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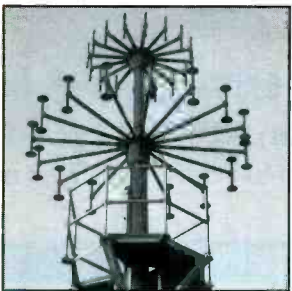
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This month's cover: Wireless cable in Illinois uses microwaves to supply the rural area of Bloomington with television, via this tower. Photo by Larry Mulvehill, WB2ZPI.

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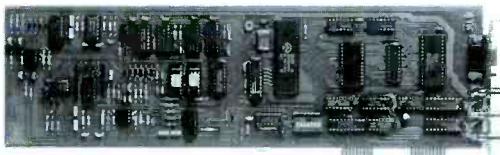
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BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Be A Communications Expert, Like Me!

If there's one thing I like to do, it's express opinions. I have thousands of them, and have spent a number of years expressing them. What with so many things always happening, I'm never at a loss to add new opinions, or update old ones. My editorials here in *POP'COMM* are where I pass them along. When possible, I like to touch upon topics that other publications choose to ignore.

My hope is that the opinions in my editorials will be sufficiently provocative to stimulate a dialog on the various topics. I neither require or hope for all readers to agree with my opinions, otherwise they wouldn't be provocative. There would be no basis for a dialog.

The responses to my editorial opinions are usually widely divergent. Some readers will agree with something I write, others feel I didn't go far enough, or they see additional aspects I hadn't thought of. And, of course, there are those readers who disagree with the opinions in an editorial. If an opinionated editorial failed to bring in at least one or two irritated and outraged letters, I'd begin to think I'm mellowing out. Hasn't happened yet.

Readers are often bluntly frank, especially those who don't merely disagree with an opinion, but actually become irritated. For instance, last November, I penned an editorial about illegal "outband" operations. Among the numerous responses it attracted was a letter of protest from a Michigan reader with the appropriate initials, M.A.D. Seldom have I received such

a thorough dressing-down. It began, "Shame on you sir!"

In a nutshell, M.A.D. thought I didn't know what I was talking about. He said he liked opinions I once expressed years ago about outbanding. He felt I was duplicitous for implying that outbanding had changed, and therefore changing my opinions. He resented that my current opinions no longer agreed with his. M.A.D. hoped that I would stop "behaving in this manner" so that I didn't ruin his respect for me and the credibility of the publication.

Was I sensing some hostility here?

M.A.D. wrote that the November issue portrayed me as "a slippery politician." Politician? *Sanan cuchilladas, mas no malas palabras.* Call me anything, including late to dinner. But don't call me a politician! Politicians are among the few humanoid life forms believed by science to be lower than barnacle breeders or magazine editors.

M.A.D. opined that my November editorial was unworthy of having been written by a "communications expert." The old familiar song. For years people have accused me of being an expert. Yet, I have never used that term to describe myself. I proudly regard myself as an enthusiastic communications hobbyist with a lot of opinions. But, OK, if everyone keeps insisting, I suppose I will also have to be an expert.

Better than that. In the best traditions of the month at hand, I will share with my readers the secret weapon anybody can use to be perceived as a communications expert.

(Continued on page 82)

Instant Expertsmanship Chart


	A	B	C
0	Attenuated	Sinoidal	Resonance
1	Pulsed	Envelope	Microprocessor
2	Demodulated	Integrated	Synthesizer
3	Coherent	Reciprocating	Capability
4	Co-phased	Steady-state	Transmission
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6	Binary	Non-linear	Memory
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CIRCLE 69 ON READER SERVICE CARD

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 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 N. Broadway, Hicksville NY 11801.

Outbander Information

The November 1993 editorial asked why the FCC accused "outbanders" of operating CB stations on unauthorized frequencies. Here's the answer why. The FCC takes its strongest action against people who directly challenge its authority. Dad is understandably miffed when Junior won't drive the automobile that Dad gave him, but goes joy riding in a stolen car instead. When a CB'er won't use the frequencies which the FCC gave him, but uses a different channel, that's a direct challenge to the FCC's authority.

The FCC's jurisdiction over government frequencies is open to question. Federal Government frequencies are under the jurisdiction of the Dept. of Commerce's National Telecommunications and Information Administration. However, until Congress changed the law this past summer, NTIA had to ask the FCC for help in keeping poachers off of government frequencies. To provide a "jurisdictional hook" on which to hang its forfeiture order, the FCC takes the position that an outbander is a CB operator, who is, therefore, under its jurisdiction, who is operating on a channel for which he is not authorized. Not pretty, but it works.

Dennis C. Brown, Esq.,
Washington, D.C.

Your editorial of November was off base. I will go along with calling the so-called operators in the 27.410-27.995 MHz portion of the spectrum "most anything with the sole exception of "amateur operators." I almost gagged at your suggestion. I will go along with calling them "illegal operators" if you object to the label "out of band operators." Apparently, because the majority of equipment in use is amateur, you think they should be called "out of band amateur operators." Why in heavens name would any self-respecting licensed amateur want to blab between 27.410 and 27.995? It doesn't mean that the people using it are amateurs. Just a few minutes of listening should be enough to convince you that the

majority are not licensed amateurs. The continual references to "pounds," use of echo boxes, and various noisemakers, filthy, language, personal insults, etc., is worse than anything I have ever heard on the amateur bands. I hope we can still be friends, Tom, but I really think you are way off base on this one. Please reconsider your remarks.

Maurice Picard, W6FQS,
Chico, Calif.

I think we can still be friends. The point is that it looks to me as if you are taking a position based upon your visualization of a hypothetical idealized ham operator. Moreover, you may not have sufficient familiarity with those who actually use outbanding frequencies. In all fairness, the subject deserves a more realistic approach than the concept that all hams are purity personified, or haven't you ever monitored the alligators 14.313 MHz, or 80 meter phone lately? My views are based upon the mail I have received over the years from licensed hams who are also active outbanders, many of whom I know personally. You should expect to hear outband operators using non-ham language and operating procedures, even if you don't personally approve of it or believe people with ham tickets could operate that way. Don't expect to hear ham operating practices if you aren't tuned to ham frequencies. Surely you aren't telling me that amateurs follow ham procedures any time they use the airwaves, including ship/shore, CB's, cordless/cellular phones, and business radios. Remember the adage about "When in Rome."—Editor.

Perhaps I can shed light on why a person would be interested in the freeband (outband) between 10 and 11 meters (27.410-27.995 MHz). Like the great mountain peaks of the world, the band is simply there, waiting to be conquered. Need I mention that the forbidden fruit always tastes sweeter, or at least so goes the perception.

Years ago, freeband was more of a challenge because most CB or amateur radios needed to be significantly modified for such operation. It put the operator into the quite unique fraternity of the tech-pioneer-rebel. This was not behavior engaged in by those weak of mind or will. These upper channel sideband-mode operators took their calling as seriously, or more so, than most hams. While some may have been less technically aware than their amateur counterparts, they spent more time on the air, engaged in more spirited, enlightening, personal,

and friendly conversations. They tended to know one another socially and meet when off the air. Most of the time you could tune across the 10 meter ham band and find it devoid of activity, not from an ionospheric or refractory standpoint, but because the "skip was rolling" on the freeband. Need I refer to the "use it or lose it" axiom, and how the FCC gutted the 220 MHz band?

I also believe that the freebanders were the original rebels that ultimately led or pressured the FCC to create a codeless license. These operators were, in a sense, sending the first loud and clear message to the world that code was an anachronism. Virtually anyone can learn coded communication, but the point was that it was of little use in a modern computer age with instant global satellite and digital communications. The world was undergoing a communications revolution, but the amateur community couldn't recognize it, let alone forthrightly respond to it in a constructive fashion. Like Nero and his fiddle.

With the advent of easily converted solid state transceivers, freeband shifted into higher gear. Several clubs and small publications catering to these operators appeared and flourished until the FCC began a vendetta-like campaign against the free thinkers it perceived as promoting freebanding. The FCC could never provide a good reason for not operating on the freeband. It was obvious from monitoring that the frequencies had no other use. As they say, the rest is history.

Despite periodic FCC "cleaning" campaigns, the best part of the freeband adventure continues to be meeting new and interesting people. Amateur radio has its attractiveness, but unless one is willing to memorize the ancient code used by mariners of yesteryear, he or she is relegated to using a mostly overworked short-range local VHF repeater. Most of this local chit-chat is stuff that should be discussed on the telephone, especially husband/wife conversations. Frequently it is boring, mundane, or outright offensive. Compared to the free-spirited and long distance conversations on the freeband, local VHF repeaters and nets are better than Sunday morning sermons for lulling listeners into a numbed out state of mind.

Before readers react with horror or anger at my views, remember that we would all be British citizens today if it weren't for the views of free thinking, rebellious people we now hold in high regard as heroes and visionaries. These non-conformists people were the founders of our great nation, and only because they demanded to change the status quo.

Bill Reuter, N8ZBR,
Petersburg, Mich.

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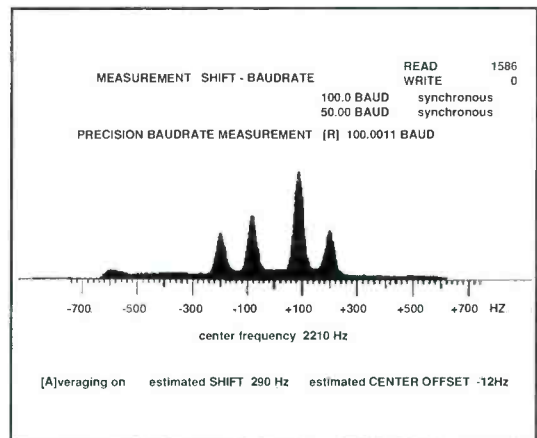
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Low Power Broadcasters: What's The Story?

Things You May Not Know About Licensed & Unlicensed Legal Low-Power Broadcasting

BY TOM KNEITEL, K2AES, EDITOR

It's a safe bet that more than half the radio hobbyists in the world have, at one time or another, fantasized about operating a broadcast station. Maybe something small, that could be located right in their home, to bring music or commentary to their neighborhood. Indeed, many of us share memories of the days when, as youngsters, we set up flea-powered AM band "wireless oscillators" to talk and play records.

You could build these sets, or buy mini-broadcasters from ads in magazines. When you had one, you could imagine the signals were wafting out into the ether to reach listeners in distant lands. Hobbyists are still interested in being broadcasters. Only recently, Seattle reader Don Edge wrote to us asking where to obtain information on building an AM or FM station.

The personal need to broadcast, of course, isn't limited to youngsters. Many who started out with flea-powered phono oscillators and home broadcast sets grew up to have careers at, or even own, commercial AM, FM, or TV broadcast stations.

Interest in low power broadcasting, though, has never abated. Few people realize scope and extent of the existing FCC mechanisms that permit unlicensed and licensed low power broadcasting. This information should be regarded as general in nature. For more specific details readers are referred to FCC Parts 15, 73, and 74.

AM Broadcasting

The lowest power AM broadcast station the FCC will license needs to run at least 250 watts. This will provide an average minimum coverage area of 25 miles. Commercial 250 watt AM stations must be on the air two-thirds of the hours they're authorized to operate during daylight hours, and two thirds of their authorized night hours. Non-commercial and school stations may not have minimum operating time requirements, but their broadcast time will be considered when they request license renewal.

A person can operate an unlicensed low-power AM station, according to FCC regulations. The maximum effective radi-

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In a bygone era, magazines were filled with a variety of ads for flea-powered home broadcasting sets.

ated power can be about 0.05 watts, which means that the approximate coverage radius will be about 200 feet. The rule actually specifies 100 mw., to the final RF stage, and permits unlimited power on a college or university campus as long as the field strength does not exceed 24000/F(kHz) uV/meter at 30 meters outside of the cam-

pus perimeter. There are no restrictions to the program content, hours of operation, or frequency.

FM Broadcasting

The FCC does not presently license FM broadcasters using less than 100 watts ef-

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LPTV station W05BE, Jeffersonville, Ind., ID's as WCTV on Channel 5. The signal is beamed to their transmitter atop the First National Tower, in Louisville, Kentucky. Here is one of the station's vehicles. (Photo by R.C. Watts.)



John W. Smith, Jr., Pres., of LPTV station W05BE (WCTV/5), shown in the control room. The station uses a lot of satellite programming. (Photo by R.C. Watts.)

fective radiated power (ERP). These stations have an approximate minimum coverage radius of four miles. Commercial stations are required to operate two-thirds of their authorized daylight hours, and two-thirds of their authorized night hours. Non-commercial stations must operate at least 36 hours per week, consisting of not less than five hours per day, at least six days of the week. School stations must operate at least 36 hours per week, consisting of five hours per day (Monday to Friday, except school holidays).

FM translators and boosters are different than broadcast stations in that they do not transmit original program material. They are used to simulcast the programs of other stations and enhance the signals of those stations in areas where reception would otherwise be poor or unavailable. FM translators run no more than 250 watts, and many run far less. Boosters are permitted to run no more than 20% of the power of the station whose signal they are used to boost. At last count, there were 2,082 FM translators and boosters operated by commercial, non-commercial, and educational institution licensees. The FCC rules state that dependable service must be provided, but no minimum-hour operating requirements are spelled out.

The FCC has rejected numerous suggestions that they allow FM translators or boosters to transmit their own original, local program material.

Unlicensed low-power FM transmitters are allowed to use about 0.01 microwatts, which equals an average of about 200 feet of effective signal coverage. The rule actually specifies a limit of 250 uV/meter measured at 3 meters.

The Fairbanks (Alaska) *Daily-News Miner* carried a feature story about high school student Brett Cooper's station, KQRP/96.3, in Palmer. This low-power station, located in Cooper's bedroom, has operated since late in 1991. Music, classic radio programs, and other programs are sent out. No transmitter power was mentioned, but the newspaper story stated KQRP has a 3-mile range. Inasmuch as KQRP doesn't show up in any station listings, the assumption is that it isn't FCC licensed.

The FCC hasn't been at all pleased about unlicensed low-powered FM broadcasters exceeding the agency's power limits. Station KAPW/88.9 was a half-watt unlicensed operation in Phoenix, Ariz. that began operating in November, 1990. KAPW's Bill Dougan has been an activist working for the creation of a low-power FM (LPFM) broadcast service. KAPW referred to itself as a "Community Access" radio outlet.

When the FCC appeared at the KAPW studios to inspect the facilities, they were refused admission. As a result, Bill Dougan was subsequently fined \$17,500. Dougan has said that since his station's signals neither crossed state lines nor caused interference to licensed broadcasters, KAPW did not come under the FCC's jurisdiction. Furthermore, he complained about the process whereby the fined party must appeal in order to be heard, and can do so only after he has been presumed guilty and issued a fine.

Despite a number of pleas from various proponents seeking to create licensed LPFM stations, it seems that the FCC is presently disinclined to authorize a class of

full service low-power FM stations, that is, ones with ERP's of less than 100 watts. Apparently, the agency's thinking is that the public is better served by a lesser number of higher-powered stations using the same amount of frequency space that might otherwise be occupied by numerous low-powered stations. This is because the greater coverage vs. interference area ratio of the more powerful stations.

Frankly, by carefully selecting frequencies, and stipulating individual limitations on transmitter power, along with the gain, height, and directivity of the antenna used, it would be feasible for the FCC to allow LPFM's to operate without problems at certain locations. Each station would have to be considered on an individual basis as to possible interference and community need. It could also be authorized as a secondary service provider. Nice to hope that someday it might become a reality, but it's just a "for instance."

Last time *POP'COMM* heard from KAPW's Bill Dougan, his address was P.O. Box 47473, Phoenix, AZ 85068. That was two years ago, so the present validity of that address isn't known. Bill may still be enthusiastically advocating the FCC's establishment of an LPFM service. Readers who support the LPFM concept may wish to try to contact Bill. If writing, please enclose an SASE if a reply is sought.

TV Broadcasting

The lowest power full-service TV station license the FCC will issue is for an ERP of 100 watts, which offers a minimum coverage of four miles. Commercial stations must remain on the air at least two hours

a day, not less than 28 hours in any week. Non-commercial and school stations have no minimum hour requirements, but their operating activities are reviewed when they request a license renewal.

Low-Power TV (LPTV) broadcasters are a special class of station licensed by the FCC. There are 503 of these stations running up to 10 watts ERP on VHF TV channels, and 933 LPTV stations running as much as 1 kW ERP on the UHF channels.

TV translators operate with the same power limitations as LPTV's. There are about 2,359 on the VHF band, and 2,437 on UHF channels. These aren't allowed to originate their own program material. They are used only to rebroadcast distant TV signals for reception in small localized communities where off-the-air TV reception would otherwise be impossible.

LPTV stations and translators may be operated by commercial, non-commercial, or school licensees. Licensees are expected to provide dependable service, but no minimum hours are required.

The FCC created LPTV as a secondary service to higher-power TV stations. Secondary status means that a higher-power (that is, full-service) TV station may come along and obtain an FCC license for operation on the same channel and in the same community where an LPTV already exists. The LPTV is then required to vacate that channel. Many LPTV's are in metro and suburban areas, but some are in communities where there is little likelihood that a higher powered TV station will be built in the foreseeable future.

LPTV stations are TV broadcasters in every sense of the word, albeit low powered. They are allowed to originate their own programming, or air any other programs that suit those who operate them. LPTV stations frequently pick up satellite feeds, syndicated shows, and reruns of network programs. Their best programs can be the ones originating locally in their studios. When the World Trade Center bombing temporarily knocked several of major New York City TV stations off the air, two of them hastily contracted to feed their programming out over area LPTV stations.

Yet, LPTV many operators have had nagging problems and complaints. With few exceptions, LPTV stations don't run network programs, nor are their signals always welcomed on cable systems. Their programs are seldom shown in published TV listings. LPTV stations are issued distinctive call letters beginning with a K or a W, followed by two digits and two letters, like K33CG, or W26BY.

LPTV operators have asked the FCC to discontinue the use of the term "low power" with reference to them, and instead, use the term "community television" for their category of station. They contend that the public suspects "low power" means "inadequate power," as it would in a car engine or a battery. In fact, LPTV stations be-

lieve they should be allowed to run higher power. They point out that so long as LPTV's don't cause interference to other TV stations, they should be permitted to improve and increase their service to their local communities.

The National Association of Broadcasters (NAB) has not supported the various hoped-for LPTV changes on the grounds that the requests constitute a "thinly veiled attempt" to upgrade LPTV stations to full service TV stations.

Cable systems are obligated to carry "qualified" LPTV signals under certain limited circumstances. Among those circumstances are the need for the LPTV to be located within 35 miles of the cable system, and deliver a good signal. In addition, both the LPTV station and the cable system must both be located outside the 160 largest Metropolitan Standard Areas, the population of the area must be less than 35,000, and there must be no full-powered TV station licensed to any community within the county or political subdivision served by the cable system. These circumstances combine to create a situation that allows for few LPTV's to qualify for slots on cable systems.

Cable systems tend to ignore LPTV's unless they are required to carry them. Even then, it isn't always smooth sailing. The operator of LPTV station W53AO, Lenoir, North Carolina, recently filed a complaint with the FCC that he couldn't get carriage on his local cable system. He felt W53AO met the FCC's qualifications and was only 4 miles away from the cable system's receiving antennas. Yet the cable system was not carrying the LPTV station.

W53AO's owner claims he sent two letters to the cable system requesting they carry his station. The only response he got was a copy of their channel line-up. The FCC agreed that W53AO was qualified, as claimed. The FCC ordered the cable system to begin carrying the LPTV station.

Operators of LPTV stations generally complain about the odd call letter format

their stations must use. They say it is confusing and appears alien to the media and the public. This makes it difficult for them to sell commercial time, purchase programs, attract viewers, as well as secure program listings in guides. People don't know whether they're hams, or what. They want the FCC to end the confusion by issuing LPTV stations standard broadcast call letters similar to those used by full-powered TV stations.

LPTV is a sleeping giant. We hope it can become disentangled from overly restrictive FCC regulations, and that it can surmount the unjustified paranoia of full-power TV broadcasters. At that point, it will develop into the community TV broadcast service the public needs and deserves.

The LPTV industry group is the Community Broadcasters Association, Box 19229, Dallas, TX 75219-8229. Phone: (214) 720-1335.

As for unlicensed TV operations, the FCC rules do not permit any unlicensed broadcasting in the TV broadcast bands.

Loose Ends

Equipment for low-power AM or FM purposes can often be located in hobby magazines. Also look in broadcast trade publications. One dependable source long used by experimenters and hobbyists has been Panaxas, P.O. Box 130, Paradise, CA 95967.

A leading source for broadcast quality low-power AM transmitters is LPB, Inc., 29 Bacton Road, Frazer, PA 19355. Phone: (215) 644-1123. Many AM stations running very low power for pre-sunrise operations rely on transmitters from LPB, Inc. Being commercial grade precision equipment, it is priced accordingly. Their stuff is absolutely beautiful.

Many thanks to William S. Perry, Jr., of Eielson AFB, Alaska, and R.C. Watts, of Louisville, Ky. for their invaluable contributions used in the preparation of this material. ■

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The Tape-H Trick

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BY RON BARTHET

Many scanner monitors would like to have a tape recorder to record their scanner signals for several hours at a time, plus capture the time the signal appeared and the frequency it was on. Though there is equipment available to do this, it is costly, and often involves a specially-modified tape recorder, a computer, and an interface.

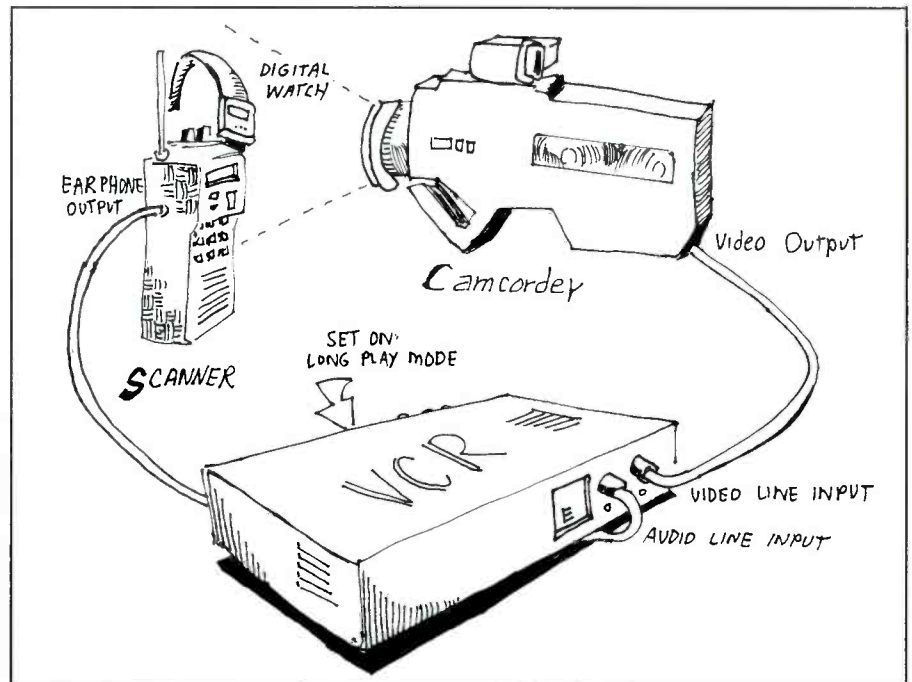
However, don't be dismayed. If you have a video camcorder, a VCR, and a scanner, you can accomplish pretty much the same thing.

Your VHS video recorder probably can tape up to six hours of signals in extended play mode, and even longer if you are using 160 video tape.

First, find the auxiliary line inputs at the back of your VCR, one for video and the other for audio. Run a patch cord from the audio output of your scanner to the audio input of your VCR. Be sure to keep the volume control on your scanner down so it won't overpower the auto-level circuit in your VCR. This allows you six hours plus of audio recording from your scanner onto the video tape.

Next, focus your camcorder's lens on the frequency readout of your scanner. Place a small digital clock near the frequency readout (a cheap digital wrist watch would do the trick), and include the clock face in the same camera view as the frequency readout.

When the camcorder's video output and

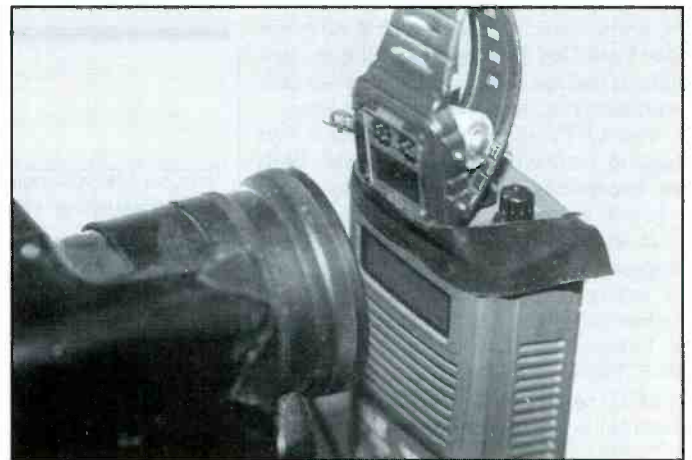


VCR's video input are set, you have achieved a video picture of recorded signal frequency readouts, and the times the signals occurred, in addition to six hours of scanner audio.

You could also do this by just using the camcorder's internal video tape, but since

it records in a standard mode, your time would be limited to the camcorder's maximum record time.

While the above method is not perfect, it does give a real-time record of what was transmitted, when it occurred, and who was transmitting at the time. ■



By aiming a camcorder lens at the frequency readout of your scanner and plugging the earphone output into the VCR's audio input, you get six hours worth of scanner audio accompanied by frequency information.

Taping a digital watch next to the frequency readout of your scanner and including both in the camcorder lens view, allows you to record both the frequency and time of transmission for any scanner signals recorded on the audio track of the VCR's video tape.

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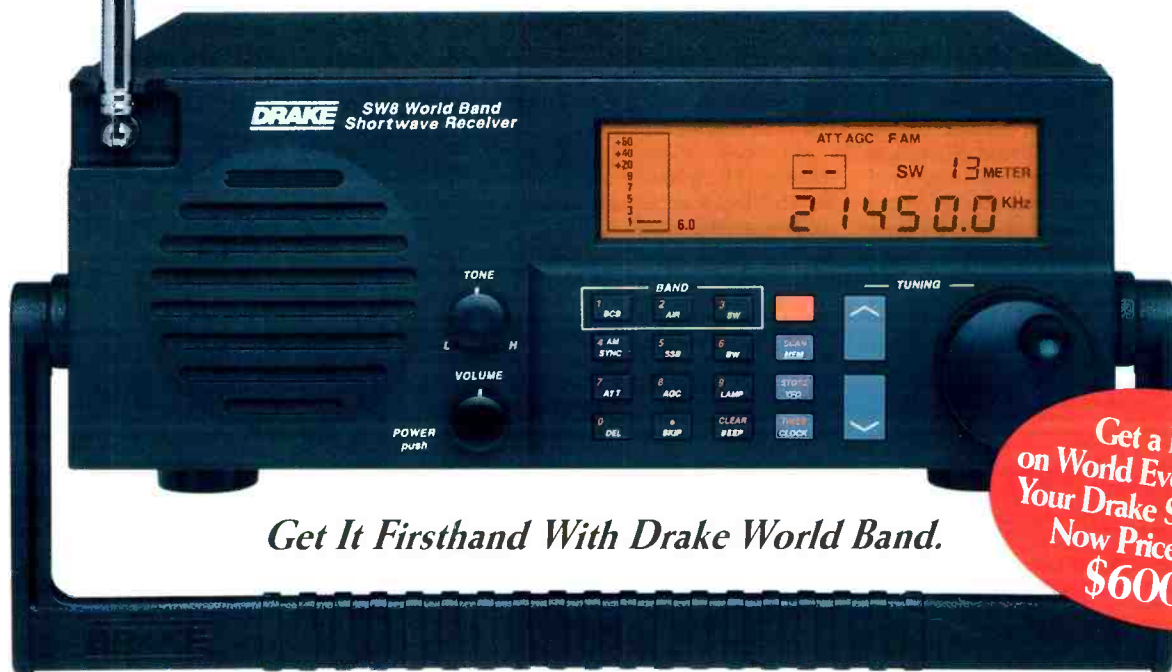
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We Review:

The Tone-Master TM-16 DTMF Decoder Display

MoTron Electronics' Tone-Master TM-16 decodes and displays Dual Tone Multi Frequency (DTMF) signals. DTMF tones are generated when the various buttons of Touch-tone phones are pressed. This is an interesting device with some very appealing features.

With a Tone-Master TM-16 connected to a scanner or communications receiver, received DTMF tones will show up on the unit's LCD screen so you can read them out. The 16 digit display has an 80 character memory that may be scrolled through either forward or in reverse.

When a grouping of numbers appears on the display, it will remain there until it moves off to the left as it is replaced by new digits. The TM-16 automatically inserts a hyphen between number groups so that they don't all run together once being sent into the memory storage. Displayed number groups can also be removed by depressing the *Clear* button, which doesn't enter them in the memory.

The numerals from 0 to 9 can be displayed, plus the star and pound symbols. It will also decode the A, B, C, and D digits generated by communications radios. The normal operating speed of the TM-16 is at 12.5 digits per second (DPS). Most fast telephone auto-dialers send at a 10 DPS rate, so 12.5 DPS should be adequate for most applications. In the event faster operation is desired, an internal shorting plug may be easily be shifted to increase the operating speed to 25 DPS. The manufacturer cautions that the higher operating speed will cause the TM-16 to be more vulnerable to false reading when speech or music is present on the input.

Connecting the TM-16 is simple. No internal circuit board wiring connections are required. You can attach a pickup cable to the loudspeaker leads of your radio, the headphone jack, or the external speaker output. Cables are supplied with the unit. There's an internal amplifier and small monitor loudspeaker in the TM-16 so that you can monitor the audio input of your receiver in the event

you use the external speaker or headphone jack for the TM-16 input. The audio quality of this speaker isn't good enough for use as your main base station speaker. The volume of the internal speaker can be varied (or turned off) by means of a screwdriver adjustment at the bottom of the case. An alternate approach would be to use the TM-16 in addition to an external communications speaker, running them both from the radio's external speaker output. We used a dual jack adapter (Radio Shack 234-310) on our scanner.

The TM-16 is small and (even though it's in a metal case) lightweight. Also, it will operate from a 9 volt battery. The TM-16 is also an excellent candidate to be used with a handheld scanner. In that application, plug it into the headphone jack and make use of the TM-16's internal loudspeaker.

For base station operation, the Tone-Master TM-16 can be operated from any 7.5 to 15 VDC source. This includes equipment such as an AC adapter.



The Tone-Master TM-16 DTMF decoder display.

Operation of the unit is very simple. There's a switch to turn it on and off, one to clear the display screen, and there are buttons to allow scrolling through the memory. Nothing more to deal with. Soon as it's out of the box, you can hook it up and start reading out the DTMF tones you monitor in use. An owner's manual is furnished.

The TM-16 sent to us dutifully reproduced every DTMF presented. It worked well with the base station and also with handhelds. DTMF tones were routinely encountered on the amateur and cordless phone bands. Telephone numbers, voice mail, answering machine remote control, are but a few of the numerous applications of DTMF that can be monitored on a scanner. The TM-16 did a fine job, and any inquisitive scanner owner, professional investigator, or communications tech will find it useful.

MoTron also has what they call a TM-16-Plus version of this device. It has the additional feature of an RS-232 9600 baud ASCII serial output, and can be connected to a computer for automatic logging or remote data entry. The company also offers IBM compatible Tone-Master Logger software as part of the TM-16-Plus package. This permits optional automatic date, time, and number identification of loggings.

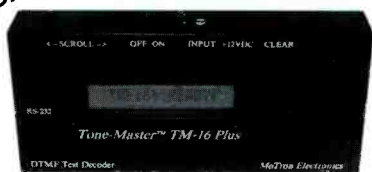
The basic Tone-Master TM-16 is \$169, while the TM-16-Plus is \$239. Computer cables are \$10 each (specify for laptop or desktop computer). The AC power adapter is \$10. Shipping is \$5 in the USA and Canada.

The Tone-Master is from MoTron Electronics, 310 Garfield Street, Suite 4, Eugene, OR 97402. Phone: (503) 687-2118.

Reviewed by POP'COMM Staff.

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SSB <1μV <5μV <.5μV

AM <3μV <15μV 1.5μV

FM N/A N/A .5μV

*Sensitivity improves with optional 500Hz CW Filter.

Selectivity: -6dB: CW, SSB, FAX @ 2.4kHz / AM @ 6kHz / AMN @ 2.4kHz / CW @ 500Hz (opt.)

Tuning Accuracy: 10Hz

Stability: ±5PPM (-5°F + 130°F)

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IF Freq.: 51.655MHz 1st 455kHz 2nd

Dynamic Range: >100dB @ 25kHz spacing

AGC Performance: Threshold 1μV; Attack 15 mS delay/200mS (fast) 3±1 sec (slow); RF Input 1μV-100mV will change audio out <10dB

Ant. inputs: (1) Coax 50Ω unbal. (2) 450Ω bal.

(3) Hi-Z for whip

IF Output: 455kHz -20dBm 8 Pin Din



Computer: RS-232C

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Card Q&A

What You Should Know About Telephone Calling Cards



This answers a number of questions about telephone calling cards.

What Are Telephone Calling Cards?

Calling cards are specialized credit cards issued by local and long distance telephone companies. The cards generally allow you to make telephone calls while away from your home or office and to charge those calls to your home or office telephone account.

Can I Use My Calling Card To Make Long Distance Calls With Any Telephone Company?

Most cards issued by long distance companies may be used for long distance calls carried on the network of that company. If your card was issued by a local telephone company, it will probably be valid to obtain service from any long distance company. Remember, however, that the rates you will be charged are set by the long distance telephone company that handles your call. That company is not necessarily the company that issued the card.

How Do I Know What Company Will Bill Me When I Use My Card?

If you begin a long distance call by dialing "0", you probably will be connected automatically to the long distance telephone company presubscribed to that telephone. That presubscribed company will bill you according to its rates when you use your calling card. The FCC requires that the company transmitting the call from a public location identify itself before any charges are incurred. It is important to listen to who that company is to ensure that you are using your company of choice and will be charged the rates of your preferred telephone company. The FCC re-

quires that the identity of the presubscribed company also appear on or near telephones available for public use, such as pay telephones and hotel or motel telephones.

What Different Types Of Calling Cards Are Available?

There are two frequently used types of calling cards. Line number-based cards use of your 10 digit telephone number, generally followed by a personal identification number (PIN). Other cards use a 14 digit calling card number that is not associated with your telephone number.

May I Get A Calling Card With My Telephone Number On It?

In some cases. You should check with your local and long distance telephone companies to find out their specific policies. Most calling cards issued by local telephone companies use your telephone number. They may also allow you to elect to have your PIN left off the card. Some long distance companies will also issue a line number-based card.

Does The Federal Government Decide Which Type of Card A Long Distance Telephone Company Issues?

No. That decision rests solely with the long distance telephone company that issues the card.

May I Get Calling Cards From More Than One Telephone Company?

Yes. You may get a calling card from each of the telephone companies with which you want to do business. In some cases, you may get each of these different cards with your telephone number on it but with different PIN's.

If I Get A New Card From My Long Distance Company, Do I Have To Give Up My Old Line Number-Based Card?

The number on the old card may still be good, but you need to check with your local telephone company to be sure. Generally, if the logo on your line number-based card is that of your local telephone company, the card is still good, and you do not have to take further action.

What Should I Do If The Telephone Company Will Not Complete My Call Because I Am Not Using A Line Number-Based Card?

If you desire to use that telephone company that issued your card, follow the instructions on the card for obtaining access to its network. The FCC requires most long distance telephone companies to have a toll-free number or a local telephone number beginning with "950" for consumers to reach them. If you desire to use the company that you have already reached, however, you may use a line number-based card issued by a local telephone company (if you have one), arrange for the call to be billed collect or use any other billing procedure that the company offers. ■

Radio, Once Upon A Time

Let's Go Back, With Stops Here & There

BY ALICE BRANNIGAN

During the World War II era, governments were very sensitive to the fact that clandestine shortwave transmitters could be used by espionage agents to supply the enemy with military and naval information. In the USA, the government responded to this threat by establishing the FCC's Radio Intelligence Division (RID).

RID was headed by George Sterling (W3DF), an FCC staff member who was a prominent amateur radio operator. Nearly three quarters of those who Sterling hand-picked to work for the RID were also licensed hams.

RID operated 12 primary and 59 secondary monitoring stations, located throughout the US, its territories, and possessions. The primary RID stations were extensive installations occupying large tracts of land. Secondary monitoring stations consisted of platform-mounted wooden huts adomed with hand-steerable Adcock direction finding (DF) antennas. Primary and secondary stations were interconnected by wire and radio networks. All monitoring stations had at least one portable or mobile direction finder, usually mounted in a car.

RID operated on a round-the-clock basis, tuning across all bands. If a suspicious

signal was reported by one station, details were flashed to the entire network so a DF fix could be obtained using bearings taken from as many stations as possible. In actual practice, the procedure was to locate the approximate area from which the signals were coming, then to use the mobile station to narrow down the fix to within a few hundred yards. For closer-in, a portable receiver indicated increasing signal strength rather than direction.

Between July, 1940 and the end of the war in 1945, RID discovered and closed down nearly 400 illegal stations. More than 400 emergency bearings furnished to lost aircraft also gave the RID a life-saving role.

RID had records of instances where their monitors were on the scene and had taken over before the espionage agent succeeded in establishing contact with the overseas station. Another case was a spy ring on the east coast first monitored by an RID station in California. The approximate location was sent out to other RID stations near the transmitter. They had no trouble tracking down the exact location. It led to the capture and conviction of eight persons.

Operating privileges for all hams had been suspended for the duration of WWII. As soon as the hostilities stopped, many

amateurs in the armed forces overseas assumed that hamming was once again allowed. They began tuning their military equipment to the 7 and 14 MHz bands, often using their stateside ham call signs. Within only a few months, RID had logged more than 350 cases of that nature. Most of those were from the far Pacific, with some activity also determined to be from Europe. The FCC pointed out that such operation was in violation of their rules, military regulations, and international treaties. Call letters of offenders were turned over to the Pentagon for action.

What really annoyed RID was that there were some hams in the US contacting the GI stations. This was before the FCC's wartime ban on ham activity had been lifted. One of the biggest headaches of the RID at that time was the policing done by well-meaning but misguided hams in the belief that they were helping ham radio by tracking down violators.

RID claimed that in several cases hams had used their own DF equipment to locate violators and either warn or threaten them. RID pointed out that such actions had no legal status in court and in many cases served to warn the violator and prevent apprehension by the government. They

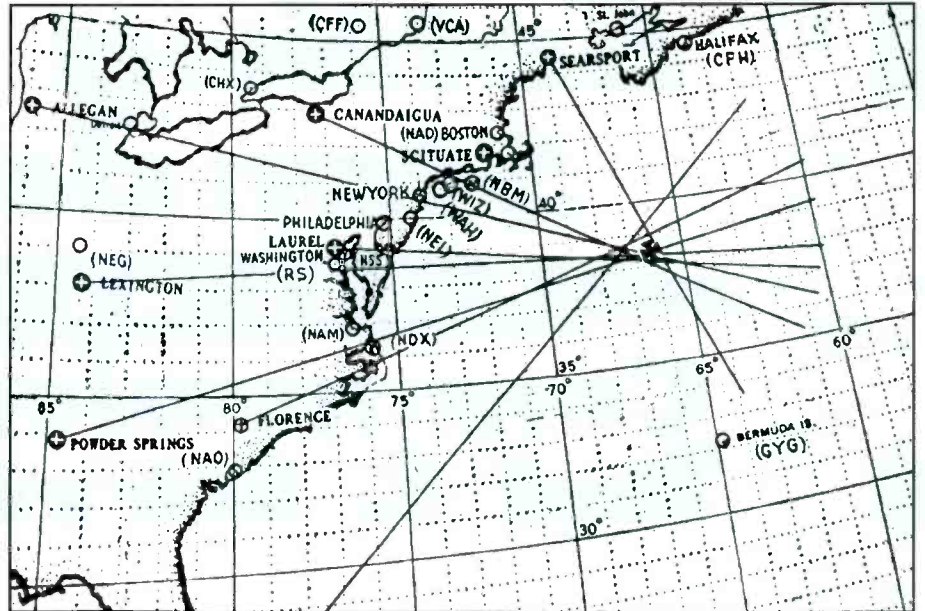
RID monitors tuned the different bands looking for illegals and spy transmitters. The RID's receiver of choice was the Hallicrafters SX-28. ▶

This is the primary RID station located at Grand Island, Nebraska as it looked during WWII. This is still an important FCC monitoring facility. ▼





Typical RID secondary monitoring station, showing the Adcock DF antenna. It had to be rotated by hand from inside the shack.



An example of how a DF fix was obtained by the RID using directional bearings taken on a signal from multiple locations. Still the best way of obtaining a DF fix.

hoped that hams would cooperate only to the extent of contacting the RID about suspected violations, then letting the agency do the rest.

The RID was regarded as a success. As a separate entity within the FCC's structure, RID ceased to exist shortly after WWII. RID's primary monitoring facilities continued in operation and became the FCC's regular monitoring network. Some of these facilities have continually been updated with the latest technology, and still remain vital to FCC monitoring efforts.

Busman's Holiday

One of the first large-scale highway uses of two-way radio was started by the Greyhound Lines. The system was given a trial in Chicago during 1945. This was known as Experimental licensee W9XIR, and proved an instant success. Not long after, the Chicago depot was issued commercial license KSA514, and the two-way system was expanded to 19 other Greyhound Lines depots in Illinois, Indiana, Michigan, and Wisconsin. The equipment was Motorola-Galvin FM type.

Greyhound Lines said that the reason they wanted two-way radio was that a bus leaves a depot and is then in transit until arriving at its destination. During the interim, various events can take place. The function of a two-way radio aboard, they observed, would be mainly to report the location of the bus, that all is going well, and that the schedule set will be met. They equated the bus with an airliner in that it leaves a depot and travels to a distant point,

noting that an airliner maintains enroute radio contact.

Greyhound felt that radioed bus information, if received in time, would allow for revision of other and connecting schedules to be adjusted to meet unusual conditions. It could also be used to send out assistance in the event highway assistance is required. Drivers could communicate with depots and other Greyhound buses.

The majority of radio-equipped Greyhound Line depots in the late 1940's and early 1950's operated on 43.98 MHz, although New York City, Washington (D.C.), and Baltimore used 43.82 MHz. During the 1945 tests, 113 Greyhound buses were licensed as W9XIS under an Experimental authorization. Later, as the system was expanded, 317 Greyhound buses received the commercial two-way call letters KA2741.



The first Greyhound bus equipped with two-way radio heads out from the Chicago depot during the company's 1945 test.

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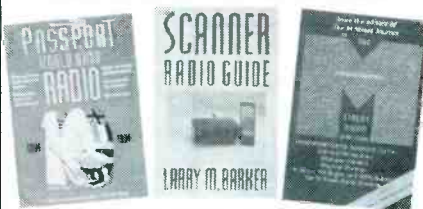


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Aug. 30 1980

Mr. Jos. Hueter,
1610 N. 16th St.,
Philadelphia, Pa.

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We expect to have a DX party every Saturday night beginning at midnight CST. Listen for us.

DX 'ingly yours,

AMERICAN BROADCASTING CORPORATION

By L. Pelle
L. Pelle, Program Director

LP:JH

A 1930 WLAP veri letter from its Louisville digs mentions 1200 kHz, 250 watts day, 100 watts at night. (Collection of the late Joe Hueter.)

All were capable of operation on 43.74, 43.82, 43.90, and 43.98 MHz.

Tale of Two Broadcasters

In 1915, W.V. Jordon, of Louisville, obtained amateur radio license 9LK. When

WWII ended in 1918, Jordan thought that radio was an excellent medium for broadcasting music. It was too bad that there was no such thing as a radio broadcast service, nor were there broadcast receivers, nor an audience.

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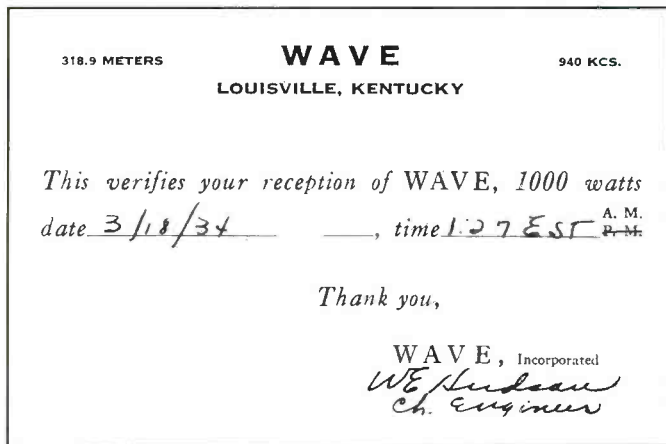
We are pleased to verify your report of reception on Mar. 20, 1934 from _____ to _____

Verified by Winston D. Clark
American Broadcasting Corp.



WLAP
1420 KILOCYCLES
Lexington, Kentucky
U. S. A.

This March 20, 1934 QSL from WLAP reveals it on 1420 kHz from its brand new location at Lexington. (Collection of the late Joe Hueter.)



A QSL dated March of 1934 shows WAVE just three months after it opened in Louisville. It was running 1 kW on 940 kHz (Collection of the late Joe Hueter.)

An attractive bronze paperweight issued some time in the past by station WKY, Oklahoma City, Okla. (Courtesy David and Martha Thelin, Penna.)

In 1918, Jordan put a radio receiver in a local hospital, then supplied the ear-phones patients required to hear the music. The music came from recordings Jordan was playing over the 9LK transmitter which had been modified for 'phone operation.

When a broadcasting service was finally created, Jordan obtained a license in September, 1922. The station was WLAP, which he said meant, *We Love All People*. Jordan operated WLAP in his spare time and, in 1926 it was sold to a church. In 1928 it was again sold and licensed to the American Broadcasting Corp. WLAP ran 250 watts (100 watts at night) on 1200 kHz. Soon after, WLAP got into a legal flap with station WFIW, Hopkinsville, Ky., which operated on 940 kHz (formerly on 1150 kHz).

In 1933, WFIW, Hopkinsville, was purchased from Acme Mills, Inc. by George Norton. Norton decided to pick up WFIW and take it to Louisville. He then changed WFIW's call letters to WAVE, and opened for business on 940 kHz in Louisville on December 30, 1933.

For whatever reasons, in March of 1934, WLAP moved away from Louisville and relocated to Lexington, Ky. There it opened up on 1420 kHz. WLAP is still in Lexington, owned by Trumper Communications of Kentucky, and running 5 kW (1 kW nights) on 630 kHz.

When WAVE first went on in Louisville, it was a 1 kW station. In 1940, the power went up to 5 kW. In March of 1941, WAVE shifted frequency from 940 to 970 kHz and commenced transmitting from its new facilities north of Jeffersonville, Indiana.

After several licensee changes, in 1988, WAVE's new owners decided to modify the station's call letters to WAVG. WAVG presently operates on 970 kHz with 5 kW. It is owned by Sunnyside Communications, which also owns WXVW/1450, Jeffersonville, Indiana.

In the official WAVG history, they mention the circuitous and unusual links between old time amateur station 9LK and modern WAVG.

We offer our thanks for the good information about WAVG sent to us by R.C. Watts, of Louisville, Kentucky.

Stock Mike?

Last July these pages featured a photo of the towers at broadcast station WKY, Oklahoma City, Oklahoma. That photo struck a familiar note with two of our readers, who remembered a WKY souvenir has been in their family for many years.

The item is a bronze paperweight in the image of a microphone type used in broadcasting decades ago. The Letters "WKY" are in raised relief across the center of the mike. The base carries an inscription reading, "WKY, Oklahoma City Times, The

Daily Oklahoman, Oklahoma Farmer Stockman."

We were given a photo of this unusual curio by the good people who thoughtfully let us know about it, David and Martha Thelin, of Chandlers Valley, Penna. Their ham call letters are WA3NSC and WA3NSB, respectively.

This serves as a reminder that souvenirs, premiums, promos, and other similar items were freely doled out during the golden age of radio. These items show call letters, and include ash trays, paperweights, pens, pennants, calendars, medallions, wall clocks, books, and pins. All of these are becoming highly collectible. If you come across any at flea markets or tag sales, snap them up.

May we see you next month? Your old QSL's (good copies are OK), station listings, news clippings, picture postcards, and other wireless and old broadcast tidbits are always useful in putting our column together

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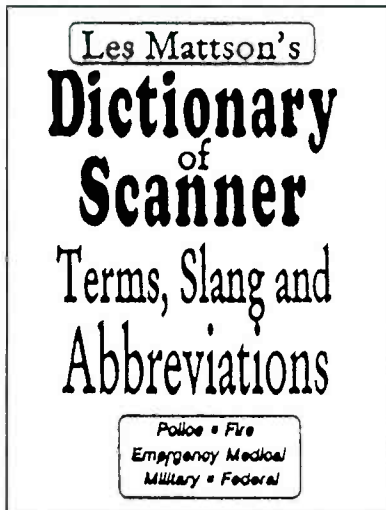



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What Did He Say?

Scanners produce an enormous array of diverse communications from different categories of users. Each individual category or group evolves its own special kind of on-the-air verbal "shorthand." Sometimes, this is done to save time, assure efficient copy, or to establish a uniform message format. Many times, it is used to add confidentiality to the communications.



Still, when you are monitoring police, fire, emergency medical, military, federal agency, or other VHF communications, you get an earful of this. It can be confusing, and that's where the *Dictionary of Scanner Terms, Slang, and Abbreviations* saves the day.

This is more than 100 pages of alphabetical listings, consisting of all of the known professional and insiders' jargon you're ever likely to hear while tuned to any scanner band. The meanings are very clearly explained. It means many of things you hear could suddenly begin to take on a whole new significance and depth.

It's when you first get a clear understanding of the lingo that you'll be on the inside of terminology like *Rabbit*, *RMP*, and *Going Easy*, as well as the many other insiders' words and terms. This is a fine and inexpensive way to get so much more from scanner monitoring.

Dictionary of Scanner Terms, Slang, and Abbreviations is \$14.95, plus \$4 shipping (\$5 to Canada), from CRB Research Books, Inc., P.O. Box 56, Com-mack, NY 11725. Residents of NY State please add \$1.61 tax. MC/VISA accepted. The order line (48 States) is: 1-800-656-0056. Other areas: (516) 543-9169. All FAX orders: (516) 543-7486.

NY/NJ Metro Area Scanner Directory

The Fifth Edition of Scanner Master's

New York/Northern New Jersey Communications Guide is available. all 660 pages of it! This book appears to have become one of the several basic reference sources that scannists in its coverage area depend upon. This book is chock full of frequencies, call signs, locations, channel numbers and usages, maps, codes, signals, and all sorts of other useful information.

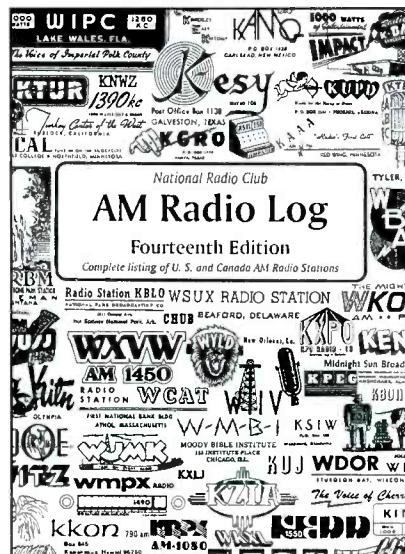
Coverage extends along both sides of the Hudson River, north to Schenectady and Rensselaer Counties, New York, then includes all of Long Island. New Jersey coverage includes everything down to Warren, Somerset, Middlesex, and Monmouth Counties. Fairfield County, Connecticut is covered, too.

Listings are for state, county, and municipal agencies. There are police, fire, EMS, hospitals, forestry conservation, highway maintenance, CD, public utilities, colleges, news media, ham repeaters, and miscellaneous other services. The listings are arranged by location, and there is also a public safety frequency-sort.

The Fifth Edition of the *New York/Northern New Jersey Communications Guide* is a book you will want to have if you use a scanner in the tri-state metro area. Scanner Master Co. is at P.O. Box 428, Newton Highlands, MA 02161. Their order number is: 1-800-722-6701. The *Communications Guide* is also available from selected dealers.

Calling All Mediumwave DX'ers

The *NRC AM Radio Log* brought out its 14th Edition, being a complete listing of its nearly 6,000 US and Canadian AM broadcasting stations, corrected to August, 1993. This publication contains more than 350 pages, and is presented in a three-hole punched loose-leaf format.



The frequency sort shows call sign, location, format, news network, station address, station slogan, day and night transmitter powers, and other pertinent data. There are cross-reference sorts by city, state, and call signs.

Quite a helpful publication, and one long held in high regard by mediumwave DX listeners. The latest *NRC AM Radio Log* is \$19.95 (Canada \$20.95) for persons who are not members of the National Radio Club. It may be ordered from the National Radio Club Publications Center, P.O. Box 164, Mannsville, NY 13661.

Shortwave Program Guide

Kannon Shanmugam's *Guide to Shortwave Programs—1994* is a 176-page directory listing more than 22,000 news, drama, music, and sports programs. These English language programs, which may be tuned in on the international broadcast bands, come from more than 100 stations located around the world.



Listings are sorted seasonally, and then by the day of the week, further delineated by the hour of the day, station identification, and type of programming. In the front of the book there is a handy chart listing each station with all of the frequencies used that you're likely to hear in North America.

Kannon has done a fine job here, with a good format sure to appeal because of the clever way the listings are arranged. This book is \$16.95 from Grove Enterprises, Inc., P.O. Box 98, Brasstown, NC 28902. Order line: 1-800-438-8155.

Little Black Book

The Black Book of Scanner Frequencies is a spiral-bound publication covering

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listings in the area of St. Louis, Missouri (including neighboring parts of Illinois).

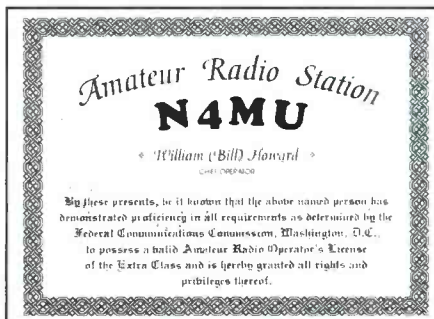
Services cover police, fire, local government, business, telephone maintenance, land mobile, power utilities, highway maintenance, coastal, special emergency, EMS, special industrial, news media, forestry conservation, and many others.

The front part of the book is sorted by locations, and the back of the book contains the stations listed according to frequencies. Callsign and licensee information is provided, as well as 800 MHz coverage.

We think this is a very well thought-out and executed directory, and we recommend it highly for St. Louis area scannists. *The Black Book of Scanner Frequencies* is \$15.90, plus \$2.50 postage. Residents of Illinois please add \$1.95 tax. Order it from Owl's Nest Publications, P.O. Box 387, Granite City, IL 62040.

In Addition...

It's not a book, but this seems like the most appropriate place to display the wall certificate being offered by Trader, 4290 Bells Ferry Road, Suite 106, Kennesaw, GA 30144. This is a three-color 8-1/2 by 11-inch job, printed on parchment-like paper. Your name, plus ham call, or CB handle, or sideband numbers, are printed in large letters beneath the heading (your choice): "Amateur Radio Station," or "Citizens Band Station." The certificate is shipped flat. Total cost is \$4.95. Be sure to specify all information to be inscribed on the certificate, including the class of your ham license. This company also offers QSL cards and radio design memo pads.



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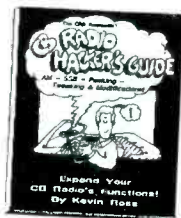
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CIRCLE 11 ON READER SERVICE CARD

POP'COMM REVIEWS:

SWAGURSAT GT

*The Easy Way To Receive
WeatherFAX*



SWAGURSAT GT eliminates the use of expensive receivers and antennas, while allowing amateurs and hobbyists to receive full resolution weather pictures, including cloud images.

Amateur weather enthusiasts' heads do not have to be in the clouds any longer when wanting to capture WEFAX weather satellite information, thanks to SWAGUR Enterprises' SWAGURSAT GT. The SWAGURSAT GT essentially is a receiver allowing amateurs and hobbyists to receive full resolution weather pictures, including cloud images.

Receiving quality weather (WEFAX) images is easy if you have access to a satellite television system, a PC with a VGA monitor, the necessary software, and finally the SWAGURSAT GT. You simply connect SWAGURSAT GT into the regular video or base band video connector behind your satellite television receiver, and then plug the system into your PC. The video output signal from the satellite TV receiver is first sent into the SWAGURSAT GT for demodulation. The signal is then sent to a decoding device, such as the computer and necessary software, which helps create the image. As you begin to adjust your satellite dish to Space-net 3 and Transponder 17, you will start receiving pictures. Images may include the formation of clouds and storm systems, and the SWAGURSAT GT system allows you to observe weather pattern movement.

The SWAGURSAT GT has a three position switch and a volume control in front of the set. Volume control is used to set the sound level of the built-in loud-speaker. The three position switch selects either channel A, which produces images favoring the Western half of the United States; or Channel B, which exhibits weather patterns for the Eastern half of the United States. The third channel is vacant, and can be used for future frequencies as they become available.

SWAGURSAT GT eliminates the use of expensive receivers and antennas, as well as the need for special preamps, LNA's or down converters. "This system is our entry into the popular market," said J.S. Gurske, owner of SWAGUR Enterprises and inventor of the SWAGURSAT GT. "The appeal of this product is that anyone with a receiver can get weather imagery."

The SWAGURSAT GT is \$335, plus \$8.75 for shipping and handling (\$25 outside of the United States). Visa and MasterCard accepted. For more information, write to SWAGUR Enterprises, Box 620035, Middletown, WI 53562-0035, or call (or FAX) (608) 592-7409. See advertisement in February & March POP'COMM.

Reviewed by POP'COMM Staff



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Scanner Nets

A New Aspect For An Old Hobby

BY PATRICK M. GRIFFITH



The alphanumeric pagers are used to feed details to the members wherever they may be.

In many cities throughout the United States the hobby of scanning public safety agencies has taken on a new perspective. In some cases the hobby has advanced to professional level.

Scanning groups in cities such as Denver, New York, Boston, Los Angeles, Atlanta, and Washington D.C. have established networks allowing their members to notify one another of major newsworthy events in their areas, as well as throughout the world, as they occur. Many of these nets are interconnected and share information with the other groups on the system on a national basis. Similar systems are in the planning stages in other areas such as Dallas, Miami, Phoenix, Salt Lake City, and San Francisco, and may join the national network soon.

In some areas the groups have established repeater systems allowing their members to communicate with each other by radio. In other cities alphanumeric pagers are used to feed details to the members wherever they may be. The Denver system, known as Mountain News Net, is a typical example of the latter type of scanner net. The system utilizes the services of PageNet, a wide coverage area alphanumeric capable paging service. The Denver system currently covers the eastern slope of the Rocky Mountains from Cheyenne, Wyoming on the north, through Fort Collins, Denver, and Colorado Springs, Colorado, into Pueblo on the south end of the state. The system is expected to eventually expand into near statewide coverage as the host paging company adds to its network of transmitter sites.



A look at the alphanumeric paging terminal used by Denver's Mountain News Net.

In the Denver system, every subscriber is a potential information resource having the capability to report any incident they are monitoring, or have knowledge of, to the dispatcher group's voice mailbox. The information supplied must include location, agencies involved, frequencies to

monitor and the subscriber's system ID number. When a message arrives in the dispatcher's voice mailbox, all of the dispatchers are simultaneously alerted via their pagers that a message is waiting. The first available dispatcher to access the mailbox is responsible for checking the infor-



By using the alphanumeric paging terminal and pager, it takes only a few seconds for the Mountain News Net to supply the subscribers with real time information on area events.

mation to ensure that it meets the necessary criteria for passing on to the net. This criteria includes items such as working fires, fatal or multi-casualty accidents, shootings, train or aircraft crashes, vehicle pursuits, certain chopper-go calls, and many other major events. It does not include medical calls, or certain situations that might place public safety personnel in danger with public knowledge of the event.

After the dispatcher filters the information, it is placed in a specific format and then entered onto the paging network on the dispatcher's personal alphanumeric paging access terminal. The paging network then transmits the message to all the subscribers by way of numerous simulcast transmitters located throughout the coverage area. While it sounds complicated, the entire process has been fine tuned to only seconds supplying the subscribers with real time information on area events. The dispatchers are a vital link to ensure the proper and timely operation of the system and are chosen very carefully. In the Denver system, many dispatchers are full time public safety professionals, including police and fire dispatchers, paramedics, and firefighters, all of whom volunteer their time as system operators.

The advantages of a monitoring net are many. I frequently describe the Denver system to potential subscribers as being "like listening to 600 channels on 10 scanners spread throughout the state but only hearing the good stuff." Plus, you don't have to carry a bulky and obvious scanner everywhere you go in order to keep updated on the area's activities.

In many areas the news media utilize these nets as another resource in their ongoing effort to gather news information. In appreciation, they often return the favor by reporting interesting items back to the net. And scanner nets often receive unprecedented cooperation from public safety officials who would rather deal with a few 'news hounds' than to endlessly repeat the same information over and over to numerous media representatives. In fact, Denver's Mountain News Net dispatchers carry actual two-way radios that were programmed (for receive only) by the Denver Police Department's own radio technicians to enable them to monitor the city's new 800 MHz trunked communications system. Another side benefit of the Denver system is that each pager can also be used by the subscriber as a personal pager at no additional cost.

So, as you can see, scanner nets have many advantages. If you are a true 'scanner nut' such as I am, look for a scanner net in your area and give it a try. You'll wonder how you ever got along without it.

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In order to handle higher power for amateur use, we used the more efficient direct coupling method of matching, rather than the lossy capacitor coupling. With this method the Wilson 1000 will handle 3000 watts of power.

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So far you have read about why the Wilson 1000 performs better, but it is also one of the most rugged antennas you can buy. It is made from high impact thermoplastics with ultraviolet protection. The threaded body mount and coil threads are stainless steel, the whip is tapered 177 ph. stainless steel. All of these reasons are why it is the best CB antenna on the market today, and we guarantee to you that it will outperform any CB antenna (K40, Formula 1, you name it) or your money back!

*Inductively base loaded antennas
**Call for details.

Lockheed - California Company

A Division of Lockheed Corporation
Burbank, California 91520

Aug. 21, 1987

Wilson Antenna Company Inc.
3 Sunset Way, Unit A-10
Green Valley Commerce Center
Henderson, Nevada 89015

Subject: Comparative Gain Testing of Citizen's Band Antennas
Ref: Rye Canyon Antenna Lab File #870529

We have completed relative gain measurements of your model 1000 antenna using the K-40 antenna as the reference. The test was conducted with the antennas mounted on a 16' ground plane with a separation of greater than 300' between the transmit and test antennas. The antennas were tuned by the standard VSWR method. The results of the test are tabulated below.

FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
26.965	1.30	35
27.015	1.30	35
27.065	1.46	40
27.115	1.60	45
27.165	1.50	41
27.215	1.60	45
27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

**58%
MORE
POWER GAIN
THAN THE
K40**

Individual test results may vary upon actual use.

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Magnetic Mount **79⁹⁵**
Wilson 2000 Trucker **59⁹⁵**
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1181 GRIER DR., STE. A
LAS VEGAS, NV 89119

27 MHz COMMUNICATIONS ACTIVITIES

Realistic's TRC-482 is the company's top-of-the line AM mobile unit, featuring Channel 9 priority, and also reception on the three most popularly used NOAA VHF weather frequencies. In addition, the TRC-482 provides for separate, switchable noise blanking and automatic noise limiting circuits to be put into use when desired. There is also a variable RF gain for the receiver, and a PA system, plus jacks for remote and PA speakers. Relative signal strength is indicated by a series of LED's. Channels are changed using a large, easy to grip, knob.

The Realistic carries an MSRP of \$99.95, and is available at all Radio Shack stores.



Realistic's TRC-482 has some excellent features, including instant CB-9 priority, and weather channel reception.

(\$2,000); and Danny L. Coffield, Los Angeles, Calif. (\$2,000).

Footwarmers...Not!

The FCC continues to issue Notices of Apparent Liability (NAL's) to those whom the agency alleges were "selling overpowered radio transmitters and linear power amplifiers," or "nontype accepted radio accepted radio transmitters and radio frequency power amplifiers capable of operating on frequencies allocated to the CB band." Among those recently cited, and the amounts:

Ross Radio & TV, Uniontown, Penna. (\$7,000); Laser Radio Communications, Woodside, N.Y. (\$20,000); U.S. Electronics, Inc., Tampa, Fla. (\$20,000); All American Radio, Ocala, Fla. (\$11,200); Bonnie & Clyde's CB & Stereos, Dallas, Tex. (\$5,600); Ted L. Wayne CB Store, Aurora, Ore. (\$14,000); Kilgore's Electronics (Fort Worth, Texas (\$10,000); Big Town Electronics, Mesquite, Texas (\$10,000); and Papa Bears Radio Service, Arlington, Texas (\$16,800).

Readers should keep in mind that issuance of an NAL means only that the FCC perceives and alleges that one or more of its rules were violated, and then establishes a fine based upon its own presumption of guilt. The recipient of the NAL may demand a hearing in order to prove innocence and show there was no justifiable reason for the NAL to have been issued. Alternately, he can ask for a reduction in the amount because of mitigating circumstances, lack of funds, or other relevant factors. As a last resort, the NAL recipient can pay the full amount.

Operators, Too!

NAL's recently issued to individuals cited for operating without an FCC license or on unauthorized frequencies, and the amounts levied, include:

Randy Hiatt, Northbend, Wash. (\$100); Michael T. Hayes, Renton, Wash. (\$100); Jose L. T. Hernandez, Long Beach, Calif.

From Readers

A letter arrived from Judy C. Frensley, President, of the Greater Anchorage REACT, Inc., of Anchorage, Alaska. Judy says that in one of our issues we stated CB Channel 9 in the Anchorage area is unmonitored. She is curious as to how we came to that conclusion.

No more curious than we are, Judy, since we never came to such a conclusion, or ran the information in this column. Maybe you read it somewhere else. Whatever. It isn't worth losing any sleep over. For the record, Channel 9 is monitored during the evening hours in Anchorage/Eagle River areas by Greater Anchorage REACT, Inc. The address of the group is 1131 East 76th Ave. #101, Anchorage, AK 99518-3216.

Alberta's Trevor Fletcher hopes we aren't getting tired of hearing from him. He happens to like *POP'COMM*, and this column in particular, so he just likes to write to us almost every month. No problem! He likes the magazine's Canadian coverage, which he rates as "great." Trevor tells that he has introduced many people to the magazine. He likes QSL cards, and will swap with other operators. His address is: Trevor Fletcher, *Corn Binder 174, 648 Clareview Rd., Edmonton, AB, Canada T5A 4J7.*

Georges Wach, 14-AT-017, and SSB Network member SSB-73D, of France, wrote to us this month. Along with his letter, he enclosed a very rare DX QSL to share with our readers. The QSL is from Nail, JY55, who is the only active 11 meter station in Jordan. We don't know the legal frequencies in Jordan (that is, if there are any), but JY55 was operating on 27.575 MHz. We can't tell if that's inside or outside of a Jordanian CB band. It's far beyond the fringes of the US/Canadian band.

Chris Malott, of Cincinnati, who also happens to be this month's "How I Got Started" winner, says he can't understand how sometimes stations on CB can reach out to communicate over hundreds or even thousands of miles. He wonders if it requires

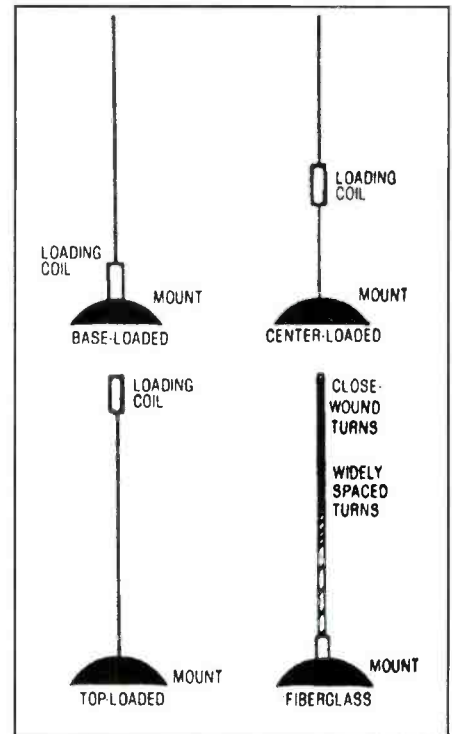
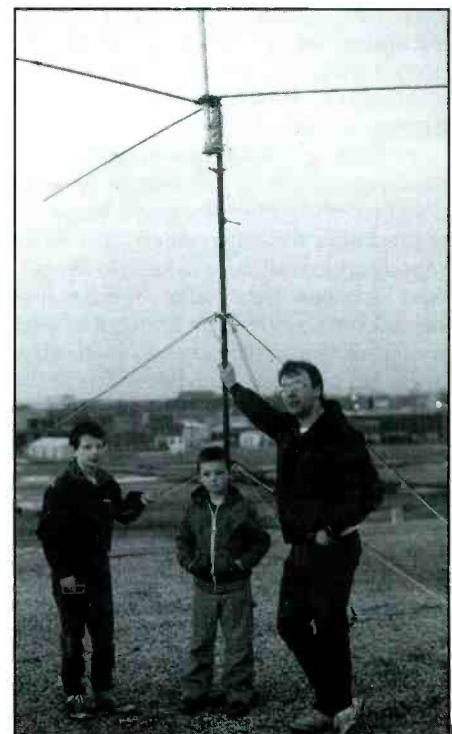


Figure 1. Loaded mobile CB antennas.



Trevor Fletcher (at the right), shown with his harmonics, whose CB handles are "Bones" and "Chunk-E." That's the 5/8-wave antenna they were getting ready to install on the roof of their building in Edmonton, Alberta, Canada.

an illegal transmitter using "a billion watts" combined with a massive antenna.

First of all, Chris, understand that the FCC considers that any CB communications (or attempts to communicate) beyond 155.3 miles to be a violation of the CB regulations. By itself, this does not appear to be a heavily enforced regulation. Maybe it is dragged out to be tossed at operators being cited for numerous other more serious rule infractions.

Next, because of the peculiarities of the frequency band allocated to the CB service, combined with the signal-transporting abilities of the ionosphere, at times a legal CB installation becomes temporarily imbued with the ability to reach out and communicate over hundreds or even thousands of miles. Many special conditions affect this, for instance the eleven-year sunspot cycle, ionospheric activity, the seasons, time of day, amount of local interference, transmission mode (AM or SSB), number of active stations, the skill of the operator, as well as other factors.

Even though it is a violation of the CB regulations, any time the band opens for DX, many CB operators can be heard contacting distant stations. While there are stations running illegal power included in the pack, our guess is that the majority of stations you're hearing on the authorized CB channels are fully legal 4-watt installations.

Mobile Thoughts

The good weather is upon us, and everybody's getting ready to take to the roads. Mobile CB's can't operate any better than their antenna systems, so pay attention to this component of your installation.

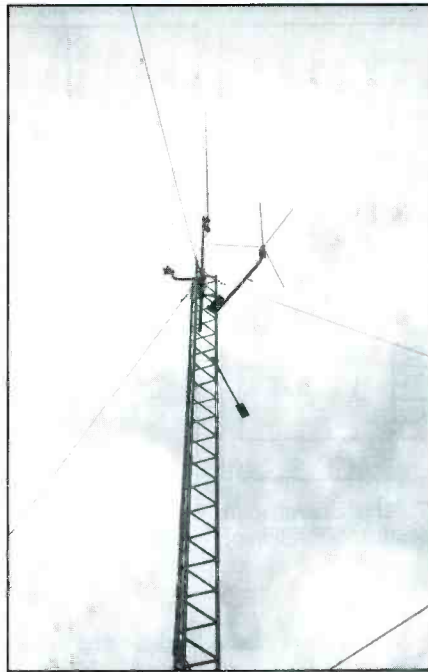
Nearly all mobile CB antennas are so-called ground plane types, with the vehicle body serving as the ground plane.

In a hypothetically ideal mobile antenna system, a full quarter-wave whip would be mounted squarely in the center of a vehicle's metal roof. Being in the center of its ground-plane, it will radiate equally well in all horizontal directions. Being electrically and physically one quarter-wave in length at 27 MHz (about 109 inches), it will be resonant and will radiate and receive maximum energy on CB channels.

But, do you really want to put a 9-ft. antenna whip where it is subject to encountering tree branches, overhead wires, underpasses, garage ceilings, and other obstacles? And, as the wind bends the whip, the signal will no longer be polarized vertically.

Obviously, other arrangements will need to be made, taking into consideration that compromise demands tradeoff. You can put the 9-ft. whip on your rear bumper. But then it will no longer radiate equally well in all directions. If mounted on the left rear bumper, the signal will skew towards the right-front of the vehicle. It will still be an efficient antenna, except that it has been made directional.

A so-called "loaded" antenna is one that



Here's a photo sent to us by reader Roger Neyens, 54-AT-848, of Mamer, Luxembourg. It shows his 45 ft. tower supporting a bunch of good-looking antennas.

has a coil at some point along the whip (Figure 1). The coil adds inductance in series with the antenna and makes it possible to resonate a CB antenna less than 9-ft. in length. Even with a whip as short as only 30 inches, it can still be made to resonate at 27 MHz.

In other words, a loading coil, by adding a loading coil it is possible to build an effective antenna that is electrically a quarter-wave long for CB, while physically being considerably shorter. Of course, even with a loaded antenna, the longer the whip, the better it will radiate. All other things being equal, an antenna with a 56-inch loaded whip would normally be expected to radiate more energy than one with a 36-inch or 42-inch whip.

Loaded antennas also include fiberglass types that consist of a helically wound coil that serves both as the radiator and the loading coil. A top-loaded antenna of this type has its windings widely spaced except near the top where the turns become closely spaced. These antennas come in lengths from 3 to 8 ft.

There are also special antennas, such as ones that combine CB functions with the vehicle's AM/FM auto radio antenna. And there are antennas designed to be used with fiberglass vehicles. One antenna uses the body of the vehicle as the antenna, and from outside the car, it looks as though there is no CB in the vehicle. Also, let's not forget the CB antenna that has a "pigtail" and is supposed to look like a cellular phone antenna.

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- 3-VOLT FM XMTR, up to 300 ft. indoors, 1500 ft. outdoors
- PHONE XMTR, range to 500 ft., uses phone-line power
- Sound-Activated XMTR, range to 500 ft.
- 2-STAGE XMTR, 9-Volt, very powerful

All above require simple soldering at 2 to 4 places. Broadcast on std FM band. Assemble in less than 5 minutes. Any of the above **\$29.95****

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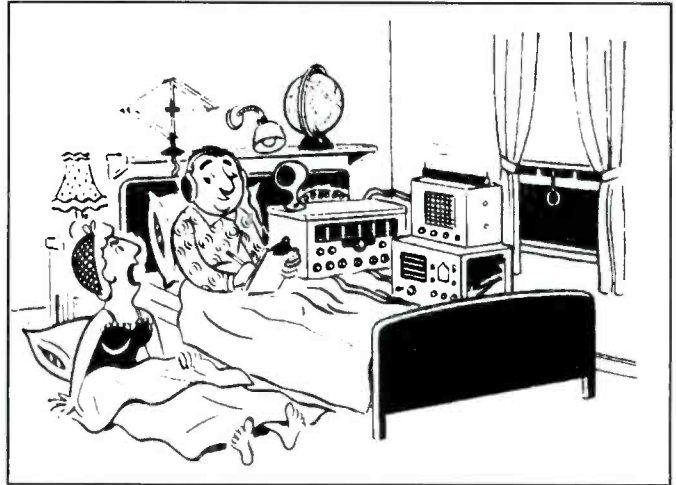
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QS O confirmed with 74 BT 017 GERGES JORDAN

BAND	MODE	DAY	MONTH	YEAR	QTR	R	S	T	NOISE	Q	S	L	Best 73s dr
24	458	21	5	93	400	5			IRB	PSL			JY 55
575					GMT	4			QRN	TNX			
									QSB				

I hope to meet you again on the air. Good DXs



A rare QSL from Nail, JY55, the only 27 MHz operator in Jordan. This QSL sent to us by Georges Wach, SSB-73D, of France.

"Sam, there's something I've been wanting to talk to you about..."

Many CB antennas are available with magnetic or twist-off bases, allowing them to be quickly and easily removed when the car is parked or taken to a car-wash.

As previously mentioned, mobile CB antennas require the vehicle's body as a ground plane. That means the shield of the coaxial cable (via the antenna mount) is grounded to the vehicle body. It is essential that a good electrical contact be made with the car at this point.

When you install a loaded whip on the roof or trunk lid, the mount should be grounded at the hole that was drilled to accept the antenna mount. When you attach the mount to the trunk lip or rain gutter, the mounting screws must bite into bare metal to make electrical contact.

In the event the hinges of the trunk lid aren't secure, you could have erratic ground problems. In that case, you should use 1/2-inch copper braid bonding straps

to electrically bond the trunk lid to the underside of the car body where hinges are attached. Solder if possible.

That sums it up for April. We want to hear from our readers. Send along a photo of your CB station, or let's see your QSL card, or QSL's you'd like share with other readers (good reproductions from an office copier are OK). Let's have questions, suggestions, opinions, and comments on CB radio.

Attention Shortwave Listeners

Introducing Wide Band Audio - DSP Noise Reduction

JPS Communications introduces the NTR-1, a wideband (7kHz) DSP noise and tone remover that can be used for AM broadcasts as well as SSB and other narrow band modes. Two front panel push buttons allow you to select the spectral NOTCH and/or NOISE REDUCER independently, while a third button lets you select WIDE or NARROW bandwidth. The spectral NOTCH removes ALL tones or whistles in 3 to 5 milliseconds. The NOISE REMOVER reduces or removes most noise types instantly.

Simple installation: Unit goes between your receiver speaker output and your external speaker.

Power required: 11 to 16 VDC @ 500 ma.

Also available:

NIR-10 Noise Reduction Unit	\$349.95
NRF-7 General Purpose Noise Remover	\$249.95
NF-60 Notch Filter	\$149.95
115 VAC to 12 VDC Adaptor	\$ 16.00

"First and Finest in Noise Reduction"



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HOW I GOT STARTED

Popular Communications invites readers to submit, in approximately 150 words (more or less), how they got started in the communications hobby. They should preferably be typewritten, or otherwise easily readable. If possible, a photo of the submitter should be included.

Each month we will select one entry and run it here. You need submit your entry only once, we'll keep it on file. All submissions become the property of *Popular Communications*, and none can be acknowledged or returned. Entries will be selected for use taking into consideration if the story they relate is especially interesting, unusual, or even humorous. We reserve the right to edit all material for length and grammar, and to improve style.

The person whose entry is selected will receive a one-year gift subscription (or one-year subscription extension) to *Popular Communications*.

Address all entries to: How I Got Started, *Popular Communications*, 76 North Broadway, Hicksville, NY 11801.

Our April Winner

This month's winner signed his entry to our column as "Always

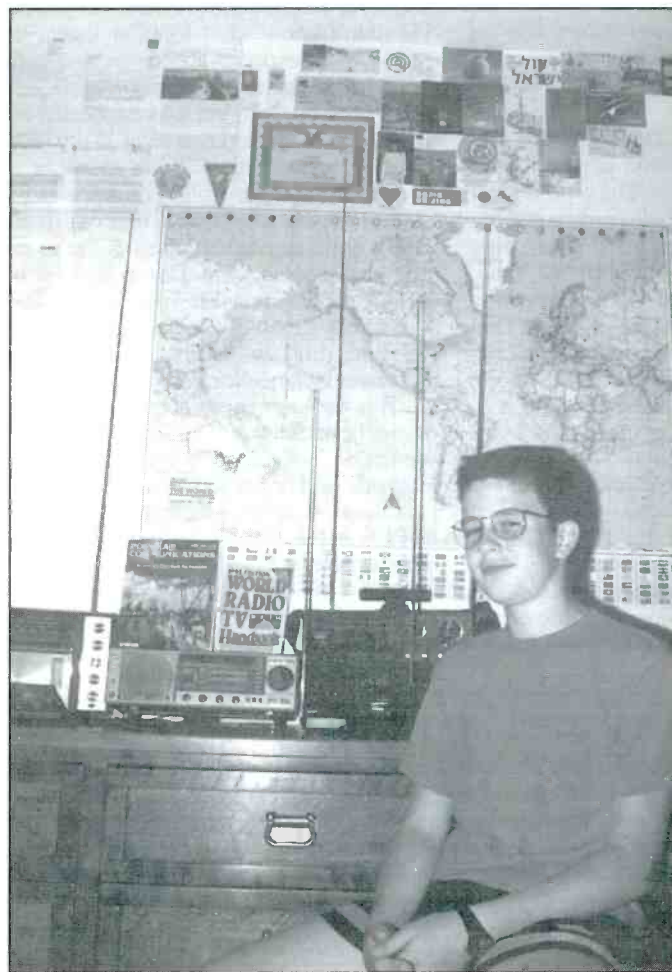
Listening, Chris Malott 'Genesis' Registered Monitor, KOH8GH," of Cincinnati, Ohio. The 14 year old hobbyist tells us this story:

"It all began in 1985. I was six years old, and my grandmother gave me an old Philco shortwave receiver. I became hooked to both the receiver and my new-found hobby the minute I heard a foreign word!

"Later that year, I received a GE CB transceiver (which I still use), along with my three other CB radios. I began purchasing more and more equipment every time I would get enough money!

"Being very interested and involved in VHF/UHF scanning, shortwave, and CB, everyone on the Cincinnati airwaves knows me as Genesis. I still use the Philco receiver, although it is analog. The equipment I mostly use are my R-2000, DAAK DMR-3000, and Uniden Bearcat BC 855XLT.

"I just found out about QSL's, and have around 20 of them already. I subscribe to *Popular Communications* and am hooked on that as well because it is so interesting. I guess I was born to be an explorer in radio communications."



Chris "Genesis" Malott, 14 poses with part of his shack, a map of contacts and various QSL's.



No standing unless you're sidebanding! A few more pieces of equipment complete Chris' radio communications collection.

BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Money for Music?: A FAX from "Punky" Farmer, of Wyoming, advises that he was shown a letter that was a new one on him. It had been sent to a local business, and demanded a fee be paid for a license that allows the business to continue to play a local radio station during business hours.

Punky asked others if they had ever heard of this. Someone told him that they had heard a story about performers and songwriters complaining that playing a radio station in a business establishment is a violation of the music copyright. The man who received the letter spoke to an attorney, but was told that the attorney couldn't help him.

Punky asked if we had heard of this restriction. We haven't heard of it as described by Punky, as business (stores, offices, food service establishments, and factories) have long played broadcast stations for the entertainment of their employees and customers. Nobody seems to have complained, so far as I am aware.

Problems definitely arise when the music comes from a private non-broadcast program service, such as *Muzak*, and those using the service do it without permission of the supplier. Those music services are copyrighted, and are supplied only for a fee. Because the programming is usually sent out over FM broadcast station sub-carriers, and can be received using SCA adapters, some people believe it is freely available for playing in business establishments. Or, maybe they realize that a fee should be paid, but feel they can get away with it.

The private music supply services have field investigators continually checking various establishments to seek out business that are using their programming without permission. The services have a right to be paid, and do vigorously press those rights through all means at their disposal. This sounds like a more reasonable explanation for the letter Punky was shown.

Broadcaster's Hall of Fame: April Sutton was inducted into the Broadcaster's Hall of Fame, making her the youngest person inductee in the history of the Academy. April is Black Entertainment Television's (BET) Hollywood entertainment correspondent, and appears weekly on the cable network's "Street Scene" program. She got her Bachelor's Degree in Speech, then went on to receive a Masters Degree in Television. Our congrats to April on this most fine honor!

Maine Changes: FM'er WDME/103.1, in Dover-Foxcroft, was sold. The new owners are brothers Rick and Jim Ganley. Rick, who is 22 years old, was a DJ at WHEB in Portsmouth, New Hampshire. Jim Ganley, 27, has a managerial-level background



April Sutton, who recently became inducted into the Broadcasters Hall of Fame. Nice going!

gained in the Credit Dept., at the May Company, which owns several major department store chains. The brothers said that owning their own radio station is something they have wanted to do for ten years.

In Bangor, station WSHZ/92.9 was purchased by Dudman Communications. The station will be operated from Dudman's facilities in Ellsworth, which are home to WDEA/1370, and WWMJ/95.7. The three stations are all under one roof, and located in building that looks like a beautiful old home.

This information was sent in by one of our most diligent reporters, Don Hallenbeck, Registered Monitor KME1CW, of Pittsfield, Maine. Thanks, Don.

The Voice of Experience: Vin Guiliano, of New Jersey, is just breaking into broadcasting. He asks that I relate any memo-

rable incidents from my first job. You're on!

It was at a small station serving a mid-west metro area. After doing a number of menial jobs around the station, I was allowed to work in the control room. Eventually they let me do some announcing. Then, later they also let me to fill in as substitute deejay on weekends, at night, or when one of the regulars couldn't come in.

After I got to feel comfortable as a substitute jock, I decided to add some pep to a few of the commercials. Most sponsors didn't seem to mind. One sponsor was a store selling leather skirts, vests, and jackets. Their stuffy ad copy read "ladies and men's cycle and bomber jackets." I told listeners they sold "ladies and men's psycho embalmer jackets." The sponsor was furious. He immediately called my boss, cancelled his commercials, and was screaming for my head on a silver platter.

The following afternoon he called the station to reinstate his commercials and apologize. That's because five people had shown up to buy psycho embalmer jackets. He didn't know what to offer them, but quickly got someone to design and paint "psycho embalmer" designs on cycle jackets. I kept my job, but was cautioned not to improvise unless I first cleared my more unusual brainstorms with the sponsors.

Socially Responsible: Los Angeles FM station KACE, which plays mainly rap and R&B, announced that it was going to discontinue playing what it described as "socially irresponsible music." The black-owned station said that this included music that "glorifies drug use, is sexually explicit, encourages violence, or denigrates women."

This decision came about because station officials felt that some music contained messages that did not serve their community well, and portrayed it in a negative way.

Other stations, including influential WBLS, in New York City, have also adopted this policy.

Many thanks to E. Wallezen, of La-Grange Park, Illinois, for dropping us a note 'bout this.

K-BEAR
Hot New Country 100.7 FM

100.7 FM
BEND AND PEEL

K-BEAR/100.7 isn't in the west, it's really WQKB-FM, Pittsburgh/New Kensington, Penna. Transmitter is on the WPGH-TV tower, with studios in Millville, Penna. (Thanks to Dave Butko, Natrona Hts., Penna.)

Applied to Construct New FM Stations

AK	McCarthy	89.7 MHz	102 watts
AL	Ozark	91.7 MHz	6 kW
GA	Pelham	92.3 MHz	6 kW
HI	Waimea	99.1 MHz	39 kW
IN	Chesterton	89.5 MHz	7 kW
ND	Carrington	98.3 MHz	100 kW
NY	DeWitt	90.3 MHz	600 watts
PA	State College	90.7 MHz	100 watts
TX	Amarillo	90.7 MHz	1 kW
VT	Bolton	91.7 MHz	150 watts

WHRT	Hartselle, AL	860 kHz	Seeks move to 890 kHz.
WKAQ	San Juan, PR	580 kHz	Seeks 10 kW.
WMMM	Westport, CT	1260 kHz	Seeks night drop to 200 watts.
WNVR	Vernon Hills, IL	1030 kHz	Seeks 4 kW.
WSKQ	Newark, NJ	620 kHz	Seeks night drop to 4.2 kW.
WWGM	Nashville, TN	1560 kHz	Seeks move to Gallatin.

Granted Permits to Construct New FM Stations

IN	Berne	91.1 MHz	25 kW
KS	Liberal	102.7 MHz	100 kW
LA	Bastrop	103.3 MHz	3 kW
MI	Kalamazoo	88.3 MHz	10 kW
MS	Bruce	94.5 MHz	4.5 kW
NM	Los Alamos	107.5 MHz	100 kW
NY	Jewett	97.9 MHz	1.45 kW
PA	Ephrata	90.7 MHz	190 watts
PR	Caguas	96.9 MHz	82 watts (WNRT booster)
WA	Winlock	95. MHz	380 watts

Deleted

KZPX Nisswa, WI 93.3 MHz 96 kW

Applied to Modify Shortwave Facilities

KCBI Dallas, TX Seeks to add second 100 kW transmitter.

Applied to Modify AM Facilities

KAGH	Crosett, AR	800 kHz	Seeks drop to 240 watts.
KCKC	San Bernardino, CA	1350 kHz	Seeks 5 kW/600 watts.
KIFO	Pearl City, HI	1380 kHz	Seeks drop to 6.2 kW.
KLHT	Honolulu, HI	1040 kHz	Seeks 7.5 kW.
KMVP	Commerce City, CO	670 kHz	Seeks 50/1.4 kW.
KOTD	Plattsmouth, NE	1000 kHz	Seeks move to 1020 kHz, 1 kW days.
WGOV	Valdosta, GA	950 kHz	Seeks night drop to 63 watts.

Changed FM Facilities

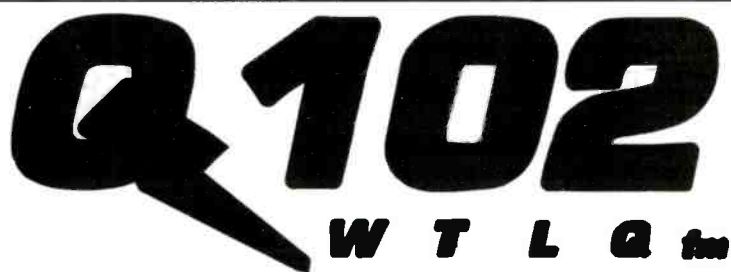
WPGR	Philadelphia, PA	1540 kHz	Increased days to 500 watts, moved to Bala Cynwud.
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Applied to Modify FM Facilities

KDAY	Independence, CA	106.3 MHz	Seeks move to 92.5 MHz, 850 watts.
KILO	Colorado Springs, CO	93.9 MHz	Seeks move to 94.3 MHz.
KQNS-FM	Lindsborg, KS	95.9 MHz	Seeks move to 95.5 MHz.
KYSL	Frisco, CO	92.1 MHz	Seeks move to 93.9 MHz, 560 watts.
WHEI	Tiffin, OH	93.3 MHz	Seeks to change frequency.
WQUL	Griffin, GA	97.7 MHz	Seeks move to 97.5 MHz with 8.5 kW from Fayetteville.
WQXE	Elizabethtown, KY	98.5 MHz	Seeks move to 98.3 MHz, 13.29 kW.

Changed FM Facilities

KULE-Fm	Ephrata, WA	95.9 MHz	Moved to 92.3 MHz, 20 kW.
KVCX	Gregory, SD	101.5 MHz	Became non-commercial.
KWEI-FM	Fruitland, ID	99.3 MHz	Moved to 99.5 MHz, 8.3 kW.
KYTT-FM	Coos Bay, OR	98.7 MHz	Changed frequency.
WCFE-FM	Plattsburgh, NY	91.1 MHz	Moved to 89.7 MHz, 190 watts.



This WTLQ/102.3 sticker is from the time when the station was called Q102. Now it's known as Kiss102.3! (This sticker sent in by Tony Kobeski, Jessup, Penna.)

Behind The Change: As you look through our monthly call letter change information each month, it's interesting to think about the fact that these are more than raw stats. Each change resulted from a station sale, or major format overhaul. In addition, the selection of the new call letters to be used no doubt required considerable brainstorming. Most of the time, we have no information on the revised format.

This month, we point out that in South

Bend, Ind., station WAMJ changed into WIWO. A note from WIWO's Michael Shannon tells us that he enjoys *POP-COMM*, and advises that the new format is talk radio from 5:30 a.m. to 5 p.m., then all sports after 5 p.m.

AM Stereo Reborn: For a wild couple of hours last November, listeners to WGR/550, Buffalo, New York, was transformed into *Radio Karaoke*. Zany DJ's Tom Regan and Karen Pingan came up with the

idea of having WGR fire up its old AM stereo exciter so that their listeners could call in and perform songs that would be heard in stereo.

The stereo exciter was in working shape, but hadn't been used in years. Listeners were told to dig out their old AM stereo receivers to experience the *full effect of Radio Karaoke*. Even people with who didn't have AM stereo sets were told the stereo transmission would make WGR sound better.

Call-in performers offered song renditions ranging from remarkable to revolting, and the afternoon was a total blast. Although the whole thing was done just for fun, AM stereo was reborn and lived, even if only for a dazzling four hour burst.

We appreciate this blurb from Dan Kazmierczak, Buffalo, New York. A clever audience participation idea!

New FM Atlas Edition: The new 15th Edition of Bruce Elving's *FM Atlas* is out. This is a 208-page book listing more than 8,000 commercial and non-commercial FM broadcasters in the USA and Canada. Listings include more than 2,000 FM trans-

Pending AM Call Letter Changes

Now	Seeks	
KAAM	KTCK	Dallas, TX
WVVBX	WLMC	Georgetown, SC

Change AM Call Letters

New	Was	
KBOQ	KOQI	Soquel, CA
KIID	KIXD	San Luis Obispo, CA
KKIS	KWUN	Concord, CA
KKYD	KDEN	Denver, CO
KNXN	KMFI	Sierra Vista, AZ
KRLL	KZKL	Albuquerque, NM
KTNP	KTLK	Lubbock, TX
WASN	WZKC	Campbell, OH
WBJX	WKKV	Racine, WI
WEYZ	WFLP	North East, PA
WFLP	WEYZ	Erie, PA
WGSO	WYAT	New Orleans, LA
WHTK	WPXY	Rochester, NY
WHYS	WBDY	Bluefield, VA
WIOV	WAGO	Reading, PA
WIWO	WAMJ	South Bend, IN
WJCE	WOGY	Memphis, TN
WKDB	WFEL	Towson, MD
WMRO	WWGM	Nashville, TN
WOLB	WERQ	Baltimore, MD
WPHY	WBEB	Philadelphia, PA
WRFB	WWKO	Cocoa, FL
WVLR	WXYU	Lynchburg, VA
WZQR	WAQJ	Black Mountain, NC

Pending FM Call Letter Changes

Now	Seeks	
KAND-FM	KICI	Corsicana, TX
KOJJ	KRLG	Porterville, CA
WADD	WLBW	Fenwick Island, DE
WAGW	WAEJ	Waynesboro, GA
WNDD	WUSK	Jefferson City, TN
WOKC-FM	WFRI	Okeechobee, FL
WYFZ	WAEG	Evans, GA

Changed FM Call Letters

New	Was	
KATH	KBOZ-FM	Bozeman, MT
KBOQ-FM	KBOQ	Marina, CA
KBOT	KOYH	Pelican Rapids, MN
KBOZ-FM	KATH	Livingston, MT

KBUC	KBOP-FM	Pleasanton, TX
KEEP	KHLC	Bandera, TX
KFIZ-FM	WFON	Fond du Lac, WI
KHTT	KAYI	Muskogee, OK
KJUN-FM	KAEK	Eatonville, WA
KKMV	WNAQ	Rupert, ID
KKRV	KSSY	Wenatchee, WA
KLXK	KVNW	Duluth, MN
KMNA	KBOB	West Covina, CA
KRRW	KLRX	Dallas, TX
KSSJ	KFIA-FM	Shingle Springs, CA
KTMN	KRBL	Los Alamos, NM
KTWC	KCWB	Glendale, AZ
KXPC	KIQY	Lebanon, OR
KXTQ-FM	KKIK	Lubbock, TX
KZWC	KKIS-FM	Walnut Creek, CA
WAMM-FM	WRDJ-FM	Bridgewater, VA
WARW	WLTT	Bethesda, MD
WBZN	WUMC	Old Town, ME
WECR	WAOH	Beech Mountain, NC
WFAZ	WTHP	Thomasville, NC
WGTB	WIFF-FM	Auburn, IN
WHXT	WKQR	Reading, PA
WIOV-FM	WIOV	Ephrata, PA
WLDJ	WVLR	Appomattox, VA
WODZ-FM	WFRG-FM	Rome, NY
WPER	WAEP	Union City, IN
WQNF	WVSK	Valley Station, KY
WQQL	WVEM	Springfield, IL
WRIL	WZKO	Pineville, KY
WSLM-FM	WDHM	Salem, IN
WUBB	WITT	Tuscola, IL
WXFG	WGUS-FM	Augusta, GA

New FM Call Letters Issued

KAEN	Little Eagle, SD
KAEP	Ft. Belknap Agency, MT
KAEU	Vail, CO
KAEW	Lake Jackson, TX
KANH	Anchorage, AK
KBYG-FM	Coahoma, TX
KEFE	Los Alamos, NM
KKCV	Cedar Falls, IA
KLMA	Hobbs, NM
KYZZ	San Angelo, TX
WAAE	Hickory, NC
WAEF	Bedford, NH
WAES	Teutopolis, IL
WAFD	Webster Springs, WV
WJZA	Columbus, OH
WMTU-FM	Houghton, MI
WXLR	Harold, KY

lators and the identities of the stations they relay or boost. Listings data for broadcasters includes call signs, locations, frequencies, stereo information, antenna height and directivity information, coverage, program format, networks, SCA (subcarrier) programming frequencies, and other data. Listings are arranged by location, and by frequency. There are also maps showing the locations of broadcast stations.

The 15th Edition of *FM Atlas* is \$14.95, plus \$4 s/h (\$5 Canada) from CRB Research, P.O. Box 56, Commack, NY 11725. NYS residents add \$1.62 tax. VISA and MC accepted. Call: 1-800-656-0056; Canada/HI/AK orders: (516) 543-9169.

New FCC Form: FCC Form 301-A, Application for Authority to Operate a Broadcast Station By Remote Control or to Make Changes in a Remote Control Au-

thorization, has been revised. As of now, only the revised new type 301-A version will be accepted, but it is no longer necessary to file a separate FCC 155 Fee Processing Form. The new form is available from the FCC's Form Distribution Center, 2803 52nd Center, Hyattsville, MD 20781. Or, you can call and leave your request on the FCC's answering machine: (202) 632-FORM.

Experimentals: The proposed EBS experimental FM broadcast station in Baltimore on 90.5 MHz was scrubbed. A new experimental TV station is proposed to serve Honolulu on TV Channel 44 with 300 kW. To be operated by Ho'Ona'auao Community Television, Inc., with the transmitter on top of Palikea Ridge.

Silent AM Stations: The FCC asked the licensee of WDIX, Yadkinville, N.C., to

show cause why its license should not be revoked. The station had requested authorization to remain silent, and that was granted. The station went quiet on June 13, 1991, with permission to remain in that status through April 29, 1993. Although the FCC claims that no extensions were requested, the agency states that WDIX had not returned to the air by June 13, 1993. The licensee was given the opportunity to appear in front of the FCC and explain why the station was not on the air in violation of FCC regulations, and to convince the agency that it is willing, capable, and qualified to continue as a licensee.

Station WNNQ, Ashburn, Georgia, has a similar situation. WNNQ went silent on June 21, 1991, with permission to be off until April 29, 1993. On July 23, 1993, the FCC wrote WNNQ the send of two let-



KTNN/650, is in Holbrook, Ariz., and uses this slick looking circular sticker. (Sent in by Steve Sellers, Station KIOZ, Rock 102.1, San Diego, Calif.)

15th Edition

FM ATLAS

By Bruce F. Elving

A guide for travelers, hi-fi listeners, media people and hobbyists

The fine new 15th Edition of FM Atlas is 208 pages in size.

ters advising that the agency must be provided with a complete status report. No response was forthcoming. The licensee was asked to convince the FCC to allow the WNNQ license to remain in effect.

WTMS, of Presque Isle, Maine, has been silent since March 29, 1991. The licensee had told the FCC that he was having financial difficulties and was attempting to sell the station, requesting to remain off the air until June 30, 1993. The FCC granted authorization until that date. On July 26th, the FCC wrote to the licensee to point out that WTMS had not returned to the air, and

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 * "Our best seller." -EEB in their recent ads and catalogs
 * "Now in use in 45 countries." -Gilfer Shortwave in 1983

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no request for an extension had been received. No response was received. The licensee will now be required to prove suitability to retain the WTMS license.

Station WTRX, Flint, Mich., has been silent since August 20, 1990, with permission to remain silent until April 29, 1993. In January of 1993, WTRX requested additional authority to remain silent, but the FCC replied that the agency wanted future requests for authority to be accompanied by a detailed summary of steps being taken to return the station to the air. On April 13, 1993, WTRX again wrote for an extension, stating that several investors were being spoken to about helping to return the station to the air.

The FCC wanted more specific information, including names of prospective buyers or investors, a marketing plan, and proof of a listing with a broker, plus other positive efforts made to sell the station. The licensee responded that that at least 15 parties had discussed the purchase within the past year, with no offers, and that the hope was to merge WTRX with another local station. There was also a commitment from a bank to loan the station \$300,000.

The FCC claimed that the loan was in-

tended to pay off the existing mortgage on the building housing the station, and that the funds wouldn't directly benefit the station's activity status. The FCC also said that it had no pending application for WTRX to merge with another station, and that the station had not demonstrated that causes beyond its control prevented it from operating. The agency said it questioned the licensee's capability and intent to resume broadcasting, and wanted a hearing before the license could be renewed.

The FCC further stated that the hearing would determine if the WTRX licensee had been guilty of violating FCC Section 73.1740 and/or 73.1750, which could result in the eventual issuance of an NAL "in an amount not exceeding \$250,000."

The FCC pointed out that Section 309(e) of the Communications Act of 1934 calls for the Burden of Proceeding with the introduction of evidence and the Burden of Proof with respect to the issues "shall be upon the licensee."

Time for a station break, so we will sign for now and be looking for you next month. As always, we invite your bumper stickers, station photos and information, format information, and newspaper clippings. ■

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

Captain Eddy of The Radio Airplane tells listeners the station really does have its transmitter mounted on the back of an airplane—all those involved with the stations are pilots and aircraft enthusiasts. Eddy once announced that the antenna got caught in the tail wheel and vibration was causing transmitter tubes to loosen. The station which began in November, 1992, has made over 30 broadcasts and is believed to have issued more than 130 QSLs. Programs are pre-taped and aired over an old Tempo One transceiver which puts out about 100 watts. They announce on the air that reception reports go to P.O. Box 452, Wellsville, NY 14895

Daniel Voltz of Illinois checks in with a log and QSL of Radio Airplane, which he heard on 7415USB at 0238. Mike Leclerc in Connecticut had them on 7466USB from 0239 to 0324. Scott Gentry of Illinois had them on 7466 at 0308 to 0346 and giving an 800 number for "live" reports.

HeMan Radio was heard by Scott Gentry of Illinois on 7415USB at 2234 with sound effects and a talk about pirates. Use PO Box 109, Blue Ridge Summit, PA 17214 for your reports. Mike Phillips in New Jersey had this one at 2300 and notes that it was only the second pirate station he's logged.

Radio Strangelove was heard on 7465 USB by Gentry at 0042 with what Mike calls "military type audio clips" and several test announcements and IDs. Leclerc had this at 0035 airing parts of the audio from the movie, *Dr. Strangelove*.

Leclerc reports two loggings of WEED Radio, on 7465.9USB at 0315 with rock and Clinton and Bush audio bits and 7465 USB at 2335 which also included bits from the *Wizard of Oz* and comments about the war on drugs. Peter Stawicki in Oklahoma had the station at 2359 "broadcasting from our underground studios..." The address is given as P.O. Box 605, Huntsville, AL 35804.

Gentry had Radio Beaver on 7417 at 1440 with instrumental music, ID and talk by someone with a lower voice than the usual. They closed broadcasting with the Leave It To Beaver theme.

ACID was another log for Leclerc. Heard on 15053 at 2009 with weird voice and sound effects and a synthesized voice asking for reports to the A*C*E bulletin, not to the station.

WREC was heard on 7463 at 2340 by Gentry with a Cheech and Chong skit. Leclerc had them on 6295 at 1925 with an old Wolfman Jack show. Bill Matthieu in Massachusetts had them on frequency 7464 at 2350.

Leclerc had Solid Rock Radio on 7465

at 0014 until 0025 when Omega Radio KO'd it. Omega featured Dick Tator with hard Christian rock and commentary. They played the "Spirit of the Sky" interval signal and gave both Wellsville and Blue Ridge Summit addresses.

Stawicki had Jolly Roger Radio on 7465 at 1847 with a parody of "Dagnet," various songs and "Blackbeard." They mentioned the Wellsville drop and asked for \$1 to be included in reports.

Leclerc had RBCN (Radio Bob's Communication Network) on 15050 at 2007 with various comedy bits. Reports go to P.O. Box 17534, Atlanta, GA 30316.

RKNA (Rock of North America) was another Leclerc logging, on 7410 at 2321 but reception was poor and Mike was only able to dig out the ID and mention of the Wellsville address.

WLIS continues to be reported nearly every month, this time by Leclerc who has them on 7415 at 1850 with Jack Boggan offering interval signals of various short-wave broadcast stations and a salute to listener Robert Ross (who sometimes checks into this column). QRM from All India Radio on 7412. Blue Ridge Summit address.

ANARCY 1 was noted by Leclerc on 7415.1USB at 2253 with what apparently was several stations going at once. Mike says he noted Radio USA, Radio Garbanzo, International Pirate Radio Net and others.

Bob Dylan Radio was on 7466USB at 0126. "All Bob Dylan all the time" and announced as being their second broadcast. Mike Leclerc says the transmitter tended to drift a bit and that no address was announced.

CRSM on 7413 at 2311 was another Leclerc log. "Radio Scottish Montreal" with Rob Roy and a "Totally Kiwi Music Show" featuring music from and comments about New Zealand. Blue Ridge address.



A press release received from the station about this broadcast says there was more response from Europe than North America. For this reason, and the fact that the Kiwi show will now air over KIWI Radio in New Zealand, CRSM will concentrate its efforts on Europe and New Zealand. Broadcasts for North America (CRSM, Radio Scottish Montreal) will be less frequent and each one will be shorter than they formerly were. A monthly ne CRSM-Europe program will be aired for listeners in the British Isles and Europe, preceded by the CRSM Worldwide program. CRSM New Zealand will air in that country for an hour before the Worldwide segment goes on there.

That runs me down for this time. Keep feeding me all that good information—logs, QSL copies, station info and the rest!

Shortwave Radio Pirates!

QSL# _____

The Radio Airplane!

TO: _____

TIME: _____ **DATE:** _____ **FREQ:** _____

Thanks for listening! 13⁵ *Capt. Eddy*



Here's Radio Airplane's QSL, complete with Capt. Eddy's "FCC fighter."

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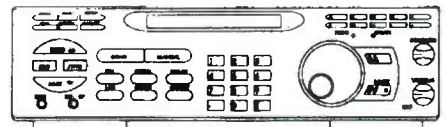
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- 216,000 - 224,995 MHz. (NFM), 225,000 - 399,995 MHz. (AM)
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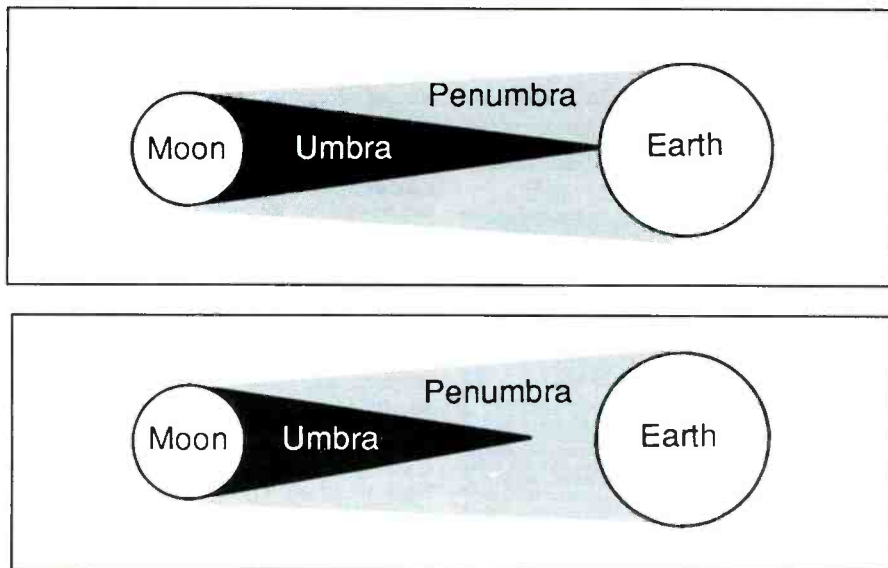
INTERESTING THOUGHTS AND IDEAS FOR ENJOYING THE HOBBY

Solar eclipses are more than remarkable astronomical phenomena; they're pretty interesting from a radio viewpoint too. You're probably familiar with the dramatic changes that take place in radio propagation when day changes to night and vice-versa. These changes are especially prominent on frequencies below 10 MHz; on the AM broadcast band (540 to 1600 kHz) stations from hundreds and even thousands of miles away can be when a path of darkness exists between both the station and your listening site.

A solar eclipse is an area of darkness and/or reduced sunlight that travels across the Earth's surface in a relatively narrow path during daytime. As the area of maximum darkness approaches a location, propagation conditions become more like night than day. Distant stations along the line of the eclipse become more audible, and when the maximum darkness is over your receiving location the propagation overhead is much like it is at night. The process is reversed as the area of maximum darkness moves away from your listening site. However, only those stations along the path of darkness received enhanced propagation, thus making reception potential during a solar eclipse unlike any other time. In short, a solar eclipse is a true once in a lifetime propagation event!

Such an event is coming up in a few months, and a large chunk of *POP-COMM's* readership will be able to take advantage of it. On May 10, 1994, a solar eclipse will be visible over approximately three-quarters of the United States, with only the northwestern corner of the country missing out. In Canada, the event will mainly be visible from Ontario eastward. The area of maximum darkness will enter the United States at El Paso, Texas and sweep to the northeast in an arc that will include such urban areas as Oklahoma City, St. Louis, Indianapolis, Detroit, Cleveland, and Buffalo as well as the entire states of Vermont and New Hampshire. In Canada, maximum darkness will be visible only in the "neck" of Ontario adjacent to Michigan where cities such as Windsor and London are located.

You might be wondering why I've used the term "maximum darkness" instead of "totality" when describing this eclipse. That's because this eclipse will not be a total solar eclipse. Instead it will be an annular eclipse of the sun. It won't be as spectacular visually or propagationally as a total solar eclipse, but it will still offer some intriguing reception possibilities. If you in or



near the area of maximum darkness, you should get ready now to take advantage of this event.

A Short Course in Eclipses

A solar eclipse happens when the moon comes between the Earth and the Sun and the Moon's shadow travels across the surface of the Earth. (This doesn't happen as often as you might expect; because of the inclination of the Moon's orbit around the Earth, the Moon's shadow normally falls only into space.) The Moon's shadow consists of two parts: a dark umbra and a lighter penumbra. The umbra gets smaller the further away from the Moon, as shown in Figure 1. This happens because more sunlight is refracted into the Moon's shadow as the distance from the Moon increases. When the umbra reaches the surface of the Earth, a total eclipse of the Sun is visible. The width of the umbra on the Earth's surface is narrow, often less than a hundred miles wide (although the umbra may travel over a path several thousands of miles long). Outside the path of the umbra a partial solar eclipse will be visible. The closer one is to the umbra, the greater the percentage of the Sun that will be covered. A partial eclipse can be seen over an area thousands of miles wide.

Now take a look at Figure 2. This is the same situation as Figure 1, except that the Moon is further away from the Earth and the umbra doesn't reach the surface of the Earth; the umbra seems to "hang" up in space. So what do people see when the umbra passes over but doesn't reach the

surface? They see the a darkened solar disc with a bright ring of sunlight surrounding it. This is called an annular eclipse of the sun. Viewers outside the path of maximum darkness—or annularity—see a normal partial eclipse of the sun.

Since the Sun is partially blocked by the Moon, less solar radiation reaches the area on which the Moon's shadow falls. Contrary to what you may have read elsewhere, the sky never gets as dark as night even during a total solar eclipse; the sky overhead is dark but the entire horizon (all 360° of it) looks like twilight or dawn. The effect during a total annular eclipse is even less impressive, looking more like an overcast day with high thin clouds. However, the amount of solar radiation reaching the Earth is reduced enough to alter normal radio propagation.

How Eclipses Alter Propagation

The effects of solar eclipses on radio propagation are remarkably similar to what happens to propagation at sunrise and sunset. These effects are more pronounced as more of the Sun is covered by the Moon. During a total eclipse, propagation is very similar to that found at twilight or dawn. Since the Sun won't be entirely covered on May 10, the effects won't be nearly as pronounced. However, they should be interesting enough.

The biggest change that happens to the ionosphere at sunrise and sunset involves the D layer of the ionosphere. The D layer extends from about 30 miles to 60 miles above the Earth's surface, and its impact

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Turn mysterious signals into exciting text messages with this new MFJ MultiReader™



MFJ-462B **Plug** this self-contained MFJ MultiReader™ into your shortwave receiver's earphone jack.

\$149.95 Then watch mysterious chirps, whistles and buzzing sounds of RTTY, ASCII, CW and AMTOR turn into exciting text messages as they scroll across your easy-to-read LCD display.

You'll read interesting commerial, military, diplomatic, weather, aeronautical, maritime and amateur traffic... traffic your friends can't read -- unless they have a decoder.

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"World Radio TV Handbook" says MFJ-1024 is a "first rate easy-to-operate active antenna... quiet... excellent dynamic range... good gain... low noise... broad frequency coverage."

Mount it outdoors away from electrical noise for maximum signal, minimum noise. Covers 50 KHz to 30 MHz.

Receives strong, clear signals from all over the world. 20dB attenuator, gain control, ON LED. Switch two receivers and aux. or active antenna. 6x3x5 in. remote has 54 inch whip, 50 ft. coax. 3x2x4 in. 12 VDC or 110 VAC with

\$129.95 MFJ-1024 **Indoor Active Antenna**

MFJ-1020A **\$79.95**

Rival indoor long wires with this *tuned* indoor active antenna. "World Radio TV Handbook" says MFJ-1020 is a "fine value... fair price... best offering to date... performs very well indeed."

Tuned circuitry minimizes intermod, improves selectivity, reduces noise outside tuned band. Use as preselector with external antenna. Covers 0.3-30 MHz. Has Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

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MFJ-1022 **\$39.95**

Plug this new compact MFJ all band active antenna into your general coverage receiver and you'll hear strong clear signals from all over the world from 300 KHz to 200 MHz -- including low, medium, shortwave and VHF bands.

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Copy RTTY weather stations from Antarctica, Mali, Congo and many others. Listen to military RTTY passing traffic from Panama, Cyprus, Peru, Capetown, London and others. Listen to hams, diplomatic, research, commercial and maritime RTTY.

Listen to maritime users, diplomats and amateurs send and receive error free messages using various forms of TOR (Telex-Over-Radio).

Monitor Morse code communications from hams, military, commercial, aeronautical, diplomatic and maritime coastal stations from all over the world -- Australia, Russia, Hong Kong, Japan, Egypt, Norway, Israel, Africa, Portugal.

Printer Monitors 24 Hours a Day

MFJ's exclusive TelePrinterPort™ lets you monitor any station 24 hours a day by printing their transmissions your Epson compatible printer.

Printer cable, MFJ-5412, \$9.95.

MFJ MessageSaver™

You can save several pages of text in 8K of memory for re-reading or later review using MFJ's exclusive MessageSaver™.

High Performance Modem

MFJ's high performance phaselock loop modem consistently gives you solid copy -- even

with weak signals buried in noise.

Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu.

It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

It's easy to read -- the 2 line 16 character LCD display with contrast adjustment is mounted on a sloped front panel for easy reading.

Copies most standard shifts and speeds. Has MFJ AutoTrak™ Morse code speed tracking.

Use 12 VDC or use 110 VAC with MFJ-1312B AC adapter, \$12.95. 5 1/4x2 1/2x5 1/4 inches.

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You get MFJ's famous one year *No Matter What™ unconditional* guarantee. That means we will repair or replace your MFJ MultiReader™ (at our option) *no matter what* for a full year.

Try it for 30 Days

Order an MFJ-462 MultiReader™ from MFJ and try it in your own setup -- compare it to any other product on the market regardless of price.

Then if you're not completely satisfied, simply return it within 30 days for a prompt and courteous refund (less shipping).

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Receive Color News Photos, MFJ 12/24 Hour LCD Clocks, Weather Maps, RTTY, ASCII, Morse Code

MFJ-1214PC **\$149.95**

Use your computer and radio to receive and display brilliant full color FAX news photos and incredible WeFAX weather maps with all 16 gray levels. Also RTTY, ASCII and Morse code.

Animate weather maps. Display 10 global pictures simultaneously. Zoom any part of picture or map. Frequency manager lists over 900 FAX stations. Automatic picture capture and save.

Includes interface, easy-to-use menu driven software, cables, power supply, comprehensive manual and Jump-Start™ guide. Requires 286 or better computer with VGA monitor.

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The Super Hi-Q MFJ-1782 Loop™ is a **\$219.95**

professional quality remotely tuned 10-30 MHz high-Q antenna. It's very quiet and has a very narrow bandwidth that reduces receiver overloading and out-of-band interference.

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MFJ-956 **\$39.95**

The MFJ-956 is a high-Q passive LC preselector that lets you boost your favorite stations while rejecting images, intermod and other phantom signals. Covers 1.5-30 MHz. Has preselector bypass and receiver grounded position. 2x3x4 in.

Mobile Scanner Ant.

Cellular MFJ-1824BB/BM look-a-like. Covers **\$19.95**

25-1300 MHz. High - est gain on 406-512 and 108-174 MHz, 19 in. Magnet mount. MFJ-1824BB has BNC/UHF plug; MFJ-1824BM has Motorola plug.

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MFJ Antenna Matcher

MFJ-959B **\$89.95**

Matches your antenna to your receiver so you get maximum signal and minimum loss.

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload.

Pushbuttons let you select 2 antennas and 2 receivers. Cover 1.6-30 MHz. 9x2x6 inches. Use 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

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MFJ-1045B **\$69.95**

High-gain, high-Q receiver preselector covers 1.8-54 MHz. Boost weak signals 10 times with low noise dual gate MOSFET. Reject out-of-band signals and images with high-Q tuned circuits. Pushbuttons let you select 2 antennas and 2 receivers. Dual coax and phono connectors. Use 9-18VDC or 110 VAC with MFJ-1312, \$12.95.

Dual Tunable Audio Filter

MFJ-752C **\$99.95**

Two separately tunable filters let you peak desired signals and notch out interference at the same time. You can peak, notch, low or high pass signals to eliminate heterodynes and interference. Plugs between radio and speaker or phones. 10x2x6 in.

Easy Up Antennas Book

How to build MFJ-38 and put up **\$16.95**

inexpensive, fully tested wire antennas using readily available parts that'll bring signals in like you've never heard before.

Covers receiving antennas from 100 KHz to almost 1000 KHz. Includes antennas for long, medium and shortwave, utility, marine and VHF/UHF services.

POP'COMM's World Band Tuning Tips

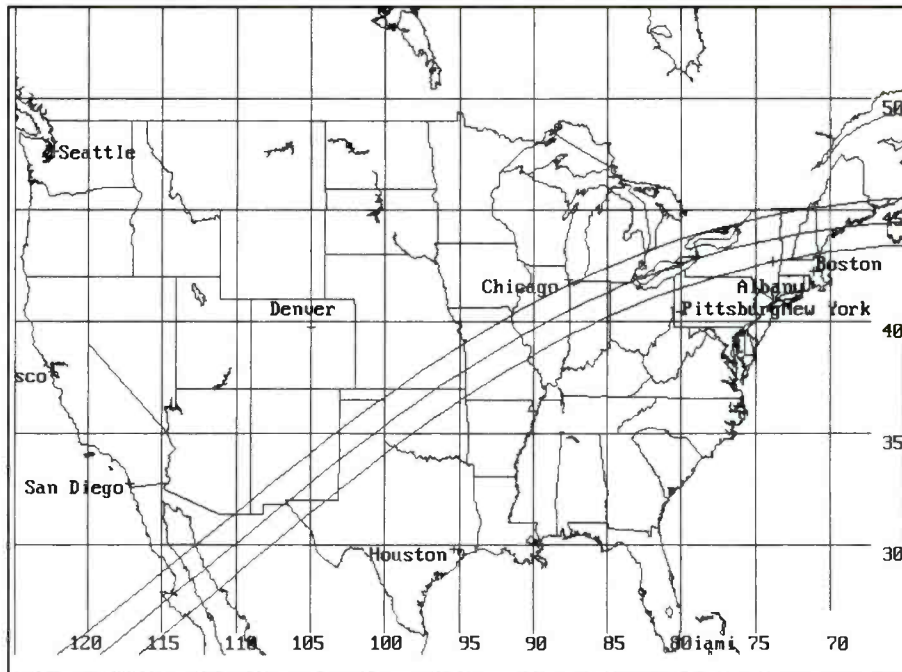
April—1994

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2390	LV de Atitlan, Guatemala	0100	local	6010	R. Havana Cuba	0400	
3200	R. 9 de Abril, Bolivia	0100	SS	6015	R. Austria Int'l, via Canada	0530	
3220	HCJB, Ecuador	0400	SS	6025	R. Japan	0530	
3230	R. Oranje, S. Africa	0230	Aft.	6025	R. Kossuth, Hungary	0630	Hungarian
3250	R. Luz y Vida, Honduras	0200		6050	HCJB, Ecuador	0700	PP
3255	BBC Lesotho Relay	0300		6055	R. Prague, Czech Rep.	0700	
3270	Namibia Bc Corp.	2345		6061	R. Universo, Bolivia	0930	PP
3290	R. Centro, Ecuador	1020	SS	6095	R. Nacional, Tacna, Peru	0400	SS
3300	R. Cultural, Guatemala	0200		6100	Deutsche Welle, Germany	0400	GG
3305	R. Western, Papua New Guinea	1100		6115	R. Union, Peru	0200	SS
3320	Radio 2000, S. Africa	0100		6117	La Voz del Llano, Colombia	0900	
3326	R. Nigeria	0500		6130	GBC, Ghana	0600	
3339	R. Altura, Peru	1030	SS	6135	Swiss Radio Int'l	0230	
3360	LV de Nahuala, Guatemala	1130	local	6150	Caracol Neiva, Colombia	0200	SS
3366	GBC, Ghana	0600		6165	R. Netherlands via Bonair	0400	
3375	R. Nacional, Brazil	0930	PP	6180	R. Nac. Amazonia, Brazil	2300	PP
3385	R. Ed. Rural, Brazil	0930	PP	6185	R. Educacion, Mexico	1000	
3810	HD2IOA, Ecuador	0900	time str	6205	R. Quisqueya, Dom. Rep.	0100	SS
3925	R. Tanpa, Japan	0900	JJ	6220	R. Bulgaria	0430	s/on
3975	BBC, England	0430	GG	6245	Vatican Radio	0640	
4299	R. Naylamp, Peru	1000	SS	6293	R. Slovakia Int'l	2000	GG/FF
4323v	R. Paz, Honduras	1100	SS	6576	R. Pyongyang, N. Korea	1130	
4705	R. Laser, Peru	1000	SS	6790	CPBS, China	1100	CC
4725	V of Myanmar, Burma	1200	Burmese	7105	R. Yerevan, Armenia	0345	
4753	RRI, Ujang Pandang, Indonesia	1100	II	7125	RTV Guinea	0700	FF
4754	Rdf Maranhao	0000	PP	7150	Capital Radio, S. Africa	0330	
4760	ELWA, Liberia	0555	s/on	7150	R. Vilnius, Lithuania	0000	
4765	RTVC, Congo	0355	s/on, FF	7185	R. Ukraine Int'l	0100	s/on
4770	R. Nigeria, Kaduna	0500		7215	R. Norway	0500	NN
4777	RTV Gabonaise, Gabon	0500	FF	7230	AWR, Italy	0930	
4780	R. Oriental, Ecuador	0100	SS	7240	R. Australia	1100	
4799	Onda Musical, Dominican Rep.	0200	SS	7245	R. Nacional, Angola	0545	PP
4800	R. Buenas Nuevas, Guatemala	0230	ss	7250	Vatican Radio	0600, //6245	
4810	R. 2000, S. Africa	0200		7255	V of Nigeria	0500	
4820	La Voz Evangelica, Honduras	0400		7265	Sudwestfunk, Germany	2200	GG
4830	R. Tachira, Venezuela	0200	SS	7275	ELBC, Liberia	0705	s/on
4836	R. Buenaventura, Colombia	0330	SS	7285	RT Malienne, Mali	0700	FF
4840	R. Valera, Venezuela	1000	SS	7295	RTV Malaysia	1030	
4865	La Voz del Cinaruco, Colombia	0100	SS	7335	R. Moscow	0300	
4870	ORTB, Benin	0500	FF	7345	R. Prague, Czech Rep.	0300	
4875	V of Jnlng, China	1200	CC	7445	V of Asia, Taiwan	1100	
4885	R. Clube do Para, Brazil	0100	PP	7455	R. Bulgaria	2300	
4895	R. IBP, Brazil	0600	PP	7475	RTT Tunisienne, Tunisia	0500	AA
4890	RFI Relay, Gabon	0355	s/on, FF	7670	R. Bulgaria	0330	Bulgarian
4895	LV del Rio Aruca, Colombia	0130	SS	9022	VOIRI, Iran	0030	EE
4900	R. La Hora, Peru	0957	s/on, SS	9165	R. Omdurman, Sudan	0255	sign on, AA
4910	Zambia Broadcasting Corp.	0345	lang.	9280	WYFR, via Taiwan	1300	CC
4920	R. Quito, Ecuador	0130	SS	9405	R. Prague, Czech Rep.	0000	
4940	R. Ukraine	0100,	Ukrainian	9420	Voice of Greece	0130	GG/EE
4960	R. Cima Cien, Dominican Rep.	0030	SS	9445	Voice of Turkey	2330	TT
4960	R. Federacion, Ecuador	1100	SS	9475	R. Cairo, Egypt	0200	
4970	R. Rumbos, Venezuela	0300	SS	9480	TWR, Monaco	0730	
4980	Ecos del Torbes, Venezuela	0300	SS	9495	Radio France Int'l	2030	FF
4985	R. Brazil Central	0100	PP	9505	R. Record, Brazil	2300	PP
4996	R. Andina, Peru	1030	SS	9510	R. Romania Int'l	0200	
5010	R. Cameroon, Garoua	0500		9510	R. New Zealand Int'l	1200	
5015	R. Brazil Tropical, Brazil	0700	PP	9535	Swiss Radio Int'l	0700	
5020	Solomon Is. Bc. Corp.	0730		9540	R. Nacional Espana, Spain	0100	
5020	LV du Sahel, Niger	0500	FF	9540	Spanish Foreign Radio	9230	SS
5025	R. Transamazonica, Brazil	0930	pp	9560	R. Jordan	1500	
5025	R. Rebelde, Cuba	0100	SS	9570	R. Portugal	0230	
5030	Bhutan Broadcasting Service	1200		9570	R. Romania Int'l	0230	
5045	R. Cultura do Para, Brazil	0200	PP	9575	Radio Medi Un, Morocco	0730	FF
5047	RTV Togolaise	0524	s/on, FF	9580	R. Tirana, Albania	0230	
5055	RFO Cayenne, Fr Guiana	0430	FF	9580	R. Yugoslavia	0030	
5075	Caracol Bogota, Colombia	0200	SS	9605	Vatican Radio	0230	ss
5770	R. Miskut, Nicaragua	2330	SS	9610	Rdf Rwandaise, Rwanda	0258	s/on, FF
5889.5	R. Bulgaria	0330	Bulg.	9615	VOIRI, Iran	1630	Farsi
5920	Croatian Radio	0800		9615	KNLS, Alaska	0800	
5930	R. Slovakia Int'l	0100		9640	Ecos del Torbes, Venezuela	1100	SS
5960	R. Monte Carlo, Monaco, via Canada	0300		9645	R. Bandelrantes, Brazil	0000	PP
5975	BBC via Antigua	0100		9650	Swiss Radio Int'l	0000	
5981	Union Radio-AWE, Guatemala	0000	SS	9655	R. Austria Int'l	0130	

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
9655	R. Thailand	1200		13650	R. Pyongyang, N. Korea	2300	
9675	R. Norway Int'l	0000	EE Sun	13660	R. Havana Cuba	0200	USB, EE
9690	China Radio Int'l, via Spain	0300		13675	UAE Radio, Dubai	1630	
9695	R. Sweden	0200		13685	Swiss R. Int'l	0700	
9700	R. New Zealand	1030		13700	R. Netherlands	1330	
9705	R. Portugal	0230		13730	R. Austria Int'l	1130	
9725	AWR, Costa Rica	1100		13750	AWR Latin America, Costa Rica	1200	s/on
9725	RAI, Italy	0100		13750	Reshet Bet, Israel	1415	Yiddish
9735	R. Nac. Paraguay	0100	SS	13785	R. Pyongyang, N. Korea	1500	
9745	HCJB, Ecuador	0730		13830	Croatian Radio	2100	
9750	R. Korea, So. Korea	1200		15020	All India Radio	1300	
9760	R. Tirana, Albania	0330	Alb.	15090	Vatican Radio	2245	s/on
9770	R. Australia	1500		15095	R. Damascus, Syria	2100	
9770	UAE Radio, Abu Dhabi	2000	AA	15100	FEBC, Philippines	1400	EE & others
9779	Rep. of Yemen Radio	2100	AA	15110	REE, Spain, via Costa Rica	1900	
9800	R. France Int'l, via Fr. Guiana	0330	FF	15120	R. New Zealand Int'l	0500	
9810	R. Slovakia Int'l	0100		15140	R. Veritas Asia, Philippines	1500	
9815	Radio Havana Cuba	0200	USB	15140	R. Nacional, Chile	0100	SS
9825	R. Kiribati	0555	s/on	15175	FEBA, Seychelles	1100	AA
9830	KHBN, Palau	1400		15185	R. Finland Int'l	2300	
9840	R. Kuwait	2100	AA	15195	R. Ukraine	0030	
9860	R. Ukraine Int'l	0500	Ukrainian	15210	China Radio Int'l	1200	
9870	BSKSA, Saudi Arabia	2030	AA	15240	R. Sweden	1230	
9880	R. Austria Int'l	0130		15240	R. Finland Int'l	1530	
9900	R. Cairo, Egypt	2230		15250	Channel Africa	1700	
9930	R. Vlanderen Int'l, Belgium	0030		15260	VOIRI, Iran	0030	
9955	R. Miami Int'l		various/tests	15265v	Radiobras, Brazil	1200	
9977	R. Pyongyang, N. Korea	1100		15295	R. Tashkent, Uzbekistan	1200	
10030	R. Cairo, Egypt	2130	AA	15305	UAE Radio, Abu Dhabi	2340	
11100	CPBS, China	1530	CC	15310	BBC via Cyprus	1500	
11402	INBS, Iceland	2300	Icelandic	15325	FEBA, Seychelles	0400	AA
11550	RTV Tunisienne, Tunisia	1600	AA	15325	R. Japan via Fr. guiana	0300	
11570	R. Pakistan	1600		15340	Rdf. Rwandaise, Rwanda	2000	FF
11600	R. Cairo, Egypt	0200		15345	RAE, Argentina	0200	SS
11620	All India Radio	2000		15345	RTV Marocaine, Morocco	1700	AA
11625	Vatican Radio	0630		15375	Spanish Ntl Radio	1900	
11645	Voice of Greece	1600	Greek	15410	VOA, Morocco relay	2200	s/off
11650	FEBC, Philippines	2300		15415	Libyan Jamahiriya Broadcasting	1500	AA
11660	R. Australia	1600		15425	SLBC, Sri Lanka	1500	
11700	R. Pyongyang, N. Korea	2330		15445	Radiobras, Brazil	1245	EE
11705	R. Sweden	2330		15470	R. Tashkent, Uzbekistan	1200	
11705	R. Moscow	1300		15475	Africa Number One, Gabon	2100	FF
11710	UAE Radio, Abu Dhabi	2330	AA	15505	Swiss Radio Int'l	1500	
11710	RAE, Argentina	0200		15515	R. Portugal	1900	
11725	R. Korea, S. Korea	1000	SS	15550	R. Pakistan	1600	
11730	BSKSA, Saudi Arabia	2230	AA	15570	R. Veritas Asia, Philippines	1530	s/on
11735	HCJB, Ecuador	0600	RR	15575	R. Korea, S. Korea	0030	
11750	Channel Africa, S. Africa	0500	PP	15635	V of Greece	1230	
11755	R. Finland Int'l	0130		15640	Kol Israel	1400	
11760	R. Japan	0800		15650	Voice of Greece	1830	
11780	R. Nacional Amazonia, Brazil	0800	PP	15675	R. Copan Int'l, Honduras	2300	SS
11795	UAE Radio, Dubai	1600		15710	CPBS, China	1400	CC
11800	RAI, Italy	0100		17490	HCJB, Ecuador	1000	
11810	Iraqi Radio	2300	EE	17500	RTV Tunisienne, Tunisia	1330	AA
11810	Deutsche Welle via Brazil	2330	SS	17515	R. Vlanderen Int'l, Belgium	1600	
11820	bbc RELAY, HONG KONG	1400		17525	V of Greece	1830	
11825	R. Tirana, Albania	2200		17575	Kol Israel	1700	
11827	R. Tahiti	0300	FF/TT	17595	R. Cairo, Egypt	1200	
11835	HCJB, Ecuador	0700		17630	Africa No. One, Gabon	1430	FF
11840	R. Japan	1100	JJ	17655	R. Netherlands via Bonaire	1730	s/on
11850	China Radio Int'l	1300		17670	Swiss Radio Int'l	1500	
11865	R. Norway Int'l	0300		17690	R. Ukraine Int'l	0100	
11870	AWR, Costa Rica	1400		17705	R. Havana Cuba	2130	SS
11880	R. Galaxy, Russia	2100		17710	R. Yugoslavia	1900	
11885	UAE Radio, Abu Dhabi	2330		17730	Swiss R. Int'l, via Brazil	0000	
11890	R. Oman	2100	AA	17740	R. Yugoslavia	1200	
11905	VOA Thailand relay	1130	s/on	17745	R. Algiers, Algeria	1930	
11910	R. Sweden	2230		17750	Voice of Free China, Taiwan	2200	via WYFR
11925	R. Norway Int'l	2200		17760	R. Havana Cuba	2130	
11940	R. Jordan	0400	AA	17785	VOA Morocco relay	1930	
11970	KNLS via Russia	1200	s/on, CC, wknds	17790	HCJB, Ecuador	2130	
11980	KSDA, Guam	1400	CC	17805	R. Romania Int'l	1730	
11985	UAE Radio, Dubai	2100	AA	17810	R. Japan	2300	
11990	R. Kuwait	1500	AA	17815	R. Cultura Sao Paulo, Brazil	2200	PP
12020	V of Vietnam	1000		17845	Spanish foreign Radio	1500	SS
12040	R. Vilnius, Lithuania	2300		17870	R. Sweden	1500	
12050	R. Cairo, Egypt	0300	AA	17875	R. Canada Int'l	2030	
12085	R. Bulgaria	1515		17880	R. Finland Int'l	1300	
12085	R. Damascus, Syria	2030		17890	Spanish National R. via Costa Rica	2130	SS
13605	R. Australia, Darwin	1130		17900	R. Portugal	2000	PP
13605	Capitol Radio via UAE Abu Dhabi	2230		21455	HCJB, Ecuador	1330	
13615	R. Bangladesh	1230		21515	R. Portugal	1500	PP
13620	R. Kuwait	2000		21550	R. Finland Int'l	1430	
13625	KHBI, Saipan	1300		21605	R. Yugoslavia	1230	
13635	Swiss Radio Int'l	2130		21625	Radio Sweden	1330	

on radio propagation, especially at lower frequencies, is essentially negative: it absorbs energy from radio signals passing through it to higher layers of the ionosphere and weakens them. The D layer is very sensitive to the radiation from the Sun. The D layer rapidly loses ionization as sunset approaches and vanishes altogether within minutes after sunset. (In fact, the D layer may vanish during daytime in mid-winter because of the reduced solar radiation reaching the hemisphere experiencing winter.) When the D layer weakens, low frequency signals—especially those on the AM broadcast band as well as the 160 and 80 meter ham bands—can reach the upper layers of the ionosphere without attenuation. The D and F layers of the ionosphere likewise start to experience conditions similar to those found at sunrise and sunset.

Interestingly, some of the best receptions are not made by those in the path of totality or maximum darkness. Instead, people within 300 to 500 miles of the path of maximum darkness experience enhanced receptions of stations within that path. As the area of maximum darkness approaches a station's location, the D layer begins to weaken and the D and F layer become more able to support propagation. Listeners within a few hundreds miles of such a location can start to hear stations begin to fade in. They will build in strength



until the area of maximum darkness passes over the station, at which time the signal strength should be at its maximum. As the area of maximum darkness moves away from the station, its signal will begin to fade away. Listeners who are also located in the path of maximum darkness will experience the most unusual reception, as they will be

able to listen to stations "ahead of" and "behind" them in the path fade in and out. However, enhanced reception may be possible anywhere where a significant (70% or greater) portion of the Sun is covered.

In March, 1970, there was a total eclipse of the Sun which swept from northern Florida and up the Atlantic coast into New



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CIRCLE 63 ON READER SERVICE CARD

England. During this event, listeners in New England were able to hear AM broadcast band stations from northern Florida, Georgia, South Carolina, and North Carolina fade in and out as the area of totality moved toward them. And, when the area of totality entered Massachusetts, listeners in the southern path of totality were able to hear stations from the north fade in. Listeners to the west of the path of totality were also able to experience enhanced reception along the path of totality, although not to as great a degree.

So What Does May, 1994 Have In Store?

Good question. While a repeat of the March, 1970 receptions seems impossible, there is a good chance for some unusual receptions below 5 MHz.

The path of maximum darkness is shown in Figure 3. The three curved lines from the lower left to the upper right represent the path of maximum darkness on May 10, 1994. The two outer lines are the boundaries where an annular eclipse will be visible; the center line is the point where annularity will last the longest time and where the Moon will cover the largest amount of the Sun; this is called the midpoint. The Moon's shadow will enter the United States in the southwest (El Paso will be very near the midpoint) and move to-

ward the northeast. A partial eclipse will be visible everywhere except the Pacific Northwest and southern Florida. The eclipse will be visible in the morning and early afternoon hours, depending upon the area; your local newspapers, almanacs, etc., will carry the exact times when it will be visible in your area.

The first place you should look for enhanced propagation is on the AM broadcast band. There are several 50 kilowatt stations along the path of maximum darkness, and a good way to prepare for the eclipse would be to compile a list of such stations that are within 300 to 500 miles of your listening location. (Station guides for the AM broadcast band are available from several advertisers in *POP'COMM*.) Check the AM band in your area during the daytime to make sure the frequencies you've targeted are clear or relatively so. A second good place to look would be on the 160 and 80 meter ham radio bands. While hams don't operate on regular frequencies at scheduled times like broadcasters do, some monitoring will give you a good idea of the normal amount of activity and the operating range of stations on those bands during the daytime. (Hint: 160 meters will be largely dead in the daytime, and most 80 meter activity will be from about 200 miles or less.)

On a day immediately before the eclipse

(ideally, May 9), monitor the bands again to determine what propagation conditions are like. When May 10 rolls around, try to be equipped with as many receivers as possible. Let's suppose that one of your target stations is KMOX, a 50 kilowatt station on 1120 kHz in St. Louis. Any receiver capable of receiving the AM broadcast band could be pressed into service for hearing KMOX, even a portable transistor radio. (If the calibration of such a radio isn't too accurate, trying tuning in KMOX the night before.) If your receiver has multiple memory channels with a scanning feature, you're in luck; such a receiver is ideal for checking a lot of frequencies in a hurry.

Start your monitoring with stations to the south and switch toward the north as the eclipse progresses. For example, if you're located in St. Louis start out by trying for stations in Oklahoma and the Texas Panhandle first. As the eclipse moves past St. Louis and toward the north, try for stations in Illinois, Indiana, and Ohio. Reception from western New York might be stretching things a bit, but it's certainly worth a shot.

If you manage to hear something unusual during this annular eclipse, I'd like to know about it. Drop me a line in care of *POP'COMM*; if there's enough of a response, I'll devote a future column to the discovered results. ■

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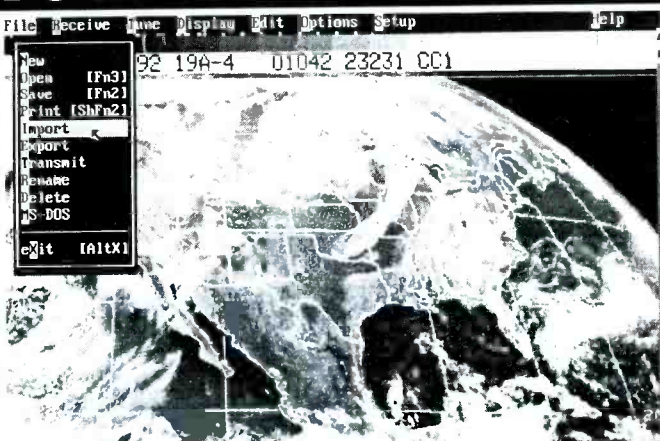
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TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Cellphones aren't intended for long-haul coverage, as noticed by our reader Robert Fraser, who lives in Westmorland County, New Brunswick, Canada. He's got a cellphone set up in his truck, but the 25 mile distance from the cell site to his camp is too far for base comms. Robert wonders if and how he can build a yagi to aim at the cell site from his camp in order to rectify the situation.

A vertically polarized beam might possibly do the job, although 25 miles is a big trip for a cellphone signal. Before you build a yagi, check out the ham market and see if you can use a commercially made beam made for the 904-920 MHz ham operation, like the Comet PYA-913. This is a 13-element yagi on a 5 ft. boom. It has a 15.8 dB forward gain, and sells in the \$130 ballpark. There may be additional 900 MHz yagis, too, from other manufacturers.

Don't forget, you'll need to mount any antenna as high as possible to get the best range. If you want to roll your own yagi, check out an antenna handbook for 800 MHz antenna plans and dimensions.

Comet Antennas are made by NCG Companies, 1275 N. Grove St., Anaheim, CA 92806-2114. They may be able to offer some thoughts and suggestions on the potentials of their beam for cell phone applications in remote areas.

Here's A New One!

The Chattanooga News-Free Press, of Tennessee, carried a most unusual cellular-related story not long ago. We thank the reader who sent it in, asking that his name not be printed.

Seems that Dennis Ashe was brought into Federal Court and charged with pro-

CONTROL	VOICE
NAC=15	Ring Phone
555-4540 (312) Registration	Stop Ringing
555-4540 (312) GoTo 869.880	Disconnect
555-4540 (312) GoTo 869.880	Ring Phone
555-3238 (312) Paging	Change Power to .25 W
555-0186 (312) Paging	Change Power to 1.6 W
555-8252 (312) Paging	GoTo 890.220
555-0186 (312) GoTo 891.090	
555-0186 (312) GoTo 891.090	

Sample screen displays from the Cellular Surveillance Interface.

ducing and possessing an altered cellphone that enabled its user to obtain service without payment. Ashe, who had formerly owned a computer consulting and software business, testified that he had been advised by another businessman that such phones were legal.

Ashe said he had purchased an older cellphone that had been modified but wouldn't work in the same way an altered cellular phone that businessman Shane Hendricks used. Hendricks said, Ashe claimed, that such phones were legal because they bypassed the cellular system and sent signals straight to a satellite, and that the airwaves were free.

Ashe alleged that Hendricks tried to sell him an altered cellphone for \$3,500, but that Ashe felt it was too much. Ashe testified that he then asked Hendricks to find out how much it would cost to send his cellphone to a firm in Calif., for modifications to permit it to use constantly changing cellphone numbers. Ashe said Hendricks told him the charge was \$1,500 and he declined to have his phone modified.

After that, Ashe said he borrowed Hen-

dricks' phone and noticed a common chip was different from the one in his cellphone. Ashe claimed he then copied the chip for his phone, so that it would work like Hendricks' cellphone. Ashe claimed he thought that changing the chip was upgrading the phone, similar in a manner to the way computers are routinely upgraded.

For its part, Bell South Mobility testified that such altered cellphones, which allow them to constantly change numbers to avoid billing, cost their company more than \$3-million a year.

The criminal case, which was pressed by the US Secret Service, and prosecuted by the US Attorney's office, went to the jury late on a Wednesday afternoon. By Friday a verdict had been reached, and Ashe was found guilty.

The Big Ear

Electronic Countermeasures Inc. tells me that their new software allows the use of their Cellular Surveillance Interface (CSI) on any cellular system, worldwide. The CSI decides the data transmitted on control



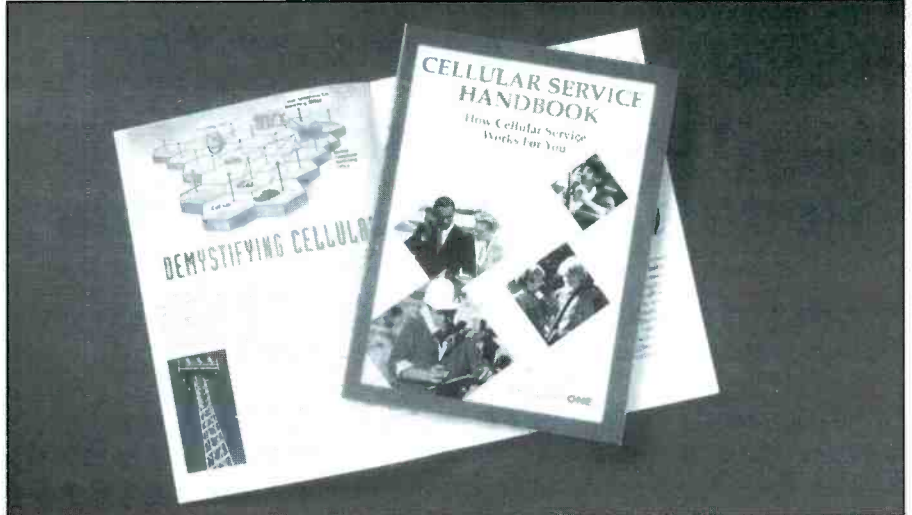
Mitsubishi introduced this portable data link that allows data or FAX to be transmitted over a handheld cellphone.



Audiovox brought out its DMX-5200 dual-mode analog/digital mobile cellphone.



The Alter Systems Iso-Antenna is claimed to reduce radiation, while still producing a 3 db signal gain.



"How Cellular Service Works For You" is a free consumer-level booklet that may be obtained by calling a toll-free number.

channels. It interprets the data as cellular commands, displays it on your PC screen, and tunes a scanner. It is compatible with systems in North America, Europe, Middle East, Southeast Asia, Hong Kong, etc., using the AMPS, TACS, or ETACS standards, including those international systems using variable control channel points for different countries.

In simple terms, CSI reads out the control data in a cell and switches the scanner to the specified voice frequency when a cellular call is placed or received in that cell. As a call switches to different cells and new frequencies, so does the scanner (so long as it can access the signal). The call is followed, without interruptions, through all cell sites within receiving range.

Looks like this can be used with the R-7000, R-7100, and R-9000, AOR AR-2500 and AR-300A, also Realistic PRO-2004, PRO-2005, and PRO-2006. Some internal mods are required.

This is a high-tech, low-cost, test instrument intended for cellular service shops, law enforcement surveillance purposes, engineers, and others requiring this ability. CSI comes complete with all cables, radio mod kit, and the latest PC software. The price is \$484 (\$509 outside of North America). Prices are US funds.

For more information, contact Bill Fischer, Electronic Countermeasures Inc., 65 31st Avenue S.W., Calgary, AB, Canada T2S 2Y7. Phone: (403) 233-0644.

Free Stuff

Every day 9,000 people sign up for cellular service. The Cellular One Group has put together a good looking and colorful booklet for consumers to explain cellular

service and answer the most commonly asked questions.

This is very basic information, telling the history of cellphones, explaining the advantages of a cellphone, and describing how cellular technology works. It gives details about the types of cellphones available, then offers a cellular glossary. If you already know a lot about cellular, this isn't going to add to your knowledge. If you're just getting into it, or are thinking about getting a cellular (or know someone who is), then this booklet is worth having, and not just because it's free.

The booklet is entitled, *How Cellular Works For You*. You can get a free copy by calling 1-800-56-CELL-1.

Is Data New Modem?

Mitsubishi International brought out the

Portable Data Link (PDL-2000), a PCMCIA cellular modem. This provides up to 14,400 bps data and 14,400 bps FAX transmission via the Mitsubishi M3500 or M4000 handheld cellphone and any PCMCIA Type II equipped computer, personal digital assistant or other data device.

For a convenient and versatile comms tool, you connect the phone directly to the PDL-2000 PCMCIA and insert the card into the computer. The simple one cable connection eliminates the cost and bother of an external connection device, such as needed for many portable data products.

The package includes an RJ-11 cord for landline connections and a cellphone cable, also a PCMCIA Type II data/FAX modem card, DOS data comms and FAX software, Windows FAX software, user's manual and installation guide. The MSRP is \$599.

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For more information, contact Mitsubishi International Corporation, 1500 Michael Drive, Suite B, Wood Dale, IL 60191. Phone: (708) 860-4200.

Dual Mode Cellphone

Audiovox Corporation has started delivering its new dual-mode (analog/digital) TDMA-based mobile cellphones, the DMX-5200, to Cellular One-Chicago. The Chicago company is purchasing a substantial quantity of these phones. The MSRP is \$995, each.

The DMX-5200 design features include one-touch dialing, memory dialing of up to 102 phone numbers, alpha search to retrieve numbers from directory by name or initials, auto-answer will pick up on second ring, multiple-NAM's, hands-free operation, built-in help menu.

For more information, contact Audiovox Corporation, Cellular Communications Division, 185 Oser Ave., Hauppauge, NY 11788. Phone: (516) 233-3300.

High Gain, Low Exposure Cellenna

Alter Systems has a patent pending for its basic technology that the company claims lowers a handheld cellphone user's exposure to signal radiation. The company states that their new antenna, which they call the *Iso-Antenna* "is a 3 dB high gain antenna whose performance is equal to or better than many existing antennas available today." The information sent here did not go into any details regarding how a 3 dB gain is achieved while they reduce the radiation exposure a user receives from the antenna on a handheld.

The only explanation offered was that the concept of reduced radiation "is not unlike having safety glass, a seat belt and/or an air bag in an automobile." You'd think that the company would claim the greatest thing about the *Iso-Antenna* would be its ability to reduce a user's exposure to whatever dangers might be caused by signal radiation. Not so.

The last line in the information from Alter offered a totally different analysis of its main advantages. They said, "Best of all it is competitively priced and comes in fashionable colors such as red, white, blue, yellow, and black."

Alter Systems, Inc., is located at P.O. Box 7096, St. Petersburg, FL 33734.

Last December, the National Institutes for Health announced that it could not find any reason to believe that radiations from cellular phones posed a health hazard.

Please join us next month. Always looking for your questions, comments, clippings, thoughts, and press releases about cellulars, paging, or other personal comms services. ■

FOR THE HANDICAPABLE COMMUNICATIONS HOBBYIST

Greetings and welcome. During this installment, we will visit with a gentleman who parlayed his hobby into a vocation. Joe Elliott was born blind in September, 1958. Growing up in Indianapolis, Indiana and Louisville, Kentucky, he didn't fantasize about firemen, policemen, railroad engineers, or cowboys. "Ever since I was four or five years old, ... I always wanted to be on the radio." Toward this end, he earned a degree in radio and television from Butler University in 1980. Now at age 35, he is host of one of the nation's foremost nighttime call-in shows, over WHAS (840 kHz), Louisville.

Joe's first broadcast experience came over a small, low-power AM rock operation in New Albany, Indiana, during the mid 1970's. While in college, he worked at Butler's WAJC, where he gained his first experience as a talk show host. "I wanted to be a disc jockey, and I got roped into doing a public affairs show," he recalled. "I pulled every string I knew how to pull." Eventually the station agreed to a compromise. "If you'll do it for one semester, we'll see if we can get you out of it in January." Of course, [after] that semester I was instantly hooked."

After graduation, Joe remained in Indianapolis, working as a talk host for both WIRE and WIFE. Before long, he received an offer to go to Salt Lake City for a late morning show. This was a solid learning experience—"great news staff, good people"—but the Utah sojourn was to be short-lived. The station was sold, and the new owners opted to "turn on the satellite," a decision which left 28 people on the street. While unemployment is never a picnic, time has lent perspective. "I've always heard the old adage that you're never really in broadcasting, until you've been fired at least once," he mused. "It's like being a baseball manager."

By 1983, Joe was back in Louisville, wondering about the long-term viability of a future in radio. However, each time a career change appeared imminent, a new opportunity would open. Over the next four and a half years, he worked on two local AM stations and one FM station, playing country, oldies, and adult contemporary music.

He came to WHAS (a 50kW powerhouse), with a long and distinguished pedigree in the spring of 1988. With FM the high fidelity medium of choice for music listening, talk formats are now dominant on the AM broadcast band; and few stations do talk better than WHAS. Over the years, their lineup has included specialty shows on such diverse topics as sports, psychology, home repair, and gardening.

Joe's initial job at WHAS was that of deejay, but his goal was to get back into talk. As he later remembered, "I was fourth in line. We had a Jewish holiday one night, and the three guys ahead of me were Jewish...I got pressed into service, and,

once I had a chance to do my first one, I was fine."

One of Elliot's early boosters at WHAS was music director, Doug McElvien who, while serving as interim program director, began raising Joe's profile as a talk show host, as well as offering encouragement and assistance. His endorsement was doubly valuable, in that he was then hosting his own lively, often controversial talk show every Sunday morning from 9 AM to noon. By the time the new director arrived, "it was established that I was the fill-in talk guy." His first "regular" slot proved to be Friday nights, from 9 PM to midnight. To this was added the Sunday morning show formerly hosted by McElvien.

The big break came in the summer of 1993. Since 1959, Milton Metz had been the dean of Kentuckiana talk radio—presiding over four to five nights per week of free-wheeling discussions on a wide variety of topics, with an audience that spanned the Eastern United States and much of Canada. After 34 years, Milton announced it was time to move on. Initially, Doug McElvien was tapped for the slot, but within weeks he had accepted an offer from another broadcasting giant, KMOX, St. Louis. Thus a man who, a decade earlier, had contemplated leaving broadcasting now found himself with one of the largest nighttime audiences in the country.

How does a blind announcer read copy live on-air? The key is preparation. "Before I go on the air, I just ask somebody to read the weather to me, and I write it up. I remember the temperature every hour from the news cast, and just plug it in." Promotional announcements for other programs are similarly handled. "A lot of times I won't even write down the whole line, just an idea. "The whole process takes maybe three minutes."

Virtually all talk shows use a tape delay, and someone (often the producer), out front screening calls—both to protect the station from a possible notice of apparent liability, and to keep the program within the desired channel. The control room and broadcast booth are connected by a computer terminal and/or a talk-back system. WHAS has both. Using the talk-back, Joe knows the name and possibly the location of a caller, before that individual goes on the air. Both the announcer's mike and the telephones have gain controls, so that calls may be handled with no audible clicks.

The talk-back came in particularly handy one night at the beginning of Desert Storm. WHAS was simulcasting a special late edition of "Night Line," when the studio phone rang. It was the program director. "Joe, this is radio. When Ted [Koppel] goes to pictures, I need you on the air, telling us exactly what they are seeing on the screen." No sooner said than done. The producer, who was monitoring the video, provided the necessary information over the head set. In relating this story, Joe

stressed that he has never "pretended" that he can see. The program director made the request without a second thought; he knew the job would be done, and it was.

So what does the future hold? Over time, the show has drawn a consistently large audience. But home entertainment alternatives have proliferated since 1959. What does this mean for radio? According to Elliott, the key word is *entertainment*. "I believe in public service, but, in order to survive in today's market, the show has to be entertaining. That means that I have to go out and find things to talk about, topics that are intriguing, that will hold people's attention—get them involved." On evenings with no guest, Joe begins by throwing out one or more topics for consideration. Unless a program is specifically devoted to the discussion of a single issue, topics from recent past programs, or other observations of general interest are welcome. However, crank callers—those with random complaints about noisy neighbors, or a generalized discontent with life—will not get past the producer. Recent programs have been devoted to local politics, the Brady Bill, NAFTA, civil liberties and the Ku Klux Klan, and a special broadcast from the nation's Capitol, featuring prominent political figures from both parties.

Another factor which, Elliott feels, should continue to give radio a competitive edge in this high-tech age is the intimately personal nature of the medium. The listeners tend to adopt and/or identify with their favorite stations and personalities. "We come into bedrooms, bathrooms, kitchens.... That's the magic of radio. People say 'WHAS is my station.'... Nobody says 'MTV is my station.'" Long live radio!

Before closing, Joe had one final comment. Apparently, other visually impaired aspirants have asked him what it takes to get into broadcasting. "I tell them the same thing I would tell anybody else. Be as well-rounded as you can; knock on doors, and meet as many people as you can. Above all, take chances, and go for it. Talking about it won't get you a job. Sounding good won't get you a job." Asking is the first step, combined with a willingness to work odd hours under, what some would consider, adverse circumstances. "Frankly, it's been a little easier for me, because it seems there are fewer and fewer people who want to do that anymore.... I don't see that kind of hunger and intensity from a lot of people." Hunger and intensity; Joe Elliott possesses those attributes, and much more.

Those interested in learning more can tune into WHAS, Louisville, Kentucky (840 kHz) Monday through Friday, from 9 P.M. to midnight, Eastern time. Listeners in adjacent states may also be able to hear the Sunday-morning broadcast from 9 AM till noon.

That's it for now. Until our June visit, take care, and let me hear from you. ■

COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

I was pleased to see that a Virginia man called the "Roanoke Phantom" has been caught and charged with endangering the safety of aircraft in flight. An Associated Press item indicated that the individual had used a transmitter installed in an automobile and while cruising the outskirts of the Roanoke, Virginia Regional Airport would transmit fake air traffic controller directions.

He conducted these illegal transmissions for six weeks, but then the FAA direction finding efforts resulted in him being nabbed. If convicted, he could receive as much as 22 years in prison.

A new technology will provide controller with the ability to direct aircraft without using voice communications. ATC personnel will communicate with pilots through computers with video monitors and printers both in the aircraft and control towers. The system is now in use are the 31 busiest airports in the U.S. for pre-departure clearance and it is expected that remaining airports will commence utilizing the new system by 1997.

"Just a short note for many of us DX'ers who have begun to make funeral arrangements for Loran C with the speedy rise of the Global Positioning System (GPS)."

The note was from Douglas Stingley, OR, and it accompanied an article from *The Oregonian* newspaper. The article described the use by the U.S. Forest Service of a modern day version of World War II.

The Loran is mounted in Forest Service aircraft and in aircraft contracted by the Forest Service. The equipment is helping to identify areas where fire or smoke has been spotted.

By having a good fix on such locations,



RESISTÊNCIA NACIONAL MOÇAMBICANA
RENAMO

Here is a PFC designed by Jim Navary, VA.

air tankers or smoke jumpers can be on site in a minimum amount of time.

The equipment size and weight have been reduced from its WWII days as has its price. Now weighing only about 6 1/4 pounds it can be obtained for around \$1,700. The smaller size lends itself to use on ships and planes as well as on the ground.

Simon Mason, England, advises there is a new newsletter out containing details on numbers transmissions, entitled "Enigma." A sample copy can be obtained by sending two IRC's to Chris Midgley, 195 Roberttown Lane, Roberttown, Liversedge, West Yorkshire, WF15 7LE, England.

Mr. Mike in Germany wrote that he first saw POP'COMM several years ago and has enjoyed the magazine ever since. He uses a Yaesu FRG-100 with an MFJ-959B antenna tuner. His antenna is a vertical 16 foot "Boomerang" CB antenna and he says it gives him good results.

A note from Hugh Hawlins, MS, indicated he now has 195 beacon loggings and has received 154 verifications. Hugh uses an ICOM R71A along with a 100 foot NE/SW longwire.

John Vylasek, VA, has rejoined us after an absence to complete his schooling. He added a new beacon to his total with the

logging of EMV located in Emporia, VA.

In his monthly summary of naval activity, Richard Baker, OH, reported that the official name for the Haitian operation is Joint Task Force 120 (JTF-120) and it is also called Operation Support Democracy. "The U.N. vessels are contacting all vessels in the Windward Passage/Jamaica Channel. Those that declare Haiti as port destinations are boarded. The M/V Michelline (Honduras) was searched and diverted by the USS Klakring after inconsistencies in the master's cargo report and the actual items on board.

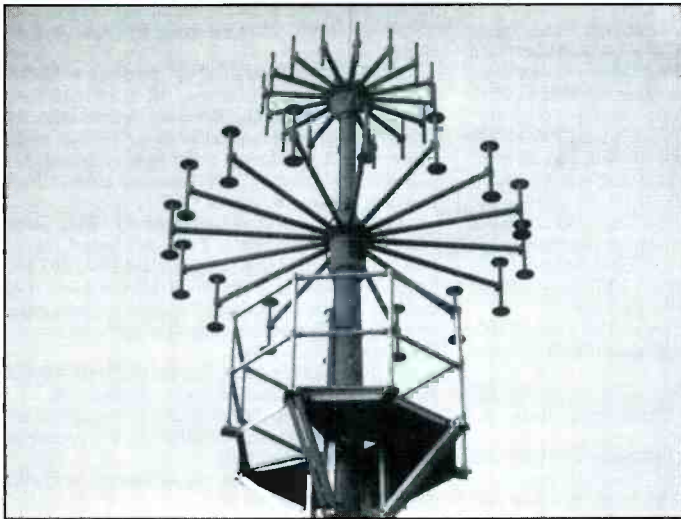
The Gettysburg contacted the M/V Seawind II (Honduras) regarding cargo and destination. The Sea wind said they are heading for Bioay, Haiti, and it was then boarded by a Law Enforcement Detachment (LEDET) from the USS Caron. Six thousand gallons of motor oil was found. The Seawind II was diverted to Miami for further inspection. The USCGC Vigilant (WMEC 617) fired warning shots from her 76.2 mm/.50 cal MK 22 D.P. gun across the bow of M/V Don Jose (Turks and Caicos), 13 nautical miles north of Haiti. A LEDET from the Vigilant boarded but could only inspect 35% of the cargo, so she was diverted. When the vessel continued to

ZBB		SOUTH BIMINI, BAHAMAS	
TO <u>Hugh M. Hawkins</u>			
This will verify your reception of			
Radio beacon <u>ZBB</u>			
At <u>77°W 17' 25"N 43'</u>			
(beacon location)			
On <u>29 APRIL</u> 19 <u>93</u>		At <u>0600</u> GMT	
Frequency <u>396</u> kHz		Power <u>1000</u> watts	
Antenna type <u>LONG WIRE</u>			
Bahamas Telecommunication Corporation			
<u>Patrick S. Griffiths</u>		(official stamp)	
(signature/title)		MAY 14 1993	
Comments:			

This PFC is from the collection of Hugh M. Hawkins, MS.



This view shows the full height of the radio direction finding antenna for the FAA at Grand Island, NE airport. (Sent in by Patrick Griffith, CO.)



A close-up shot of the Grand Island DF antenna. (Sent in by Patrick Griffith.)

C4PC		
GENERAL CARGO VESSEL ** M/V MAIROULI ** 15,197 GWT		
VERIFICATION OF RECEPTION		
CALL SIGN C4PC	FREQ KHz 8 MHz	LOCATION - POS'N 34°15'N-03530E
DATE FEB. 22, 1993	TIME-UTC 0330 UTC	ANTENNA INVERTED-L (FOLDED) 20M FORE / 20M AFT.
HMTR POWER SAIT 1200 W MTB HF SSB	MODE A1	
SIGNATURE: <i>Steven McDonald</i> STEVEN D. AGENA RADIO OFFICER		

Steven McDonald, BC, Canada sent in this PFC. He stated that C4PC was his farthest ship DX logged on any band! The vessel was anchored in Beirut harbor!

wards Haiti, ignoring communications, two 10 round bursts were fired. Don Jose turned and headed back north after firing."

Richard also provided a recap of frequency use noted for the Haitian operation.

4160.5 kHz: NATO ships, tactical call signs (some may be cutters) and the FOX TANGO group.

7741 kHz: USCG cutters and aircraft with plain ID's, also USN a/c with tactical call sign (most likely a P-3C). This frequency was used before in Able manner, but had been quiet awhile.

1102 kHz: USN tactical call signs, FOX WHISKEY group.

Some of these units may be heard on USAF GHFS system, like 11176 kHz, or Navy Safety of Flight Atlantic, 8972 kHz also. And of course, the USCG aviation frequencies of 5696 kHz (nights), 8984 kHz (days), and 11201 kHz (sometimes) would be good to watch as well. When the HC-130H's take off from their "homeplates," they will establish an air guard with one of the CommSta's on the East Coast. Once on scene, they will turn their guard over to whichever cutter has the duty that night on 7741 kHz, if they are following the same procedure as at the start of Able Manner.

UTE Intercepts. All Times UTC.

13.6: OMEGA, La Moure, ND, hrd 24 hrs daily plus Haiku, HI hrd nights 0600-1100. (Krey, TX)

60: WWVB, Ft. Collins, CO. 24 hrs daily w/strong sig. (Krey, TX)

77.5: DCF77, time signal stn Braunschweig, Germany in AM at 2244. (Mike, Germany)

135.9: NPG, CommSta San Francisco (Stockton), CA hrd most nights past 0600 UTC. (Krey, TX)

188: Lowfer GSR, Frederick, MD at 1046. (Crabill, VA)

190: Lowfer THE, Colts Neck, NJ at 1048. (Crabill, VA)

201: Beacon DED, Deland, FL at 0945. (Crabill, VA)

203: Beacon SFQ, Suffolk (Municipal), VA at 0423. (Vylasek, VA)

204: Beacon JAU, Jacksboro, TN at 0917. (Crabill, VA)

205: Beacon CQA, Celina, OH at 0902. (Crabill, VA)

209: Beacon IKB, Wilkesboro, NC at 1213. (Crabill, VA)

219: Beacon SA, San Antonio, TX at 1107. (Crabill, VA)

226: Beacon FAF, Ft. Eustis (Felker AAF), VA at 0452. (Vylasek, VA)

227: Beacon GDY, Upperville, VA at 2242. (Ed.)

230: Beacon SH, Shreveport, LA at 0939. (Crabill, VA)

233: Beacon LG, Long Beach Daugherty Fld, CA at 0310. (Vaage, CA)

239: Beacon TCU, Tecumseh, MI at 0955. (Crabill, VA)

248: Beacon UL, Montreal (Dorval Intl-Kirkland), Canada at 0500. (Vylasek, VA)

251: Beacon AM, Amarillo Intl, TX at 2246. (Farley, NM)

257: Beacon LKA, Chino, CA at 0346. (Vaage, CA)

266: Beacon LLN, Levelland (Municipal), TX at 2247. (Farley, NM)

272: Beacon LD, Lubbock Intl, TX at 2247. (, NM)

278: Beacon HG, Hagerstown, MD at 2247. (Ed.)

283: Beacon AFP, Wadesboro, NC at 0427. (Crabill, VA)

290: Beacon YNP, Managua, Nicaragua at 0439. (Crabill, VA); beacon OLR, Chickasha, OK at 2248. (Farley, NM)

296: Beacon B, Point Bonita, CA; beacon B, Quatsino Sound, BC, Canada; beacon LGD, La Grande, OR. No times given. (Forsman, CA)

303: Beacon RTT, Rattenburg, Austria in AM at 2234. (Mike, Germany)

305: Beacon RO, Roswell Industrial, NM at 0401. (Vaage, CA)

317: Beacon CBE, Cumberland (Municipal), MD at 0547. (Vylasek, VA)

318: Beacon AGB, Augsburg, Germany in AM at 0200. (Mike, Germany)

319: Beacon RB, Redondo Beach West Jetty Light 3, CA at 0402. (Vaage, CA)

326: Beacon MA, Midland Regional, TX at 2250. (, NM)

333: Beacon STI, Mountain Home Municipal, ID at 0718. (Vaage, CA)

345: Beacon IGL, Ingolstadt, Germany in AM at 0210. (Mike, Germany)

346: Beacon EMV, Emporia (Municipal), VA at 1521. (Vylasek, VA); beacon THJ, Laurel, MS at 0555. (Crabill, VA)

356: Beacon TIM, Georgetown, Guyana at 0608. 1000 Hz, DSB. (Crabill, VA)

358: Beacon MNW, Munich, Germany. AM at 0215. (Mike, Germany)

367: Beacon ZAG, Zagreb, Croatia in AM at 2338. (Mike, Germany)

370: Beacon MQI, Manteo (Dare County Region-

al), NC at 0601. (Vylasek, VA)

376.5: Beacon ORI, Orio Al Serio, Italy in AM at 0209. (Mike, Germany)

378: Beacon OT, North Bend, OR. No time given. (Forsman, CA)

385: Beacon GAI, Gaithersburg (Montgomery County), MD at 0611. (Vylasek, VA)

390: Beacon OWC, Douglas, GA at 1026. New freq, ex-420 kHz. (Crabill, VA)

403: Beacon AXA, Algona, IA at 1109. (Crabill, VA)

404: Beacon Y, North Bay, Ont., Canada at 0958. (Crabill, VA)

414: Beacon OOA, Oskaloosa, IA at 1140. (Crabill, VA)

419: Beacon TX, Lawrenceville, GA at 1114. New ID, ex-UEW. (Mike, Germany)

426.5: Beacon MIQ, Ingolstadt, Germany in AM at 0220. (Mike, Germany)

428: Beacon COG, Orange, VA at 0623. (Vylasek, VA)

432: Beacon IZN, Lincolnton, NC at 0631. (Vylasek, VA)

448: Beacon LQ, Landesburg, Germany in AM at 0220. (Mike, Germany)

488: Beacon ILM, Illesheim, Germany in AM at 2347. (Mike, Germany)

512: Beacon HMY, Lexington, OK at 1119. New; 1000 Hz DSB. (Crabill, VA); SPE, Szczecin radio, Poland in CW at 0205 w/tfc list. (Boender, Netherlands)

2137: CGBS, Parizeau, Canadian Official Service Oceanographic ship which referred to as "CSS" Canadian Survey ship? Chaiting w/another "CSS" vessel at 0605. QSY'd from 2182 kHz. USB mode. (Baker, OH)

Abbreviations Used For Intercepts

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identification/led/location
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)

2514: St. John's. Canadian CG radio at 0713 w/unk CCGS (on 2118 kHz) advising him of a disabled ves needing to be towed in. The CG ship ETA is 24 hrs. USB mode. (Baker, OH)

2744: YL/EE rptng ULXZ for several mins on AM, then changing modes but not readable & announces more info for few mins then out at 0308. (Mike, Germany) Possible Mossad? (Ed.)

2899: Shanwick Oceanic Control w/North West 46. Canadian 44 requesting flight level 370. USB at 0312. (Mike, Germany)

3390: NAVMARCORMARS Region 2 tfc net w/NNNOLNB. Tallahassee, FL, as NCS in USB at 0135. (Baker, OH)

4160.5: Fox Tango net tfc however this appears to be NATO Haiti Ops. At 0502 Mike, Oscar, Juliet, and T7G hrd w/U.S., British and French (Canadian?) accents. Lots of tfc w/all lat & lon's around Haiti. (Baker, OH)

4208.5: ESA, Tallinn, Estonia in CW at 1823 w/call mkr. (Boender, Netherlands)

4296: IQX, Trieste, Italy in CW at 0020 w/call mkr. (Boender, Netherlands)

4303: SLHFM "C" in CW at 0022. Location listed as Moscow. (Boender, Netherlands)

4466: New York CAP net w/Empire 826 as NCS at 2301 w/ck in's by other Empire units. USB mode. (Baker, OH)

4465: Unusual Mossad activity. At 2110 in LSB a YL/EE sending 5L grps. In USB position different 5F grps being sent. Then at 2114 on 4463 kHz YL sending MIW2 (usually FTJ freq). AT 2115 MIW2 went off & reappeared on usual freqs of 5230//8641 kHz. (Mason, England)

4618: U/i CW stn at 1630 w/5F grps for "555." (Boender, Netherlands)

4643: CW stn sending NNN from 2100-2105 every Friday. Then YL/GG w/Gruppe 20 and into 5F grps. (Mason, England)

4996: Moscow time signal station in AM at 0356. (Mike, Germany)

5530: Anyone have any ideas on this station?? At 2000 every day YL rpts 3 words "LEHTI ASEM CINKO"? Then this changes to "LU BAVAM LU" after 3 minutes. A long tone is then sent and the whole thing is rptd. May be on 5835 kHz at 1900 also. (Mason, England)

5616: Both Shanwick OAC and Gander OAC trying to reach Delta 22 (Atlanta-Paris). American 44 checking CLGP selcal and Delta 76 (JFK-Munich) w/position report. USB at 0152. (Mike, Germany)

5680: Alpine 24 w/Edinburgh Rescue w/wx for Leeming Mountain Rescue w/wx for Falish (?) Mountain Rescue Team at 0652; Alpine 20 w/Edinburgh Rescue w/wx for Stafford Mountain Rescue Team at 0654. All USB. (Boender, Netherlands)

5719: USN Link 11 data system hrd here at 0126. Since start of Haiti Op's, these are hrd all over the place! (Baker, OH)

6288: IGJ43. Italian Navy, August, Italy w/V mkr in CW at 0400. (Baker, OH)

6462: FUM, French Navy, Papeete Island, Tahiti, Society Islands w/V mkr in CW at 0419. (Baker, OH)

6738: Architect, RAF Strike Command wkg Ascot 2143 w/position & selcal ck, EGAC at 0432 in USB. (Baker, OH)

6775: YL/GG rptng 477 x3. 1 from 2000-2005 foll by 'Achtung 642 35 642 35' and into 5F grps. Finished w/00000 & Ende. Rptd msg one week later. (Mason, England)

7535: Norfolk SESEF. NOZK, USS Josphus Daniels (CG 27) at 148 w/HF xmtr tests. Also xmtr tests for USS Wasp (LHD-1) at 1805 and USNS Leroy Grumman (T-AO-195) at 1807. USB mode. (Baker, OH)

7588: YL/EE w/1-0 count and 381 from 2100-2110. Then 10 tones 'Count 208' and into 3/2F grps. (Mason, England)

8152: OM/EE rptng 382 x3 from 2020-2025 then 315 48 315 48 and into 5F grps. Ended w/00000. (Mason, England)

8240: NMUD. USCGC Diligence (WMEC-616) w/CAMSPAC San Francisco in pp w/flight surgeon re ill crewman. Recommended medavac, however Diligence said to be 100 miles South of Roberts Naval Station. Panama & 15 hrs from Malogai, Columbia. USB at 0050. (Baker, OH)

8496: CLA. Havana, Cuba wkg OTTI (?) vessel Pogol. foll by 5HTIO, Abana, and u/i call sign EZSM starting at 0311 in CW. (Baker, OH)

8839: Leningrad Volmet. YL/RR in USB at 1307. (Mike, Germany)

8891: U/i ATC wkg KLM 605. 747, Amsterdam-San Francisco, at 12020/position report. ATC advised a/c when at 100°W to contact Edmonton on 133.4 MHz. Japan Air 19. 747, Atlanta-Tokyo at 2121 "Overhead Edmonton at 2121 Flight Level 350." Pilot requested this msg be sent to JAL Ops at San Francisco. (Heywood, BC, Canada)

8957: Shannon Volmet. USB at 1308. (Mike, Germany)

9043: OM/RR rptng 031 x3. 000 from 2000-2005 & then off. (Mason, England)

10057: Brazzaille, Congo Volmet. OM/EE w/strong French accent in USB at 0012. (Mike, Germany)

10780: FISHER (Cape Radio) wkg W3V re status of launch of shuttle Columbia STS-58. Interesting that tactical call sign's were used in non-classified mission. USB. (Baker, OH)

11002: VVV DE OLX in CW at 1200 foll by YL/Czech rptng 879 then into 5F grps. New OLX skeds are 0600-1200 4601/6282/8141 kHz; 1200-1800 5301/6758/11002 kHz; 1800-0600 3280/5301/6758 kHz. (Mason, England)

11022: Fox Whiskey wkg Fruit Juice 715 for vessel contact reports at 0058 for Marine Trader & Ate-male. This seems to be USN Haiti Ops freq. USB mode. (Baker, OH)

11150: Reach 36F8Y w/Incirlik. Estimates WSAP (Singapore) at 0015, eta airbase Japan 1030. Tail Nr 40653 (C-141). USB mode. (Boender, Netherlands)

11176: Can Force 3750 w/Croughton in USB at 0730. Enroute London-Ottawa. Tail Nr 144616 (Canadian Challenger C600). (Boender, Netherlands); Air Evac 781 wkg Offutt w/pp at 1728 w/"Furious" re 43 passengers. 2 ambulatory, and 1 litter on board. A/c was probably bringing back wounded soldiers from Somalia. USB mode. (Baker, OH)

11282: U/i ATC wkg United 01. 747, Selcal FGHP, LA-Hong Kong at 2238 w/position report. Pilot said he'd tried SatComm. United 897. 747 LA-Tokyo at 2244 w/position report. Pilot said he'd tried SatComm but not working. "Could you phone someone and ask them to hit computer with a hammer!" (Heywood, BC, Canada)

11300: KLM 561 wkg Cairo in USB at 0028. Enroute Amsterdam-Cairo. (Boender, Netherlands)

11538: NAVMARCORMARS. NNNOCNX. USS Virginia (CGN-38) wkg NNNVGV, u/i, w/pp tfc in USB at 2210. (Baker, OH)

12857: 6WW, Dakar Naval, Senegal in CW at 1850 w/V mkr. (Baker, OH)

13008: JOR, Nagasaki, Japan in CW at 1400 w/mkr DE JOR QSX 2MHz 12MHz. (Mike, Germany)

13023.5: D3E415. Luanda, Angola w/mkr in CW & QSX freqs at 2245. (Baker, OH)

13555: YL/EE w/1-0 count and 478 from 1200-1210. Then 10 tones 'Count 225' and into 3/2F grps. Also on 16086 kHz. (Mason, England)

14441.5: NNNOCPT, NOAA Discoverer in USB at 0336 c/g Any Shore Station. (Navy, VA); Foll NAVMARCORMARS hrd between 1937 & 0107-NNNOCSP. USCGC Spencer (WMEC-905) wkg NNNOPSX, u/i, QSY 14477 kHz for pp tfc; NNNOCUX, USS Nassau (LHA-4) wkg NNNORRC, u/i ship & NNNOCNJ, USS Caron (DD-970) wkg NNNOVGV trying to get a wkg freq for pp tfc.

14452.5: Foll CFRS sines wkd VVV9, CFARS Golan Heights for rdo cks or pp's in USB at indicated times. CIW628, Pembroke at 1828. CIW824 Halifax at 2015. CIW605 Ottawa at 2015. CHL2 Western Sahara at 5042. CIW 806 Westville, NS at 2015: VDH9 Alert, NWT at 2019: VE9V Valtcartier, PW at 2000: CIW603 Kingston, Ont., at 1818: CIW802 Lower Sackville at 1819. (Boender, Netherlands)

15015: Sentry 67 wkg McDill GHFS at 1915 w/pp. Giant Killer (FACSFAC VA Capes, Norfolk) re freqs to use, advised 4372 kHz primary. At 2006, Jumbo 21 (B-52G, 2BW, Barksdale AFB, LA) wkg McClellan GHFS for rdo ck. All in USB. (Baker, OH)

16083.9: YL/EE on USB at 1341 w/5F grps w/very strong warble jammer right on top of numbers xmsn. (Ed.)

16414: YL/GG rptng November Zulu from 1300-1305 with tones. Then 5F grps for 955 and 649. (Mason, England)

16735.5: 9AR, Rijeka, Croatia trying to raise u/i ship in CW at 1830. Called DE 9AR rptd several times. (Baker, OH)

17027: FFL8, St. Lys, France w/QSX mkr at 1811 in CW. (Baker, OH)

17206: IAR, Rome, Italy in CW at 1000 w/strike notice. "Notice to ships. Due to trade union meeting if radio operators, radiotelegraphy & radiotelephony service will be interrupted until further notice." (Boender, Netherlands)

17995: OM/EE w/wx for Stevensville & Ottawa being passed to u/i stn in USB at 1537. (Mike, Germany)


18446.9: U/i CW stn at 1715 sends SA2 QRL S1 IMI K (pause) QTR 2200 QSA NO QLS 1 K (pause) ZTT 13936 K AS K. Checked 13936 kHz and hrd stn tuning foll by BK BK BK (over & over) then rpts many V's. No more hrd at 1721, dropped. Other end never hrd on either freq. (Ed.)

20185.6: NASA relay of Cape Radio comms at 1440 for launch of shuttle Columbia STS-58. Hrd in USB. (Baker, OH)

22452: XSO, Guangzhou, China in CW w/mkr at 1032. (Boender, Netherlands)

22560: URL, Sevastopol, Ukraine in CW at 1034 w/CQ DE URL mkr. (Boender, Netherlands)

22581.5: KFS, San Francisco w/QSX mkr in CW at 1816. Also noted same on 12695.5, 12844.5, 17026, and 17185 kHz to 1852 UTC. (Baker, OH)



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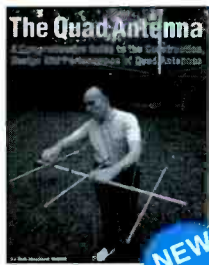
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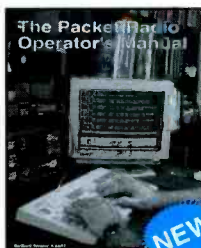


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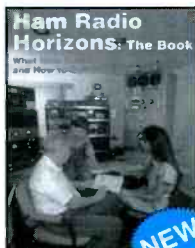


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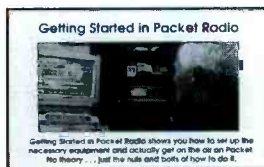
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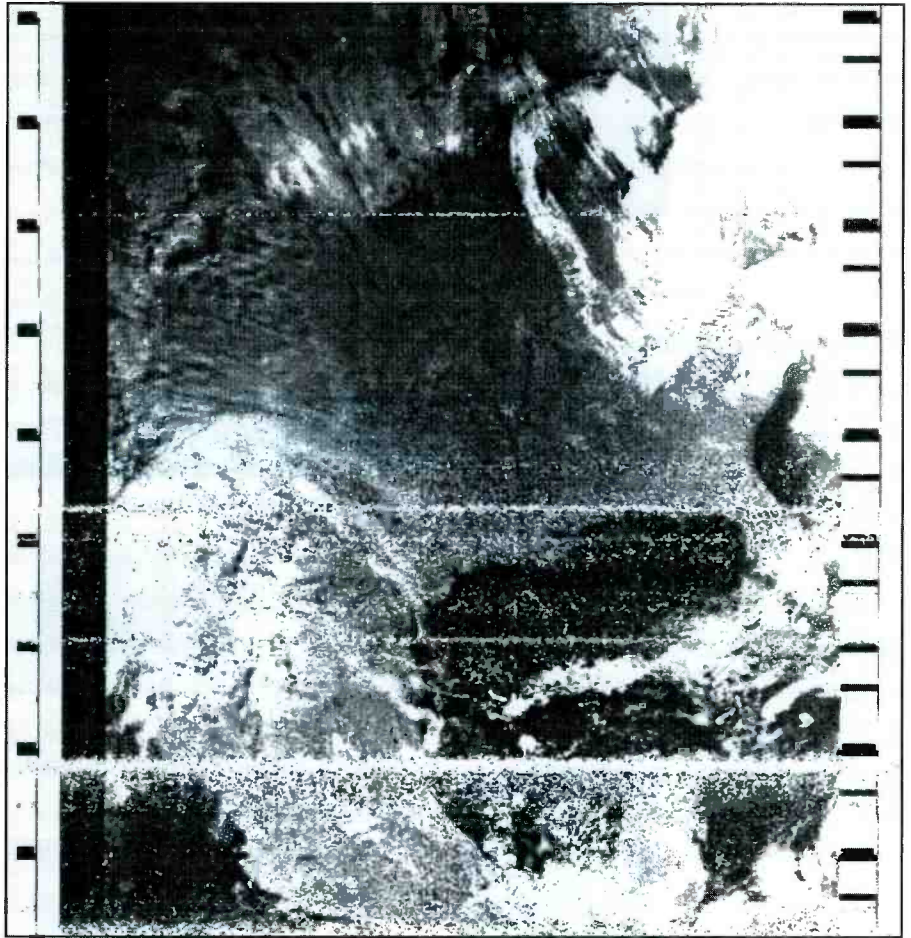
For more than a year weather satellites on the 137 to 138 MHz band were monitored here at The RTTY Ranch. The equipment used was very basic: TV aerial, ICOM R-7100 receiver, DES M-800 Fax Converter, and a 24-pin dot matrix printer. The printouts were interesting but didn't look very exciting. Something was lacking, but I couldn't pinpoint the reason immediately.

What was needed was an entire change of equipment. "Out with the old, in with the new" was the rallying cry that helped transform my printouts from the blahs to the aahs. An omnidirectional antenna with a pair of phased dipoles over a ground plane substituted for the TV aerial. A GaAs-FET preamplifier was placed between the antenna and a length of 50-ohm coaxial fed to a Vanguard WEPIX 2000-B synthesized receiver. From there the signal ran to an OFS Software WeatherFAX Scan Converter card in my IBM compatible personal computer. A Hewlett-Packard LaserJet IIP plus printer produced the faxphotos.

While hearing a weather satellite for the first time over the Vanguard receiver, I fired up the computer, ran the OFS software program, and rejoiced at seeing the immense detail of weather systems I never saw with my other equipment. Clouds looked fluffy, not flat. Rivers stood out sharply; they were never visible on past printouts.

If some photos didn't look clear and sharp on the computer screen, the OFS software would enhance them, bringing out details that seemed to be hidden from view. For instance, the weatherphoto shown this month was heard on 137.620 MHz. Before processing, it looked very dark. Most of the land mass of the United States was barely discernible from surrounding waters. The cloud formation in the upper right corner, however, was very sharply detailed. In order to bring out the land mass and lower level clouds, such as those over Texas and New Mexico, I had to adjust the contrast of the image. The cloud system in the upper right corner then became washed out, but the sacrifice was worth it because several rivers, including the Mississippi, became noticeable, as well as Lake Michigan, which is partly obscured by the left side of the cloud ring near the center of the photo.

Maritime RTTY: This month we look in on Boufarik Radio, Algeria, with 7TK20 on 4350.5 kHz, working ships on 4171.0; 7TK21 on 6496.5 to ships on 6258.5; 7TK22 on 6502.5 to ships on 6264.5; 7TK23 on 8710.0 to ships on 8349.0; 7TK24 on 8711.0 to ships on 8350.0; 7TK25 on 13092.0 to ships on 12512.0; 7TK26 on 16695.0 to ships on the same frequency; 7TK27 on 17227.5 to ships on



An NOAA satellite view of the United States on 137.620 MHz. (From Robert Margolis.)

16690.5; and 7TK28 on 22580.5 to ships on 22211.5.

Satellite RTTY: Golay and POCSAG pager modes on Galaxy 4, transponder 4, SCPC, at 64.00 MHz.

Stax of Fax Dept.: In Robert Hall's Nov. '93 loggings, he has this comment for a weather map he spotted on 18621.8 kHz at 1900 UTC, 120/576, "unid., unlisted, fuzzy pix, could be imagery." What you saw, Bob, was LRO84, Buenos Aires Meteo, Argentina, which, until a little more than a year ago, was on 18093.0 kHz. While the signal is generally quite strong here at The RTTY Ranch, the charts always look degraded. It seems that the charts, running as one long strip, are placed halfway inside some type of plastic holder. The holder is transparent but apparently of color, possibly yellow. This darkens the image of the fax image and makes it very difficult to read compared to the uncovered half of the strip. Adjusting the brightness of the dark image only serves to darken the uncov-

ered part, making it unreadable. I sent a printout of the problematic transmission to Buenos Aires about a year ago, but received no reply.

RTTY Intercepts. All Times UTC.

518.0: ZSC, Capetown R., RSA. w/navareas & wx. FEC at 1630. (Robert Hall, RSA)

3175.3: LOR, Puerto Belgrano Navrad, Argentina. w/wx in SS. 700/75 at 0030. (Fred Hetherington, Fla.)

3549.3: YMA20, Ankara Meteo, Turkey. w/wx. 850/50 at 0105. (Hetherington, Fla.)

3607.3: GKZ1, Portishead R., England. w/product info in FEC at 0130. (Hetherington, Fla.)

3667.2: Un-ID w/KAA cct ID at 0130. ARQ-E/46. (Hetherington, Fla.)

3684.0: FMV, Lyon Navrad, France. w/msg to Paris, ARQ-E/72 at 1956. (Ary Boender, NLD)

3745.0: Un-ID w/wx at 0230. 850/100. (Hetherington, Fla.)

3781.5: FDY, French AF, Orleans, France. w/le bricks, RYRY & "test de FDY." 425/50 at 0120. (Hetherington, Fla.)

4000.2: YRR, Bucharest Meteo, Romania. w/coded wx. 425/50 at 0220. (Hall, RSA)

4017.0: U.S. Army MARS net at 0150. 170/45. (Richard Baker, Ohio)

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/led
MFA	Ministry of Foreign Affairs
nx	News
PP	Portuguese
RYRY	"RYRY . . ." test tape
SS	Spanish
tfc	Traffic
w/	With
wx	Weather

4023.0: U.S. Army MARS net at 0140, FEC. (Baker, Ohio)

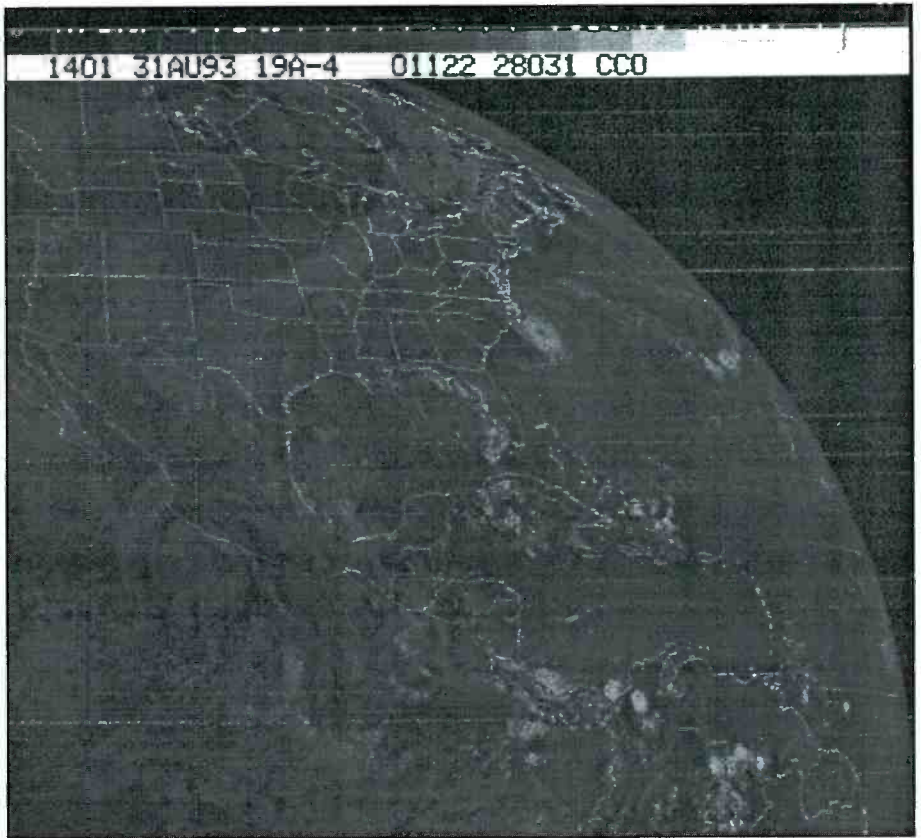
4171.0: EFGG, Campocriptana (Spanish oiler—Ed.), w/msg to Campsa Logistica Madrid, ARQ at 1942. (Boender, NLD)

4173.0: M/V Aquila w/msg for police to remove belligerent crew, ARQ at 1940. (Boender, NLD)

4175.5: D5DH, Atlantic Forest (Liberian dry cargo ship—Ed.), w/ETA Rotterdam msg, ARQ at 1825. (Boender, NLD)

4179.0: UIGU, the Russian tanker Ashkhabad, w/tlx to New York, ARQ at 0210. (Ed.) SPZN, Zawiercie (Polish gen. cargo ship—Ed.), w/msg to Antwerp at 2007, ARQ. (Boender, NLD)

4547.0: PWZ33, Rio de Janeiro Navrad, Brazil, w/CQ's & RYRY at 0230, 850/75. (Hetherington, Fla.)



Hurricane Emily off the North Carolina coast last August. (From Steve Wielgos, of India.)

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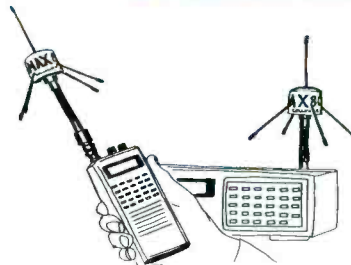


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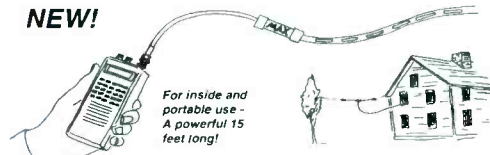
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6465.0: GXG, Royal Navy School of Sigs., Portsmouth, w/kg GXF w/unclass drill msgs. 75 baud at 2000. Results were discussed in USB voice. All msgs sent by "Caroline" and addressed to "Calliope," "Claverhouse," and "Camperdown." Calliope ID'd as GXF. (Boender, NLD)

5335.3: RPFNG, Lisbon Navrad, Portugal, w/RURY & SGSG, 850/75 at 0102. (Harold Manthey, N.Y.)

5402.3: AEKB, USACE M/V ___? ___, w/msg to AEUI, USACE M/V Mississippi, FEC at 1702. (Ed.)

5425.0: Un-ID w/s/off msg in FF, ARQ at 1423. (Baker, Ohio)

5430.0: RVM45, Tashkent Meteo, Uzbekistan, w/coded wx. 50 baud at 0115. (Boender, NLD)

6266.0: PJQV, Normandic, w/ETA Portsmouth msg, ARQ at 0120. (Baker, Ohio) I find PGJP listed as the c/s for this Dutch reefer—Ed.

6269.5: 9MBB7, the Malaysian cargo ship Bunga Siantan, w/tlx tlc at 2038, ARQ. (Ed.)

6270.5: P3CH3, the Cypriot cargo ship lolcos Leader, w/grocery list, at 2038, ARQ. (Ed.)

6312.7: WLC, Rogers City R., Mich., w/Great Lakes buoy/ship obs, foll by Great Lakes marine wx fm NWS, Cleveland, Ohio, FEC at 1926. To ARQ at 1952 w/tlx tlc. (Ed.)

6483.1: PBB, Den Helder Navrad, NLD, w/availability chart. 850/75 at 0015. (Hetherington, Fla.)

6562.0: 6VU, ASECNA, Dakar, Senegal, w/RURY + "6VU testing." 790/50 at 0030. (Hetherington, Fla.)

6668.3: Un-ID w/activity rpt in EE, ARQ at 0315. (Hetherington, Fla.)

6740.5: Un-ID w/AFP nx in FF, HTS cct, ARQ-E/72, 1043-1053 & 1105-1128. Similar sta. found on 6936.0 at 1225. (Hetherington, Fla.)

6835.0: GFL22, Bracknell Meteo, England, w/coded wx, 50 baud at 0426. (Jim Navary, AA4JN, Va.)

6966.0: FDY, French AF, Orleans, France, w/RURY & "le bricks." 50 baud at 0447. (Navary, Va.)

7520.0: BZP57, Xinhua, Yuryumqi, China, w/nx in EE at 0130, 850/75. (Hetherington, Fla. & Boender, NLD)

7644.2: Un-ID idling. ARQ-M2/200, 0000-0300. (Hetherington, Fla.)

7650.0: BZR67, Xinhua, Yuryumqi, China, w/Xinhua nx in EE, 380/75 at 0230. (Hetherington, Fla.)

7713.1: TJK43, ASECNA, Douala, Cameroon, w/wx rpt, ARQ-M2/96, ch. B, at 0100. (Hetherington, Fla.)

7766.0: NMN, Portsmouth CG, Va., w/ARQ phasing sig. + CW ID at 1030. (Hetherington, Fla.)

7818.2: RFQP, French Navy, Djibouti, w/"control de voie," ARQ-E/100 at 0055. (Hetherington, Fla.)

7961.0: OMZ, MFA, Prague, Czech Rep., w/nx items selected from nxpapers, 100 baud at 0705. Was // 9280.0 kHz. (Zacharias Liangas, Greece)

8151.7: HMF86, KCNA, Bosong, North Korea, w/nx in EE. 501/50 at 1045. (Hetherington, Fla.)

8192.0: 9MR, Johor Baru Navrad, Malaysia, w/RURY at 1115, 850/75. (Hetherington, Fla.)

8264.5: Un-ID w/unlk. lang. & 5F grps. 500/50 at 0313. Poss. Asian. (P. Loo, Canada)

8348.0: GBVC, Canberra (British psgr ship—Ed.), w/msgs at 2044, ARQ. (Boender, NLD)

8377.5: KHRC, Matsonia (American cargo ship—Ed.), w/tlx tlc to KFS at 0223, ARQ. (Baker, Ohio)

8381.0: WIEO, the American tanker Texas Sun, w/AMVER, ARQ at 2303. (Navary, Va.)

8593.3: CCS, Santiago Navrad, Chile, w/msgs to ZKBT & PLXF (presumed ship c/s/s) at 1025. (Hetherington, Fla.) Mode???—Ed.

9156.0: "GVAC" w/RURY + ID at 0100, 850/50. Whozit? (Manthey, N.Y.)

10317.5: DFZG, MFA, Belgrade, Yugoslavia, w/nx in SC, FEC-A/144 at 2316. (Loo, Canada)

10521.6: Un-ID idling w/strong sig., ARQ-E3/192 at 0558. (Hall, RSA) RFLI, French Navy, Fort de France, Martinique—Ed.

11022.0: RPFNN, Lisbon Navrad, Portugal, w/RURY to RPTIH. 840/50 at 2339, foll by QRU QRX QRM AR. (Hetherington, Fla.)

11070.0: NNN0CCN, USN MARS aboard USS Monterey (CG-61), w/MARSgrams to NNN0FZQ in ARQ at 0056, & NNN0CRZ aboard USS America (CV-66) w/MARSgrams at 0059. (Baker, Ohio)

11080.0: YKP28, Sana, Damascus, Syria, w/nx in EE at 1805, 600/60. (Manthey, N.Y.)

11415.3: RFFVAY, French Forces, Sarajevo,

BHE, w/aport wx conds., ARQ-M2/200 at 1810. (Hall, RSA)

11430.0: HMF55, KCNA, Jungsan, North Korea, w/nx in FF at 2245, 250/50. (Ed.)

11443.7: Egyptian Emb., Brussels, Belgium, w/5L grps to Cairo, ARQ at 1835. (Hall, RSA)

11499.8: Un-ID in SS at 0000, ARQ w/425 Hz shift. (Hetherington, Fla.)

11620.1: AFS, USAF AWC, Offutt AFB, Nebr., w/aviation wx at 1638, 850/75. (Ed.)

12110.0: YOM21, Rompress, Bucharest, Romania, w/nx in EE, going QRT at 1130. (Liangas, Greece) Shift/baud???—Ed.

12139.0: HWN, Paris Navrad, France, w/RURY & SGSG at 1135. (Liangas, Greece) Shift/baud???—Ed.

12186.2: Jana, Tripoli, Libya, w/nx in EE, plenty of anti-U.S. propaganda, 406/50 at 1733. (Hall, RSA) So what else is new???—Ed.

12208.3: Czech Rep. diplo sta. OMZ66 w/nx in Czech. 425/100 at 1000. S/off 1008 w/73 A GOOD LUCK VAM PRAJE KOLEKTIV OMZ66. (Hetherington, Fla.)

12478.0: KNIJ, the American cargo ship Manulani, w/tlx tlc to KFS at 0340, ARQ. (Navary, Va.)

12482.5: PHVS, the Dutch cargo ship Swallow, w/AMVER report in ARQ at 2123. Was sailing from Guadeloupe to Le Havre. (Ed.)

12486.5: WTEA, NOAA ship Discoverer, w/ARQ tlc to NMO at 0200. (Navary, Va.)

12489.0: NAMW, the vehicle cargo ship USNS Algot (T-AKR-287), w/ETA Savannah msg at 1803, ARQ. (Ed.)

12490.0: OXBM6, the Danish coaster Fetish, w/AMVER in ARQ at 1659. (Ed.) WTER, NOAA ship Malcolm Baldrige (R-103), w/AMVER to NMN, ARQ at 1908. (Baker, Ohio)

12491.0: DPUP, Urte (German cargo ship—Ed.), w/tlx in GG at 0318, ARQ. (Navary, Va.)

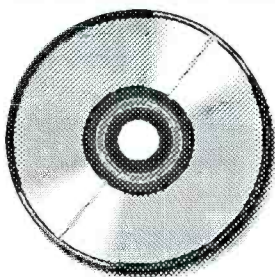
12557.0: TCIA, Kinai (Turkish cargo ship—Ed.), w/kg un-ID sta. in ARQ at 2202. (Baker, Ohio)

12599.5: VAI, Vancouver CG, B.C., Canada, w/wx in FEC at 1508. (Baker, Ohio)

12654.0: TAH, Istanbul R., Turkey, w/telexes in Turk, ARQ at 1315. (Hetherington, Fla.)

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CLOUD COVER 5/8ths WIND BEARING 180 DEG AT 01 KNOTS
AIR TEMPERATURE -0.7 DEW POINT -7.7
PRESSURE 1015.1 MILLIBARS 3 HR CHANGE -1.0 MILLIBARS
CLOUD NO STRATOCUMULUS, STRATUS, CUMULUS OR CUMULONIMBUS

SOVIET STATION AT 23625 (MANNED)
CLOUDBASE 500 TO 1000 METRES VISIBILITY 50+ KILOMETRES
TOTALLY OVERCAST WIND BEARING 180 DEG AT 01 KNOTS
AIR TEMPERATURE +0.2 DEW POINT -6.6
PRESSURE 1017.3 MILLIBARS CLOUD DIFFERING LEVELS OF CUMULUS & STRATOCUMULUS

SOVIET STATION AT 28076 NO SIGNAL OR NO REPORT

SOVIET STATION AT 28367 (MANNED)
CLOUDBASE 2500+ OR NO CLOUD VISIBILITY 4 KILOMETRES
TOTALLY OVERCAST WIND BEARING 190 DEG AT 6 KNOTS
AIR TEMPERATURE +3.5 DEW POINT -5.5
PRESSURE 1026.9 MILLIBARS 3 HR CHANGE -2.2 MILLIBARS

ANTARCTIC STATION AT 8807/=-

SOVIET STATION AT 28382 (MANNED)
CLOUDBASE 2500+ OR NO CLOUD VISIBILITY 20 KILOMETRES
CLOUD COVER 5/8ths WIND BEARING 200 DEG AT 02 KNOTS
AIR TEMPERATURE +2.6 DEW POINT -5.2
PRESSURE 1030.1 MILLIBARS 3 HR CHANGE +0.1 MILLIBARS
CLOUD NO STRATOCUMULUS, STRATUS, CUMULUS OR CUMULONIMBUS

SOVIET STATION AT 28481 (MANNED)
CLOUDBASE 2500+ OR NO CLOUD VISIBILITY 50+ KILOMETRES
TOTALLY OVERCAST WIND BEARING 230 DEG AT 04 KNOTS
AIR TEMPERATURE +3.6 DEW POINT -5.7
PRESSURE 1030.5 MILLIBARS 3 HR CHANGE -0.1 MILLIBARS
CLOUD NO STRATOCUMULUS, STRATUS, CUMULUS OR CUMULONIMBUS

SOVIET STATION AT 28495 (AUTOMATED)
CLOUDBASE 2500+ OR NO CLOUD VISIBILITY ?? KILOMETRES
CLOUD COVER 1/8ths WIND BEARING 000 DEG AT 30 KNOTS
DEW POINT +11
3 HR CHANGE +0.4 MILLIBARS

*5F coded weather as translated into English by Robert Hall's Era Synoptic Decoder.
This transmission is from Nairobi Meteo, Kenya, on 17441.0 kHz at 1400 UTC, on
October 18, 1993, 838/100.*

12704.4: LOR, Puerto Belgrano Navrad, Argentina, w/5L grps, 425/100 at 2145. (Hetherington, Fla.)

12848.9: Un-ID w/RYRY, 425/75, QRT 2030. (Hetherington, Fla.)

13415.2: PCW1, MFA, The Hague, NLD, w/ARQ phasing sig. + ID in CW at 1901. (Navary, Va.)

13417.0: CCS, Santiago Navrad, Chile, w/RYRY + "esta es cinta de prueba" at 1255, 850/75. (Hetherington, Fla.)

13512.4: MKD, RAF, Akrotiri, Cyprus, w/foxes & 10 counts on 5 FDM chnls, 170/50 at 1758. (Hall, RSA)

13526.0: DHJ51, Gregel Meteo, Germany, w/coded wx, 425/100 at 1100. (Hetherington, Fla.) Ditto at 1618, but also some plaintext GG. (Navary, Va.)

13867.5: Un-ID idling in ARQ, 1843-1930. Found idling at 2156 the foll day, a Saturday. (Ed.)

13868.0: Un-ID idling in ARQ at 2134-2200. Returns at 2235 & idles again, fading out by 2316. Prob. same sta. as hrd on 13867.5 kHz. (Ed.)

13986.0: Un-ID using unknown TTY mode, 300/90.2, 1756-1759. (Ed.)

14356.0: GFL24, Bracknell Meteo, England, w/coded wx, 50 baud at 1626. (Navary, Va.)

14409.8: RPTIH, Portuguese AF, Horta, Azores, w/RYRY, 10 count, SGSG, & "from all the bottles in the bar the best are the fullest so far." Was to RPFNN at 1524, 50 baud. (Ed.)

14497.0: CSY, Santa Maria Air, Azores, w/

RYRY at 1919, 50 baud. (Navary, Va.)

14532.0: Un-ID w/encryption at 1315, 81 baud. (Boender, NLD). I've heard a ton of frequencies w/81 baud crypto, Ary, Russia & Cuba are thought to be the heaviest users—Ed.

14606.7: RFHI, French Navy, Noumea, New Caledonia, w/"controle de voie," ARQ-E3/100 at 1453. (Ed.)

14622.0: "DKI," Bulgarian Emb., Havana, Cuba, w/RYRY + "DKI" ID, foll by "informaciya" in Bulgarian, 425/75 at 1637. Xmsn rptd at 1735 on 13922.0 kHz. (Ed.)

14674.0: DFZG, MFA, Belgrade, Yugoslavia, w/list in EE of stories to follow, 425/75 at 1508. (Ed.)

14675.3: AJE, RAF, Croughton, England (USAF AWN), w/EGWR wx data, 850/75 at 2030. (Hetherington, Fla.)

14684.0: Un-ID w/what sounded like FEC. Got nothing intelligible. Went to CW at 1530 asking for QSL on "alpha 3." (Hetherington, Fla.) My database shows CSY22, Polish Emb., Ottawa, Ont., Canada, using POL-ARQ—Ed.

14721.3: "6XM89" w/foxes to "C37," 170/100 at 1930. Told C37 to standby on "W25." At 1945, s/off w/"TCS GG AR NX KB GOOD NIGHT ALSO BY BY." So, they talk EE! (Hetherington, Fla.)

14815.0: CLP1, MFA, Havana, Cuba, w/RYRY to Nicaragua, 425/50 at 1604. (Ed.)

14824.0: BPA, Yuryumqi, China, w/RYRY + ID & 5L grps, 425/75 at 1515. (Manthey, N.Y.) Not from

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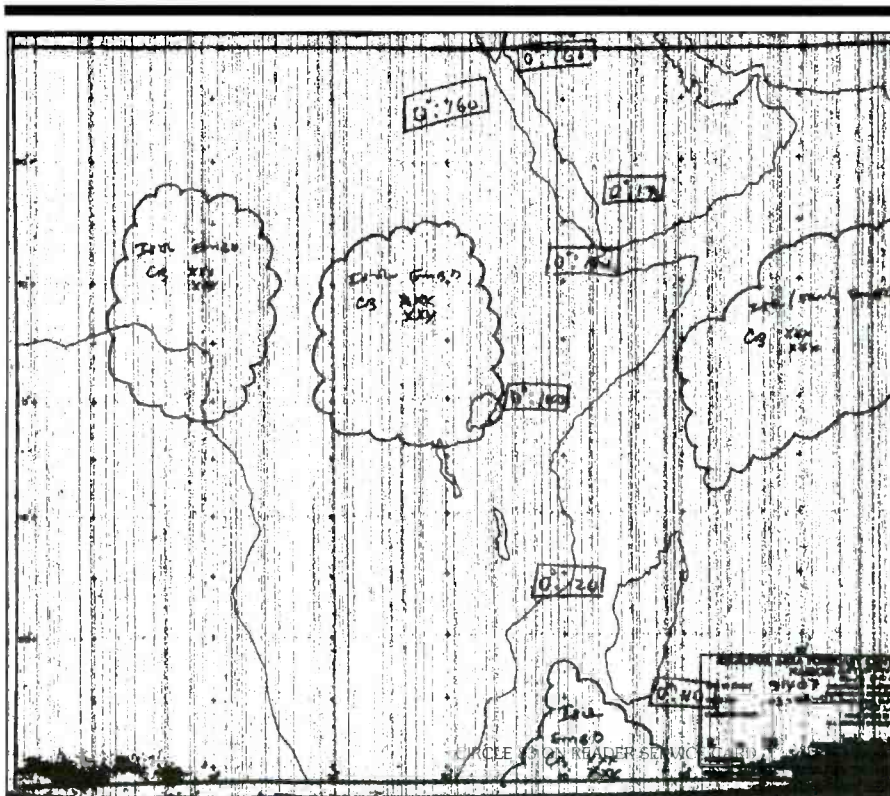
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Weather chart from 5YE, Nairobi Meteo, Kenya. (From Robert Margolis.)

China. Harold. BPA is a c/s concocted by an un-ID RTTY numbers sta—Ed.

14830.5: Un-ID w/encryption. 500/40.5 at 1247. (Loo, Canada)

14991.5: MFA. Cairo, Egypt. w/5L grps + text in AA. ARQ at 1500. (Manthey, N.Y.)

15627.8: RFTPA. French Forces. N Djamen. Chad. w/ "controle de voie." ARQ-M2/200. ch. A. at 1835. (Hetherington, Fla.)

16066.8: IRO30. Ansa. Rome. Italy. w/nx in EE at 1735. 50 baud. (Navary, Va.)

16114.0: SNN299. MFA. Warsaw, Poland. w/msgs in FF & Polish to Tunis. Tunisia. POL-ARQ at 1304. (Ed.)

16153.0: Un-ID w/5L grps at 1228. 500/50. (Loo, Canada)

16274.7: GNQ. British Army. London, England. w/foxes on 6 FDM chnls. 170/50 at 1855. (Hall, RSA)

16696.5: WTER. NOAA ship Malcolm Baldrige. w/tfc to NMN at 1702. ARQ. (Navary, Va.)

16704.0: UVLR. Niko Nikoladze (Russian bulk carrier—Ed.), w/kg Balumi Radio. 170/50 at 0955. (Boender, NLD)

16717.0: ZCKZ. Farland (Hong Kong cargo ship—Ed.). w/tfc via Portishead Radio. ARQ at 1905. (Navary, Va.)

16785.0: Un-ID w/sea nx in EE. ARQ at 1930. S/off w/DE L3 L3 L3. (Baker, Ohio)

16806.6: NMC. Point Reyes CG. Calif. w/Pacific & Indian Ocean wx. FEC at 1525. (Hall, RSA)

16870.0: NMH. Alexandria CG. Va. w/wx in FEC at 1940. (Baker, Ohio) Here is a case where xmsns like this should be viewed w/ suspicion. A well-known freq. guide has NMH listed on this freq. The info is incorrect and may've been printed purposely to detect copyright violations of the guidebook. We come to trust guides such as this one too much, & when we copy info out of it w/o double checking it for accuracy, we perpetuate the error & spread it around like a virus. The station Rich monitored here was not NMH. It was KMI. Dixon R., Calif., which maintains a continuous FEC b/c w/wx. b/c info, & tfc lists—Ed.

17387.4: Un-ID w/encryption. ARQ-E/288 at 1602. (Loo, Canada)

17590.0: NBA. USN. Balboa. Panama. w/AWG exercise msgs in SS to CCS at 1545 850/75. (Hetherington, Fla.)

18186.0: Un-ID w/5L grps. 510/50. S/off 1908 w/QRU SK. (Hetherington, Fla.)

18230.2: OMZ. MFA. Prague. Czech Rep., w/nx in Czech. 393/100 at 1240. (Hall, RSA)

18256.0: Un-ID w/MSF Guinee re aerial inst. for KKN (Washington, D.C.). ARQ at 1325. (Hall, RSA)

18257.0: HBD46. Swiss Emb., Havana, Cuba. idling in ARQ. 1804-1807. foll by "no message" then c/s. (Ed.)

18269.0: HBD20. MFA. Bern. Switzerland. w/nx in FF & GG at 1235. ARQ. (Hall, RSA)

18275.0: Un-ID w/encryption. ARQ-E/288 at 1315. (Loo, Canada)

18359.7: RFFX. FF. Versailles, France. w/5L grps at 1259. ARQ E/72. (Hall, RSA)

18385.0: LOR. Puerto Belgrano Navrad. Argentina. w/5L grps. 170/96 at 1058. (Hall, RSA)

18475.0: CLP1. MFA. Havana, Cuba. w/prensaminrex. 425/75 at 1921. foll by op msgs at 425/50. (Ed.)

18490.2: Un-ID w/"evyknkgcgwvial3" repeated for sev. pages. 492/100 at 1315. (Hall, RSA) I've monitored similar stuff up here. Bob. It's a synchronous mode, possibly TORG according to my notes—Ed.

18597.5: Poss. a Spanish diplo w/wds in SS + encrypted hdr prefacing 5L grps. ARQ at 2023. (Ed.)

18702.0: DGS70. PIAB. Elmshorn, Germany. w/nx in GG. FEC-A/96 at 1500. (Manthey, N.Y.)

18884.0: LYNJ. RTMKS Kapitan Butrimov (Russian flag). w/TG's in RR to Kerch R., Ukraine. 170/50 at 1502. (Ed.)

19724.5: UJY. Kaliningrad R., Russia. w/TG's in RR. 170/50 at 1446. (Ed.)

19747.5: 6VU79. Dakar Meteo, Senegal, w/coded wx. 425/50 at 1445. (Ed.)

19865.5: YZJ4. Tanjung. Belgrade. Yugoslavia. w/pooled nx in SS from various nx agencies at 1440. 425/50. (Ed.)

20318.7: CLP1. MFA. Havana, Cuba. w/prensaminrex at 1419. 425/50. (Ed.)

20590.2: HBD20. MFA. Bern. Switzerland. w/5L grps at 1743. ARQ. (Hall, RSA)

20619.2: OMZ. MFA. Prague. Czech Rep., w/nx in Czech. 398/96 at 1127. (Hall, RSA)

20627.0: CLP1. MFA. Havana, Cuba. w/5F grps to Cairo. 850/75 at 1640. (Manthey, N.Y.)

COMMUNICATIONS FOR SURVIVAL

Search And Rescue Transponders

If your rescue squad operates river, lake, and ocean boats, you need to know about a relatively new device on the marine scene called a search and rescue transponder—SART for short.

The search and rescue transponder is part of the necessary onboard marine electronics to meet the new global marine distress safety system requirements. While these requirements effect only major sized boats like commercial passenger ships, ferries, and all ships over 300 gross tons, some of this "required" equipment is also being used by recreational boaters as well as the U.S. Coast Guard and search and rescue agencies.

The marine SART has some of the same characteristics as an aeronautical transponder. When the transponder captures an incoming radar sweep, it will instantly send out a very distinguishable echo that shows up at and from your position on the radar scope. On aircraft, you would show up as numbers on the radar screen. On the marine radar system, the SART will show up as 12 highly visible lines pointing directly to the location of the activated search and rescue transponder. And since fiberglass boats or persons in the water are almost impossible to see on radar beyond a couple of miles, the activated SART will pinpoint this location with alarming visibility on an X-band radar set.

The marine SART operates in the 9 GHz frequency band, and will transmit its response signal when it recognizes any standard small boat and medium-sized vessel X-band radar. X-band radar is used by U.S. Coast Guard and harbor patrols almost exclusively throughout the world, and any small boat radar with maximum ranges of 24, 36, or 48 miles normally operates on X-band frequencies.

The design of the SART antenna system enables the completely waterproof beacon to broadcast in all directions, even in heavy seas. It floats in an upright position with the mounting pole in place so that it can transmit effectively while in the water. The internal batteries allow the SART to operate for a minimum of a week in standby condition, and continuously for eight hours while responding to radar signals. It will also operate at temperatures as cold as -20 C, 0 F.

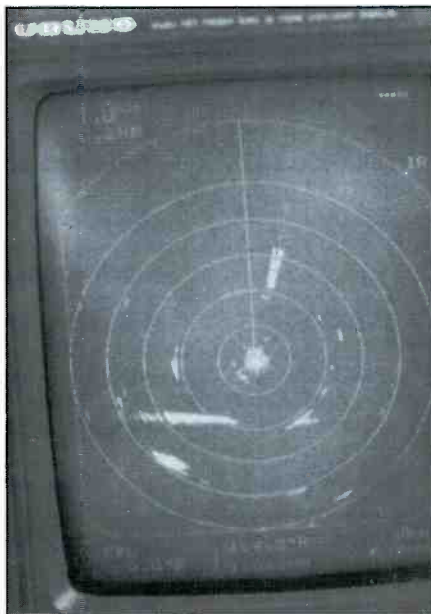
The activated SART puts an unmistakable series of lines on a nearby radar set pointing to the position of the activated signal. This is the exact same principle which has been in use for over 15 years by the U.S. Coast Guard RACON buoys and aids



Author Gordon West adjusts his SART testing equipment to measure SART signal levels at 10 GHz.



All types of X-band 10 GHz radar sets will receive the SART signal.



Activated SART echo seen 20 off to the right of the radar heading marker, out at the second range ring.



A close-up view of the Alden SART unit.

to navigation. The RACON, just like the SART, sends out a distinctive identifier, listed on the chart, corresponding to its listed characteristic. RACONs have proved an invaluable way of determining what aid to navigation is showing up on a radar screen.

The activated SART is intended for immediate distress situations. Sailboat operators question whether or not they could activate their SART for collision avoidance circumstances. I would certainly think so. If it's an emergency, use it.

For search and rescue operations, the SART could be immediately deployed in an area where an aircraft has gone into a lake or river, or at the scene of a drowning, or at the scene of a diving emergency. Re-

sponding agencies with vessels equipped with common X-band radar could immediately pinpoint the location of the incident, and head directly to it without need for VHF direction-finding counts from one to ten. Incoming helicopters with X-band radar could clearly see the exact location of the immediately emergency area.

But most important is to recognize the 12-line characteristics of the activated SART. This would alert the radar operator that there is something that needs to be investigated in this area. And while the SART is not intended to replace the emergency position indicating radio beacon, it's used with the EPIRB as an adjunct for on-scene location on any common X-band radar set. ■

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

How do you use your scanner? Do you listen to the same frequencies every day? Do you search for new channels that may prove interesting? While there's nothing wrong with using your scanner to hear routine public safety communications in your community, there's plenty of other things to be heard.

Except for low-priced units, most scanners have the capability to search through frequency ranges. For instance, if you were search from 153.740 to 156.240 MHz, you'd find not only police, fire, local government, school buses, veterinarians, rescue squads and ambulances, but also trauma helicopters, businesses, hospital security and maintenance, park police, business paging, mall and store security, police mutual aid, police point-to-point broadcasts, street crews and highway workers and more. For the most part, it depends where you live as to what types of communications you will hear on your scanner. If you live in a major metropolitan area, you'll hear the entire range of communications suggested here. However, if you live in a rural area, you'll hear only a handful of those types of communications. The point is, however, that you will hear all kinds of things, if you go looking for them.

In the above example, we limited our search between two frequencies spaced about 2.5 MHz apart. The less the range you search between, the higher the chances you have in finding active communications without passing over them. For instance, if a station transmits on 155.175 MHz on a sporadic basis (and you don't know the frequency), you stand a better chance of finding it if you are searching from 155.000 to 155.250, than you would if you were searching from 151.000 to 158.000. That's because the search function will pass over the target frequency more often in a search range that has less range to search through.

If you stumble across new stations, how do you determine who you are hearing? First, check your local scanner directory. Most radio stores carry one version or another of a local scanner guide. In the rear of most scanner guides, there is a sort of licensees by frequency. For instance, if you heard hospital security on 155.175, you could look under that frequency to find what nearby hospitals might be licensed on that frequency. While call signs aren't always used, you should jot down any you hear. These begin with a W or K and have a combination of anywhere from two to four letters and three to five numbers, such as: KA3002, KB91235, WXJ42, WYR-333 and KNJJ244. Typically call signs with

33.00 to 34.00—Fire, ambulance and school buses.
39.00 to 40.00—Police.
45.00 to 46.50—Police, fire, ambulance, school buses.
46.61 to 46.97—Cordless phones.
49.67 to 49.99—Cordless phone bases.
52.00 to 54.00—Hams (FM mode).
118.000 to 137.000—Aircraft.
137.000 to 144.000—Military.
145.110 to 147.390—Hams, FM simplex and repeaters.
148.000 to 150.750—Military.
150.995 to 151.475—Tow trucks, parks and environmental.
151.625 to 151.955—Businesses.
153.035 to 153.395—Manufacturing.
153.410 to 153.725—Utilities.
153.740 to 156.240—Police, fire, local government, ambulances, school buses, business.
156.275 to 157.425—Marine.
158.130 to 158.265—Utilities.
158.730 to 159.465—Police, local government, parks and environmental, streets and highways.
159.495 to 160.200—Trucking.
160.215 to 161.565—Railroads.
162.000 to 174.000—Federal government.
222.000 to 225.000—Hams.
225.000 to 406.000—Military aviation (AM) and satellites (FM).
406.000 to 420.000—Federal government. 420.000 to 450.000—Hams (except public safety in 420-430 MHz band in areas near Canada).
450.000 to 451.000—News media.
451.000 to 453.000—Industrial, utilities, buses, trucking, tow trucks, taxis.
453.050 to 454.000—Police, fire, local government.
454.000 to 455.000—Mobile telephone, paging.
455.000 to 456.000—News media.
460.000 to 460.625—Police, fire.
460.650 to 461.000—Airlines, alarm companies.
461.000 to 465.000—Businesses, paramedics, general mobile radio service, paging.

For those who want to get a start in searching, for new kinds of frequencies here are a few ranges to check out and the primary types of communications you'll hear.

just two letters, in the first two examples above, are for stations that are licensed for mobile operation only. Stations with three letters and two numbers are usually for fixed stations such as control stations that are at base stations and operate through repeaters or perhaps are used for point-to-point communications only; stations with three or four letters and three numbers are used for base stations and all associated mobiles and handhelds.

By catching the call sign, you can figure out not only what type of station you are hearing, but also perhaps who it is by matching the call sign in a scanner directory. That's part of the trick of being a successful frequency detective. By knowing how to search for new frequencies, you can find all kinds of new stations that might prove interesting to monitor. Sure, you may prefer to keep an ear on your local police and fire departments on a day-to-

day basis, but on a rainy day, you might find it more interesting to tune across a range of frequencies and find new stations you weren't aware of previously. It all adds up to enhance the hobby. As long as you are willing to invest some time in searching for new frequencies, it will prove beneficial in the long run.

And don't forget, when you come across those new frequencies, send a list to us here at Scanning VHF/UHF and we'll tell others in your area of some exciting new frequencies.

Mailbag

Patrick J. Healy, a firefighter and emergency medical technician in Bristol, Virginia, sends along a few frequencies of interest for his area: 159.165, Virginia State Police dispatch: 155.445, Virginia State Police cars: 39.62, Washington County



Here's the well-equipped listening post of George Speck, Registered Monitor KTX5FT, of Fort Worth, Texas. Scanners include a Regency R-1077, Cobra SR-900, Realistic Pro-2022, Regency INF50, Regency INF2, Realistic Pro-34, Uniden Bearcat 70XLT, Realistic Pro-26, Realistic Pro-22, Realistic Pro-27, as well as CB, two-way and shortwave equipment.

sheriff; 154.175, Washington County fire; 155.595, Bristol (Va.) police; 462.975, Bristol Life-Saving Crew dispatch; 155.205, Bristol Life-Saving Crew; 155.160, Washington County Life-Saving Crew; 462.950, Med-Flight II medical helicopter; 154.400, Bristol (Va.) fire; 42.42, Tennessee Highway Patrol dispatch; 451.550, Tennessee Highway Patrol cars; 155.640, Sullivan County sheriff; 154.280, East Volunteer Fire Department; 154.130, Avoca fire; 155.700, Bristol (Tenn.) police; 154.400, Bristol (Tenn.) fire.

Patrick notes that Bristol is in both Tennessee and Virginia and that the fire departments there share the same frequency to serve the area better. Patrick has been a firefighter with the Bristol (Va.) Fire Department for 22 years, and a member of the Bristol Life-Saving Crew for 24 years.

John Finney of Olathe, Kansas, says he has an Icom R7000 receiver as well as a Radio Shack Pro-2004 at his listening post in the Kansas City area. John said he is looking for frequencies used by newspapers, not just his area, but others where he might be traveling in, too.

Newspapers are allocated two basic groups of frequencies. The first one is a block of four VHF frequencies: 173.225, 173.275, 173.325 and 173.375 MHz. The second group is on UHF. Base stations, repeaters and mobiles can use 452.975 and 453.000 MHz, while mobiles can use 457.975 and 458.000. In addition, a handful of frequencies are reserved for low-power handheld use: 452.9625, 452.9875, 457.9625 and 457.9875. Newspapers use these frequencies for a variety of functions, including circulation (newspaper delivery), administrative and dispatch (delivery of advertising materials)

and news (both reporters and photographers). Some newspapers even might use the frequencies for advertising sales representatives, vehicle maintenance, paging and more.

While a lot of newspapers use these few channels, many smaller papers can't afford

to invest in all the equipment needed to put a major radio system on the air and instead may use conventional business band frequencies (after all, a newspaper is a business, and thus qualifies for that radio service as well). Most newspapers using business band will show up on shared repeaters in the 461-465 MHz band, or on T-band frequencies in the top 20 metropolitan areas. In addition, some newspapers also use 800 MHz repeaters and trunked systems, not to mention 935-940 MHz trunked systems in major cities. In fact, some larger newspapers may use a variety of radio systems in their operations.

For instance, a newspaper might use one or two VHF channels at 173 MHz for news photographers, a UHF frequency at 453 MHz for circulation deliveries, a UHF business band frequency at 461 MHz for outlying circulation units, an 800 MHz trunked system for reporters on assignment and low-power frequencies at 453 and 458 MHz for building security and data transmission for press operations monitoring. Check around and see what you can come up with.

If you have a question about scanning, we'll try to come up with the answer for you. What are your favorite frequencies? How about sending along a photo of your listening post? Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, N.Y. 11801-2909. ■

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CIRCLE 55 ON READER SERVICE CARD

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

It took a surprisingly short time for Herald Broadcasting (Christian Science Monitor) to find a buyer for its Maine shortwave station, WCSN. Prophecy International has signed a letter of intent to buy the station, which would become effective in September. Prophecy International operates a church, school and TV ministry out of Mt. Dora, Florida and is headed by Seventh Day Adventist Pastor John Wesley Osborne, Jr. Prophecy will pay \$5 million to acquire WCSN. By the time you read this WCSN will already be carrying as much as 30 hours of Prophecy programming per week. Herald Broadcasting is in the process of installing an additional 500 kw transmitter and additional antenna systems at WSHB in South Carolina to enable that station to pick up the coverage slack which will be caused by the loss of WCSN.

Our congratulations to Jeff White, the "big guy" at Radio Miami International which began test broadcasts late last year, even though the first airings were via a low power standby transmitter. WRMI will broadcast in Spanish (and some English) mostly to the Caribbean and northern South America. Look for WRMI on 9955 and send your reception reports to P.O. Box 526852, Miami, FL 33152.

WHRI's new station in Hawaii should be on the air now. KWHR is scheduled for English broadcasts at 0000 on 17555, 0200 on 17510, 0600 on 9930, 1600 on 7425, 1800 on 13625, 2000 on 13720 and 2200 on 17510. Most of the programming will consist of relays of WHRI.

The Voice of America has dedicated its new relay station in Morocco. The new station has ten-500 kw transmitters and 21 steerable antennas. The installation, which cost \$200 million to build, is fully computerized and can be run automatically. Programming from the VOA in Washington is picked up off a satellite for rebroadcast. The new relay replaces the old VOA site at Tangier.

Radio Veritas Asia, in the Philippines, is celebrating its 25th anniversary. The station was conceived as the Catholic Voice of Asia when it went on the air in 1969, nine years after the first meeting was held to discuss the establishment of such a station. The station now receives over 90 thousand letters a year and broadcasts in 15 languages. It uses three-250 kw transmitters and 15 curtain antennas. Studios are in Quezon City and are microwave linked to the transmitter site at Palauig.

Contrary to rumors, the Adventist World Radio station, Union Radio in Guatemala, is not off the air. It is broadcasting a regular schedule of programs in English and Spanish, operating on 5980 and running



CAAAMA programs part of the Australian shortwave station at Alice Springs on 2310 kHz. Thanks to J.W. Roberts, Brevard, NC.

3.5 kw of a 10 kw transmitter. Eventually an additional 5 kw transmitter will be used, probably in the 25 meter band. The second transmitter is currently at AWR Costa Rica and will be moved to Guatemala City, according to information from Dr. Adrian Peterson, co-ordinator of special projects for AWR.

Suddenly there's fresh shortwave activity from Honduras. First it was Radio Copan International opening transmissions on 15675. Now we have reports that a station called Radio Litoral in La Ceiba has begun operating on 4830. But we don't know of any one who's logged this one yet, perhaps due to Radio Tachira's signal blocking the channel. Now, word is just in about a Radio Paz, operating on 4323 and being heard around 1100 UTC in a local indian language and announcing 4325 as its frequency.

Watch for bigger signals from Singapore sometime this year as SBC puts six-250 kilowatt transmitters on the air along with a single 100 kw unit. Once these are active the Radio One network will operate on 6155 and 9530, City Sound (in Chinese) will be on 6000 and 9635, the Malay home service will operate on 7250 and 9590 and the Tamil program will use 7170. As SBC is active, operations on 60 meters will then be discontinued.

Shortwave operations of the Australian ABC regionals appear to be doomed. ABC Brisbane on 9660 has been dropped and the word is that 4920 is also running out

of time. Don't bet against also losing the ABC Perth outlets on 6140, 9610 and 15425. If they go the only local Aussies in operation will be the three stations of the Northern Territories Shortwave Service at Alice Springs, Katherine and Tennant Creek, all of which are difficult DX.

Your reports and other contributions are always most welcome here at the Listening Post. Loggings must be listed by country (alphabetical order is not necessary) and you must double space your items and include your last name and state abbreviation after each item. We also welcome photographs of you and your shack (or just your shack if you're shy!), spare QSL cards you don't need returned, station schedules, photos and background information about shortwave stations.

Here are this month's logs. All times are UTC (5 hours EST, i.e. 7pm=0000). Language of broadcasts is assumed to be English (EE) unless otherwise noted, i.e., FF=French, SS=Spanish, CC=Chinese, etc.

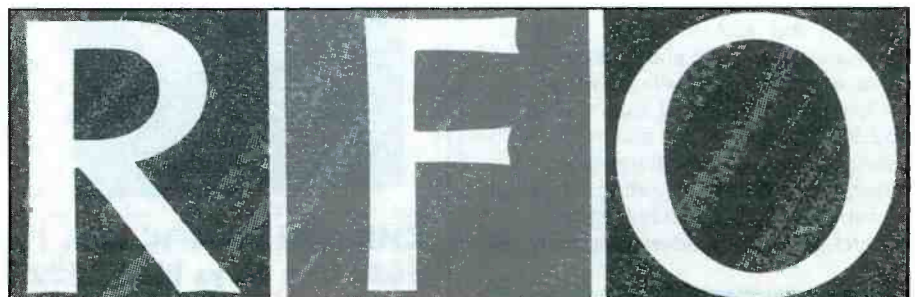
ALGERIA-Radio Algiers, 17745 at 1900 with news, frequent time checks, US pops, Arabic music, sports. (Miller, GA)

ANGOLA-Radio Nacional, 7245 at 0543 with pops, full IDs, other mentions of Angola, time checks in PP. (Paszkiwicz, WI)

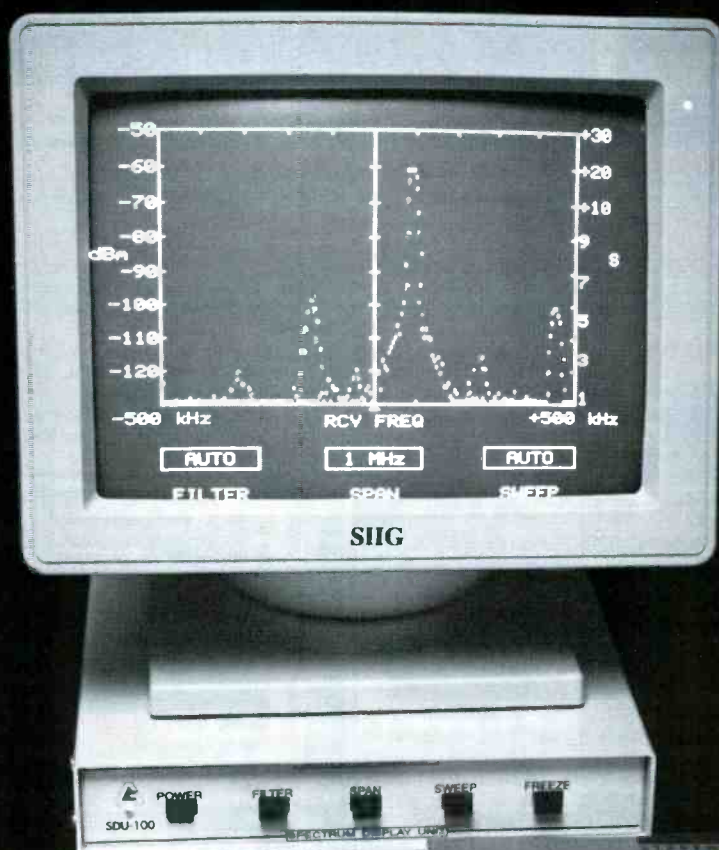
ARGENTINA-RAE, 11710 at 0335 in FF with music. The signal is much improved since several nearby stations changed frequencies. (Lamb, NY)

AUSTRALIA-ABC Radio, Brisbane, 4920 at 1257 with music. "News on the hour on ABC Radio," ID and news. (Zamora, NM)

Radio Australia, 6060 at 1404 in Cantonese with news, ID. "English for Overseas Listeners." Also



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CIRCLE 6 ON READER SERVICE CARD

Nobody Talks To Me!

You just bought your first 2-meter FM transceiver, but you seem to be doing more listening than transmitting? What's wrong? Well, nothing that's not easily remedied, so don't panic! This month's guest columnist, Steve Ford, WB8IMY, has just the solution:

All revved up and no place to go. We all know the feeling. You just unpacked your first 2-meter FM transceiver and you're dying to use it. You punch in the frequency of the local repeater and listen. Silence. This is the moment of truth. You key the microphone and, in your most confident voice, announce, "WB8IMY listening."

The repeater transmits for a few seconds, then stops. Surely someone is reaching for their microphone. They'll call you in just a few seconds, won't they? The seconds stretch into minutes. "WB8IMY listening," you announce again, this time with added urgency.

Still nothing.

The lonely minutes pass. Maybe you just picked a bad time. You'll try again in an hour or so. As you reach for the power switch, the repeater suddenly comes to life.

"WB8ISZ this is WB8SVN. You around Dave?"

"WB8SVN from WB8ISZ. I'm here. Did you just get off work?"

Now you feel a new emotion—anger! It's a safe bet that one of these two guys were listening before. Why didn't they answer you? Is it because you are a new ham?

The Shy Communicators

Hams pride themselves on their ability to communicate, yet there is an odd contradiction: many hams are painfully shy! It's one of our hobby's greatest paradoxes.

Breaking through the shyness barrier to communicate with a stranger can be difficult. When you announced that you were listening, a dozen people may have heard you. No one recognized your call sign, though. You're a stranger, an unknown.

For many hams, the familiar line of reasoning is, "Hmmm, I don't know this guy. What would I say to him? Nah, I'll wait. I'm sure someone else will give him a call." The problem is, when all the hams on the repeater feel this way, no one replies!

And so it goes on repeaters throughout the country. The problem isn't you *per se*, it's that fact that you're a stranger. So how do you make the transition from stranger to friend?

Breaking The Ice

If you keep announcing that you're "listening," someone is bound to come back to you eventually. This could take a long time though—especially if you're trying to start a conversation during less popular hours. To really break the ice and shed your "stranger" label, you need to assert yourself on the air. That is, you need to become part of an existing conversation.

Listen to the repeater during the early morning and late afternoon. As you hear ops talking to each other listen for an opportunity to contribute something—even if it's just a question. Let's say that you find two hams discussing computers...

"KR1S from WR1B. Well, I'm definitely going to pick up some extra memory at the show tomorrow. I figure I need at least two megabytes."

"I don't know Larry. I think four megabytes would be a better choice for the kind of software you're running."

Even if you don't own a computer, I bet you can think of a question that will give you an excuse to join the conversation. In the pauses between their transmissions, announce your call sign.

"WB8IMY."

"Well, there's a new voice. Ah... WB8IMY... I think it was...this is KR1S. How can I help you?"

"Hello. My name is Steve and I live in Wallingford. I'm thinking about buying a computer for my Amateur Radio station, but I'm a little confused. You guys seem to be knowledgeable. Can you give me any recommendations?"

Perfect! Stroking a person's ego is the best way to get them talking. With luck, these fellows will be more than happy to show off their expertise. Just keep the questions and comments coming.

If you engage in enough of these conversations on the same repeater, you'll gradually melt through the shyness barrier. In

time, your call sign will be as familiar as any other. When you say, "WB8IMY listening," you'll have a much better chance of getting a response. After all, they'll *know* you.

Getting Involved

Another way to establish yourself is to become involved in club activities. Look for local club that's active in public-service events. Attend the meetings regularly and be prepared to volunteer whenever they ask for help. Don't worry about your lack of experience in public-service operating. Believe me, it isn't that difficult. You'll be told exactly what to do and, in most cases, an experienced ham will be nearby.

After participating in several public-service events, everyone will know you by name and call sign. Soon, there will never be a shortage of people to talk to on the repeater.

Some Tips To Try

- If you announce that you're "listening" and no one responds, wait and try again a few minutes later. You'll have better luck during the commuting hours in the morning and afternoon.

- Try asking for a signal report rather than simply stating that you're "listening." A report request gives an otherwise shy ham an extra incentive to call you.

- Join a club that's active in public-service activities. Volunteer for as many events as possible.

- Active contest clubs are also good prospects. Offer your time to assist in several major contests at the club station.

Whatever you do, don't let social fears keep you from enjoying Amateur Radio to its fullest. If the locals are too shy to talk to you, reach out and contact them. You'll both benefit from the experience!

Well said, Steve!

As always, keep our QSL cards, photos, questions, and letters coming to me at ARRL, Department PCN, 225 Main St., Newington, CT 06111. See you at the next club meeting! ■

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- With the ARRL, expert help is only a phone call away. Call us any business day, toll-free, to have your questions about the ARRL Technician Class Video Course or your FCC exam answered personally.

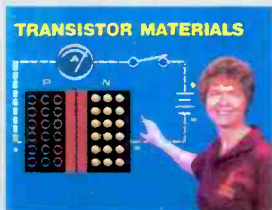


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SATELLITE VIEW

BY DONALD E. DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

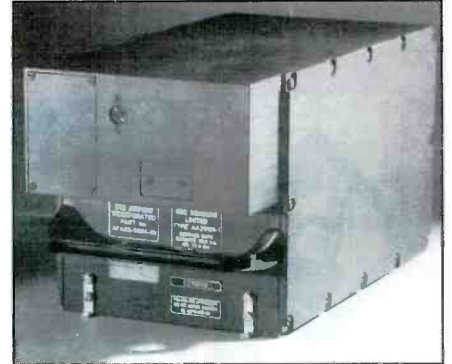
Airphones

Soon you won't have to (or want to) carry that magazine or paperback book on your next domestic or international flight. GTE and American Airlines have come up with a new concept for in-flight communications and entertainment. United just started installing GTE's GenStar™ digital communication system on more than 100 of their B-747, B-767, and B-777 aircraft, all of which service Europe, Latin America, and the Pacific rim. More than half of United's fleet will be equipped with basic Airphone service allowing transoceanic passengers to place telephone calls, as well as transmit data and facsimiles. Virtually 100% of United's domestic fleet, and 86% of the international fleet will carry the telephone service. That is more than 500 aircraft making over 2,100 flights daily. The GTE Airphone is also carried on more than 2,000 other aircraft owned by 10 other domestic carriers.

In both first and business classes, GTE will integrate the GenStar™ system with video systems supplied to United by GEC Marconi In-flight Systems Inc. Each seat will be equipped with a video monitor and telephone handset. In addition to GTE's FAX, data, and telephone services, the video system will also be offering six multi-language video channels, up to 24 channels of audio entertainment, electronic games,



ARAD-RADIO routes communications through ground stations and satellites.



Cabin Telecommunications Units (CTU) make airphone possible by controlling all incoming and outgoing signals.

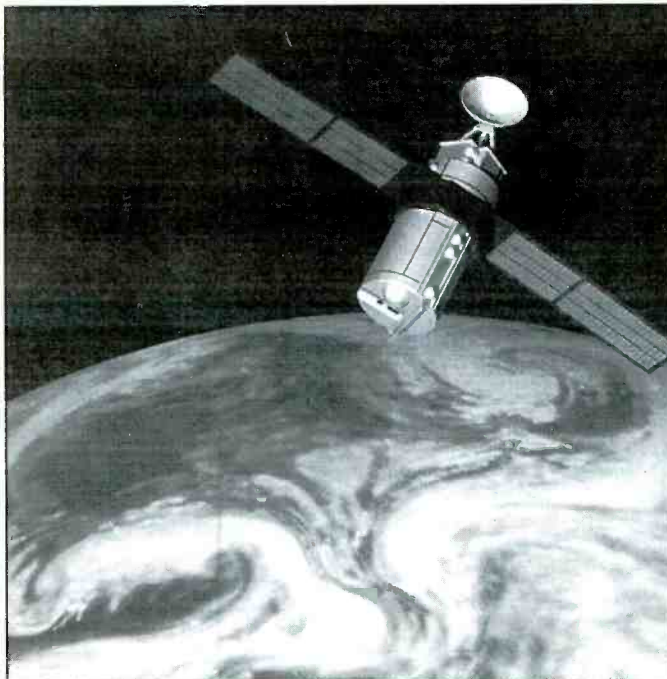
and enroute aircraft position displays and flight information.

With the GenStar™ system, GTE is greatly expanding its services for business travelers. For example, the system now offers static-free air-to-ground calls and will soon provide new capabilities such as air-to-ground calling. It will also feature conference calling, seat-to-seat calls, and information services. Passengers in economy class will also have full access to all features through telephones equipped with liquid

crystal displays and "RJ-11" jacks for computer and FAX connections.

Each Airphone/GTE equipped aircraft has a GTE Cabin Telecommunications Unit (CTU) on board. This console will manage the onboard entertainment and communications network by controlling the flow of information and services throughout the entire aircraft, and from the aircraft to ground stations.

When the aircraft is over the continental United States, or within 200 miles of



Inmarsat satellites transmit calls from airplanes via an antenna resting on top of the aircraft.



Just an example of what GTE will be offering air-traveling passengers with GenStar™ in-flight communications.

“The R8 is a highly sophisticated receiver. We'd call it professional grade, or about as close to it as receivers get these days.”

*Staff review
Popular Communications*

“The R8 is like a breath of fresh air, with its ground-up engineering and up-to-date digital control from the front panel. I am very pleased to see a quality HF receiver of American manufacture that should successfully compete on the world market.”

*Bill Clarke
73 Amateur Radio Today*



“Overall, the Drake R8 is simply the best radio we have ever tested for quality listening to programs...”

There's nothing else quite like it.”

*Lawrence Magne
Monitoring Times*

“The best of the best for high-quality listening to news, music and entertainment from afar.

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*Editor's Choice
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They appreciated the R8's sensitivity, clarity, simplicity, and all-around versatility so much that many of them declared the R8 simply the best of its class. High praise, indeed, from very well-traveled ears.

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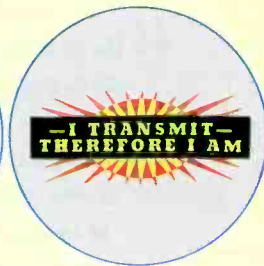
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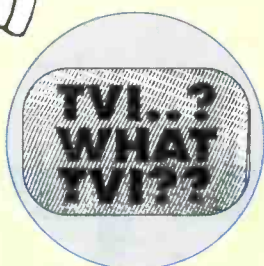
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This DC-10 is one of many planes that may be equipped with GTE's in-flight communications and entertainment system.

the coast, GTE communications services will be routed through its 109 ground station network. The ground stations will automatically hand-off signals to the next station in range without service interruption.

On satellite-equipped aircraft, travelers can continue to make and receive telephone calls as well as transmit data and facsimiles when the aircraft is in flight over the ocean and other continents.

With the satellite based service, an on-board radio transmits each call to a waiting Inmarsat (International Maritime Satellite Organization) satellite via an antenna resting on top of the aircraft. The satellite then routes the call to a COMSAT Earth station, which sends it to the public telephone network, making calls possible worldwide.

Through a comprehensive service agreement with GTE, COMSAT Aeronautical Services provides access to the Inmarsat global satellite network through ground stations in Southbury, Connecticut, and Santa Paula, California.

"We've seen a great deal of interest in mobile satellite services among international travelers because, for the first time, they will be able to stay in touch with their homes and offices during what used to be 'dead time' over the oceans," said Dr. Elizabeth Young, Vice President and general manager for COMSAT Aeronautical Services. This agreement will put United and GTE in the forefront of passenger communication technology.

Inmarsat, being a non-military mobile satellite system, provides telecommunication services to both ships and aircraft on a worldwide basis. The organization consists of 48 member countries. It controls four satellites in geo-stationary orbit. They are located at 178°E, 64.5°E, 15°W, and 54°W. These spacecraft use 1.5 and 1.6 GHz (1,500 and 1,600 MHz) to commu-

nicate with the aircraft. The satellites then downlink signals on 4 GHz. The ground stations uplink to the spacecraft on 6 GHz.

Inmarsat spacecraft have traditionally transmitted in voice and facsimile in standard SCPC (Single Carrier Per Channel) FM.

The installment of Airphone and GenStar™ equipment will continue throughout

the year on United, Delta, and other domestic and international carriers. So remember, the next time you board a plane and find a whole new world of information, entertainment and telecommunications at your fingertips, it was satellites and satellite technology that helped make it happen. See you next month!

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WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS

"Phantom" Caught

The FCC's Philadelphia office identified a minor responsible for causing deliberate interference to the Allentown New Jersey police radio system. The FCC investigation was conducted in cooperation with the Allentown New Jersey police, and the Hamilton Square New Jersey police.

This investigation was initiated after notification from the Allentown police that deliberate interference, including profane language, was being transmitted by an unidentified person in the Hamilton Square area. Much time was required to conclude this case since the subject transmitted for short periods and at random times.

The subject surrendered his equipment to the FCC Philadelphia Field Office in Langhorne, PA. The hand-held and base unit are valued at \$1500. A citation warning letter has been sent to the subject, and he is currently facing prosecution by the local authorities.

The accused, his brother and father are all licensed Amateur operators. The father stated that his son, who was responsible for this problem, may not operate the Amateur equipment for one year. The subject is also identified as the Pirate Station WCYC.

New Experimental Licenses

The FCC granted the following experimental applications:

KA2XNS, Marro Communications, Inc., to operate in the 2500-2600 MHz range to test the design of a new antenna configuration created to eliminate shadowing problems. FX: Boston, Suffolk, MA.

KA2XNY, Lockheed Sanders, Inc., to operate on various frequencies to evaluate a new communications signal and to compare its performance to an existing standard signal. MO: NH, MA, GA, IA, FL, AL.

KA2XOS, Martin Marietta Corp., to operate in the 400-500 MHz range development of a test bed for an adaptive array system. FX: Utica, NY

KC2XAA, Cincinnati Microwave, Inc., to operate on 314.2 MHz for development, testing, and production of residential home monitoring systems. MO: Continental U.S.

KC2XAB, Tektron Micro Electronics, Inc., to operate on frequencies 902-928 MHz for development of a digital audio transmitter for body worn, hand-held communications. MO: Hanover, MO.

KC2XAD, General Instrument Corp., to operate on various frequencies to use a limited number of prototype digicypher encoders and decoders in field tests prior to their test equipment authorization. FX & MO: Continental U.S.

KC2XAE, Nynex Science & Technol-

ogy, Inc., to operate on 2500, 2600, 22500, 28500, and 39500 MHz to investigate the factors associated with the use of microwave technologies as a transmission medium for video on demand applications. FX: White Plains, NY.

Vanity Call Sign System For Amateur Radio Operators

The FCC proposed to allow amateur radio operators to choose their own call signs. In light of the decision, the Commission by separate action vacated the rule provisions that established private entity call sign administrators and reinstated the prior rules.

Each amateur station licensed by the Commission is assigned a unique call sign with the purpose of providing over-the-air identification of the station while it is transmitting. Many amateur radio operators have expressed an interest in being able to choose their own call signs, which might be their initials, nickname or even a personal statement.

The Commission's current automated processing system does not have the capability to assign call signs other than sequentially. However, the Private Radio Bureau is now installing a new automated licensing system which will permit vanity call signs to be selected. Thus, the Commission proposes that such call signs be available, provided they have not been previously assigned. At the same time, the sequential call sign system would remain in place for those radio operators who do not want a vanity call sign.

The Commission supports this proposal which will allow amateur radio operators and the Commission to benefit from a creative use of improved technology. Amateur radio operators will be able to personalize their call sign and express themselves using the airwaves. The Commission will be able to improve the efficiency of its licensing process and better serve its customers, amateur radio operators.

In the future, this new automated processing system might allow amateur radio operators to check for call sign availability on their own, through an on-line system and ultimately, amateur license applications might be received electronically. This would further ease the process for both the operators and the Commission.

The proposed rule would allow the licensee of an existing primary station to request a new, vanity call sign. The Commission also proposes to extend this privilege to the license trustee of an existing club station. The Commission would also administer a club and military recreation station sequential call sign system under the new automated licensing process. Applicants

for a vanity call sign would use a new application form.

On May 11, 1993, the Commission adopted an Order which amended the amateur service rules to establish call sign administrators for club and military recreation stations. At that time, the Commission believed that such a system in the private sector would make club call signs widely available and benefit the amateur community without an undue burden on FCC staff.

On June 15, 1993, David B. Popkin filed a petition for reconsideration of action contending that the rules adopted should have been proposed in a notice and comment rulemaking proceeding and asked that they not be implemented. Popkin argued that the establishment of club call sign administrators is not minor and non-controversial in the amateur radio community.

Because the proposal adopted by the Commission also will meet the needs of persons interested in obtaining a club license, the Commission said there appeared to be merit in Popkin's argument and granted its petition. Accordingly, the Commission also vacated the rule provisions that established private entity call sign administrators.

Amateur Service Rules Concerning 222-225 MHz

The Commission amended the amateur service rules to create a small new subband at 222-222.15 MHz where repeaters are prohibited, and has authorized frequency privileges for Novice Class operators in the entire 1.25 m band.

In November of 1992, the FCC proposed three changes in the operational rules for the amateur service: 1) the creation of a subband in the 222-225 MHz (1.25 m) band where repeaters would be prohibited; 2) the authorization of frequency privileges for Novice Class operators in the entire 1.25 m band; and 3) the eligibility of Novice Class operators to be licensees and control operators of repeaters in the 1.25 m band, as well as in the 1270-1295 MHz segment of the 1240-1300 MHz (23 cm) band.

The Commission found that the establishment of a subband in the 1.25 band for non-repeater operations would facilitate experimentation, one of the fundamental purposes of the amateur service. The Commission further concluded that the authorization of Novice Class operators to use the entire 1.25 m band would provide them with the opportunity to become proficient in a wider variety of amateur service operations and give them greater flexibility in selecting the mode of transmission to use. However, the Commission determined that Novice Class operators should not be

authorized as control operators and licensees of repeaters in the 1.25 m and 23 cm bands because they lack knowledge about repeater operation. Further, it would diminish the distinction between the Novice and Technician Classes.

Apparent Liability Issued For Marketing Unauthorized Radio Frequency Devices

The FCC's Houston Office issued a \$5,600 Notice of Apparent Liability to Saab Tank Control of Houston, Texas. The company was marketing a radio frequency device that apparently did not have the required Commission equipment authorization. The device, known as a Saab Tank Radar, is used to measure fluid level in tanks. The device must be certified by the FCC before it can be marketed or used.

The FCC's Honolulu office issued a \$7,000 Notice of Apparent Liability to Pacific Ocean Producers, Honolulu, HI. The Notice of Apparent Liability was issued for selling fishing buoys which contain radio transmitters that do not have an FCC equipment authorization.

Outdated Renewal Application Forms

Only the May 1992 and later editions of FCC Form 405A, Private Radio Application for Renewal, reinstatement and/or Notification of Change to License Information, will be accepted for renewal of licenses. If you hold a license in one of these services and do not receive a renewal notice within 60 days of your license expiration date, you should submit FCC Form 503 to renew a Marine Coast station license.

Current editions of these forms may be obtained from the Commission's Forms Distribution Center, 2803 52nd Avenue, Hyattsville, MD 20781, phone number, (202) 632-FORM.

For further information, contact Private Radio Bureau's Consumer Assistance Branch, 1270 Fairfield Road, Gettysburg, PA 17325-7245, phone (717) 337-1212.

License Terms Of Ship And Aircraft Stations Extended To Ten Years

The Commission amended its rules to extend the terms of ship and aircraft station licenses from five years to ten years and to eliminate certain record keeping requirements in the Private Operational Fixed Microwave Service.

The FCC noted that the Communications Act permits license terms up to ten years in these services, and requires that the licensees have to measure the carrier frequency tolerance, the power delivered by the transmitter to the antenna, and the ERP for stations in the Private Operational Fixed Microwave Service when the trans-

mitter is initially installed or a change is made. These measurements are specified in the rules and in the station authorization, and must always be adhered to. There is little benefit, the Commission said, in requiring measurements at specified times, because the licensee is responsible for proper performance of its transmitters at all times.

Finally, the Commission eliminated certain record keeping requirements for Private Operational Fixed Microwave Service.

Apparent Liability Issued To Passenger Carrying Vessel

The FCC's Allegan, MI Office issued a

\$1,500 Notice of Apparent Liability to the "Seaport 76 Foundation" of Newport, RI. The Foundation's vessel, the PROVIDENCE, sailed on the Great Lakes without having an FCC safety inspection of the marine radiotelephone equipment. The Great Lakes Agreement requires passenger carrying vessels, such as the PROVIDENCE, to have yearly FCC safety inspections of the radiotelephone equipment.

Rules To Ensure Cable-Consumer Electronics Compatibility

The Commission proposed regulations that will ensure compatibility between cable television systems and consumer electron-



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ics equipment, such as television systems and consumer electronics equipment, including television sets and videocassette recorders.

These regulations will implement the statutory requirements set forth by Congress in Section 17 of the Cable Television enacted October 5, 1992. The objective of Section 17 is to ensure consistency with the need to prevent theft of cable service, so that cable subscribers will be able to enjoy the full benefits of both the programming available on cable systems as well as the functions available on their TVs and VCRs.

The rules the Commission is proposing are based on the findings and recommendations in its recent "Report to Congress in Means for Assuring Compatibility Between Cable Systems and Consumer Electronics Equipment." These proposals include measures that are intended to provide a significant degree of improved compatibility between existing cable and consumer equipment and also include provisions for achieving more substantial improvements in compatibility through the introduction of new cable and consumer electronics equipment.

The major provisions of the proposed plan are to:

—Prohibit the scrambling of signals on the basic tier of cable service;

—Require cable systems to provide a consumer education program to their subscribers. This program would include the notifications regarding potential compatibility problems that could be experienced by cable subscribers when receiving cable service through a set-top device and oper-

ation of remote controls required under Section 17. The consumer education program would also include a notification that some models of consumer equipment may not be able to receive all of the channels offered by the cable system when connected directly to the system;

—Require cable systems to provide supplementary equipment such as converters with multiple descramblers and by-pass switches to enable the operation of extended features and functions of consumer equipment and to provide subscribers the option of receiving in the clear all signals whose reception does not require use of a converter;

—Require cable systems to use the EIA/ANSI IS-6 channel plan;

—Adopt standards for all consumer electronics equipment that is marketed as cable ready. These standards would include:

- A Decoder Interface connector;
- The ability to tune all of the channels specified in the EIA/ANSI IS-6 standard; and
- Improved tuner performance and shielding;

—Require cable operators that use scrambling systems to provide component descrambling to subscribers that have TVs and VCRs that are equipped with the Decoder Interface connector. Cable systems would not be allowed to charge separately for the component descramblers.

The Commission stated that while the supplemental equipment/Decoder Interface approach appears to be the most practical for resolving the major compatibility problems between cables systems and consumer electronics equipment, it nonetheless believes the most desirable solution would be for cable operators to use technologies that provide subscribers all authorized signals "in the clear," without scrambling. The Commission stated that it therefore intends to encourage the use of technologies that eliminate the need for additional cable equipment in the home.

Finally, the omission stated that it intends to standardize the technology used by cable systems for digital transmission.

tially provide global coverage, they have the capacity to bring voice communications—as well as other service—to parts of the world that have previously had only the most limited means of participating in the global information network.

The services proposed include voice, facsimile and data applications such as cellular telephone-like services, personal locator services, data messaging, inventory control and fleet monitoring. Mobile satellites could also lead to the development of other innovative new services. This in turn has a potential to generate economic growth and more job opportunities in the telecommunications sector.

In addition, these mobile satellite services could not meet important public safety objectives by extending reliable mobile communications capability to rural and remote areas.

In deciding to allocate this spectrum for MSS, the Commission noted these bands were allocated to the MSS at the 1992 World Administrative Radio Conference (WARC-92) with no distinction between geostationary and non-geostationary satellite services.

For the 1610-1626.5 MHz band, the Commission adopted a bi-directional format, with a primary allocation for Earth-to-space (uplink) operations in the 1610-1626.5 MHz and a secondary allocation for space-to-Earth (downlink) operations at 1613.8-1626.5 MHz. For the 2483.5-2500 MHz band, the Commission adopted a primary allocation for space-to-Earth (downlink) operations. The Commission concluded that potential interference could be resolved through coordination with existing users or by using other technical means to protect radio astronomy and aeronautical radionavigational systems, such as the Russian Federation's GLO-NASS. It noted, however, that if bi-directional operations causes interference to primary service operations, the secondary service operator will be required to correct the interference to cease operations.

In allocating the spectrum to MSS, the action also upgrades the existing secondary allocation for the radioastronomy service in the 1610.6-1613.8 MHz band and implements the coordination requirements for MSS adopted at WARC-92.

Field Operations Bureau Authorized To Issue Subpoenas

The Commission recently delegated the Field Operations Bureau authority to issue subpoenas in the investigations of cases involving violations of Sections 301 (unlicensed operation) or 302 (illegal marketing of RF devices capable of causing harmful interference).

The Commission noted that this will facilitate investigations of illegal activity and, therefore, is in the public interest. ■

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Spectrum Allocated Above 1 GHz

The Commission allocated 33 megahertz of spectrum for the mobile-satellite service (MSS). This allocation, 1610-1626.5 and 2483.5-2500 MHz, will be available for both geostationary (GEO) and non-geostationary (low-Earth orbit) satellite systems.

Today's action will make possible the development of new mobile satellite services in this country and also create a potential means of communication for underserved parts of the world. This allocation is the first step in realizing mobile voice communications over low-Earth orbit (LEO) satellites. Because LEO satellites systems can poten-

CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

The station of the Mozambique National Resistance (RENAMO) is reported to be airing its broadcasts over a shortwave transmitter owned by Swazi Commercial Radio in Swaziland. The broadcasts are airing Mondays through Fridays at 0400 to 0500 and 1600 to 1700 on 6155. Each segment runs a half hour longer on Saturdays and airs for a full two hours on Sundays. The RENAMO station, however, claims to be broadcasting from inside Mozambique.

Broadcasts by Radio Free Afghanistan have ceased. The US government's surrogate broadcaster went on the air during the Soviet-Afghan war, using the facilities of Radio Free Europe/Radio Liberty.

Mini wars and unrest in the republics of the former Soviet Union continue to spawn clandestine radio activity. A Voice of Free Tajikistan is in operation, apparently along one of the border areas and apparently staffed by some ex-workers of the national broadcaster there. The station is operating between 7080 and 7089 and has been monitored with half hour broadcasts at such times as 0700 and 0900. Its broadcasts claim the current government of Tajikistan is communist and that the government supports the Iranian government.

The South Korean clandestine Echo of Hope (which is beamed to the North) has revised its schedule. Broadcasts are now from 2000 to 2100, 0800 to 1200 and 1400 to 1700, all on 3985 and from 0300 to 0700 on 6348, all in Korean.

Another South Korean clandestine beaming to the North also has a revised schedule. The Voice of the People currently operates from 0300 to 0430, 0600 to 0730 and 0830 to 1000 on 6518 and 6600. Also from 1200 to 1330 and 1600 to 1630 on 3912 and 2100 to 2230 and 2300 to 0030 on 6600, all in Korean.

The Democratic Voice of Burma, sponsored by the Union of Burma National Coalition Government, now airs on 15180 between 1430 and 1455, over Radio Norway facilities.

The latest schedule for the Voice of the Resistance of the Black Cockerel (VORGAN) is 0445 to 0845 on 4960 and 9550, 1015 to 1430 on 7290 and 11830 (varying to 11837) and 1630 to 2200 on 4960 and 7290. For a QSL try writing to P.O. Box 65463, Washington, DC 20035.

The Voice of Human Rights and Freedom for Iran currently operates from 1030 to 1225, 1445 to 1530 and 0030-0225



RESISTÊNCIA NACIONAL MOÇAMBICANA
RENAMO

The Mozambique National Resistance station, operated by RENAMO, is reported to be broadcasting over Swazi Commercial Radio on 6155.

on 11470, 15100 and 15670. Frequencies 9359 and 15100 are used from 2200 to 2245. Reports can be sent in care of Mina Alborzi, 18 bis, rue Violet, 75015 Paris, France.

Clandestine hunter Robert Ross in Canada has received a QSL for the Guatemalan clandestine, Voz Popular Guatemala for a reception back in 1988! The card was signed by station representative Julia Bares Lemis, a "lieutenant guerrilla woman combatant" member of the station, who was on a Canadian tour to raise money for the station. Ross says the representative reported the station runs two kilowatts of power and is located near the Tajumurco volcano in the Sierra Madre Mountains in Guatemala.

The current operating schedule is Tuesday and Friday at 2300 to 0045 on variable 7000 and on 3500V at 0200 to 0900. Reception reports for the station may be sent to Fernando Garcia, Centro de Promocion Popular, Apartado 20-668, Mexico D.F., Mexico.

Mike Hardester in North Carolina is tracking a station which he notes with an abrupt, but variable sign on around 0300. Some nights he finds the station on 6220, on other occasions on varying frequencies between 6210 and 6250. He thinks it might be one of the Mujahedin stations. Mike also hears all sorts of other interesting "stuff" in this area.

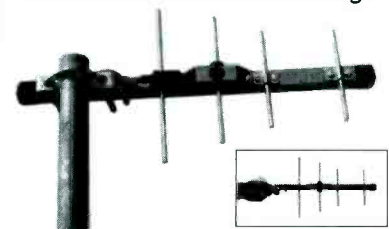
Now that Radio Miami International is on the air (on 9955) you may want to monitor this station to see what they carry in the way of paid anti-Cuban and anti-Haitian programming. Since RMI has brokered quite a bit of this programming on other US shortwave stations it seems quite likely they'd also place it on their own.

That wraps things up for this month. Your loggings of clandestine and related types of broadcasts are always welcome, along with QSL and address information, background notes on stations or the groups which run them and other clandestine news and related information. We are always happy to hear from you!

Until next month, good hunting! ■

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CIRCLE 79 ON READER SERVICE CARD

Beaming In

(from page 5)

pert. Believe me, if I can be hailed as an expert, *anybody* can.

Let's face it, we're discussing your old friend, *me*. The inventor of the Vampire Bat Antenna. The discoverer of contrapolar energy. The man who took four years to learn to solder to a PC board without burning a hole clear through it. The fellow who never puts the reducing adapter and outer collar on the coax before soldering on the innards of the PL-259. The man who thought an ohm was where an Englishman lives. The guy who always thought a half-wave is how to greet the neighbor you didn't like.

Look, I started out earnestly trying to be an expert. When transistors came along, I began learning everything I could. PNP and NPN, how simple! Problem was that it didn't end there. I had to continue slogging through a quagmire of preposterous inventions being announced at an ever-increasing pace—FET's, MOSFET's, tunnel diodes, Gunn diodes, Zener diodes, unijunction transistors, Nuvistors, Compactrons,

Varactors, bipolar transistors, bridge rectifiers, LED's, PLL's, flip-flops, and all sorts of other complicated and confusing things, many now long forgotten.

At some point, I fuzzed out and sank down beneath the relentless deluge of new devices and tech specs. They had beaten me. There was no way to keep up with this while simultaneously turning out a monthly magazine, spending time with my radios, and also getting my family to remember who I was.

No problem. The answer was a way of short-circuiting all of the studying, and ending up perceived as an expert. I reveal this sure-fire secret weapon only once every ten years, so it will be prudent to take notes.

The trick is in the use of the evil little chart that is the heart of system. It's possible for you to come up with about 1,000 different super-colossal meaningless high-tech terms. This is very effective.

All you need to do is pick a three digit number. The numbers represent a word from each of the three columns. That gives you access to a technical vocabulary of sufficient mass and impressiveness to do battle with practically anybody.

Here's a typical example of how you

could put the chart to use at a club meeting, on the job, in a store, at a trade show, at a convention, or anywhere else. You are standing there staring at some odd looking technological gizmo. You haven't the foggiest notion as to what it is or does.

Soon enough, you realize that you have been joined by a guy that you sense is about to try to humble you. Some people can't feel tall unless they can make someone else kneel. You instinctively know that it's your turn. He says, "Interesting device there. Makes effective use of negative differential resistance. The current decreases with increasing potential—odd, don't you think?"

You pretend to mull it over for a second, then toss him a 362, "Yes, I understand the government has been using this approach to develop a coherent non-linear synthesizer." This should effectively cause him to slink off into the shadows, both shamed and beaten.

He may try to recover his composure with a comeback, "Ah, yes, I heard that, too. Do you think it will work?"

Don't bat an eyelash when you whip out a 271, "Only if they pay careful attention to avoiding problems with pulsed transitional resonances." That will do it. You could even receive an on the spot offer of employment with the guy's company. If so, accept. Obviously, most of his engineers are using the evil chart. You'll fit right in.

See how easy it is? The possibilities are virtually unlimited. Best of all, the route to becoming perceived as a communications expert will be swift and direct.

Being thought of as an expert offers many extra perks. There is a certain thrill in having people who would otherwise not give a rap what I think seek me out for advice. Like when I get to be an expert witness in Federal District Court cases.

Also, experts get invited to a lot of swell places where free food is served. Once, at a buffet lunch thrown to introduce new IC's to communications consultants, a Texas Instruments VP chased me down to ask what I thought of TI's new chips. I told him they weren't nearly as good with dip as *Fritos* or *Ruffles*.

No doubt about it, this chart offers new hope for instant expertise. But a word of caution. What with so many possible combinations that can be made up from the chart, there is always the remote possibility that several of the combinations actually mean something. What's worse, such a phrase could be uttered to a person who understands what it means. Such an event has a potential for registering as much as 9 on the 10 point Kneitel Calamity Scale. With your luck, it's likely to happen within the first week you use the chart.

You're definitely wondering why I didn't run a complete listing of those combinations that really mean something. I figured you'd get around to that. Frankly, I haven't any idea what they might be. What do you think, I'm an expert? ■

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Other Mobile Scanners

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Fax fact on above: #560

(color slide)

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Scan/CB/Highway Patrol/ plus extra cost WX, X,K,Ka,Wide & Laser

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BCT2\$149.00
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Fax fact on all above: #580

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Fax fact #511.

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Fax fact #512.

SG-700L\$49.95

12 band AM/FM compact portable analog receiver

Fax Fact #514

TOTAL COVERAGE RECEIVERS




TR 2500



TR 980 TR 1000XL TR 1500

SCANNERS



BC 200XLTM



BC 760XLTM



TR 2

SHORTWAVE RECEIVERS



ATS 818CS



ATS 606

NEW!



BC 8500XLT



BC 2500XLT

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