version of the letter-number-letter combinations that have been heard phonetically for many years in military voice communications. Sometimes the shorter callsign can be heard in voice transmissions on frequencies about 2.2 kHz on either side of the packet radio frequency during breaks in the RTTY transmissions.

One example is RAO98 to G4G72, packet radio, on 12291.3 kHz at 1714 and 2028 UTC; and on 12293.5 kHz, lower sideband, at 1714 and 2042 UTC. In their voice communications each addressed the other as "Romeo 4 Oscar" and "Golf 4 Golf."

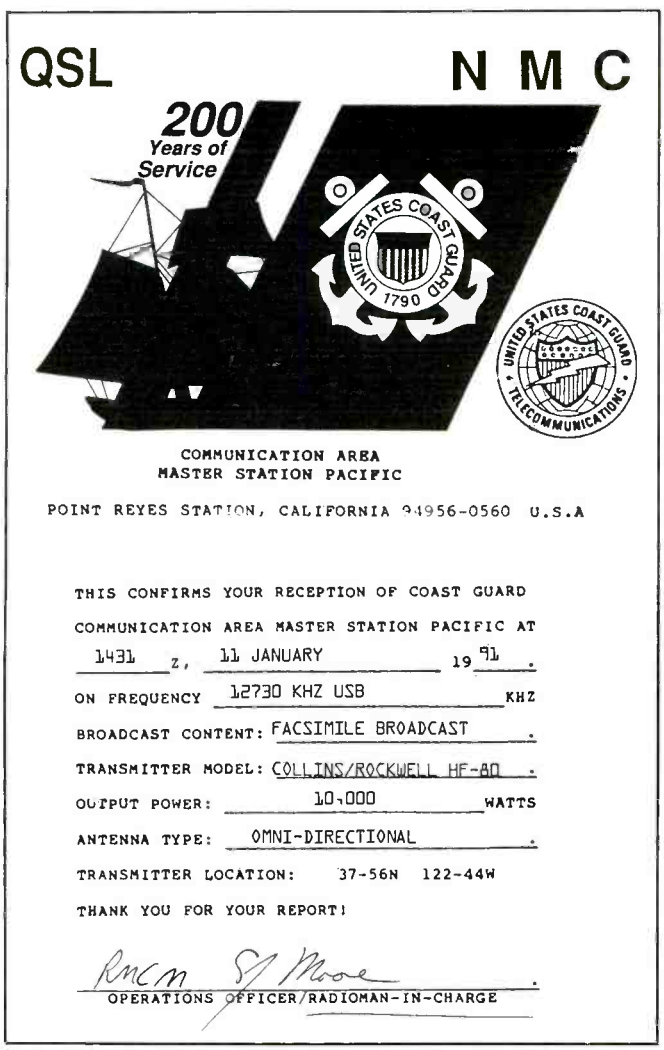
N3K87 ran packet radio transmissions to J0O30 on 7887.4 kHz, at 1336 UTC, and on 14898 kHz, at 1611 UTC, both on the same day. At 1737 UTC, J0O30 sent messages to ZID87 on the 14 MHz frequency. After a brief conversation, ZID87 relayed encrypted traffic from C3P47. The encryption consisted of alternating uppercase and lowercase letters like this: JgLmLoPjBpKcIg. . . Several days later on 7887.4 kHz, F6Y71 sent traffic using the same encryption scheme to Y2M56 at 1645 UTC.

W3C24 and W6A20 held a gabfest in a packet radio transmission on 14655.2 kHz at 1656 UTC. Upper sideband communications were on 14653 kHz.

A station identifying itself as "AAA" ran a packet radio transmission on 2110.3 kHz, at 0430 UTC, with encryption in the U frame to "CQ." No breaks in the transmission occurred during two hours of continous monitoring. The station was heard for several days from about 0100 UTC onward.

You may recall reading in March's and April's column about KF2XEW, PI9STC, VE9LBQ, and WE1COM, participating on a packet radio bulletin board system on 14646.5 kHz. Another callsign, AC2CQ, has joined them. Its location, given in a RTTY transmission, is Fort Monmouth, New Jersey, where WE1COM also operates. This BBC also operates on 6782 kHz, where I saw packet radio messages at 1921 UTC from VE9LBQ to KF2XEW.

A similarity is noted between the KF2XEW callsign on 14646.5 kHz and KO2XBK, who was working NEW286 on 9081.7 kHz with packet radio. After several observations of



QSL N M C

200 Years of Service

UNITED STATES COAST GUARD 1790

UNITED STATES COAST GUARD TELECOMMUNICATIONS

COMMUNICATION AREA
MASTER STATION PACIFIC

POINT REYES STATION, CALIFORNIA 94956-0560 U.S.A

THIS CONFIRMS YOUR RECEPTION OF COAST GUARD COMMUNICATION AREA MASTER STATION PACIFIC AT 1431 Z, 11 JANUARY 19 91.

ON FREQUENCY 12730 KHZ USB KHZ

BROADCAST CONTENT: FACSIMILE BROADCAST.

TRANSMITTER MODEL: COLLINS/ROCKWELL HF-80.

OUTPUT POWER: 10,000 WATTS

ANTENNA TYPE: OMNI-DIRECTIONAL.

TRANSMITTER LOCATION: 37-56N 122-44W

THANK YOU FOR YOUR REPORT!

RMCM S J Moore.

OPERATIONS OFFICER/RADIOMAN-IN-CHARGE

NMC, U.S. Coast Guard, San Francisco, CA, sent a letter to Don Webel of Florida, and a QSL card to Chris Anders of Oklahoma, for their monitoring efforts.

US Department of Transportation
United States Coast Guard

Commanding Officer
USCG Communication Area
Master Station Pacific
San Francisco, CA

17000 Sir Francis Drake Blvd.
P.O. Box 560
Pt. Reyes Sta., CA
94956-0560
(415) 669-1045

2000
01 October 1991

Mr. Don Loebel

Dear Mr. Loebel

I am very pleased to receive your letter. Thanks for taking the time to write us as we always welcome comments.

The original Radio Station San Francisco was located in San Bruno, California, and went on the air in June 1943. Ground was broken on the present site at the Point Reyes National Seashore in 1972. Communication Station San Francisco went on the air 1 February 1973, our name was changed to Communications Area Master Station Pacific, or in short (CAMSPAC) to reflect our changing role in Coast Guard communications.

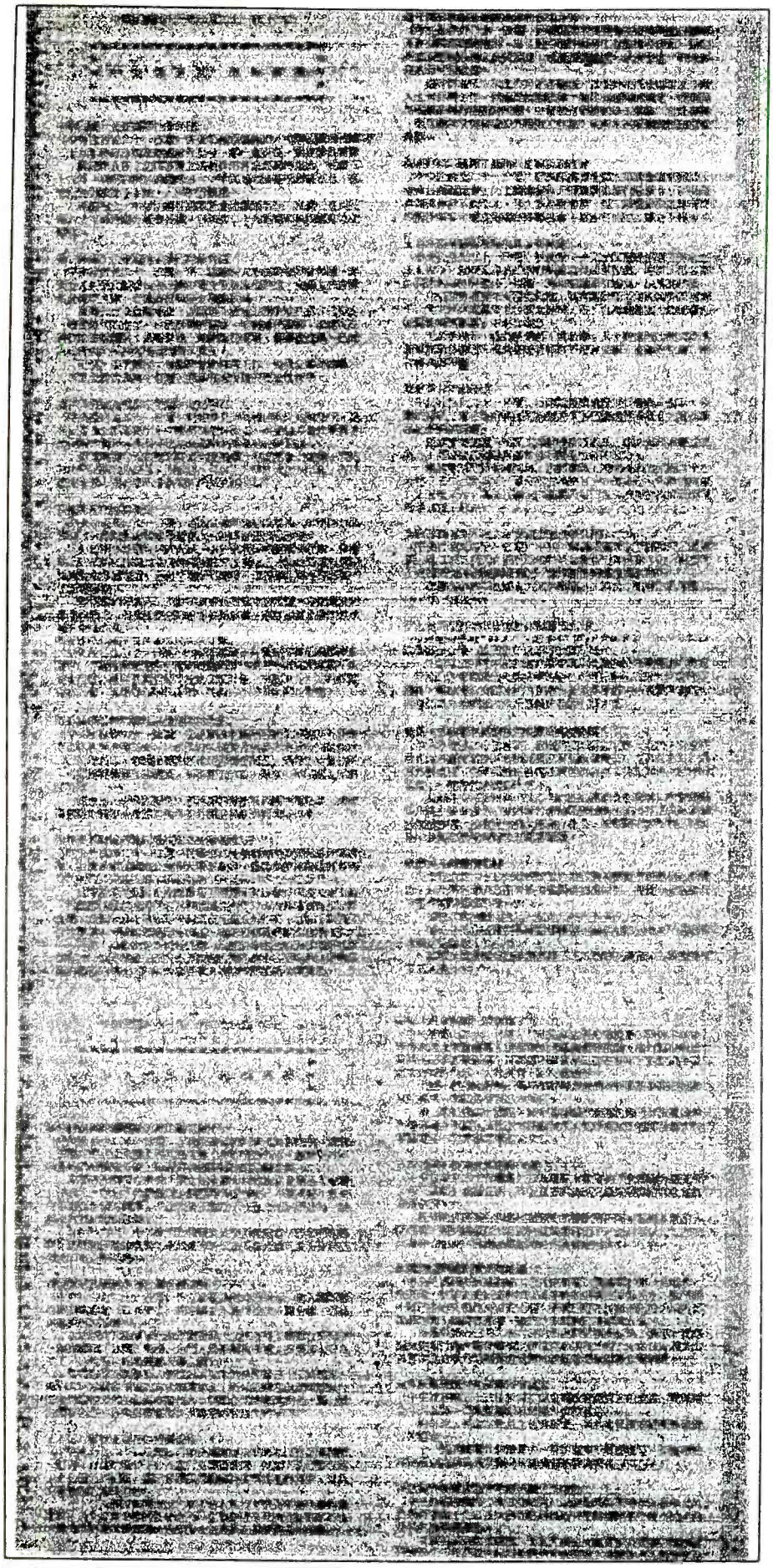
For your information, we transmit with a vertically polarized omni-directional antenna with a full 360 degree orientation. Our HF transmitters are the Collins/Rockwell HF80 series utilizing 10 KW.

CAMSPAC's primary mission, as well as all of Coast Guard communications, is to provide communications support for Coast Guard and other Government agencies. Some of the other missions of CAMSPAC are monitoring international distress frequencies, support for National Marine Fisheries Services, and Disseminating Weather for the maritime boating public.

Thank you again for taking the time to write.

Sincerely,

S. J. Moore
Master Chief Petty Officer, USCG
By Direction of the Commanding Officer



NEW186's traffic, both encrypted and in the clear, I suspect that NEW286 may be a code name for the computer that's handling the packet radio transmissions. The "286" callsign might indicate the computer has an intel 80286 microprocessor chip. Directory listings on the NEW286 computer show file transferring and file compression/decompression programs.

Late last February, NEW286 passed encryption to "Vectra" over packet radio on 9081.7 kHz at 1636 UTC.

The U.S. Air Force has a packet radio BBS on 14647.3. Noted were AFA01, Washington, DC; AFA02, Key West, Florida; AFA03, Bonita Springs, Florida; and AFA05, Homestead AFB, Florida. I have yet to see a transmission from AFA04. One other callsign seen on the net was AIR1AF, which might also be Washington, DC.

A new frequency for the Tito-Peca-Sara net, 13858 kHz, was used in February and March. The net operated during late afternoon and early evening hours in the U.S. Tito appeared to be the head honcho as most of the traffic came from him. The traffic mostly consisted of five-figure groups to Peca in the afternoon and to Sara in the evening. Any chatter would be brief and in Spanish.

Fort Sheridan, Highwood, Illinois, will be closed at the end of next month. It is headquarters for region five Army Military Affiliate Radio Systems (MARS) stations, which operated under the callsign AAR5USB. This station, heard on 6907 kHz (upper sideband), and 6909.3 kHz (packet radio), with a callsign of AAT5FC, relayed its last MARSgram on March 31.

The closures were a cost-cutting move by the U.S. Government. The fort's last fiscal year budget, Oct. 1, 1991 through Sept. 30, 1992, was $5.3 million. Fort Sheridan's MARS operation ran with a civilian payroll of $1.5 million, according to Lou Nowa, a civilian who headed the base's station.

John Foote, AAR5RD, director of region five's operations, says that with the fort's closure his region now operates on an individual basis, with several stations acting as gateways for telegram traffic out of AAA6USA, Fort Sam Houston, San Antonio, Texas, to other Army MARS stations in the six states that comprise region five.

If you read any RTTY transmissions last February and March between Army MARS stations, you may have noticed frequent talk about a project called "Earthwinds." This referred to a hot air balloon that was to have been the first balloon to circumnavigate the

Newspaper with Chinese text sent by 3MA23, CNA, Taipei, Taiwan, 19680.5 kHz, 0604 UTC, 120/576. Monitored by the RTTY Column editor when the actual time at his location was 0004, which might explain the fair quality of this transmission on a high frequency from the Far East.

globe, in a two-week flight covering 22,000 miles. The flight was to have begun Feb. 9, but was postponed several times due to bad weather and technical problems. Finally, about the middle of March, the flight was aborted until sometime this Autumn.

Army MARS stations across the United States plan to be voluntary participants in the project. A RTTY message from AAR5USB, before the last postponement of the project and before the closing of Fort Sheridan, read, "This station will be operating in support of the Earthwinds project. We will be acting as the region collection point for all reports relating to the project."

Foote says that if the flight takes place, region five Army MARS stations plan to take position reports via high-frequency radio from the balloon three times every hour, while the balloon is over the United States, and relay them to AAA6USA, which will forward the information to Akron, Ohio, the lift-off site for the privately funded project.

HF radio frequencies to be used by the balloonists are 3347, 13993, 14663.5, 20994, and 28304.5 kHz, all upper sideband, according to Foote.

More MARS news. . . For those of you interested in slow scan television, this item might be worth a looksee. It was relayed on Mar. 12 from NNN0NIM, U.S. Navy MARS, Gulfport, Mississippi, to NNN0NRO in Rota, Spain, and originated from U.S. Marine Corps headquarters in Washington, DC:

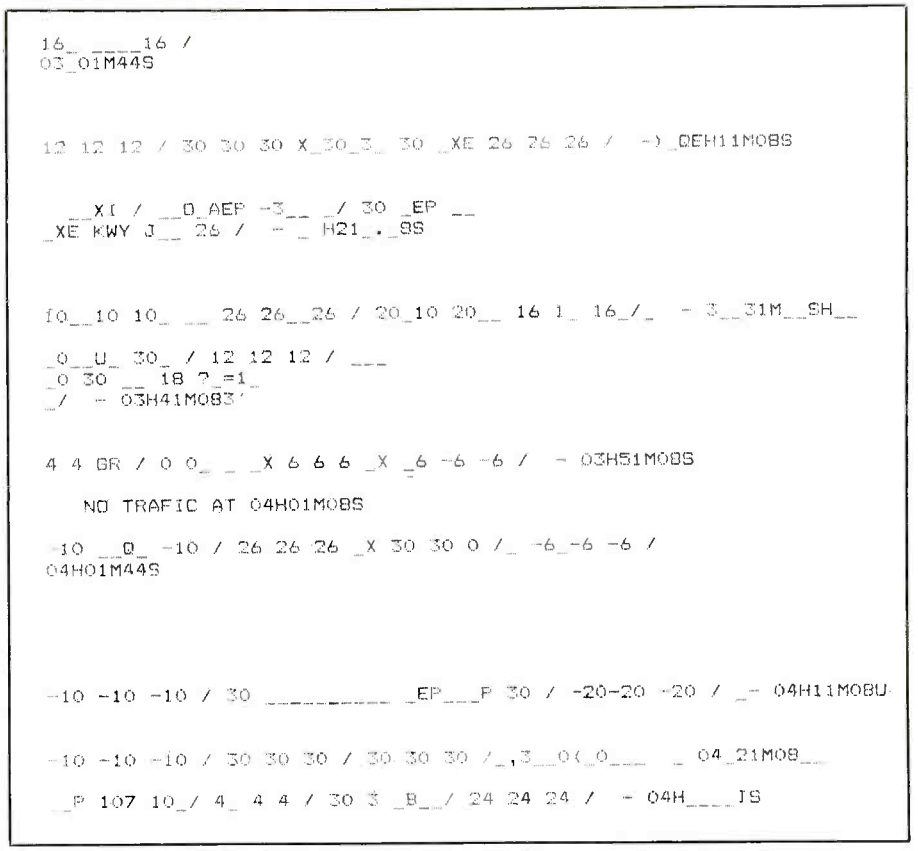
"Slow scan TV (SSTV) network will be convened by NN0PPG/NNN0BRW 21 and 22 March and subsequent Saturdays and Sundays 2200A - 2300Z, 7372.5 kHz. During this net further information will be provided with emphasis on organizing region SSTV nets."

An unidentified ship transmitted a very long list of frequencies in Russian on 25194 kHz, at 2104 UTC, 50 baud. The transmission apparently began at 2100 UTC, and its identity may have been given at that time. The list consisted of all the RTTY and CW frequencies on the 4, 6, 12, 16, 22 and 25 MHz bands, upon which it transmitted, both in simplex and duplex. Also listed were the frequencies and times of operation for the Russian coastal stations in Kiev, Moscow, and Sevastopol. The sender also added an artistic touch to the list by showing all the keys on his Cyrillic character keyboard, left to right, from the top row to the bottom row, followed by the Russian alphabet.

I tuned to the same frequency the next day a little bit earlier, hoping to catch this transmission again and maybe the name of the ship, but the transmission didn't reoccur.

Whozit/Whatzit Dept.: Station "FDE" sent its callsign in Morse Code, along with the ARQ phasing signal, last February. This occurred on 12616.3 kHz at 0518 UTC. Does anyone out there in RTTYland know anything about this station? Please drop us a line.

WTED, the fish assessment ship Chapman (R-445), and KHWA, National Marine Fisheries Services, Pasacagoula, Miss., were recently intercepted as they conversed in an unusual RTTY mode—150 baud packet radio.



An unidentified station, probably in the United States, sent short data such as this for several hours on several days in March. The transmissions occurred every 10 minutes on the 1's: 0301, 0311, 0321, 0331, etc. This logging, by the RTTY Column, editor, ran from 0301 to 0421 in FEC mode on 7639.5 kHz. The UTC times are given in hours, minutes, and seconds. The signal was a flea-powered one.

The two were on 12488 kHz from 1745 to 2000 UTC. Their transmissions related to marine research taking place at different latitudes/longitudes, and at various depths, of the Gulf of Mexico.

The Chapman is part of a fleet of 26 ships used by the National Oceanic and Atmospheric Administration. Its primary use is for fish stock assessment in the Gulf of Mexico and the Caribbean, and along the east coast of the United States. This assessment is used for fishery management programs. It carries three officers, 9 crew members and 6 scientists.

After logging the stations, I sent a letter to the ship along with a prepared QSL card and a SASE. A reply, verifying my logging, and embossed with the ship's seal, was received nine days later. The QSL reply said that the power output was 100 watts at the time of the RTTY transmission, and the antenna was a 37-foot-long whip. A brochure, describing the ship and its operation, was also enclosed.

New Callsigns Dept.: CPF2, Bermejo Naval Radio, Bolivia, seen in an Inter-American Naval Telecommunications dispatch from Quito, Ecuador, as using RTTy and SSB voice modes. No intercepts of CPF2 have been brought to my attention as of last March. Only one frequency, 6790 kHz, is listed in ITU files for CPF2.

News items from former Soviet news agency Tass, which ceased its shortwave radio RTTY transmission on Jan. 1, were seen again in early March under the new name of Intar-Tass. The transmissions were not coming from Russia or any of the other former Soviet republics, but as part of a news broadcast in German from DFX69, PIAB, Bonn, Germany, which was seen on 23697.5 kHz at 1508 UTC, FEC-A/96.

An Associated Press item in January, cited in this column in June, said that Tass was going to be renamed Rita (Russian Information Telegraph Agency) in a structural change in the agency, if it met the approval of Russian President Boris Yeltsin. Itar-Tass, however, became the new chosen name in February.

FAXcinatin' Rhythm Dept: A number of new frequencies for radiofax transmissions were found earlier this year, and might be worth checking if you desire an interesting variety of stations.

An unidentified weather station was on 23602.5 kHz at 2118 UTC, but the charts were too dark to see anything clearly. Another weather station, also unidentified, with a rather weak signal, was on 23006 kHz, at 0030, 0041, 0100, and 1408 UTC, on different days. All printouts were of very poor quality and showed no features.

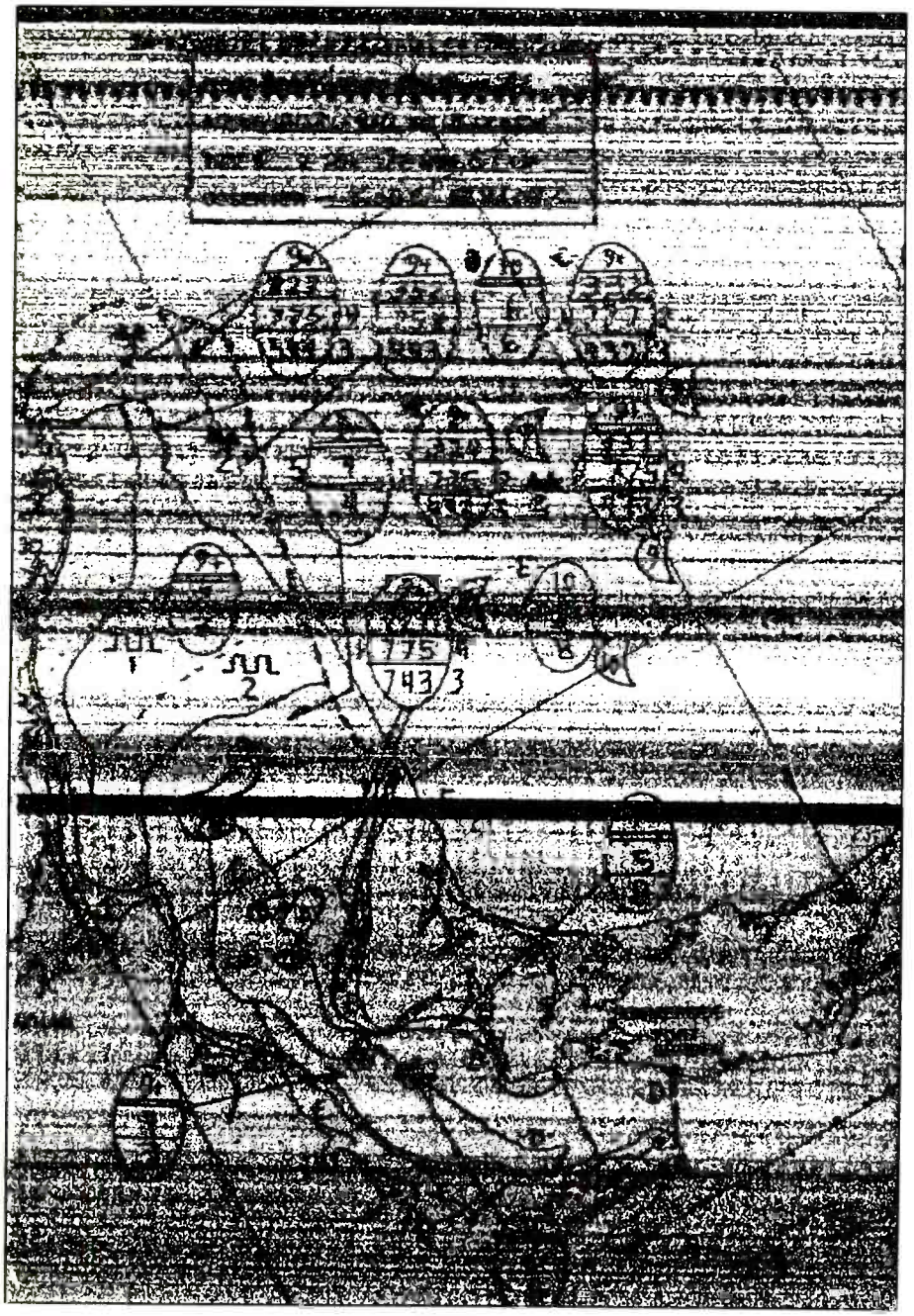


Figure 1

In March, two weather charts seen on 8115 kHz may have been sent by CZW, Maritime Air Group, Halifax, NS, Canada. The ending of one chart was occurring around 1615 UTC, when I happened upon it. It was transmitting at 120/576. The station went off the air momentarily, returning at 1619, to send another chart until 1639. It did not return to the air on the monitored frequency for the remainder of the day, nor was it heard at the same time the next day.

The weather chart that was sent at 1619 (see figure 1) showed the eastern coastline of Newfoundland and Prince Edward Island. Although the printout was of fair quality, the names of four towns are somewhat illegible. They are Summerside and Port Borden on Prince Edward Island, and Moncton and Chatham in Newfoundland. The chart was transmitted from bottom to top. The zigzag line across the top of the chart, that may have obliterated the station ID, was caused by some raucous man-made noise.

A newspaper with Cyrillic text, ran on 19745 kHz, from 1600 to 1750 UTC, on a couple of days in March. Figure 2 shows the last page of one of the newspapers I monitored. The decoder setting was 60/288. I didn't know where the newspaper came from until three weeks later when I received a similar fax printout from Syd Deitch of Alberta, Canada, which he monitored in February on 17000 kHz at 2330 UTC, also at 60/288 (see figure 3). Deitch said, "Previous faxes from this station which people have translated for me indicate that they consist of newspaper excerpts for fishermen and are sent from Vladivostok (Russia) . . ."

Offenbach Meteo, Germany, is operating on a new frequency of 13365 kHz. On March 6, I saw three weather charts between 2030 and 2100 UTC, at 120/576. One of them had "Frankfurt" in the chart's legend. The station may have been using the transmitter of either DFN36, Bonames, Germany, or DGN26, Elmshorn, Germany. Both sites are listed as using the neighboring frequency of 13364 kHz.

A new radiofax frequency for NPM, U.S. Navy, Pearl Harbor, Hawaii, was found in January. It was 14369.5 kHz, with weather charts being sent at around 0300 UTC, 120/576.

In February's column, I reported about RTTY decoding software called "Ham Comm" by W.F. Schroeder (DL5YEC) of Germany. Jeff Brown of Indiana says he downloaded it from a BBS and found problems with it. Here's his report on his experience:

"The op-amp interface is the weak link in this setup and produces difficult copy on even the strongest clear signals. I found that by inserting my Voicegate II noise reduction unit between the receiver and op-amp interface, my print improved considerably. I use the two notch filters on the interface and the peak filter on the desired RTTY signal. With a dedicated filter ahead of the interface, I'm sure the software would perform better yet."

I have been trying unsuccessfully for several months to find a frequency that doesn't have encrypted piccolo RTTY transmissions. Graeme Bartlett in Australia has had better luck than I've had with the venture and he sends along eight frequencies where he found piccolo RTTY in the clear. They are listed in the RTTY Intercepts section. Graeme says monitoring piccolo RTTY and radiofax are his main interests.

Correction: In April's column I mistakenly said MTO was the callsign of the Royal Navy, Rosyth, England. Rosyth is in Scotland, north of Edinburgh, across the Furth of Forth.

RTTY Intercepts

123.7: DCF42, PIAB, Bonn, Germany, w/nx at 0620, FEC-A/96. (Ary Boender, NLD)

129.1: DCF45, VWD, Frankfurt, Germany, w/financial nx, 300 baud at 1420. (Boender, NLD)

518: LGP, Bodoe R., Norway, w/Navtex tfc at 2100, FEC. (Boender, NLD)

2716: SAB, Goeteborg, R., Sweden, clg XFIV, ship Ottar Birthing, ARQ at 2247. (Boender, NLD)

3196: OLB2, Prague Meteo, Czechoslovakia, w/coded wx at 0120, 50 baud. (Harold Manthey, NY)

3229.5: AFS, Offutt AFB, Elk Horn, NE, w/KAWN wx data, 75 baud at 0131. (Manthey, NY)

3898: RFFXQA. French Forces, Versailles, France, w/tfc to Paris, ARQ-E/72 at 2100. (Boender, NLD)

4174.5: SIDY, Safe Supporter (Swedish platform), w/a telex at 1837, ARQ. (Boender, NLD)

4583: DDK2, Pinneberg Meteo, Germany, w/RYRY & CQ, 50 baud at 0557. (Ed.)

5094.6: AFS, Offutt AFB, Elk Horn, NE, w/KAWN wx data, 75 baud at 0533. (Ed.)

5887.5: IMB32, Rome Meteo, Italy, w/coded wx, 50 baud at 0133. (Manthey, NY)

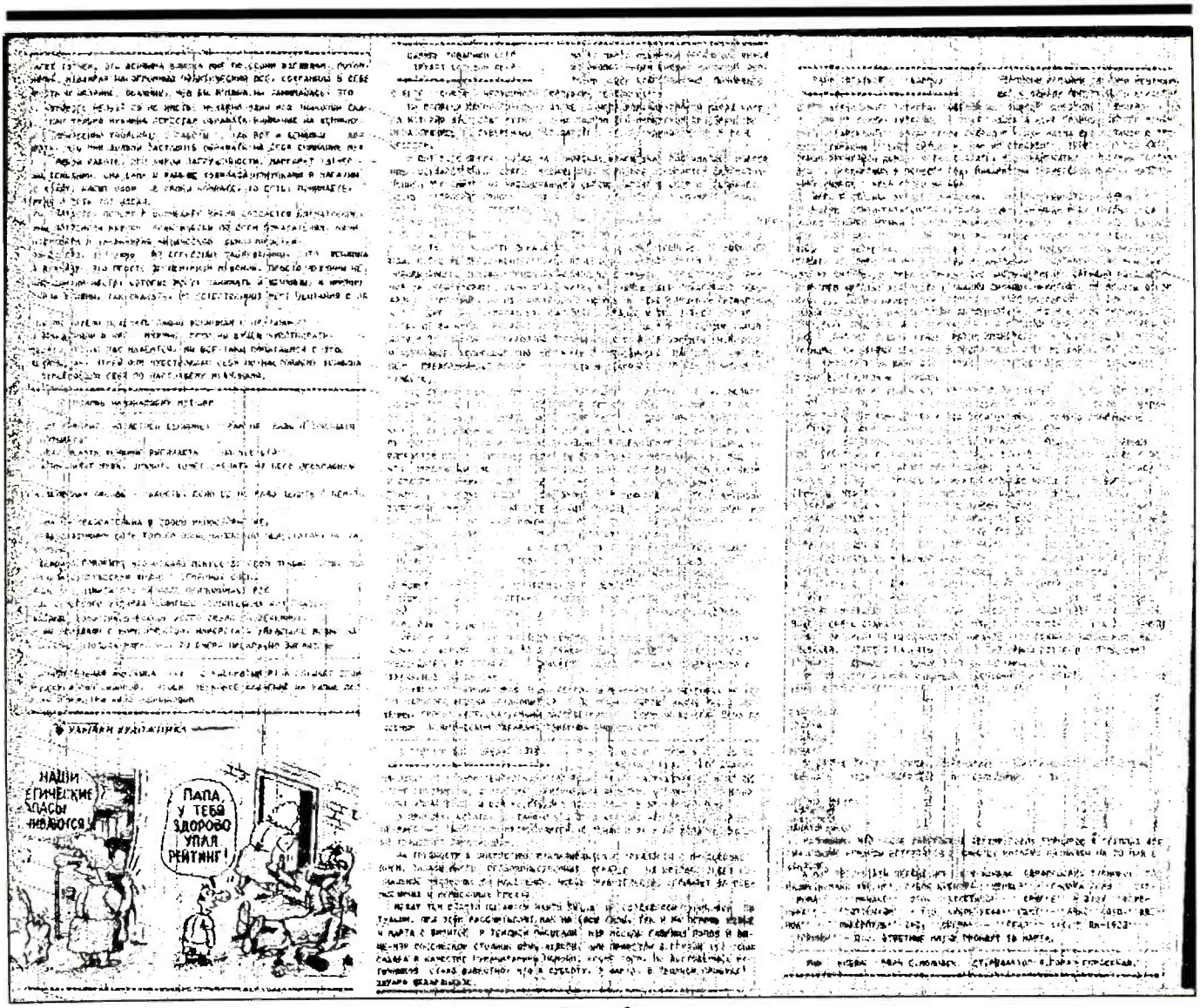


Figure 2

5904.5: AFS, Offutt AFB, Elk Horn, NE, w/KAWN wx data, 75 baud at 0608. (Ed.)

6266: H9AN, ship Panarea I (Panamanian-registered dry cargo), w/msgs at 2005, ARQ. (Boender, NLD)

6315: GKE3, Portishead R., England, w/a tfc list at 0500, FEC. (Ed.)

6320: KPH, San Francisco, R., CA, w/a tfc list at 1300, FEC. (Ed.)

6496.6: CFH, Canadian Forces Meteo, Halifax, NS, w/coded wx, 75 baud at 0552. (Robert Hall, RSA)

6683.3: Un-ID w/a list of 139 Spanish names, FEC at 0057. Appeared to be from a South American navy. (Ed.)

Abbreviations Used In The RTTY Column

AA	**Arabic**
ARQ	**SITOR mode**
BC	**Broadcast**
EE	**English**
FEC	**Forward Error Connection mode**
FF	**French**
foxes	**"Quick brown fox . . . "test tape**
GG	**German**
ID	**identification/ied**
MFA	**Ministry of Foreign Affairs**
nx	**News**
PP	**Portuguese**
RYRY	**"RYRY . . . "test tape**
SS	**Spanish**
tfc	**Traffic**
w/	**With**
wx	**Weather**

6736.5: ETD3, Addis Ababa Aero, Ethiopia, w/aero wx at 0054, 50 baud. (Ed.)

6775.2: XTU, ASECNA, Ouagadougou, Burkina Faso, w/aero wx, ARQ-M2/96, channels A & B, at 0541. (Ed.)

7626: TZH, ASECNA, Banako, Mali, w/RYRY, 50 baud at 0134. (Ted Hay, ON, Canada)

7646: DDH7. Pinneberg Meteo, Germany, w/coded wx at 0620, 50 baud. (Ed.)

7658: YZD, Tanjug, Belgrade, Yugoslavia, w/nx in EE, 50 baud at 0155. (Manthey, NY)

7684.8: RBV75, Moscow Meteo, Russia, w/coded wx, 50 baud at 0456. (Ed.)

7639.5: Un-ID w some type of data along w/UTC time in hrs, mins & secs. Updates occurred regularly. Was FEC at 0301. (Ed.)

7806: YZD7, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 0209, 50 baud. (Manthey, NY)

7921.8: Civil Air Patrol net w/units in CO, GA, MI, MN, PA, & TN, packet radio at 1629. (Ed.)

7925: RPFN, Monsanto Navrad, Portugal, w/foxes, & 10 count, 75 baud at 2120. (Boender, NLD)

8020: HMF85, KCNA, Pyongyang, North Korea, w/nx in EE at 1506, 50 baud. (Ed.)

8123: TNL, ASECNA, Brazzaville, Congo, w/RYRY, ARQ-M2/96 at 2227. (Hay, ON, Canada)

8356.5: EDEN, ship Villa de Mogor (Spanish fishing vessel—Ed.), w/telex tfc, ARQ at 1957. (Boender, NLD) With a c/s like that the ship should be named "Paradise"—Ed.

8416: NMF, USCG, Boston, MA, w/navareas at 0202, FEC. (Hall, RSA)

8439.3: PBC38, Goeree Island Navrad, The Netherlands, w/an availability tape, 75 baud at 0219. (Ed.)

8493: Un-ID w/RYRY + VMGTCNJBH foll by crypto, 100 baud at 0225. (Ed.)

8514: WLO, Mobile R., AL, w tfc list & KWBC wxcast, FEC at 1539. (Ed.)

9190: RDZ75, Moscow Meteo, Russia, w/coded wx, at 0125, 50 baud. (Manthey, NY)

9983.7: RFVICF, French Navy, Paris, France, w/msgs in FF & Dutch, ARQ-E3/100 at 2120. ("Gal of Liberia," Italy) My files show RFVICF as being the helicopter carrier Jeanne d'Arc (R 97)—Ed.

10285: Un-ID in ARQ-E3 mode at 0147. (Hall, RSA). The sta. is RFLIRT, Cayenne, French Guiana—Ed.

10335.1: Un-ID w/4L grps at 0140, 50 baud. (Hall, RSA)

10423: YMA8, Ankara Meteo, Turkey, w/RYRY & coded wx, 50 baud at 0607. (Ed.)

10523.3:: HMF45, KCNA, Pyongyang, North Korea, w/nx, 50 baud at 1350. (Manthey, NY)

10650.2: BJZ23, Wuhan Meteo, China, w/coded wx at 0108, 75 baud. (Hall, RSA)

10749.5: "C37A" w/encryption to "6XM8," ARQ-E/192 at 2333, & w/op msgs at 0004, 100 baud. (Ed.)

10780: SDN6, PTT, Stockholm, Sweden, w/tfc to Ho Chi Minh Ville, Vietnam, ARQ-M2/96 at 1520. (Boender, NLD)

10805.5: NA, Buenos Aires, Argentina, w/nx in SS, 75 baud at 0055. (Hall, RSA)

10814.3: RFQP, French Navy, Djibouti, w "controle de voie" at 2116, ARQ-M2/200, channels A & B. (Ed.)

10894: LRB39, Telam, Buenos Aires, Argentina, w/nx in SS at 0015, 50 baud. (Ed.)

10950.2: RFFA, Mindefense, Paris, France, w/a msg in FF, ARQ-M2/200 at 1831. ("Gal of Liberia," Italy)

10950.3: RFGW, MFA, Paris, France, w/5L grps, ARQ-M2/200 channel A, at 2348. (Ed.)

11018.9: Polish Embassy, Cologne, Germany, w/a msg in Polish, POL-ARQ at 1449. ("Gal of Liberia," Italy)

11138.9: Un-ID Brazilian warship, w c/s PWLI, w/msgs in PP to PWN33, Natal Navrad Brazil (on 11139.2), 75 baud at 2350. (Ed.)

11198.6: "LYNX" w VPQK selcal, ARQ at 2317. (Ed.)

11393: IPG20, MFA, Rome, Italy, w/5L grps & a msg in II, ARQ-E/96 at 1641. ("Gal of Liberia," Italy)

11606: BZS21, Xinhua, Yuryumqi, China, w/nx in EE, 50 baud at 1520. (Manthey, NY)

12065: EPD, Teheran Aero, Iran, w/RYRY, 50 baud at 1340. (Manthey, NY)

12072.2: WUG, USACE, Vicksburg, MS, working WUE6 in Nashville, TN, FEC, 1706-1710, on USACE channel 10. (Ed.)

12075: VVD62, New Delhi Meteo, India, w/RYRY & wx, 50 baud at 0118. (Ed.)

12110: YOM21, Rompress, Bucharest, Romania, w/nx at 1130, 50 baud. (Boender, NLD)

12124.1: MFA, Sofia, Bulgaria, w/RYRY + "DOR" ID, 75 baud at 0858. (Ed.)

12148: SOM230, Warsaw R., Poland, w/nx in Polish, FEC at 1434. (Ed.)

12157.8: Possibly a Chilean sta. w coded wx data for Antarctic stas., ARQ at 0301. (Ed.)

12186: Jana, Tripoli, Libya, w/nx in EE re economic, scientific, & technical cooperation pact between Libya & Romania, 50 baud. Time not given. (Aris Giannarelis, Greece)

12212.8: YZD7, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 1015, 50 baud. (Ed.)

12220.5: Un-ID Portuguese Navy sta., w c/s RPFW, w/a 5L msg & naoclas msgs in PP, ARQ at 1944; & w c/s RPFR, which was idling in ARQ 2015-2224, foll by a brief msg in PP. (Ed.)

12291.3: "R4O98" to "G4G72," packet radio (U frames only) at 1714 & 2028. LSB voice comms between the two on 12293.5. (Ed.)

12265: BZR62, Xinhua, Yuryumqi, China, w/nx at 1525, 75 baud. (Boender, NLD)

12487: Y5LA, ship Rudolf Diesel (German cargo) w/telex tfc at 1554, ARQ. (Ed.) This ship was also logged by Ary Boender of The Netherlands on 8351 kHz, as it was clg Norddeich R., Germany, in ARQ mode at 0913—Ed.

12488: WTED, fish assessment ship Chapman (R-446) & KHWA, National Marine Fisheries Service, Pasacagoula, MS, w/tfc to each other, 150-baud packet radio, 1745-2000. (Ed.)

12490: NIDR, research ship USNS Vanguard (T-AG 194), w/coded wx & position report, ARQ at 1315. (Ed.)

12494.5: V7AB4, Un-ID ship (Marshall Islands registry), w/QSKK selcal & ID, ARQ at 1820. (Ed.)

12503.5: TCJF, ship Buyuk Timur (Turkish tanker) w ETA msg, ARQ at 1556. (Ed.)

12590: EAD, Madrid R., Spain, w/a tfc list in ARQ & FEC at 0300. (Ed.)

12598.5: VCS, Canadian Coast Guard, Halifax, NS, w/a msg to an un-ID ship, ARQ at 2058. (Ed.)

12601: ZSC63, Capetown R., RSA, w/a tfc list at 0415, FEC. (Ed.)

12602.5: KFS, San Francisco, R., CA, w/a tfc list at 0535, FEC. (Hall, RSA)

12637.5: UMV, Murmansk R., Russia, w "qsl nil k 73s de UMV." Was ARQ at 0438. (Ed.)

12657.7: LOR, Puerto Belgrano Navrad, Argentina, w/a "boletin meteorologico" at 0157, 75 baud. (Ed.)

12714: UXN, Arkhangelsk R., Russia with RYRY & ID, FED at 1049. (Ed.)

13030: URD, St. Petersburg R., Russia, w/telegrams in RR, 50 baud at 0730. (Ed.)

13310.2: RFFA, Mindefense, Paris, France, w/coded tfc, ARQ-E/72 at 0529. (Hall, RSA)

13397.8: DFZG, MFA, Belgrade, Yugoslavia, w/RYRY, 75 baud at 1429. (Don Schimmel, WV)

13530: RVW53, Moscow Meteo, Russia, w/coded wx, 50 baud at 0640. (Boender, NLD)

13539.5: Un-ID w/encryption, 125 baud at 2217. (Ed.)

13627.5: Un-ID w/encryption, 125 baud at 0037. (Ed.)

14387.9: NSS, USN, Washington, DC, w AP/UPI nx, FDM 50 baud at 1630. (Ed.)

14445: Un-ID w what appeared to be coded wx. Was extremely garbled. Ran at 50 baud at 1509. (Ed.)

14655.2: W3C24 w/msgs to W6A20, packet radio at 1656. (Ed.)

14674.2: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC at 1448, 75 baud. (Ed.)

14681.2: MFA, Bucharest, Romania, w/encryption, ROU-FEC/164.5 at 1128. To CW at 1143. (Ed.)

14786.5: 9PL, Kinshasa Aero, Zaire, w/aero wx & msgs in FF at 1545, 50 baud. (Ed.)

14817.5: Un-ID w/telexes in FF, ARQ at 0257. (Ed.)

14823.7: XVN, Hanoi Meteo, Vietnam, w/coded wx, 50 baud at 0030. (Ed.)

14795.4: RETA, Spanish Army, QTH unknown, w/a msg in SS, ARQ-M4-242/192 at 1900. ("Gal of Liberal," Italy)

15835.8: 164.5, foll by coded CW tfc at 2100. S20 sig. (Ed.)

15855: GFH w/foxes at 2313, piccolo. (Graeme Bartlett, Aus) GFH is the British Military in Hong Kong—Ed.

16015: MFA, Sofia, Bulgaria, w/crypto after DDDDD to Berlin, foll by crypto to Vienna, 75 baud at 1300. (Ed.)

16092: LOL, Buenos Aires Navrad, Argentina, w/tfc to PWX 33, 75 baud at 2355. (Hay, ON, Canada)

16111.2: HBD20, MFA, Berne, Switzerland, w lots of 5L grps, ARQ at 2007. (Ed.)

16136.2: Egyptian Embassy, Washington, DC, w/5L msgs to Cairo at 2100, ARQ. (Ed.)

16165.3: RFQP, French Navy, Djibouti, w/"controle de voie" at 1910, ARQ-M2/200, channels A & B. (Ed.)

16170: VHC w/msgs to GFH on freq. F8, 1342-1534, piccolo. (Bartlett, AUS) VHC is at Belconnen, ACT, Australia—Ed.

16205: MKK, RAF, London, England, w "LOLO" at 1111 to MTS, piccolo. (Bartlett, AUS)

16227.7: "RCF" w/RYRY for several minutes, foll by CQ's & ID, then into what appeared to be a tfc list. Was 75 baud at 1436.

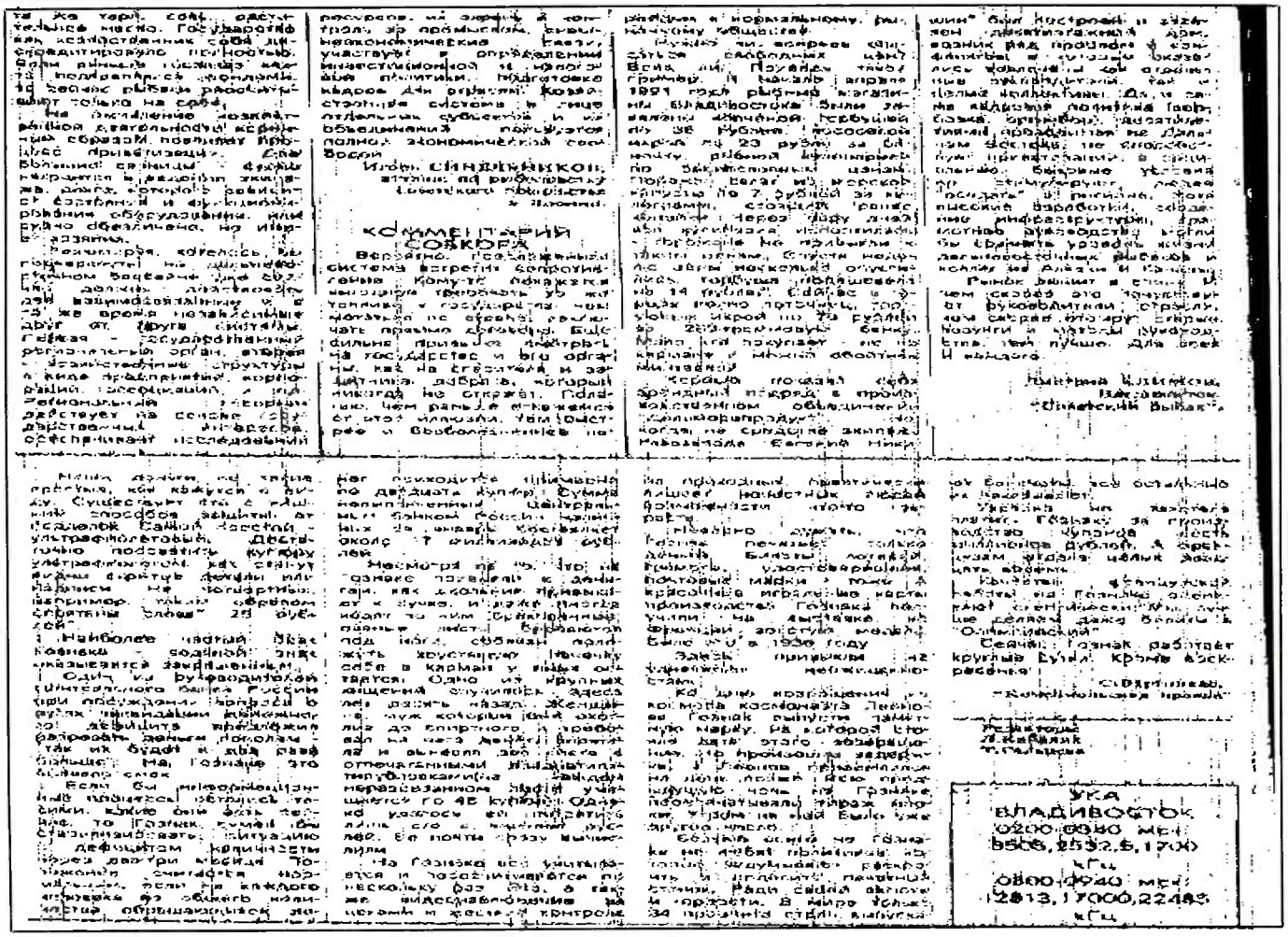


Figure 3

16302: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC at 1449, 75 baud. (Ed.)

16687.5: CBRB, ship Rubens (Chilean cargo), w/a telex via CBV, ARQ at 2355. (Ed.)

16696.5: HZXS, ship Al Zohal (Saudi Arabian cargo) w/wx obs to Washington, DC, ARQ at 1956; and ATLX, ship Chennai Muyarchi (Indian cargo) w/wx obs at 0022. (Ed.)

16699.5: SXIL, ship Chloe (Greek cargo), working HPP, ARQ at 2345. (Ed.)

16713.5: V2PI, ship Wadai (Antigua and Barbuda registry), w tfc at 2037, ARQ. (Ed.)

17108.5: FUF, French Navy, Fort de France, Martinique, w/RYRY & SGSG, 75 baud at 1349. (Hay, ON, Canada)

17134: UNM2, Klaipeda R., Lithuania, w/navareas in RR, 50 baud, 1612-1615. (Ed.)

17432: DFZG, MFA, Belgrade, Yugoslavia, w/crypto after xpxpxp, 75 baud at 1527. (Ed.)

17454.7: French Embassy, Fort de France, Martinique, w/5L msgs to Port au Prince at 1347, ARQ6-90/200. (Ed.)

18063.5: Un-ID w 2 telexes in Il from Kinshasa, Zaire, to Dar-es-Salaam, Tanzania. Was in ARQ at 1630. (Hall, RSA)

18320: OMZ, MFA, Prague, Czechoslovakia, w/nx re CSVE conf., 100 baud at 1000. (Boender, NLD)

18363.5: 9PL, Kinshasa Aero, Zaire, w/RYRY at 2000, 50 baud. (Boender, NLD)

18448: Un-ID w/5L grps at 1800, 75 baud, then to CW at 1803. (Ed.)

18450: RCF, MFA, Moscow, Russia, w/5L grps, 1448-1457, 75 baud. (Ed.)

18496.1: CNM80, MAP, Rabat, Morocco, w/nx at 0955, 50 baud. (Boender, NLD)

18553.7: RFTJ, French Navy, Dakar, Senegal, w/"controle de voie," ARQ-E3/100 at 2118. ("Gal of Liberia," Italy)

18630.5: CLP1, MFA, Havana, Cuba, w/5F msgs to Embacuda Guyana, 50 baud at 1707. (Ed.)

19063.7: French Mil., Paris, France, w/5L grps at 1152, ARQ-M2/200. ("Gal of Liberia," Italy)

19110.4: GFH, Hong Kong, w/QSY request to VMA, Diggersrest, Australia, at 0936, piccolo. (Bartlett, AUS)

19202.4: "BE-11" w/activity rpts to "CGA," 75 baud at 0419, foll by CGA w wx & 5L grps to BE-11. May be Bolivian Navy. (Ed.)

19204.8: RFLI, French Navy, Fort de France, Martinique, idling, ARQ-E3/100 at 1946. ("Gal of Liberia," Italy)

19217: DFZG, MFA, Belgrade, Yugoslavia, w/crypto after xpxpxp at 0719, 75 baud. (Ed.)

19224.6: DMK, MFA, Bonn, Germany, w/crypto to Kinshasa, Zaire, ARQ-E/96 at 1244. ("Gal of Liberia," Italy)

19266.7: Un-ID Egyptian diplo w/a msg in AA, ARQ, 1258-1307. (Ed.)

19515.8: Un-ID w/5L grps, 0540-0600, ARQ-N/96. (Ed.)

19575.9: ORI59, RTT, Brussels, Belgium, w/a telex in EE, ARQ-M2-242/96 at 1517. ("Gal of Liberia," Italy)

19707: UXN, Arkhangelsk R., Russia, w/telegrams in RR, ARQ at 1529. (Ed.)

19718: UDK2, Murmansk R., Russia, w/telegrams in RR at 1533 & 2122, 50 baud. (Ed.)

19734.5: URD, St. Petersburg R., Russia, w/telegrams in RR, ARQ at 1536. (Ed.)

19961: VHC, Belconnen, Australia, w/msgs to GFH on freq. F12, 0830-1045, piccolo. (Bartlett, AUS)

20049.6: EGWR, USAF, Croughton, England, w/aero wx, 75 baud at 1541. (Ed.)

20085: ISX20, ANSA, Rome, Italy, w/RYRY & nx in FF at 1405, 50 baud. (Manthey, NY)

20179.8: RFFA, Mindefense, Paris, France, w/5L msgs & "non protege" msgs in FF, ARQ-E3/100 at 1620. (Ed.)

20181.7: Un-ID Egyptian diplo w text in AAS, 1838-1852, ARQ. (Ed.)

2026.7: RFLIGA, French Mil., Cayenne, French Guiana, w/a mil. promotions roster, ARQ-E3/96 at 1814. (Ed.)

20286.5: SPW, Warsaw R., Poland, w/nx briefs in Polish at 1827, FEC. (Ed.)

20304.6: An Egyptian embassy, QTH unknown, w/a telex in AA, ARQ at 1500. (Ed.)

20348.5: 9RE203, PTT, Lubumbashi, Zaire, w/commercial tfc in FF to Brussels, ARQ-M2/96, channel B, at 1540. (Ed.)

20352.3: HDN, Quito Navrad, Ecuador, w/IANTN tfc to CXR, 75 baud at 1552. (Ed.)

20385: French Air Force, Versailles, France, w/a msg at 1650, ARQ-E/72. (Ed.)

20402.3: YWM1, Maracaibo Navrad, Venezuela, w "Ejercicio EC-01" tfc to HDN, 75 baud at 2111. (Ed.); Same w/RYRY at 1935 & 2103. (Hay, ON, Canada)

20655.4: Un-ID w/5F grps, 50 baud, 1330-1356, then to CW. (Ed.)

20694: RFFUAJ, French Mil., Villacoublay, France, w/5L grps, ARQ-E/72 at 1609. ("Gal of Liberia," Italy)

20732.3: HDN, Quito Navrad, Ecuador, w/IANTN msgs to CCS, 75 baud at 1846. (Ed.) Same w/RYRY & SGSG at 1830. (Hay, ON, Canada)

20756.5: RFLIRT, French Navy, Cayenne, French Guiana, w "controle de voie," ARQ-E3/96 at 1933. (Ed.)

20820.1: CLP1, MFA, Havana, Cuba, w/5F msgs to Peru, 50 baud at 1653. (Ed.)

20872: RFFUBA w/5L grps, ARQ-E/72 at 1555. ("Gal of Liberia," Italy) RFFUBA is reported to be the French Air Force, Cambrai, France—Ed.

21859: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC, 75 baud at 1509. (Ed.)

21863: Un-ID idling in ARQ 1456-1505, foll by "gorgebhva mantakr drisnyhr" then went QRT. 2nd st then heard on this freq also going QRT. (Ed.)

22377: GKE7, Portishead R., England, w/telex tfc at 1530, ARQ. (Ed.)

22464: UFB, Odessa R., Ukraine, w/telegrams in RR, 50 baud at 1549. (Ed.)

22465: Un-ID Ukrainian ship apparently relaying nx in RR from Odessa R., 50 baud at 1517. (Ed.)

22607.3: SAB93, Goeteborg R., Sweden, w/telex tfc, ARQ at 1542. (Ed.)

22636: URB2, Klaipeda R., Lithuania, w/RYRY & CQ + "cirkular"s in RR at 1533, 50 baud. (Ed.)

22676.5: UMV, Murmansk R., Russia, w/telegrams in RR & EE, 50 baud at 1520. (Ed.)

22967: HBD20, MFA, Berne, Switzerland, w/5L grps at 1522, ARQ. (Manthey, NY)

22968: HBD32, un-ID Swiss diplo sta., w/5L grps, ARQ at 1425. (Manthey, NY) HBD32 is the Swiss Embassy, Brasilia, Brazil—Ed.

23021.7: MFA, Islamabad, Pakistan, w/tfc at 1413, ARQ. (Ed.)

23040.2: Cuban Embassy, Kampala, Uganda, w "Cubatex" msgs in SS, 50 baud at 1858. (Ed.)

23046.5: Bulgarian Embassy, Havana, Cuba, w/regional nx in Bulgarian, 75 baud at 1425. (Ed.)

23050: CLP55, Cuban Embassy, Georgetown, Guyana, w "Guyana Chronicle" nx in SS, 50 baud at 1604. (Ed.)

23052: CLP28, Cuban Embassy, Lusaka, Zambia, w/crypto after ZZZZZ, 100 baud at 1520. (Ed.)

23083.5: Italian Embassy, Teheran, Iran, w/telexes in Il to Rome, ARQ-E/96 at 1339. (Ed.)

23120.3: Un-ID w/header "0016 240210 23000 9130" foll by encryption, 75 baud at 1341. S/off 1349 w "ok gb :ks 73 k." (Ed.)

22122.3: Probably the same sta. as found on 23120.3, w/header "0010 240210 13444 9064" foll by crypto after EEEEE. Was 75 baud at 1352. The first grp of ###'s is the msg ###, & the 1st two ###'s in the 3rd grp is the date of xmsn. (Ed.)

22378: FFT91, St. Lys R., France, w/navareas, FEC at 0910. (Hall, RSA)

22379.1: VIP, Perth R., Australia, w/a tfc list & a "seatex" msg, FEC at 1118. (Hall, RSA)

22388.6: UJY, Kaliningrad R., Russia, w/RYRY, 50 baud at 0902. (Hall, RSA)

22907.7: Un-ID w "Guten tag de Dakar. Hier nil. Haben sie etwas?" Was ARQ-E/96 at 1052. (Hall, RSA) It's the German Embassy at Dakar, Senegal—Ed.

23116.7: MFA, Cairo, Egypt, w/msgs in AA to Conakry, Guinea, at 1440, ARQ. (Ed.)

23176.5: RCCS, Darwin, Australia, w/crypto, then idle at 1333, piccolo. (Bartlett, AUS)

23212.3: Xinhua, Yuryumqi, China, w/nx in EE, 75 baud at 1438. (Ed.)

23376.6: Un-ID w/a telex in FF, ARQ at 1545. (Ed.)

23510.3: Un-ID w very long 5F msg, 50 baud at 1511. Went to CW at 1523 for s/off. (Ed.)

23548: SAM, MFA, Stockholm, Sweden, w/5L grps at 1219, SWED-ARQ. (Ed.)

23841.8: RFGW, MFA, Paris, France, w/5L grps, ARQ-E3/192 at 1617. (Ed.)

23866: Un-ID idling in ARQ mode at 1552 & QRT at 1609. (Ed.)

23976.8: Un-ID w/crypto & a msg in EE that mentd "Ghana Energy Water Corporation." Was ARQ at 1648. (Hall, RSA)

23992: ZRH, Capetown, Navrad, RSA, w/RYRY to CCM 50 baud at 1420. (Ed.)

24037: CLP45, Cuban Embassy, Luanda, Angola, w/crypto after ZZZZZ at 1550, 75 baud. (Ed.)

24132: Un-ID w/encryption, ARQ at 1432. (Ed.)

24231.6: KNY32, Bulgarian Embassy, Washington, DC, w/nx in Bulgarian, 75 baud at 1445. (Ed.)

24244.2: MFA, Sofia, Bulgaria, w/text in Bulgarian, 75 baud at 1437. (Ed.)

24780: ISX24, ANSA, Rome, Italy, w/RYRY foll by nx in EE, 50 baud at 1502. (Ed.)

25050.6: GFH, Hong Kong, foxes w/RBMV ID, 0527, & a telegram at 0700, piccolo. (Bartlett, AUS)

25108.2: Data bursts heard at 2008. Were from "Broadsword" to "Custer 5." ID'd via USB voice comms on 25106. Custer 5 too weak to be heard. Broadsword s/off at 2015 w "terminating window at this time." (Ed.)

25477: RCCS, Darwin, Australia, w/diplo telegrams to Ulan Bator, Mongolia, 0300-0900, piccolo. (Bartlett, AUS)

26101.5: OXZ, Lyngby R., Denmark, w/nx in Danish, FEC at 1648. (Ed.)

29705: Un-ID w/encryption, 81 baud at 1705. (Ed.)

BY DON SCHIMMEL

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Eugene Lish, FL said he has been a SWL'er and UTE DX'er on and off since the latter part of the 30's. "First set was a table model RCA. Pull the tuning knob out and you had bandspread. Quit to serve in Air Corps during WWII. Started again in the late 50's with a National NC-120. Went to a Hammarlund HQ-180. Was basically interested in point-to-point commercial plane circuits. Logged 70 countries with 60 QSL's. Most notable was a phone call from Armand Hammer in Cleveland to Kruschev in the Crimea, while on vacation, but was unable to locate him. In December 1990, got a DX-440 and in 1991 went to a Sony ICF-2010."

We received a photograph of the FAA Tower taken by E.H. Walters, PA at the Charles E. Kelly Support Facility, 99th Arcom, Oakdale, PA in September, 1991. He wrote, "The 99th is an Army Reserve Base, and back then I was their Telecommunications Engineer. I believe the tower not only serves the 99th Arcom, but also Greater Pittsburgh International Airport. The building is, if I recall, about five stories high and is loaded with equipment, much of which I have never seen.

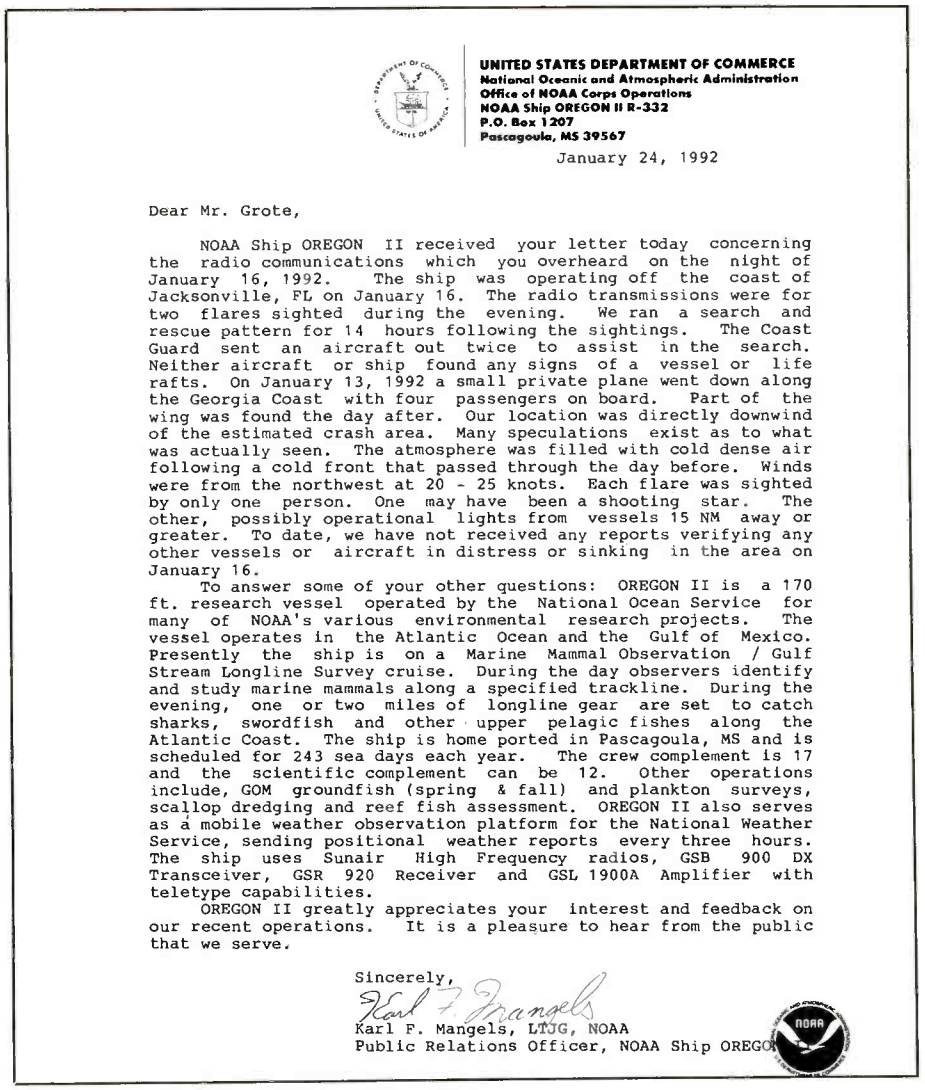
On another matter, my monitoring post is named NOMAD RADIO because it is completely portable. I can take the whole shack on the road with me."

From Gary Kingon on Guam we heard that the CB band is usually a good indicator of the political climate in the Philippines. "If one is interested in learning when political activities will warm-up in the Philippines, all they have to do is listen to 27.750 MHz USB around 2000 hours Guam time. About one week before a coup is planned the frequency will come alive.

Some of your readers might be interested in listening to 8829 kHz USB. Although no callsigns are given, this appears to be a "Pacific Rim" aviation weather network operated by SITA (International Aviation Telecommunications Society) with net operations conducted in the English language. I've sent along a log covering a period of operation which is typical of their schedule." (See loggings section).

Several folks have written in asking about Bermuda station VRT. I believe that facility is now only on VHF having discontinued HF voice and CW operation in 1990.

Simon Mason, England explained, "I was tuning around 27 MHz listening to various CB transmissions when at approximately 1330 UTC a strong carrier came up on 27095 kHz with a familiar sound to it. Sure enough, at 1500 a YL/EE appeared and repeated a 1-0 count and '512' callup until 1310 when ten tones were heard and the YL went into 3/2F groups. This is by far the highest frequency I've heard used by these stations. Signal strength was very good."



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office of NOAA Corps Operations
NOAA Ship OREGON II R-332
P.O. Box 1207
Pascagoula, MS 39567

January 24, 1992

Dear Mr. Grote,

NOAA Ship OREGON II received your letter today concerning the radio communications which you overheard on the night of January 16, 1992. The ship was operating off the coast of Jacksonville, FL on January 16. The radio transmissions were for two flares sighted during the evening. We ran a search and rescue pattern for 14 hours following the sightings. The Coast Guard sent an aircraft out twice to assist in the search. Neither aircraft or ship found any signs of a vessel or life rafts. On January 13, 1992 a small private plane went down along the Georgia Coast with four passengers on board. Part of the wing was found the day after. Our location was directly downwind of the estimated crash area. Many speculations exist as to what was actually seen. The atmosphere was filled with cold dense air following a cold front that passed through the day before. Winds were from the northwest at 20 - 25 knots. Each flare was sighted by only one person. One may have been a shooting star. The other, possibly operational lights from vessels 15 NM away or greater. To date, we have not received any reports verifying any other vessels or aircraft in distress or sinking in the area on January 16.

To answer some of your other questions: OREGON II is a 170 ft. research vessel operated by the National Ocean Service for many of NOAA's various environmental research projects. The vessel operates in the Atlantic Ocean and the Gulf of Mexico. Presently the ship is on a Marine Mammal Observation / Gulf Stream Longline Survey cruise. During the day observers identify and study marine mammals along a specified trackline. During the evening, one or two miles of longline gear are set to catch sharks, swordfish and other upper pelagic fishes along the Atlantic Coast. The ship is home ported in Pascagoula, MS and is scheduled for 243 sea days each year. The crew complement is 17 and the scientific complement can be 12. Other operations include, GOM groundfish (spring & fall) and plankton surveys, scallop dredging and reef fish assessment. OREGON II also serves as a mobile weather observation platform for the National Weather Service, sending positional weather reports every three hours. The ship uses Sunair High Frequency radios, GSB 900 DX Transceiver, GSR 920 Receiver and GSL 1900A Amplifier with teletype capabilities.

OREGON II greatly appreciates your interest and feedback on our recent operations. It is a pleasure to hear from the public that we serve.

Sincerely,

Karl F. Mangels

Karl F. Mangels, LTJG, NOAA
Public Relations Officer, NOAA Ship OREGON

Dan Grote, IL received this interesting QSL letter from NOAA Ship OREGON II.

An interesting newspaper clipping was received from R.H. Reid, BC, Canada. The article was from the *Vancouver Sun* and told of an individual who was an ex-Speaker of the Yukon Assembly and who now monitored air communications and acted as a lifeline for trappers, miners, and anyone living in remote areas from Colville Lake, about the Artic Circle in the Northwest Territories to the Skeena River in central British Columbia. The man's name is Don Taylor and he is a member of the southeast Yukon emergency measures program. Every night at 7 PM (local) he runs his net for 30 minutes, utilizing his HF 10-watt portable radio. Taylor stated that, "There've been times we've saved lives. No doubt about it."

Everyone does not use UTC on their communications. Many countries notate their date-time-groups with the particular letter corresponding to their time zone (see Figure 1.). For example: if you copied traffic in the Spanish language and the DTG had a "Q" suffix, the originating country is either Venezuela, Bolivia, Paraguay or Chile. Other traffic characteristics would then come into play in arriving at the correct identification.

The 5th Annual Winter SWL Festival held this past March in Kulpsville, PA was a great success. About 200 persons attended and the

FAA Tower at Charles E. Kelly Support Facility. Photo courtesy of E.H. Walters, PA.

program was arranged with informative seminars. There were four sessions devoted to DX'ing & SWL'ing: "Central and South America" by John Fisher; "Asia and Oceania" by Dave Clark; Europe by Bob Colyard and Africa by Al Quaglieri. "Portable Receivers and Antennas" was presented by Rich Arland and "Computer Information Services in SWL'ing" was given by Richard Cuff.

Other subjects treated included: "Beginner's Forum" by Harold Cones; "Utilities DX'ing" by Bill Grant; "Introduction to Mediumwave DX'ing" by David Schmidt; "Collecting Radio Memorabilia" by Bob Brown and Harold Cones; "Are You Sure You Want To Be A DX'er?" by Dave Clark, and a scanner forum was conducted. A job well-done!

Various hobby club and manufacturers representatives were present and many donated prizes. CQ Communications, Inc., donated three 1-year subscriptions to *Popular Communications* plus 25 copies of the *Popular Communications 1992 Communications Guide*. Editor Tom Kneitel provided copies of some of his own books, too. A huge thanks to all who contributed items as prizes.

If you missed the Fest this year plan to make it next year. A notice will be carried here in the column.

COAST GUARD BROADCAST SCHEDULE

U.S. Coast Guard Group Moriches, New York/NMY42
2670KHZ/VOX 0010Z AND 1210Z

U.S. Coast Guard Communication Station Portsmouth, Virginia/NMN
448KHZ/CW 0020Z AND 1520Z
518KHZ/NAVTEX 0130Z, 0730Z, 1330Z, 1930Z
4426/6501/8764 KHZ/VOX 0400Z, 0530Z, 1000Z
6501/8764/13089 KHZ/VOX 1130Z, 1600Z, 2200Z, 2330Z
8764/13089/17314 KHZ/VOX 1730Z

U.S. Coast Guard Group Fort Macon, North Carolina/NMN37
2670KHZ/VOX 0103Z AND 1233Z

U.S. Coast Guard Group Eastern Shore Chicoteague, Virginia/NMN70
2670KHZ/VOX 0233 AND 1403Z

U.S. Coast Guard Group Hampton Roads, Virginia/NMN80
2670/VOX 0203Z AND 1333Z

U.S. Coast Guard Group Cape Hatteras, North Carolina/NMN13
2670KHZ/VOX 0133Z AND 1303Z

U.S. Coast Guard Group Cape May, New Jersey/NMK
2670KHZ/VOX 1103Z AND 2303Z

U.S. Coast Guard Group Charleston, South Carolina/NMB
2670KHZ/VOX 0420Z AND 1620Z

U.S. Coast Guard Group Mayport, Florida/NMA10
2670KHZ/VOX 0620Z AND 1820Z

U.S. Coast Guard Communication Station Miami, Florida/NMA
400KHZ/CW 0050Z AND 1500Z
518KHZ/NAVTEX 0300Z, 0900Z, 1500Z, 2100Z

U.S. Coast Guard Group Miami Beach, Florida/NCF
2670KHZ/VOX 0350Z AND 1550Z

U.S. Coast Guard Group St. Petersburg, Florida/NMA21
2670KHZ/VOX 0320Z AND 1420Z

U.S. Coast Guard Greater Antilles Section San Juan, Puerto Rico/NMR
518KHZ/NAVTEX 0415Z, 1015Z, 1615Z, 2215Z

U.S. Coast Guard Greater Antilles Section San Juan, Puerto Rico/NMR1
2670KHZ/VOX 0305Z AND 1505Z

U.S. Coast Guard Communication Station New Orleans, Louisiana/NMG
432KHZ/CW 0100Z AND 1500Z
518KHZ/NAVTEX 0000Z, 0600Z, 1200Z, 1800Z

U.S. Coast Guard Group Galveston, Texas/NOY
2670KHZ/VOX 1050Z, 1250Z, 1650Z, 2250Z

USCG broadcast schedule received by Dan Grote, IL.

Ute Intercepts. All Times are UTC.

77.50: DCF77, Time Signal station, Mainflingen, Germany at 1020. (Boender, Netherlands)

122.30: OUA23, Danish Marine station, Stevns, Denmark in CW at 0955 w/VVV OUA23 mkr. (Boender, Netherlands)

212: Beacon AWW, Winchester, IN at 1036. Beacon SJ, St., Johns, NB, Canada at 1035. (Crabill, VA)

218: Beacon RL, Red Lake, ONT., Canada at 1211. (Crabill, VA)

255: Beacon PNU, Washington, PA at 0737. Beacon TZ, Gibraltar Pt., ONT., Canada at 0743. New freq; ex-290. (Crabill, VA)

281: Beacon DMO, Sedalia, MO at 1038. Beacon HP, White Plains, NY at 1109. (Crabill, VA)

291: Beacon NP, Nobaska Pt. LS, MA at ?? (Crabill, VA)

293: Beacon UI, Quincy, IL at 1146. (Crabill, VA)

299: Becon Q, Hillsboro Inlet LS, FL at 1105. (Crabill, VA)

303: Beacon P, Point Petre LS, ONT., Canada at 0850. (Crabill, VA)

332: Beacon CUL, Carmi, IL at 1209. Beacon FFL, Fairfield, IA at 1159. (Crabill, VA)

342: Beacon Y, Gallantry Head LS, St. Pierre & Miquelon at 1144. (Crabill, VA)

363: Beacon RNB, Millville, NJ at 1710. (Bryson, PA)

375: Beacon MKY, Marco Island, FL at 0007. (Ed., FL)

379: Beacon PUU, Pulliam, Flagstaff, AZ at 1101. (Vaage, CA)

385: Beacon WL, William Lake, BC, Canada at 1053. (Vaage, CA)

396: Beacon LNL, Land O'Lakes, WI at 1054. (Crabill, VA)

400: Beacon LKR, Lancaster, SC at 1104. (Crabill, VA)

401: Beacon LA, Lafayette, IN at 0502. (Crabill, VA)

402: Beacon IFJ, Winnfield, LA at 1104. Beacon LW, Lawrence, MA at 1105. (Crabill, VA)

403: Beacon BPO, Oneida, TN at 1108. (Crabill, VA)

411: Beacon RD, Roberts Field, Bodey, Redmond, OR at 1041. (Vaage, CA)

413: Beacon OEG, Yuma (Yuma Prv. Grds-Golden Eagles), AZ, (US Army) at 1042. (Vaage, CA)

418: GLD/GNF, Land's End/Northforeland w/tfc list in CW at 1230. LZNC, MV Pliska wkg w/Northforeland, England in CW at 1244. (Boender, Netherlands)

425: DAN, Norddeich, Germany in CW at wkg SYTM, MV Anangel Hope at 0838; UNQH, MV Volga w/eta Elbe Pilot at 0848; USWD, MV Leningradskaya Slava (425/474 kHz) at 1007; UIEF, MV Youly Danichevsky at 1144 and 3EYY, MV Hersing w/eta Elbe at 1153. (Boender, Netherlands)

444: DAN, Norddeich, Germany cld in CW by UVVY, MV Koporie at 0925; 7THU, MV Ismara at 1214. (Boender, Netherlands)

454: LAHL4, MV Bergen Falcon in CW at 1125 clg LGQ, Rogaland, Norway; 3EKX2, MV Hegg in CW at 1126 clg FFB, Boulogne-Sur-Mer, France. (Boender, Netherlands)

468: UOTF, MV Kapitan Vekula in CW at 0850 wkg ? w/eta Steenbank. (Boender, Netherlands)

484: GCC, Cullercoats, England in CW at 0853 clg LYBY, u/i ship. (Boender, Netherlands)

500: FFB, Boulogne-sur-Mer, France in CW at 0720 w/nav., wrngs, QSW 450 kHz; C4XN, MV Susak in CW at 1027 clg OST, Oostende, Belgium; UFDF, MV Anton Goubarev clg OST in CW at 1109. (Boender, Netherlands)

516: LGQ, Rogaland, Norway in CW at 1600 w/tfc list. (Boender, Netherlands)

521: Beacon TVX, Greencastle, IN at 1122. (Crabill, VA)

530: WNHV296, LAX airport, Los Angeles, CA at 1840. Now w/higher power. LAX general info & "Interesting facts of LAX." (Vaage, CA)

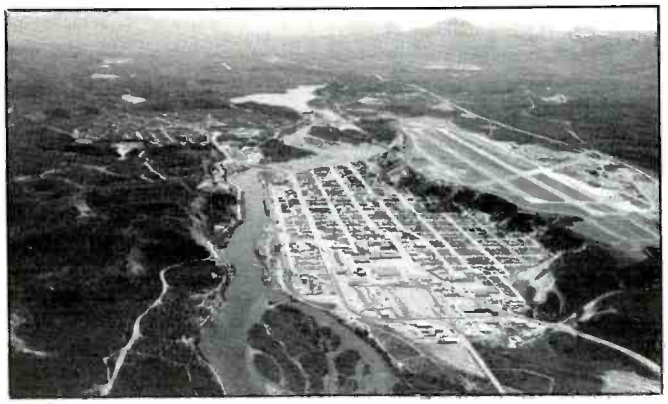
2750: Halifax, NS, Canada Coast Guard in SSB from 2312-2318 w/wx for Canadian Maritimes. (Caldicott, MA)

3300: Every Friday at 0200 YL/GG w/1-0 count and '345.' At 0210 ten tones 'Gruppe 89' and into 3/2F grps. Also on 5440 kHz. At same time on 5750 kHz same YL/GG w/'755.' After ten tones 'Gruppe 153' and into 3/2F grps. (Mason, England)

3228: YL/GG rptng 'Echo Bravo' from 2000-05 w/electronic tones. Then a 135 group 5F msg from '528.' Some days later on same freq but at 1900 w/132 for same addressee. (Mason, England)

4397: WLO, New Orleans, LA in SSB w/offshore marine forecasts for Gulf of Mexico and Caribbean at 0600. (Caldicott, MA)

4427: ComSta San Francisco in LSB at 0906 clg Sierra Six November w/request to come up to 3387 kHz but no joy. At 0913 Comsta Kodiakto u/i CG Cutter asking for immediate tfc and to QSY 2145.5 kHz. Weak sigs, uncopy. (Garcia, OH)



An aerial view of the town of Whitehorse—population 20,000. Thanks go to Ronald Tull for the photo.

Here's a photo from Ronald Tull, Yukon, Canada, showing the Department of Communications Office in Whitehorse.

4466.8: Empire Net. (CAP New York) w/numerous callups at 2344. (Ed.)

4640/5046: YL/SS at 0000 w/698 x3 & 1-0 count in AM. Stopped abruptly at 0001 and after 3 secs of silence YL/EE came on w/665 x3 1-0 count. At 0010 ten tones, Count 66 x2 and into 3/2F grps. Rptd at 0016, off at 0022 w/End. At 0005 checked 7422.5 kHz and YL/SS was on w/698 bcst. At 0010 ten tones, Grupo 86 x2 and into 4F grps. (Johnson, NY)

4740: YL/EE rptng 15241 from 2200-2205 in AM. At 2205 Ready Ready 21 21 and into 5F grps. (Mason, England)

5000: Observatoria Naval Cagigal, Caracas, Venezuela Time Signal station w/announcements in SS. Hrd at 0057. (Caldicott, MA)

5696: Rescue 2102 w/patch thru Comsta New Orleans re 4 lb. newborn w/respiratory distress for Medevac. Hrd at 2359. Rescue 1504 reports checked search area & found nothing. Detected ELT 100 miles prior. Also 2 high flyers detected ELTs around "CORAN." Searched that area, found nothing. Heading to "MERCY or MARCY." This was pp to Atlantic Rescue by ComSta Boston. (Starr, MI)

5748: Music box playing 'Swedish Rhapsody' w/YL/GG and 1-0 count between tunes. At 2205 '44986' then into 5F grps. (Mason, England)

6224: FLASHING XRAY wkg WZA7707, SUB SIG II (Survey/ Research ship) for rdo ck. Julliet Charlie also wkg WZA7707. JC in center of area 10 & said wx supported ops. JC reported rendezvous time 0500 local & wud contact 7707 wanted use 6218.5 kHz but JC said he had to stay on maritime freq. JC said he would be standing-by on both nets. USB at 0400. (Hill, MI)

6227: NOAA survey ship Mount Mitchell (WTEG) clg WHD576, Medical Advisory Systems, Owings, MD for medical advisory. No joy. USB at 2338. (Hill, MI)

6231: YL/EE in AM at 0334 w/5F grps. (Hill, MI)

6504: YL/EE rptng 597 604 32 & into 5F grps. Closed w/32 00000. AM, off at 0140. (Hill, MI)

6658: Honolulu in LSB at 1041 wkg several a/c. NW Air was refused altitude climb due other a/c heading its way. (Garcia, OH)

6670: OM/GG in AM w/216 fm 2200-2204 then into 5F grps. Same OM voice that does Russian 5F msgs. (Mason, Enland)

6705: QXJT (SELCAL) wkg Trenton Military, Canada for wx. USB at 2116. (Hill, MI)

6935: YL/EE in AM at 0201 rptng 368 55. Then Ready, Ready, 18, 18 and into 5F grps x2. Off at 0206. (Johnson, NY)

7375: Every Tuesday at 2000 YL/GG w/3F x3, 5F, 3F callup. On this occasion rptng 101 x3, 05820, 045. At 2006 five tones then into 5F grps. Also on 6708 kHz. (Mason, England)

7522.1: KJL412, New York Telephone Co., alternate net control wkg WNYC244 (unknown) and WNHN755, Michigan Bell at 1826. (Willmer, MI)

7654.5: YL/EE at 2100 w/187 187 187, count 1-0 in AM. At 2110 ten tones, Count 77 x2 and into 3/2F grps. Rptd at 2117, off at 2124 w/End. Also on 9090 kHz. The YL/EE bcsts on these two freqs always come in exceptionally loud & clear, never any warble-jammers. (Johnson, NY)

8122: OM/RR rptng 961 x3, 1 frm 2200-2205 in AM. At 2204 427 76 427 76 and into 5F grps. (Mason, England)

8743.7: KMI, Point Reyes, CA in SSB w/duplex high seas comms (other end on 8219.8 kHz). Boat owner informed Captain of ship to get the air out of the tanks. Owner wanted Captain to call him back at officae after 1000 San Diego time w/update info. (Caldicott, MA)

8829: Hong Kong gives wx for Hong Kong, Naha, Taipai, & Kaohsiung at 1318. At 1327 hrd wx for Fairbanks, Cold Bay, Vancouver, Anchorage, & Elmendorf AFB. At 1332 Honolulu giving wx for Honolulu, Hilo, & Guam. AT 1337 Honolulu gives wx for San Francisco, Seattle/ Tacoma, Los Angeles, Portland, Sacramento, Ontario & Las Vegas. All USB. (Kingon, Guam)

8894: USCG Helo 2126 w/pp thru Comsta Miami to District 7 Operations asking if Badger can reveal when squadron of a/c due take off. Helo 2126 maintaining 600 foot level in SAR area & is concerned about impending a/c in his path. District 7 Ops complied w/request and will call back w/updated info ASAP for 2126. (Caldicott, MA)

9006: 431 wkg Edmonton Military, Canada w/tfc in USB at 2328. (Hill, MI)

9025: 4XJ (NCS) in USB wkg stns 5XJ, 6XJ, and 7XJ w/rdo checks. QSY'ed to 9000 kHz and 4XJ advised 8XJ of net operability. Net then QSY'ed to administration frequency (unlocated). (Willmer, MI)

9090: OM/EE Outbander, ID'd himself as "Salty Dog 0364" in the Big Apple. Wanted make contact w/Bayou Country New Orleans. No response. Hrd several times between 2305 2319. USB mode. (Johnson, NY)

9586: At 1833 stns Pyramid, Sensor and Alley Cat in USB w/authentications into net. Advised Sierra 02 was secondary and proceeded to pass "burst" type msgs. (Willmer, MI)

9958: At 0230 ten tones then YL/SS rptng 7810 2625 until 0240 then off. Also on 6840. Same day at 1030 on 7725/10324 kHz was same YL/SS & she rptd 7810 2625 2271 until 1040. Same two grps as earlier plus one additional grp. All AM mode. (Johnson, NY)

10057: U/I stn w/OM tiving aviation wx in FF at 0411 in USB. Fairly strong sig but too muffled to copy locations being given. (Johnson, NY)

10324: Ten tones at 1030. Then YL/SS w/0407 5408 4244 rptd. Off at 1040. Also on 7725 kHz. Rptd at 1830 on 11491/16310. All AM mode. (Johnson, NY)

10780: Cape Radio wkg K0Z at 2153. K0Z rptd something re HOT ROD & cape replied K0Z shud QSY to Latex Tobacco (LT) or high & Cape cud give more power on directional antenna. Few mins later Cape advised to go to Ecuador Dogfight (Ed) freq. (Ed.)

11108: At 0000 electronic and YL/GG w/Papa November x4 rptd until 0005. Then into 3/2F grps x2 for 406, 997, 210, 713, and 084. Same grps given on 5015 kHz aboiut 20 secs behind 11108 kHz transmission. Electronic tones were diff on each freq. Nothing hrd on 2707 or 7404 kHz. (Johnson, NY)

11176: USAF Evac 70010 at 0118 w/SSB pp to Kelly AFB thru Albrook. Gave Howard departure report and eta 0310. Gave load as 3 litters, 23 ambulatory, 4 attendants, 31 passengers, crew of 10, 6 foreign nationals. Pilot requested 2 metros, need oxygen and 2 med tech attendants. (Caldicott, MA)

11201: At 1635 Portsmouth ComSta in USB advising CG Rescue 6009 that District 5 had lost ELT and to RTB if they found nothing. (Willmer, MI)

11220: Gillcraft to Overlord at 1500. Overlord advises he wud be in monitor only status reminder of day. (Starr, MI)

11233: A/c 410 wkg Edmonton, Canada for wx for Gander. USB at 2318. (Hill, MI)

11235: AF 651 in LSB at 1707 w/McDill for pp. Kent 6152 asked for wx in Calgary from Trenton Meteo. (Garcia, OH)

11494: Survival clg Mandrel. Depot securing from net. USB at 2114. (Hill, MI)

11510: YL/EE in RCS at 11410 w/571 callup and 210 3/2F grps. (Willmer, MI)

11602: YL/EE at 1300 w/414 414 414 & 1-0. At 1310 ten tones, Count 225 x2 and into 3/2F grps. Rptd at 1331, off at 1351 w/End. Same bcst rptd every Mon & Thu for 5 weeks. Also on 16198 kHz. (Johnson, NY)

13026: ASK, Karachi, Pakistan Coastal Station in CW at 0600 clg CQ. (Caldicott, MA)

13077: KMI, Dixon, CA in USB at 2225 wkg u/i vessel. YL/EE discussing problems aboard. (Lish, FL)

13215: Weather info request/pp at 1822. MAC 38086—Dover Metro observer. eta 2035. Base station id sounded like Lorring. (Starr, MI)

13244: Tribesman and MacDill in USB, QSY'ed to 11228 kHz to run encrypted (KG-84) data. (Willmer, MI)

13268.5: U/i stn calls VUC VUC etc and then goes into cut nbr texts. CW at 1331. (Ed.)

13382: MCW stn w/callup 831 831 831 at 2230. Down w/TTT. (Ed.)

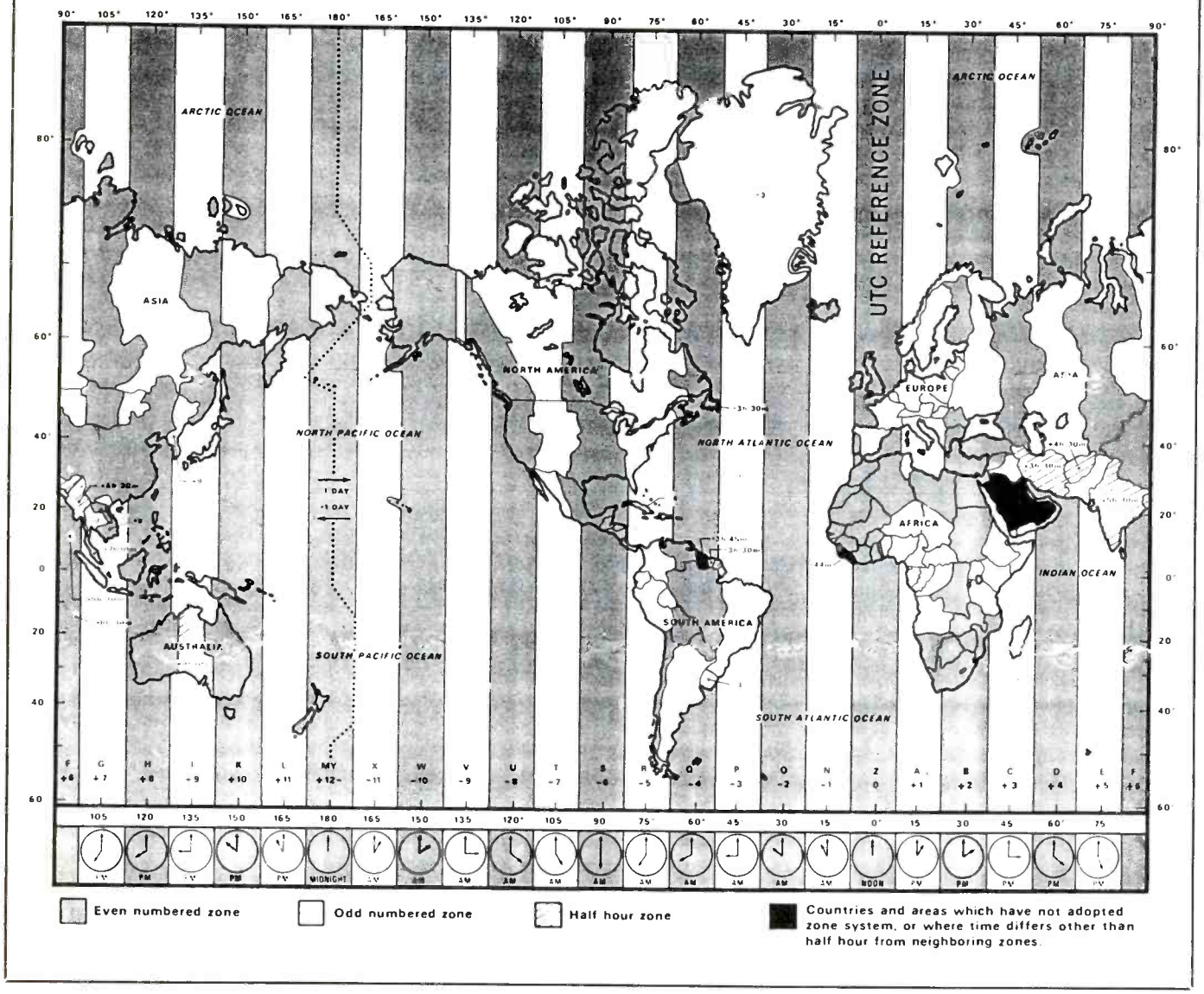
13424: Warble jammer at 1339. Can't determine what is being jammed as that sig too weak. (Ed.)

13551: FF (NCS) wkg an Alligator Playground with

Abbreviations Used For Intercepts

AM	**Amplitude Modulation mode**
BC	**Broadcast**
CW	**Morse Code mode**
EE	**English**
GG	**German**
ID	**Identifier/Ied/Ication**
LSB	**Lower Sideband mode**
OM	**Male operator**
PP	**Portuguese**
SS	**Spanish**
tfc	**Traffic**
USB	**Upper Sideband mode**
w/	**with**
wx	**Weather report/forecast**
YL	**Female operator**
4F	**4-figure coded groups (i.e. 5739)**
5F	**5-figure coded groups**
5L	**5-letter coded groups (i.e. IGRXJ)**

World Time Zones (From NIST Special Publication 432, Revised 1990)



G, H, I, KA, T, and V at 1535 in USB. (Willmer, MI)

13555: Stns 01 & 02 in USB testing ANDVT encryption unit. Advised that the modem sounded loud and clear. Wud recheck parameters and reload. Hrd at 1614. (Willmer, MI)

14420: YL/EE at 2000 in AM w/188 188 188 & 1-0 count. At 2010 ten tones and Count 219 x2 and into 3/2F grps. Rptd 2030, off at 2050 w/End. Also on 17370 kHz. (Johnson, NY)

14833.5: At 1412 D Main advising 101 Rear (aka Aviation) that they can't QSY to 25 MHz because they won't be able to talk over the time check station. They QSY'ed anyway but I heard nothing. I thought they might have meant 2.5 MHz but the time of day did not seem right for propagation. A check of 2.5 MHz revealed nothing. Later hrd these stns back on this freq. All USB. (Willmer, MI)

14937: Cape Radio wkg Eye Sight 03 (P-3 Orion) and Sea Green 01 (prob Naval tactical call for Cape Canaveral ops. USB mode. (Willmer, MI)

14945: YL/GG with 3/2F grps in USB at 1440. (Willmer, MI)

15000: BSF, Taiwan, ROC at 1259 w/time signal id in CW foll by time announcement in CC. (Caldicott, MA)

15004: RID, Irkutsk, Siberian Russia Time Signal stn in CW w/id at 1150. (Caldicott, MA)

15834: YL/EE in RCS at 1410 w/361 361 361 & 1-0 count. 10 tones, Count 225 x2 and into 3/2F grps. (Ed.)

15938: At 1300 YL/EE w/1-0 count and 110 til 1305, then 10 tones, count 225 and into 3/2F grps. Hour later YL/EE with 1-0 count and 230 foll by 225 3/2F grps. At 1600 1-0 count and 115 but this time count 210 and into 4F grps. (Mason, England)

16084: YL/EE with Lincolnshire Poacher tune sign-on rptng 47460 on this new freq and also on 14487/15682 kHz. At 1310 into 200 5F grps. Warblers jamming all three freqs. (Mason, England) This new freq simulcast with 14487 & 15682 and all nearly drowned out by warblers. (Johnson, NY)

16199: YL/EE in AM at 1451 with 3/2F grps. Down w/End. Warble jammer in background. (Ed.)

17198: HZG, Damman, Saudi Arabia in CW at 1315 w/DE HZG & QSX mkr. (Caldicott, MA)

17278: LFU9, Rogaland, Norway in USB at 1730 setting up tfc w/UN in Angola. (Lish, FL)

17284: CUL, Lisbon, Portugal in USB at 2000 w/pp tfc. (Lish, FL)

17341: SVN6, Athens, Greece in USB at 1934 w/phone tfc. (Lish, FL)

16430: YL rptng Hotel Sierra from 1100-05 w/electronic tones. At 1105 YL/GG w/5F grps for 961 and 344. (Mason, England)

17479.8: Very strong u/i CW stn. Sends callup of A2,

17492.4: Automatic CW stn at 1313 w/5F grps. Down w/TTT TTT at 1320. (Ed.)

18200: Cut nbrs in CW (hand sent) at 1506. This sounds like CLP1, Havana Cuba xmtr. (Ed.)

18418.2: CLP1, MFA, Havana, Cuba in CW at 1428 sending msg to CLP4, Bissau, Guinea addressed to Cuban Ambassador. Text in SS. (Ed.)

18524.5: Dept of State w/QRA x3 DE KKN50 x3 w/QSX mkr at 1300 in CW. (Mason, England)

18880: YL/EE in AM rptng 104 from 1700 to 1704. Then 525 x2 73 x2 and into 5F grps. Off at 1717 w/525 x2, 73 x2, 00000. Rptd nex day at same time. (Johnson, NY)

20350: YL/GG w/Hotel Kilo x4 alternating w/electronic tones from 1600 to 16043. Then into 3/2F grps x2 for 621 and 336. Rptd same time next day on 19295 kHz. (Johnson, NY)

20425: YL w/Mossad transmission MIW2 at 1418. (Mason, England)

22696: EHY, Madrid, Spain in USB at 1605. Two OM/SS w/phone tfc. (Lish, FL)

25546: FUM, French Navy, Papeete, Tahiti in CW at 1733 w/mkr. (Hill, MI)

26106: WLO, Mobile, AL in CW at 1705 w/mkr. (Hill, MI)

THE HAM COLUMN

BY KIRK KLEINSCHMIDT, NT0Z
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

Getting Started in Digital Communications – Part 2

In a recent issue, the *Ham Column* featured an introduction to packet radio, a popular digital mode that, along with contest logging, has ushered in the era of the computerized ham-shack. This month, we'll take a look at what you can do with some of the other digital modes like radioteletype, or RTTY, and its error-correcting cousin AMTOR-modes whose popularity is increasing faster than ever before.

Why are RTTY and AMTOR becoming so fashionable? There are many reasons, but the wide availability of reasonably priced multi-mode communications processors (MCPs, such as AEA's PK-232; Kantronics' KSM; MFJ's Model 1279; and even HAL's PCI-3000) seem to have everybody punching the "green keys." (If you explore RTTY for any length of time, you'll be sure to come across the term "green keys," an affectionate nickname that harks back to pre-PC days when hams used teletype machines that had green keys, of course. . .)

So now that you have your PC talking to your do-it-yourself MCP and you've been messing around with VHF packet for a while, what's next? Well, plenty!

RTTY

Technically speaking, the term RTTY encompasses many forms of amateur digital communications, including AMTOR and ASCII. In common use, however, RTTY refers to the use of the 5-bit International Telegraph Alphabet Number 2 (ITA2), also known as Baudot (pronounced Baw-dough). (Although communications data rates for landline or radio modems are properly expressed in bits per second, you'll often see them referred to as so many "bands." Telephone modems typically run at 2400 or 9600 bauds; most VHF packet runs at 1200 bauds; AMTOR chirps along at 100 bauds and most amateur RTTY warbles along at an easy-to-type pace of 45.45 bauds. Further discussion of the technical aspects of RTTY are beyond the scope of this column. For more technical information, check out Chapter 19 of *The ARRL Handbook*, or Chapter 9 of *The ARRL Operating Manual*: both are available from you local dealer or directly from the ARRL.

Unlike AMTOR, which we'll get to in a minute, making RTTY contacts is a lot like making Morse code QSO's. Because no error-correction schemes are used, signal strength and propagation are important. If a RTTY signal fades out for a second, your RTTY terminal "loses copy."

To make a contact, one station usually calls CQ (see the Table for suggested frequencies) by turning on his transmitter and typing "CQ CQ CQ CQ DE NTOZ NTOZ NTOZ K K K," or something similar, usually repeated two or three times (computerized terminals and their programmable buffers make short work of this).

A station answering the CQ might reply with a three-by-three reply (sending the CQ'ers call sign three times followed by his call sign three times), which is sometimes preceded by a short string of "RY's." Because of their Baudot code patterns, an "endless" string of the letters R and Y produces an unmistakable sound. The RY's make it easy for the receiving station to exactly tune in the other station before information is exchanged —sort of like priming the pump. (Don't overdo the RY's, however. . . .)

From then on, an RTTY QSO is a lot like a Morse code QSO. In fact, many of the same procedural signs are used.

If the hustle and bustle of everday hamming is getting you down, RTTY may be the answer. RTTY ops are known for being extra friendly, and "hitting the keys" makes for an interesting, almost nostalgic, ragchew medium.

Ragchewing is a popular RTTY pastime, but there's something for everyone, from intense contest action, to traffic handling, to awards chasing and DX'ing. (With low-cost RTTY technology catching up to the rest of the world, the RTTY subbands are bursting with DX stations. Often, they're much easier to work than their SSB and CW counterparts.) One look at the DX'ing newsletters and you'll see that even DXpeditions to rare spots around the globe equip at least one RTTY station. If you've "worked 'em all" an SSB or CW, why not give RTTY a try?

Regardless of your interests, even a fully computerized RTTY setup seems to take you back to a bygone era when mechanical teleprinters churned out copy on long rolls of gritty yellow paper. You can almost smell the oil and the machinery. . .

AMTOR

If RTTY is known for its nostalgic appeal, then AMTOR, a modern error-correcting cousin of SITOR, brings amateur HF digital communications into the computer age.

Instead of sending and receiving steady streams of data, an AMTOR station sends short data bursts back and forth, and will keep repeating the same burst until the receiving station has acknowledged receipt. This results in AMTOR's (and SITOR's) characteristic "chirp-chirp-chirp" sound, which is hard to miss on the bands.

If signals fade momentarily, the AMTOR stations chirp away until the data has been correctly sent and received. This eliminates some of the "nostalgic" feel, but ensures nearly 100% copy, which is important in traffic handling or transferring computer or text files. Ragchewing via AMTOR is a lot like hooking up via VHF packet radio.

All of the previously mentioned RTTY activities take place on AMTOR, but the newer mode is more suitable for certain types of "remote access" activities such as AMTOR "mailboxes," which work a lot like landline BBSs. You can leave mail for other AMTOR users, and when they "check in," their mail is waiting to be picked up. Text files and other data files are also available from the mailboxes.

Probably the most popular AMTOR mailbox system is a global network of *APLink* stations. *APLink* stations can network with VHF packet networks, and in the near future, this technology promises to link our VHF and MF data networks for seamless traffic handling and emergency communications. An example of how effective AMTOR can be, during the Gulf War, hundreds of messages were clandestinely relayed from occupied Kuwait by only a handful of AMTOR/APLink operators hidden within the borders.

Other Modes

Also available to today's digital hams are modes like ASCII (the upper and lower-case "alphabet" used by your computer), slow-scan television (SSTV) and facsimile. Sending fax picture on HF used to be reserved for those who happened to own expensive and bulky commercial or maritime fax transceivers. Because today's MCPs offer black-and-white fax capabilities, sending amateur fax pictures is becoming more popular. Who knows, fax may become the next mode to explode with activities!

Whatever mode you choose, be sure to dust off those MCP manuals and start warbling or chirping on HF.

If you have any questions, or if you want to drop me a line, your inquiries, photos and letters are welcome in care of ARRL, Dept PCN, 225 Main St., Newington, CT 06111.

Common RTTY Frequencies in kHz

1800-1840	21,070-21,000
3605-2645	24,920-24,930
10,140-10,150	28,070-28,150
14,070-14099.5	

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

The deck's are again awash with reports. I'll get in as many as I can. I'll skip the several logs of Radio Chaos since the station has already been busted by the FCC. It was being operated by 29-year-old Frank Foskey of Newark, NJ.

Lots of newish stations this month. Radio Bunny was heard by Dave Huff, Iowa, on 7416 at 2350, closing with "Sunny the Bunny." The call letters are WBNY, says Pat Murphy, who had this at 0000 to 0007 close. Mentions of "People's Committee and solidarity with rodents freedom fighters" and "rabbit liberation." Joshua Wilkes, KY had this at 0002 on 7416, giving an address of POB 40554, Washington, DC 20016.

Radio Ohm, 7417.5 at 1930 with address of PO Box 40554, Washington, DC, 20016, according to Walter Tallbot, PA.

WARI, Alternative Radio with Dr. D.J. Lobotomy noted by Pat Murphy in VA on 7418 to 0533 close who notes this used to be Radio Free New England. John Hollowell, MD had them at 0207 on 7415 and on another occasion at 0033. Harwood had them at 0530-0600.

Kranker Radio International showed at 0428 on 7416 for Tallbot, mentioning it was their 5th broadcast and with DJ Robert J. Ryan. Address given as PO Box 25302, Pittsburgh, PA 15242. Skip Harwood, CA had this at 0430-0520. Hollowell had them at 0421.

Murphy had several logs of CSIC, Voice of the Great White North, on 7413 as late as 0757 sign off, giving POB 109, Blue Ridge Summitt, PA. Tallbot notes they want a $1 bill for the QSL. Jim Laughlin, NY had them at 0200. R.C. Watts, KY had them on 15055, relaying WLIS at 2100-2200.

CRTC, some or all of it relayed by CICS, has also been widely heard. Ross had them on 7413 at 0221 with slogan "Ottawa's best rock." William Hassig, IL noted them giving Box 293, Merlin, Ontario N0P 1WI as a mail-drop. Laughlin had them at 0230, being introduced by CSIC. Murphy had this to 0257 close, mentioning "Elvis is dead—spend your money on records instead."

Ross logged WORM Radio on 1620 at 0306 and giving an address of Box 116, Still River, MA.

Irish pirate Radio Dublin is back on the air. Heard by Murphy on 6911 to 0516 sign off with Pet Clark and rock. Ross had them on 6910.8 at 0100.

RCBN (Radio Bob Communications Network)/Voice of Shakerag was found by Hollowell on 7415 at 0259 opening to 0404 close. Mrs. Catherine Zylka, NY had them at 0305 "coming to you from somewhere down south" with address of POB 17534, Atlanta, GA 20316 (they say don't send stamps). Fake commercials, country music. Seems some confusion whether Shakerag is one word or two. Harwood had this at 0305-0405. Murphy had this on 7415.95 to 0410 close. "RCBN, public access, sub-space radio" and ID as "Radio Bob."

Tallbot had Omega Radio on 7415.2 at 0623 with DJ Dick Painter and both Blue Ridge and Wellsville addresses, requesting three stamps.

Harwood had WGOP on 7415 at 0300 and 0350 with political talks. Murphy reports it to 0158 with pro-Republican talks (hence, the "GOP," I suppose). He also had their first broadcast, using a slogan of "consecutive radio" and a plea to vote Republican.

Harwood had Radio Wacko on 7415 at 0130 with a crying baby bit and something about Lotto America.

Tallbot found WCYC on 7415.2 at 0005 with DJ Neal Stanley and rock. Played "Taps" at sign off. Also noted at 0550. Murphy had them to 0448 close with long talk about pirate radio and Blue Ridge and Merlin addresses. Voice mail to 1-606-232-9868.

Tallbot had Voice of the Voyager II at 0038 on 7415.5 with DJ RF Wavelength who noted power was 40 watts on an Icom 735. QSL via the 7240 ANARC SWL net.

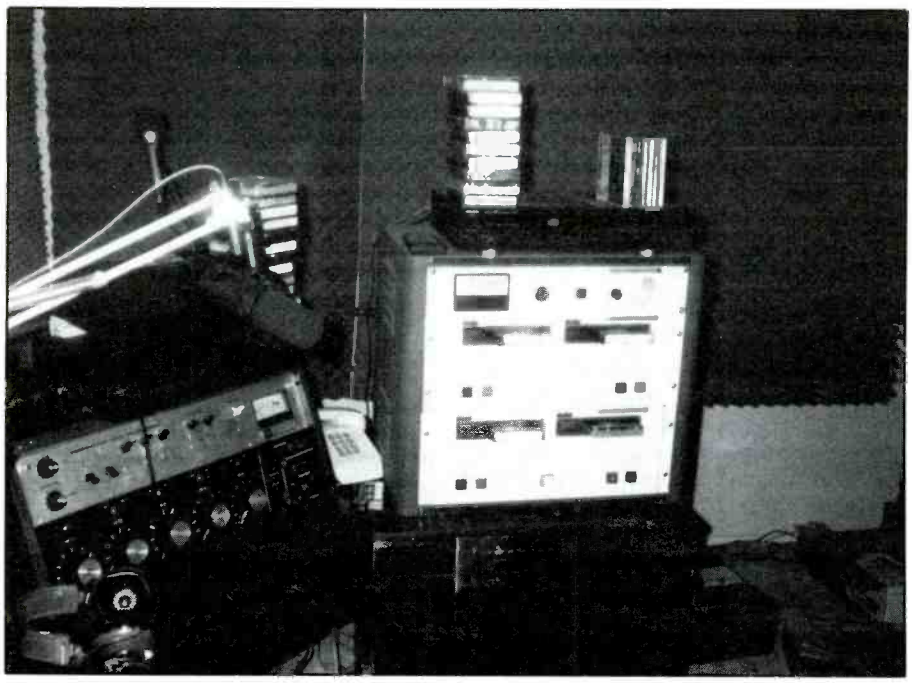
WBBS was found by Murphy on 7415 at 0351-0406. Wilkes had this at 0600.

Harwood reports VERO—Underground Radio on 7416 at 0640 requesting listeners to tune in tomorrow for more information.

Several logged WHAV/WIZ (or WHIZ) Radio. Harwood had 'em on 7415 at 0540 with DJ "The Wizard" claiming to be in the northeast. Watts heard both this and WCTC calls on 7415 at 2240, via the "Baby Pirate." Ross had them to 0607 close.

Other stations reported this month: Jolly Roger Radio—6231.8; Radio Beaver—7415; WFRN-7415; Radio Fax—6205; Hello Radio—7416; SW-3-7415; Radio USA—7415; EPR-7414.9; TCPR-7415; Action Radio—7415; KXKVI-7415; WSKY-7415; WLIS-7413; Voice of Sex—7415 and Delta Radio—6275.6.

Keep those reports coming! See you next month! ■



Here's the set up at Midnight Radio, a picture program director Maxwell O. Silver says is a "never before seen by the outside world" picture. Midnight Radio says they are the number one (and only) talk radio pirate.

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

Maximum Amount Of Delegated Forfeitures Raised

The Commission amended its rules to delegate to the Chiefs, Mass Media Bureau, Common Carrier Bureau, Private Radio Bureau and Field Operations Bureau, and the Chief Engineer, authority to act in forfeiture proceedings involving $20,000 or less.

The previous limits had been between $20,000 and $10,000.

This action follows a 1989 amendment of the Communications Act in which Congress increased substantially the maximum amounts of forfeiture the Commission could impose.

Pirate Radio Station Shut Down, Equipment Seized

A Clark, NJ Pirate Radio station was shut down, and its equipment was seized by the U.S. Government, the FCC said. The seizure of "RADIO KAOS" took place under Federal civil forfeiture provisions initiated by the U.S. Attorney, Michael Chertoff, of Newark, NJ.

U.S. Marshals, with the assistance of FCC investigators from New York and Philadelphia and officers of the Clark Police Department, conducted the seizure. The station was located by an FCC engineer from Philadelphia, using mobile radio direction finding equipment.

The unlicensed station operated on 7420 and 7415 kHz from a single family residence. The pirate station called itself "RADIO KAOS" and played rock and roll music.

The operator of the station was also the subject of a previous FCC investigation concerning complaints of interference to home electronic entertainment equipment submitted by local residents to the FCC New York Office.

Unlicensed radio operation is a violation of Section 301 of the Communications Act of 1934, as amended. Penalties for unlicensed radio operators include fines of up to $100,000 and/or one year in prison. The U.S. Department of Justice is proceeding with civil action against the equipment and unlicensed radio operator. Peter Gaeta, Assistant U.S. Attorney, Civil Division, is handling the case for the Government.

"We hope that this action sends a message to future would-be pirate radio operators. Unlicensed radio operators cannot disregard Federal Authority," said John Rahres, Engineer-in-Charge of the FCC Philadelphia Office.

$16,000 Fine For False Distress Signal And Unlicensed Operation

The Commission notified Richard E. Mattice, of Zion, IL., that he is apparently liable for a monetary forefeiture of $16,000 for transmitting false distress signals using an unlicensed station.

On June 7, 1991, Lake County Marine Units 676 and 675 (Lake County Sheriff's Office) and Coast Guard Station Kenosha (Wisconsin) vessel CG 41325 responded to a "MAYDAY" on Marine Channel 16 by a vessel reportedly taking on water on Lake Michigan near North Point Harbor. Lake County Marine Unit 676 ("Unit 676") identified the source of the transmissions, through radio direction finding, to be the vessel "It'l Do." As Unit 676 approached that vessel the "It'l Do" got under way. Unit 676 followed and stopped the vessel. Unit 675 and CG 41325 also intercepted the vessel. The "It'l Do" was escorted to Lake Point by Unit 676 and the Coast Guard where it was boarded by both the Lake County Sheriff's Office and the Coast Guard. The Coast Guard interrogated Richard E. Mattice and determined that he was the operator who transmitted the "MAYDAY." The Coast Guard determined that there had been no distress situation. As there was evidence of alcohol consumption by Mattice, he was given a field sobriety test, which he passed. The Coast Guard also determined at inspection that the station was not licensed.

Two Fines For $8,000-$10,000 Each For Unlicensed Operation Of Stations

The Commission notified two individuals that they are apparently liable for a monetary forfeiture of $8,000-$10,000 each for unlicensed operation of stations.

The two individuals are:

Robert Pizano, Tampa, Florida-$8,000

Donald W. Bishop, Overland Park, Kansas-$10,000

Ordered To Pay $750 For Transmitting On An Unauthorized Frequency

The Commission ordered Gerald A. Kawalec of Fulton, TX, to pay a forfeiture of $750 for unlicensed radio transmissions on a frequency assigned to the fixed aviation and international fixed public radio communications services.

In his request for review, Kawalec stated that he was not aware that the frequency was not available for marine use. He was told to use this frequency by other radio operators or remembered an incorrect frequency. If it were an improper frequency, he stated, his radio should not have been able to transmit on this frequency.

The FCC noted Kawalec was knowledgeable regarding radio transmitters, used the frequency at prearranged times to communicate with friends, used the frequency for the stated reason that it had clear reception, and used the frequency over a period of time. A person using a radio is responsible for transmitting only on frequencies for which he is licensed, and a misunderstanding or unfamiliarity regarding an FCC rule or license requirement does not excuse a violation.

By letter of January 30, 1991, Kawalec indicated that he could not afford to pay the monetary forfeiture. The Field Operations Bureau requested documentation to support Kawalec's claim of inability to pay. In a letter to Kawalec, the Bureau stated "If you do not submit this evidence, the FCC will resume its review of your monetary forfeiture penalty assuming that you do not wish to maintain your claim of inability to pay." No documentation was provided.

CB Station Shut Down; Equipment Seized

U.S. Marshals, with the assistance of engineers from the Federal Communications Commission's Philadelphia Office, confiscated the radio equipment of CB operator Gary Bond (aka Gary Finkelstein) at his home in Wilmington, Delaware. The seized equipment included linear amplifiers capable of boosting transmitter power to 2,000 watts which is far above the legal 4 watt limit. The use, sale or manufacture of linear amplifiers or other devices that boost CB radio power is illegal. These devices can cause severe interference to licensed radio services.

The FCC had received a petition, signed by area residents, which stated that CB radio transmissions could be heard on their television sets and telephones. Based upon that information, the Commission's Philadelphia Office opened an investigation centered around the unauthorized use of linear amplifier equipment. Staff from that office performed on-scene monitoring in the Wilmington area. From the monitored transmissions, FCC investigators determined that Mr. Bond was operating illegal equipment.

The seizure took place under federal civil forfeiture proceedings initiated by the U.S. Attorney for the District of Delaware. Carolyn Greene, Assistant U.S. Attorney, is handling the case for the government. Further administrative sanctions are pending against Mr. Bond with the FCC. The Commission will continue to enforce its CB rules by prosecuting violators.

Fined For Operating An Unlicensed Station

The Commission notified David Plourde

of Lewiston, Maine, of an apparent liability for a forfeiture of $10,000 for operating an unlicensed station.

On October 9, 1991, Plourde operated a CB Radio Station on 27.215 MHz using a non-type-accepted transmitter and a linear amplifier. Use of non-type-accepted transmitting apparatus voided Plourde's authorization to operate a CB station.

Plourde has been the subject of complaints of 12 persons in four cases handled by the Field Operations Bureau since moving to his present address. There is a history of complaints concerning Plourde's CB operation at his previous address. Plourde has not been cooperative in addressing these complaints.

The base forfeiture for this type of violation is $8,000. However, pursuant to the *Policy Statement, Standards for Assessing Forfeitures*, it is appropriate to increase the amount of forfeiture when the conduct is intentional. In light of the history of complaints, it appears that Plourde's violation was intentional. The Commission, therefore, increases the amount to $10,000.

West Virginia Cable Company Ordered To Cease Operations

On February 13, 1992, staff from the Commission's Baltimore Office ordered Berkeley Cable Communications of Falling Waters, West Virginia, to cease operations on cable system channels 14-16 (121.2625, 127.2625 & 133.2625 MHz) and channels 25-53 (229.2625 through 397.2625 MHz). An inspection of the Berkeley cable system on February 12th revealed signal leakage in excess of the Commission's signal leakage standards.

The use of these channels could affect radio communications in the aviation radio services. Under the Commission's regulatory framework, a cable system's use of spectrum in the aeronautical radio band is dependent upon its ability to maintain signal leakage integrity. Cable systems employ closed coaxial cable delivery systems which are not intended to radiate frequencies over-the-air. Thus, cable television systems and authorized over-the-air users may use the same frequencies in the same area. However, cable systems must meet stringent Commission radiation standards to ensure that their use of the same frequencies via coaxial cable will not interfere with collocated over-the-air licensed services.

An inspection of the Berkeley cable system on February 12th revealed signal leakage in excess of the Commission's signal leakage standards. As a result, the Engineer-in-Charge of the Baltimore Office issued the order to cease operations on the affected frequencies.

The cumulative result of these measured leaks caused the system to exceed the Basic Signal Leakage Criteria as set forth in Section 76.611 of the Commission's Rules. The Cumulative Leakage Index (CLI) standard is designed to prevent the presence of potentially harmful interference to aeronautical communications in the frequency bands 108-137 and 225-400 MHz. Violations of the Commission's CLI standards present a threat to public safety. Because of the safety of life concerns associated with excessive leakage from cable television systems, the Commission will continue to inspect and enforce its regulations in this area.

$20,000 Fine For Failure To Light Antenna Tower

The FCC notified Alexander Mitchell Communications Corp., licensee of WSKS-FM, Milledgeville, GA, of an apparent liability for forfeiture of $20,000 for failure to light an antenna tower, and then neglecting to notify the Federal Aviation Administration (FAA) that the tower lights malfunctioned.

The antenna tower was inspected by the FCC's Atlanta Field Office on August 13, 1991, and all the lights were out on the antenna structure. The inspection further revealed that the FAA had not been notified that the lights had been extinguished. Failure to comply with the Commission's antenna rules is an especially serious matter because of the potential dangers to aviation created by such violations.

Pursuant to the Commission's *Policy Statement, Standards for Assessing Forfeiture*, the base forfeiture amount for failure by a licensee to comply with the Commission's rules regarding the lighting of an antenna tower is $20,000. The Commission said there appeared to be no factors which would warrant an adjustment in this case.

Another Fine Issued For Failure To Light Antenna Tower

The Commission issued Hawkins & Company (Private Land Mobile licensee) a Notice of Apparent Liability (NAL) for $8,000 for failure to comply with FCC's rules regarding the lighting of a radio antenna structure.

The FCC noted that it has the authority to regulate the illumination of radio towers and that it requires licensees to observe antenna towers on which they are licensed once every 24 hours to insure that the lights are functioning properly. If lights malfunction, licensees are required to notify the FAA within 30 minutes of discovery.

Channel 9 To Be Used As Second Marine Calling Channel

The Commission amended Part 80 of its rules to permit the use of VHF Marine channel 9 as a second calling channel by noncommercial vessels in the Maritime Radio Services.

Channel 16, 156.800 MHz, is internationally designated as the distress, safety and calling frequency for ships and coast stations. Most ships equipped with a VHF radio are required to monitor channel 16 and are permitted to establish communications with other ships or coast stations by calling on it. Routine communications, however, are not permitted on channel 16. Thus the majority of ships equipped with VHF stations use channel 16 as a calling channel to establish communications. In areas with a large number of VHF equipped ships the increased use of channel 16 for calling increases the likelihood of congestion and may mask a distress call. As part of its responsibility for ensuring the safety of mariners, the U.S. Coast Guard maintains a watch on channel 16 and, among other things, responds to distress calls. Consequently, congestion on marine VHF channel 16 is a major concern of the Commission, the Coast Guard and the maritime community.

Because it was particularly concerned about the effect, if any, of permitting the use of a second calling channel on overall marine safety, the FCC's Field Operations Bureau, Boston Office, conducted a study in cooperation with the Coast Guard on the effect of using marine VHF channel 9 as a second calling channel in Boston Harbor. The results of the test showed that congestion on channel 16 was reduced by almost half during the times when usage of the channel was highest. The Coast Guard reported that the use of channel 9 for calling by recreational boaters reduced the load on channel 16, permitting it to be used for safety and distress purposes as intended. No safety problems were reported to the Coast Guard or the FCC because of the use of channel 9 for routine calling.

Therefore, the FCC amended its rules to permit the use of channel 9 as a second calling channel on a nationwide basis.

FCC Reexamines Licensing And Reporting Requirements Of Specialized Mobile Radio Systems

The Commission issued a Notice of Proposed Rulemaking to reexamine its licensing and mobile loading reporting requirements in the Specialized Mobile Radio Service (SMR). This action is part of the FCC's regulatory reform initiative to reduce unnecessary paperwork burdens.

SMR systems are private two-way land mobile radio stations authorized in the 806-821/851-866 MHz and 896-901/935-940 MHz bands. SMR systems are either trunked or conventional. SMR base station licensees are authorized a specified number of frequencies, generally on an exclusive basis, and are permitted to provide a wide array of mobile communications services to customers, called end users, on a commercial basis. Customers of SMR systems must be licensed for associated control points, control stations and mobile radio stations and are authorized to operate only on the systems for which they are licensed. The Commission, on its own mo-

tion, initiated this proceeding to determine whether it should discontinue end user licensing.

Specifically, the Commission proposed to: 1) eliminate separate licensing requirements imposed on end users of SMR systems; 2) authorize end users to operate under the terms and conditions of the authorization issued to SMR base station licensees; 3) require SMR licensees to assume responsibility for exercising operational control over all mobile and control stations that communicate over their base stations, including ensuring compliance with applicable Federal law, including the Communications Act, Commission Rules, Federal Aviation Administration antenna requirements, and the National Environmental Policy Act; 4) eliminate certain loading reports now required of licensees of trunked SMR systems and, instead, require those licensees to file loading data to acquire additional channels to expand an existing system or to construct a new system within 40 miles of its existing system or to renew trunked SMR systems based on the business records of base station licensees; and, 6) relax the requirement to modify trunked SMR system licenses. For regulatory and enforcement purposes, operation of end user equipment would still be covered by an FCC license, but by the license issued to the SMR base station licensee, instead of the end user.

The Commission believes these proposals will greatly reduce unnecessary reporting burdens on industry and administrative costs to the Commission, thereby increasing efficiency and improving the regulatory milieu in which SMR system licensees operate.

FCC Proposes Rule Changes For Private Land Mobile Licensees

The Commission proposed to either eliminate or modify various rules that impose unnecessary regulatory burdens on private land mobile licensees. This action is consistent with the FCC's regulatory reform initiatives.

First, with respect to licensees of shared systems that do not individually license their end users, the Commission proposed eliminating the requirement that licensees maintain and periodically furnish detailed information about their end users. Second, the Commission proposed reducing the frequency with which most private land mobile licensees must file license modification applications when increasing or decreasing the number of mobiles on their systems. Finally, the Commission proposed that, under certain circumstances, licensees be permitted to file applications for license modification to reflect an increase in the number of authorized mobiles directly with the FCC rather than through a frequency coordinator.

This action was initiated by various petitioners who asked the Commission to require frequency coordinators to treat end user lists as proprietary and confidential because such lists are essentially compilations of each private carrier's customers. The Commission responded by tentatively concluding that end user lists are not essential to the coordinator's functions, nor is end user information routinely used to carry out the FCC's licensing responsibilities. Moreover, the Commission said that coordinators already obtain necessary channel occupancy information through the license modification process. Therefore, the Commission proposed to eliminate all requirements that end user lists be submitted as part of the application process, or subsequently to coordinators. The Commission requested comment on whether there are public interest considerations which outweigh its assessment that the regulatory burden imposed by end user submissions is unjustified.

The National Association of Business and Educational Radio, Inc. (NABER), also petitioned the Commission seeking an exemption of Private Carrier Paging (PCP) Systems from the FCC's requirement that paging systems modify their licenses whenever the number of paging receivers increases or decreases by 50 units.

The Commission agreed that the 50 unit threshold is not appropriate. The Commission believes that license modification requirements are the best vehicle to gather this data and therefore proposed requiring systems operating on paging-only channels to modify their licenses when the number of paging receivers increases or decreases by 35 percent. Comments are invited on whether this approach would provide adequate information to ensure a current data base while relieving licensees operating on paging-only channels of unnecessarily burdensome record-keeping obligations.

Since the Commission uniformly grants applications to add paging receivers, the Commission is also seeking comment on the need, after the initial licensing of systems on paging-only channels, for a modification of a system's license to authorize merely a change in the number of paging receivers.

The Commission also proposed that most licensees, with the exception of licensees of systems operating on paging-only channels, be required to modify their licenses only when the number of mobiles increases or decreases by 20 percent from that authorized. The Commission believes this represents a significant change in system operation warranting modification of the FCC's and coordinator's data base. The Commission proposed the 20 percent benchmark, rather than the 35 percent threshold proposed for systems operating on paging-only channels, because the change in the number of mobile units for most private land mobile systems on two-way channels occurs less frequently than that of systems operating on paging-only frequencies. Comments are requested on the 20 percent benchmark figure or, as an alternative, whether a change in the number of mobile units should only be authorized at the time of license renewal.

FCC Expands Eligibility Criteria For Motion Picture Radio Service

The Commission expanded the eligibility criteria for the Motion Picture Radio Service (MPRS), and renamed that service the Video Production Radio Service (VPRS) to reflect broader eligibility.

The use of radio frequencies to assist motion picture production was first authorized by the Radio Act of 1927. In 1937, the FCC clarified the rationale for establishing the MPRS, and the eligibility for the service has not expanded since that time.

The MPRS authorizes persons engaged in the production of motion pictures to use radio frequencies for production coordination during the on-location filming of motion pictures produced for distribution to movie theaters. In this proceeding, the Commission amended the rules to include eligibility for diverse entities engaged in on-location film production, such as the videotaping or filming of television programs or motion pictures produced for final distribution to motion picture theaters, television broadcast or other mass communications outlets. Eligibility is also extended to those entities producing educational or training films not produced for movie theaters, television or other distribution outlets, and to those entities providing supporting services to VPRS eligibles. This action amends the Commission's rules to accommodate additional technologies and services developed since the MPRS was created more than 60 years ago.

FCC Clarifies Rules To Implement The Television Decoder Circuitry Act of 1990

The Commission clarified its policies concerning closed-caption decoders in television receivers. Specifically, upon reconsideration of its *Report and Order* in this proceeding, the Commission: 1) modified its prohibition against shipping noncompliant television receivers; 2) clarified the requirement for compatibility with cable television security systems; and , 3) made several changes to the technical requirements.

On April 12, 1991, the Commission implemented the provisions of the Television Decoder Circuitry Act of 1990 and adopted closed-caption decoding requirements for television receivers. These requirements include marketing prohibitions against the manufacture, assembly, importation, or shipment in interstate commerce of noncompliant television receivers after July 1, 1993. Also included is the requirement that closed-caption decoder circuitry in television receivers function properly when receiving signals from any cable television security system that was designed and marketed prior to April 5, 1991.

The Consumer Electronic Group of the Electronic Industries Association (EIA/CEG) asked the Commission to reconsider both the marketing prohibitions and the cable compatibility requirement, and to make minor changes to the technical requirements.

Granting partial reconsideration, the Commission amended its rules to indicate that the marketing prohibitions place no restriction on the shipping or sale of television receivers that were manufactured before July 1,1 1993. The Commission also concluded that its cable compatibility requirements should be retained with slight clarifications. The Commission said it was never its intent, nor it believes the intent of Congress, that television receiver manufacturers should be responsible for achieving closed-caption decoder compatibility with unconventional cable security systems that are virtually unknown to the marketplace. It was also not the intent of the Commission to hold television receiver manufacturers responsible for compatibility if vital captioning information has been destroyed by some outlying security system. The Commission said it intended only that its compatibility requirement extend to all commonly used cable security systems, and has therefore amended the rules accordingly. ■

BY GERRY L. DEXTER

CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

Radio Free Bougainville, Chapter Three. News of the existence of this station a few months ago was followed by word that it had been shut down. Now, it appears to be active again. The station is said to be located in the town of Aroua, on Bougainville Island, which has announced its independence from Papua New Guinea. Frequencies are 3880 (variable) in use for local programming from 0800 to 1110 (sometimes later). An "international service" is reported active on variable 21450 USB, with broadcasts at 2330, 0400, 0600, 0700 and 1300 to 1400.

An Australian amateur operator, Sam Voron, VK2BVS, is operating the station, supported by the International Amateur Radio Network (IARN). The station broadcasts on behalf of the Bougainville Revolutionary Army. The power is estimated at less than one kilowatt.

A couple of top U.S. DX'ers—Guy Atkins in Washington State and David Valko in Pennsylvania, have reported at least tentative success in digging this one out at around 0900 on 3875. Signals were weak and, as might be expected, there was QRM from ham operators.

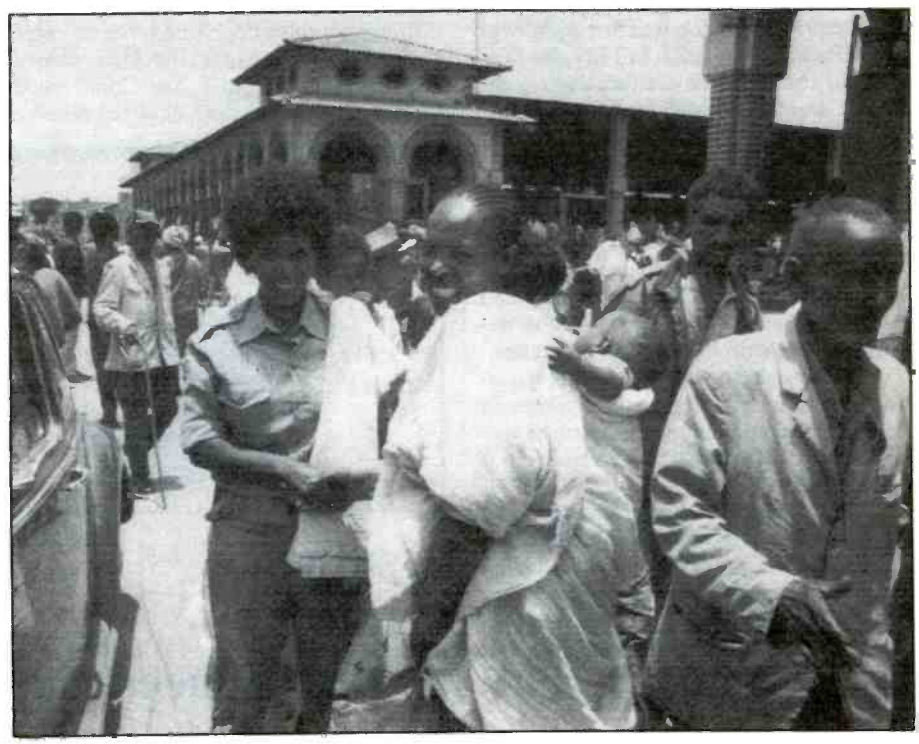
One of the main Afghanistan clandestines, the Voice of Unity, may have ceased operations. But a new Afghan clandestine seems to have come on the air. Pyam-I-Azadi (Message of Freedom) is reported to have started broadcasting from inside Afghanistan back in January. Its broadcasts on behalf of the Islamic Party of Afghanistan, with schedule is given as 0115-0315 and 1400-1500 on 7100.

The Voice of Independent Kashmir had added a one hour broadcast on 6300 (and 5000) which goes on at 0230, 1100 and 1430. Another program is said to air at 1630 on 5000, 5900 and 6300. The programs are produced in Rawalpindi, Pakistan.

Radio Venceremos, now a legitimate El Salvador radio station, has been noted on 6750, with broadcasts announced for 0000, 0200 and 1200. Broadcasts are also aired on 100.5 FM in San Salvador. Meantime, sister station Radio Farabundo Marti plans to seek a license, too, and probably air commercials.

The anti-Taiwan station, Voice of Taiwan, has apparently been closed down. It seems that the station broadcast from somewhere inside Taiwan, even announcing telephone and fax numbers, and a mailing address. It used 9900. All told, it was on the air for only seven or eight days over a two week period.

Another long time clandestine station, now legit, is the Voice of the Broad Masses of Eritrea, the station of the Eritrean People's Liberation Front, active since 1979, most of that time from Fah, in Sahel province in Northeastern Eritrea. With the victory of the anti-government forces, the station moved to the Eritrean capitol, Asmara, and has added a 50 kW mediumwave transmitter, formerly used by the Ethiopian government. Reporter Robert Ross in Ontario is hearing the station on 7020 around 0345 in local languages, with many mentions of Asmara and Eritrea. Bob also reports a tentative log of another of the former anti-Ethiopian government stations, the Voice of the Tigre Revolution on 6940 at 0408 in a local language the same day he had excellent signals from Broad Masses.



The crowded market in Asmara, Eritrea, now home to the Voice of the Broad Masses of Eritrea, being heard by some DX'ers on 7020.

An anti-Somali government station is reported to be active using 6958 at 0400-0500 and 1600-1800 and 9467.2 USB from 1000-1100.

The merger of two Khmer Rouge stations, reported sometime ago, seems to have now taken place. The Voice of the National Army of Democratic Kampuchea and the Voice of Democratic Kampuchea have become the Voice of the Great National Union of Kampuchea. The station is using 5200 from 2330-0200, 0800-1000 and 1200-1500. North American monitors should be able to pick this one up around 1200, come fall. It appears the Chinese-based transmitters which used to carry the Voice of Democratic Kampuchea are no longer being used. The 5200 outlet would seem to be the transmitter used by the army station which operated on 5408. Meantime, the Voice of the Khmer still operates on 6325 at 2300-0000 and 1100 to 1400, the latter often heard by North American DX'ers.

Radio Iran, one of the several anti-Iranian government stations, may have a new name. A station announcing as Radio Azadi (Radio Freedom) seems to have supplanted the other station. It is running at 0230 to 0300 and 1830 to 1930 on 9400 and 15650.

We appreciate your informational input into this column, whether in the form of loggings, QSL information, schedules, background information on stations and the political groups and governments which operate them. It will help greatly if logs are kept separate from those sent in for the *Listening Post* column. Thank you. And until next month, good hunting! ■

HOW I GOT STARTED

Here's Jeff, the Dragon Master, clutching a D-104.

A good looking station all the way, operated by Jeff, Registered Monitor KVA4FW.

We invite our readers to submit, in about 150 words, how they got started in the communications hobby. Please send them typewritten or otherwise easily readable. If you have a photo of yourself, please include it with your story. We can't return or acknowledge material, whether or not it is used. Your story need be submitted only once, we'll keep it on file to consider it for future issues. All submissions become the property of *Popular Communications*.

Entries will be considered on the basis of their story being especially interesting, unusual, or even amusing. We reserve the right to make any editorial changes we deem necessary to improve style or grammar.

Each month, we will select one winner. The author will receive a 1-year gift subscription (or subscription extension if already a subscriber) to *Popular Communications*.

Address all entries to How I Got Started, Popular Communications, 76 North Broadway, Hicksville, NY 11801.

Our Winner For August

This month, our winner is Jeff Seymour, Registered Monitor KVA4FW, and known on the CB by the handle *Dragon Master*. Jeff hails from Colonial Heights, Virginia.

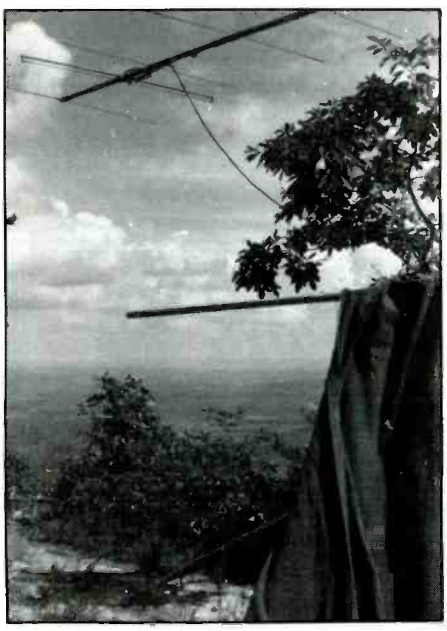
"My interest in radio started at an early age. When I saw a shortwave radio it was love at first sight. As they say, I was bitten hard by the radio bug, and it has always been a part of my life. It has helped me meet and talk to people who have the same problem I have, which is known as "Dyslexia." All kinds of communications help me, so I talk on the radio, listen to the radio, read about radio, and I like to write stories about radio." ■

Beaming In

(from page 4)

Height (ft.)	LOS (mi.)
3,000	80
3,500	85
4,000	90
4,500	95
5,000	100
5,500	105
6,000	110
6,500	115
7,000	120
7,500	125

Approximate line of sight (LOS) distances possible at various heights. Distances are in statute miles.



Why VHF hams look down on other operators.

Afton Mountain isn't recommended as a place to pull over for mountain-top DX'ing. Consider better alternative sites in Dixie, such as 6,684 ft. Mt. Mitchell, or 5,964 ft. Grandfather Mtn. They're both on the fine Blue Ridge Parkway in North Carolina. Good parking. A lot safer, too.

New Hampshire offers 6,300 ft. Mt. Washington, 8 miles south of Gorham. This is the highest point in the northeastern states, with a line of sight path of 113 miles. The weather is so violent there that the tree line is at 4,000 ft., and the wind speed was once clocked at 231 m.p.h. (the world's record). The temperature has dipped to 49 below zero (F). There is a poor quality 131-year old toll road going to the summit. The road requires almost an hour of very hard driving, taking as much out of your car as it takes out of you. Then you've got to drive the road downhill in only an hour or two. Or, you can take the slow cog railway. When you get to the summit, there is a museum, WHOM/94.9's broadcast transmitter, a weather station, lots of clouds, a constantly howling wind, and quickly changeable weather that is never more comfortable than chilly. There are certainly better places to enjoy mountaintop radio hobbying—such as on Mt. Equinox.

The first time I went to Vermont's Mt. Equinox, in the late 1960's, I met Ben Toy (I believe his callsign was W1NXJ), a physician from Boston. He told me that he drove to Equinox at least several times a summer for afternoons of mountaintop hamming. We had dinner at the inn there, swapping a few favorite radio stories. The fog was beginning to roll in, so Ben and his XYL decided it was time to drive back down the mountain in his Lincoln to return to Boston. I can't imagine anybody driving that rollercoaster road in a big moose of a Lincoln car, or in a fog, or at night.

Since then, I've never failed to meet at least one other radio hobbyist each time I've gone to the Mt. Equinox summit parking lot. Sometimes it's been several at a clip. No shortage of good stories up there to swap about the DX that got away.

Here's an example. This summer, I made my annual drive up Mt. Equinox. While sitting in my car and tying the ribbons on a 10 meter QSO, I was approached by a fellow who told me he was there for the first time. I'll call him Hank, although that's not actually his name. Hank is retired from many years with the FCC. He and his XYL were taking a leisurely drive across the continent. They were in Vermont and heading towards Nova Scotia when a local ham suggested to Hank that he catch the view and see the fun he could have with his 2 meter mobile rig simplexing on 146.52 MHz from Big Equinox. So, like me, he had come for a weekend at the old inn.

At dinner we got to talking about the FCC old timers we both knew, then Hank started spinning out FCC yarns. He put one on me that he insisted was completely true. I enjoyed it so much that I'll share it with you.

It seems that when he was with the FCC, he was sent out from one of the field offices to check out a problem at a broadcast station. As he was zipping merrily along in an unfamiliar rural part of the state, he noticed something that didn't make him too happy. It was a burly local police officer standing by the side of the road, motioning him to pull over.

My friend was accustomed to doing what many people do, driving a few m.p.h. above the posted speed limit. But this was ridiculous. It was a 55 m.p.h. zone and he wasn't going any faster than 60 m.p.h. That's not enough to get you dragged off the highway by even the most heartless traffic cop.

The officer approached, calling out, "Hey Boy, you were just clocked at 58 in a 30 mile zone."

That was a shocker. Here he was in the middle of nowhere on a secondary road and it was a 30 m.p.h. zone! He didn't see any sign that changed the speed limit from 55 to 30. As the officer wrote out the ticket, Hank asked why it was a 30 mile zone. He was told that he had entered the limits of an incorporated village where the posted speed limit was 30 m.p.h.

The ticket was immediately payable at the village traffic court, and only in cash or traveler's checks. After the ticket was paid, Hank slowly traced his way back along the road looking for that elusive 30 m.p.h. sign that he had missed earlier. Sure enough, it was there, except that a large tree branch and dense underbrush made it all but impossible to spot unless you were driving slowly and looking hard. Right next to it was another sign announcing the limits of the incorporated village and its population of a handful of souls. As far as Hank was concerned, they had done him dirty—caught him in a sneaky speed trap.

He looked back down the road towards the village to see if he could determine the method by which he had been clocked. For starters, the obscured 30 m.p.h. sign was only about 50 feet beyond a plainly visible 55 m.p.h. sign. There wouldn't have been much chance of dropping to 30 m.p.h. in time, even if the sign had been spotted. Just beyond the hidden 30 m.p.h. sign was a battered old pickup truck parked by the side of the road. Upon closer examination, the pickup truck contained a police officer dressed in bib overalls, a two-way radio, and a radar unit. This is where he had been clocked, and the point where the officer radioed ahead to pull him over.

Identifying himself as an FCC official, Hank asked to inspect the radio equipment. At first, the officer was nasty, and flatly refused. He explained that nobody was allowed to tamper with village property. After a few minutes of explanation, Hank convinced the officer that to resist inspection of the radio equipment was not only useless but also foolhardy.

Guess what? The radar was unlicensed! The transceiver was unlicensed! The officer picked up the mike on his dashboard to report to headquarters that the village's main income producing industry had suddenly hit a snag. Hank told him to put down the mike unless he could produce a copy of the license. From there, Hank headed back to the Village Hall, which was police headquarters and the traffic court.

This was a ramshackle private home with an antenna on the roof. The Chief of Police, it turned out, was also the Traffic Court Magistrate. He was surprised and decidedly unhappy to see Hank's return, fortified by the FCC badge and identification, along with requests to see the documents and station rec-

ords for any and all radio equipment under the Chief's control.

The Chief explained that a year earlier, a fast talker with a van filled with second hand two-way radios came through town and offered to put them on the air for an unbelievably reasonable price. The man pointed out the revenue producing potentials of the equipment, and how it would pay for itself in no time at all. The village bought his radar unit, 3 mobile units (installed), a base station and its antenna (installed).

The slick salesman somehow forgot to mention that the two channels on which these radios operated were allocated to the Special Industrial Radio Service. He also didn't say anything about keeping station records or needing FCC licenses to use radio equipment. The Chief claimed that since they were used for official business, he assumed they didn't need licenses. Although the seller had represented the radios as having been retired from service by a big city police agency, Hank later learned that the grungy two-way equipment had all been ripped off from a road construction job site in a neighboring state.

Yes, the radios did produce revenue. There were no complaints about that. But the Chief didn't like it when Hank finished shooting a roll of film and jotting down 4 pages of notes on the village's various unlicensed radio operations on industrial frequencies. At that point, Hank said the Chief was about as jittery as a worm in a chicken coop. The Chief said he was sure that the little matter of the "misunderstanding" about Hank's speeding summons could be "put to rest" since maybe they shouldn't have been using unlicensed equipment, anyway.

Nothing doing, said Hank. That was one batch of notes and photos he was going to file at his office without delay. As Hank was getting back into his car, the Chief was out in front of headquarters practically begging to let him cancel the speeding ticket. Hank told me it was the most enjoyable traffic fine anybody had ever paid—worth every cent.

I liked this story, although when it was over I had a sudden urge to reach into my wallet and show Hank a copy of my ham ticket. I resisted the temptation, but I've wondered ever since if Hank first came over to me in the parking lot just to be friendly, or in order to check me out because of his old habits. I was trying to remember if I had adequately identified my station at the end of the QSO he overheard.

Hank absolutely insisted that dinner was his treat. We exchanged addresses, promising to keep in touch. It was getting late, so we called it an evening.

Early the next morning, my XYL woke me to say I should have fought harder to pick up the dinner check. She told me she had just spotted Hank out in the Equinox parking lot snapping pictures of my car. I figure the photos were probably just for his trip scrapbook. Yes, I'm sure of it. I really am. ■

CIRCLE 52 ON READER SERVICE CARD

CIRCLE 49 ON READER SERVICE CARD

Zeroed In

(from page 10)

Allegan's Engineer in Charge Melvyn Hyman believes the quality of the spectrum is decreasing because of the decline in FCC activity. According to Hyman, there have always been shoddy broadcasting operations and occasional license revocations but now that broadcasting is big business revocations are rare and the FCC fines are a mere slap on the wrist. Amateur radio has lost much of its self-policing aspects and Hyman feels that the quality of activity on the ham bands is declining. Fines and revocations of ham operators, formerly rare occurrences, are on the rise. His opinions are the result of years of experience as an FCC field engineer but, without hard statistical evidence, things are not likely to change.

Regardless of your opinion of the quality of the spectrum and the efficiency of the FCC,

Measurement and recording racks.

Allegan is an impressive facility. It may not be state of the art but, with that antenna farm and quiet location, even my old Collins 51J-3 would pull in some great DX. ■

You Should Know

(from page 39)

is shows. When my local electrical noise gets really tough—as when the mercury vapor street lights in my neighborhood start their slow turn-on process—the noise limiters on my vacuum tube radios do a better job of eliminating it than the noise limiter on my kilobuck solid-state marvel.

Another area where tube receivers really shine is chasing DX on the AM broadcast band. On the AM broadcast band, a desired DX station may be only a kHz or two away from a powerful local station. Many modern receivers (except for the top-of-the-line models) are unable to handle the powerful local signals found on the AM broadcast band, with stronger signals creating overloading and related problems. Vacuum tube receivers are less subject to overloading, and there is often better isolation between internal circuit sections.

Finally, older vacuum tube receivers often have selectivity features not found on more modern receivers. One is a circuit called a *Q-multiplier*, which gives you the option of continuously narrowing the receiver bandpass or rejecting a signal located above or below the one you want to hear. Another is a *crystal filter with a phasing control*. Like crystal filters on contemporary receivers, this circuit lets you select between two or more receiving bandwidths. Unlike current crystal filters, however, the phasing control lets you move the selectivity bandpass around the received signal. This means you can "peak" a signal by placing it inside the filter's band pass or "reject" it by placing a signal outside the band pass. Some receivers have a *notch* or *slot filter*, which lets you take a narrow "slice" out of the received signal. This is a handy way to get rid of a heterodyne or CW signal interfering with the station you want to hear. This is a handy way to get rid of a heterodyne or CW signal interfering with the station you want to hear. Some receivers had two of these selectivity circuits. For example, the Hammarlund HQ150 had both a crystal filter and a Q-multiplier, which gave users all sorts of options.

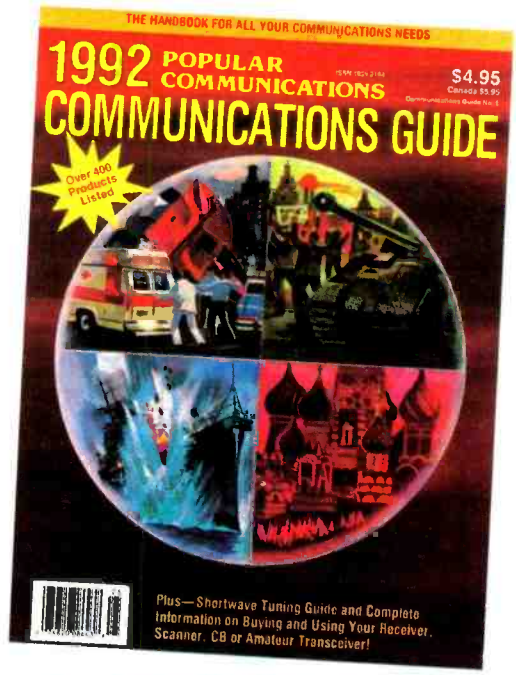
The Next Steps

If you'd like to learn more about classic receivers, check out a copy of *Communications Receivers: The Vacuum Tube Era* by Raymond Moore. This book describes virtually every vacuum tube communications receiver ever made in the United States, and is available from many of the advertisers in *POP'COMM*. A monthly publication devoted to vacuum tube communications gear is *Electric Radio*, 4 Aspen Place, Durango, CO 81301. A sample copy is $2.

One of the great benefits of collecting and using classic shortwave radios is how inexpensive most available gear is; typically, units are available for only pennies on the dollar of the original price. However, price for some popular and high-end models have actually risen over the past couple of years, so there's some real investment potential here.

But who cares about money? The sight of my Hammarlund HQ150 and HQ160 receivers side-by-side with their tubes softly glowing . . . that sight is priceless! ■

1992 POPULAR COMMUNICATIONS COMMUNICATIONS GUIDES



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IF:	561.225, 58.075, 455KHz or 10.7MHz
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Coverage:	27-54, 108-174, 406-512, 830-950MHz
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Scan Speed:	15 ch/sec.
IF:	21.4MHz, 455KHz
Increments:	10,12.5,25,30
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Power:	12.8VDC, 200MA
Antenna:	BNC
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- One Year Limited Warranty.

Options:

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RS232 Control Package (software & cable) offers spectrum display and database.	SCS2	$295.00
Wide band preamp	G-W2	$89.00

Specifications:

Coverage:	1MHz-1500MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	38 ch/sec. scan. 38 ch/sec. search
IF:	750.00, 45.0275, 5.5MHz 455KHz
Increments:	5,12,5,25 KHz
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 300mA
Antenna:	BNC
Display:	LCD, backlighted
Dimensions:	2 1/4H x 5 5/8W x 6 1/2D Wt. 1lb.

AR3000 $1095

400 Channels. 100KHz to 2036MHz.

Standard Features:

- Extremely compact size.
- Continuous coverage.
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- Tuning increments down to 50Hz.
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- 4 Priority Channels.
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- 15 band pass filters, GaAsFET RF amp.
- Sleep and Alarm Features.
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- Telescopic Antenna
- One Year Limited Warranty.

Options:

Earphone.	EP200	$2.00
External Speaker. Mobile Mount.	MS190	$19.50
Extended Warranty. 2/3 yrs.		$65/$75
Mobile Mounting Bracket.	MM1	$14.90
RS232 Control Package (software & cable) offers spectrum display and database.	SCS3	$295.00
Wide band preamp	G-W2	$89.00

Specifications:

Coverage:	100KHz-2036MHz
Sensitivity:	.35uV NFM, 1.0uV WFM, 1.0AM/SSB/CW
Speed:	20 ch/sec. scan. 20ch/sec. search
IF:	736.23, (352.23) (198.63) 45.0275, 455KHz
Increments:	50Hz and greater
Audio:	1.2 Watts at 4 ohms
Power:	Input 13.8 V. DC 500mA
Antenna:	BNC
Display:	LCD
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R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels and many deluxe features such as programmable scanning, dual 24-hour clocks with timer, all-mode squelch and noise blankers, a large, front-mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 118-174 MHz VHF capability with VC-10 option.

Optional Accessories R-2000:
- **VC-10** VHF converter
- **DCK-1** DC cable kit for 12 volt DC use.

R-5000:
- **VC-20** VHF converter
- **VS-1** Voice module
- **DCK-2** for 12 volt DC operation
- **YK-88A-1** AM filter
- **YK-88SN** SSB filter
- **YK-88C** CW filter
- **MB-430** Mounting bracket.

Other Accessories:
- **SP-430** External speaker
- **SP-41** Compact mobile speaker
- **SP-50B** Mobile speaker
- **HS-5** Deluxe headphones
- **HS-6** Lightweight headphones

RZ-1
Wide-band scanning receiver

The RZ-1 wide-band, scanning receiver covers 500 kHz-905 MHz, in AM, and narrow or wideband FM. The automatic mode selection function makes listening easier. One hundred memory channels with message and band marker, direct keyboard or VFO frequency entry, and versatile scanning functions, such as memory channel and band scan, with four types of scan stop. The RZ-1 is a 12 volt DC operated, compact unit, with built-in speaker, front-mounted phones jack, squelch for narrow FM, illuminated keys, and a "beeper" to confirm keyboard operation.

Optional Accessory
- **PG-2N** Extra DC cable

Specifications, features, and prices are subject to change without notice or obligation.

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