

POPULAR COMMUNICATIONS

Scanning Interstate Big Rig Truckers

Also in this issue:

- **Selected English Language Broadcasts — Summer**
- **We Review: New Drake SW8 World Band Receiver**
- **Was It America's Obscure Broadcast Station?**
- **Bandwidth Explained**



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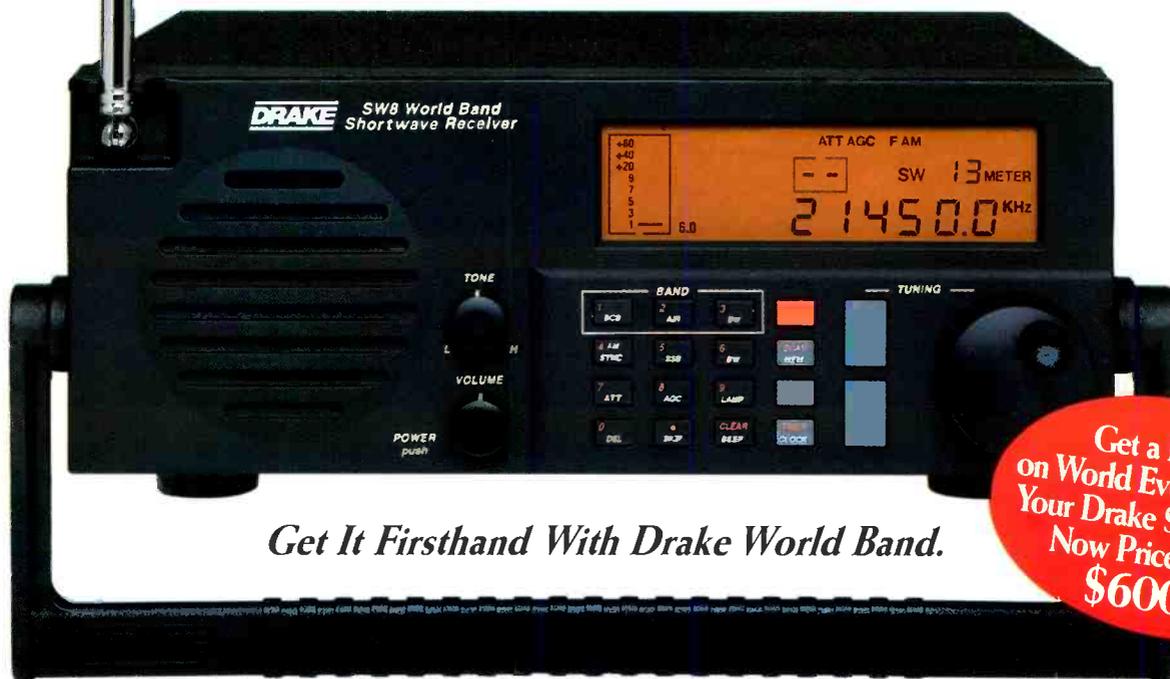
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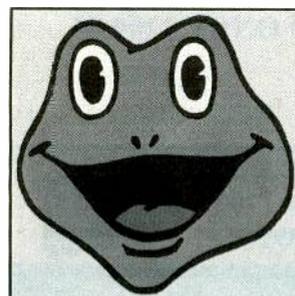
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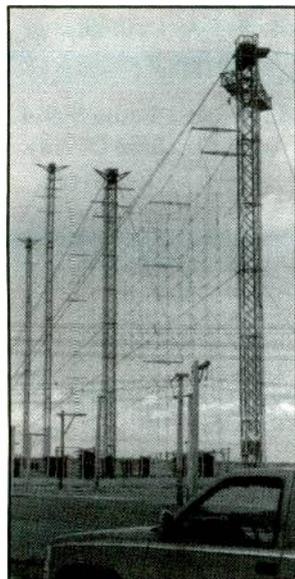
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This month's cover: Just one of the many "Big Rigs" traveling America's Interstate Highways. Photo by Larry Mulvehill, WB2ZPI.

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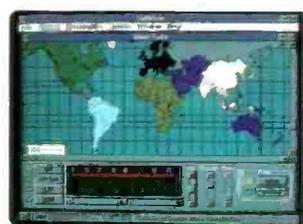
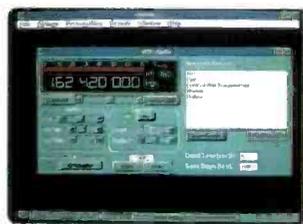
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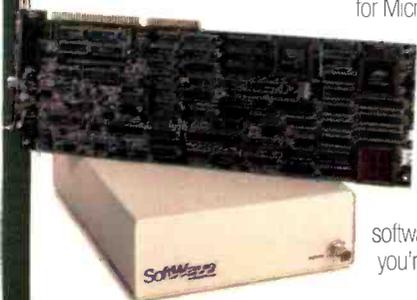
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Thoughts for a Summer Day

This month I'm going to touch upon several different topics that I haven't been able to get around to until now.

Not long ago, I went out shopping for a new car. This brought into sharp focus for me that auto manufacturers know just how to name their products in order to tweak the public's imagination. I mean the names that stand out because they're far more glitzy than *Rabbit*, *Elantra*, *Golf*, *Taurus*, or *Civic*.

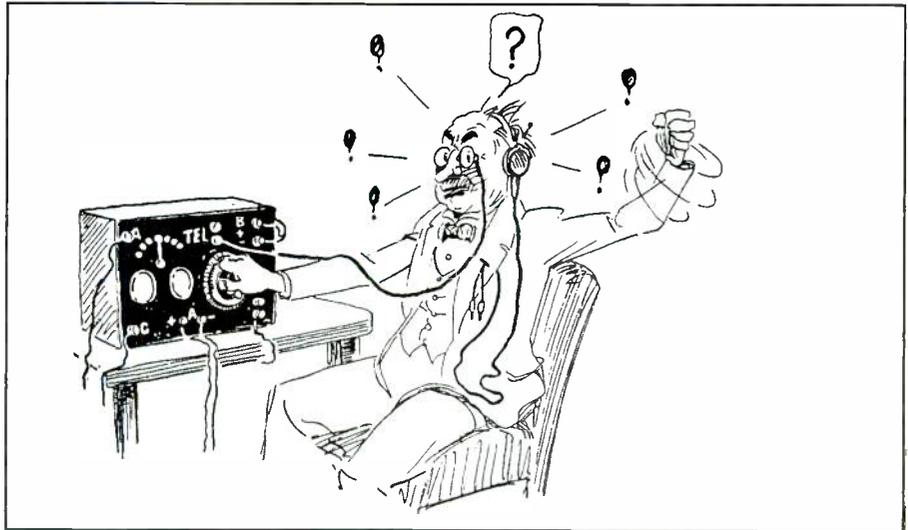
It's impossible for me to even think about vehicles with certain exotic names without getting an adrenalin rush. That's half way to luring me into the dealership for a test drive. It's the "Walter Mitty" syndrome. That's why I have always felt a kinship with vehicles having names like *Jaguar*, *Cougar*, *Eagle*, *Stealth*, *Spyder*, *Mustang*, *Firebird*, *Thunderbird*, *Bronco*, *Raider*, *Ram Charger*, *Explorer*, *Trooper*, *Wrangler*, and *Pathfinder*. Oh, to have owned the Batmobile.

Many years ago, someone custom designed a gutsy 6-meter mobile ham rig. When they produced some and began selling them under the name *Black Widow*, I knew this was one radio that belonged under my car's dashboard. Other people wanted them too, and the entire production run sold out so quickly that the *Black Widow* became an early 6-meter legend.

What this made me think about is how great it would be if we could see a lot more hobby communications equipment offered with names having that certain pizzazz. We could have transmitters named the *Band Blaster* and the *Killer Watt*. There would definitely be a major market for a scanner called the *Privacy Probe*.

How about a limited production version done up in a matte black cabinet and front panel, with a bit of brushed aluminum trim? Each set would have its serial number stenciled on the front panel. This receiver could be presented under a name like *The Black Box Communications Interceptor*, or *The Panther Signal Stalker*. I'd be first on line to get one. Would not be able to restrain myself. Then I'd spend weeks planning and putting up special antennas for the exclusive use of the receiver. Ah, the joys of SWL'ing, can't get enough!

The thrill of accomplishment when you work or receive a station on the outer fringes of your station's capabilities is, to me, a big part of the kick of the communications hobby. This is true when you drag that one-lung broadcast or *ute* station out of the static with your communications receiver, or when your scanner pulls in that elusive station two counties away from your location. If you're a CB'er, it means stretch-



"...the reason my headphones always stop working is because I keep forgetting to connect them to the receiver."

ing your station's coverage those extra few miles to reach out to more mobiles and bases. For HF hams, it's adding that hard-to-work country, or working that DX station during a pile-up. For hams who concentrate on 6 and 10 meters, it's seeing how you stack up when the bands open for skip.

Squeezing every last ounce of performance potential from any ham, SWL, CB, or scanner installation is the way I view the hobby. That means being the most proficient operator possible, plus using good equipment that is being given its best shot at delivering maximum results. This forces the operator to stop and think about details like using the most suitable antenna for the job needed. This holds true whether a person is using deluxe high-power gear or an economy set. Station and operator proficiency are put to the test only when a person pushes him/herself and their station to function successfully, or work/copy stations, under less than normal (or "arm-chair") operating conditions.

Careless or botched equipment installation combined with sloppy or inept operating practices do allow for at least some degree of scanner, CB, ham, or SWL operation, but at what cost?

I'm surprised that so many hobbyists seem willing to settle for no more "arm-chair" operating capability. It offers a quick and easy participation in the communications hobby. This provides a general, albeit superficial, feeling of what the hobby is. If someone expects no more from the communications hobby than what may be gleaned from skimming its surface, they'll never realize what they're missing.

A friend of mine thinks this happens be-

cause people today have become too casual about electronics technology. They see no need to become proficient in order to enjoy their TV sets, VCR's, CD players, computers, or cellphones. The equipment is removed from a box, gets plugged in and is designed to be on-line operating full blast right from the get-go. Ham radios, scanners, and communications receivers have come to be regarded the same way by too many people.

Modern communications gear is beautiful, reasonably priced, and sophisticated. It's so user-friendly that now things have gotten too easy. It wasn't always handed over to hobbyists on a silver platter, and that was a plus.

At one time, people getting started in communications often enjoyed entering its ranks by assembling an assortment of junk parts and a couple of vacuum tubes. From these things they could build an endless variety of low-tech hombrew transmitters and/or receivers, using a cigar box or a piece of board as a chassis. Constructing these sets was fun, and the hands-on knowledge of radio gained was valuable. More than that, the operating challenges those rinky-dink radios working off of makeshift antennas offered a wonderful sense of having actually accomplished something.

I'm not picking a fight with technological advances, they're obviously the best thing to happen to communications since Marconi. No way am I suggesting a return to the days of breadboard 6L6 transmitters. Still, I can't help but suspect that high-tech has played some vague role in bypassing an early formative stage in the evolution

(Continued on page 81)

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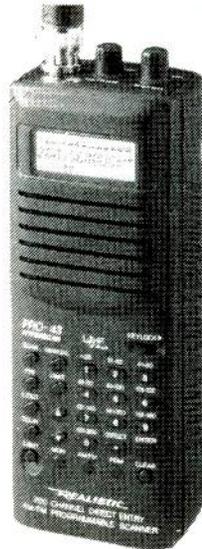
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Each month we select representative reader letters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons. All letters submitted must be signed and show a return address. Upon request, we will withhold sender's name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

27 MHz Topics

You have dealt with CB operators using CB radios and linear amplifiers, as well as stores selling this equipment. I have always endeavored to adhere to the Dept. of Communications (DOC) rules. DOC is the Canadian equivalent to the FCC. In the Toronto area, I am aware of at least 150 individuals operating illegal 27 MHz equipment, and am amazed to find that stores are performing modifications to standard CB radios to let them operate outside of the band. How unfortunate that the DOC appears either not to care and/or not have the personnel to regulate the 11 meter band properly. It wouldn't be so bad if it weren't for the fact that the individuals who operate this illegal equipment are irresponsible and obnoxious. When the skip comes in and these people are heard all around the world, I'm ashamed to admit that I'm a Canadian CB operator when our American cousins can hear the antics of the operators of my fellow Toronto operators. I hope the DOC takes a chapter from the FCC's latest blitz on outlaw CB stores and operators.

Bruce Hale,
Toronto, Ontario, Canada

I am an avid *Freeband* operator, operating daily between 27.410 and 27.995 MHz. My equipment consists of modified base and mobile radios, run barefoot. I have been active on 27 MHz since 1959, and had one of the original "19Q" CB call letters, later a "KLI," then a "KCO." Starting out with an old *Gonset* with the lever P-T-T switch, I eventually became one of the first sideband illegals on the in-between frequencies during the 23-channel era. I did everything I could to escape the "What's yer 10-20?" and time check people. I received one of the first FCC pink slips for shooting skip on 27 MHz. Shame on me.

Like many CB'ers, I decided not to go the route of Amateur radio. The impression I had was that too many hams were

snobs who were more interested in form than function. They were into admonishing people for improperly entering a net, and insisting that people learn the archaic Morse code. How many astute proponents of code requirements are now operating packet stations?

As for being an illegal operator, so be it. I was in Los Angeles during the January '94 quake, and I was happy to be sending messages all over the US and Canada, and to Australia. Many worried families first found out their relatives were safe because of my station.

Perhaps not many Amateur operators can remember back to when the 11 meter ham band was reallocated to CB radio because it wasn't used. This was followed by the destruction of the 220 MHz ham band for the same reason. The 10 meter ham band is apparently dead. Why? Because people who want to communicate are all operating in the adjacent illegal "freeband."

Yes, there is filthy language on the airways. I hate it. Also, there are linears. These average about 100 watts, not really all that much power. I find my barefoot radio a challenge, and like to hold half-hour QSO's with stations in the Philippines, Argentina, or wherever. Who am I hurting? Whose communications am I interfering with? No one!

The majority of Freebanders I have met operate clean, harmonic-free stations, using more than a modicum of courtesy. They respect the rights of others. We offer advice and assistance to others in need.

"Ghost rider," 2WG916,
Arizona

Needs Some Help

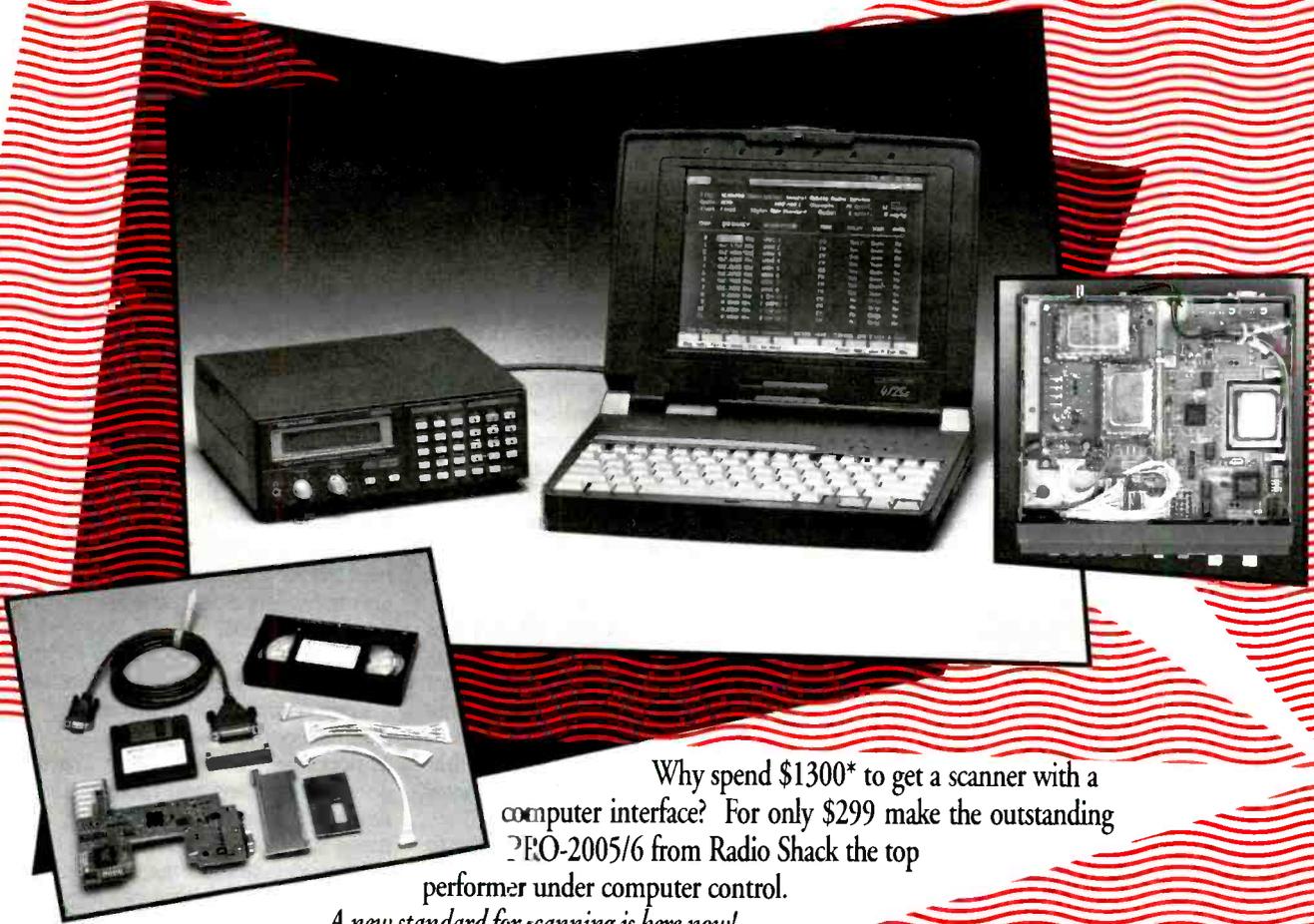
Recently I acquired an Allied Radio Corp. *Star Roamer* shortwave receiver. It was in good shape except for the knobs, which I have now replaced. I have been unable to obtain a manual for this radio and was wondering if any reader has one that they could spare or copy.

In addition, I have the *Radiolog* program, as mentioned in *POP'COMM*. I'm not computer oriented and have not been able to get it to work. I own a Tandy 1000-HX, 640K, with DOS 2.1. Can anyone offer advice getting this program running in my computer?

Kenneth Britten,
Registered Monitor KMI8GJ,
188 Wanondoger Tr.,
Battle Creek, MI 49017

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- No Drill or Solder Installation Video

It's a well known fact that the microprocessor made it possible to develop the programmable scanner in 1974. Virtually all programmable scanners could have had (many feel should have had) a computer interface. It's as if the scanner manufacturers had a secret meeting on some deserted island and agreed to put computer interfaces on only a few of the most expensive radios. Why are they trying to limit the number of computer controlled scanners? What don't they want you to listen to or to find?

Well they didn't invite Optoelectronics to the big secret meeting. We don't agree to keep computer scanning expensive! The OptoScan 456 makes computer controlled scanning available at half the price with unbeatable performance and features.

The OptoScan 456 includes every thing you need to easily convert the superb Realistic PRO 2005/6 scanners into computer controlled screamers. Hardware, cables and software for the PC is included for the introductory price of \$299. Step by step video instructions show installation details without drilling, cutting or soldering. Simple hand tools are all you need. Features such as CTCSS, DCS, and DTMF decode give the OS456 superior performance.

Why Computer Controlled Scanning?

The computer makes the scanner *really* perform, simply and effortlessly. Even when you are not around the computer can continue to search out those frequencies you want to listen to and record them into virtually unlimited numbers of memory channels. The OptoScan 456 becomes a relentless monitor of the VHF/UHF frequency spectrum searching out illusive signals. The OptoScan software makes using the PRO-2005/6 easier and much less confusing than using the front panel controls. Complex store, search, and scan features are more easily accessible through software menus.

Why Decode CTCSS Tones and DCS Codes?

Virtually all non-trunked VHF/UHF two way radio use squelch tones or codes for privacy and efficiency. These sub audible tones and codes are identifying signatures that can aid in following transmissions across channels. The OS456 decodes tones, codes and touch-tone characters to provide the Radio Monitoring Enthusiast with a powerful new tool in sorting out who is talking, accessing a repeater and in general what is going on. Like the computer interface, tone decode should have been built into the radio but wasn't. Optoelectronics has produced the OptoScan 456 to make the PRO-2006 family radios perform to a new standard that no one else can match for any price!

Complete Installation Kit, Model OS456, includes the assembled and tested controller board, mounting hardware, cables, OptoScan 456 software for the PC and the installation video

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Scanning Interstate Big Rig Truckers

*The 18-Wheelers: Still Knights of the Road.
Monitor Them from 26 MHz to 856 MHz!*

BY CHRISTOPHER BLEECKER, KTX5AM

Headed any big rigs lately? In the 1970's, CB'ers used to hear the salty Interstate Highway truckers wall-to-wall on CB Channel 19. Their colorful chatter inspired songs, movies (*Smokey and The Bandit*, etc.), TV series (*Movin' On*), and contributed most to what the world came to regard as "CB lingo."

The truckers never failed to be interesting, and a unique listening experience for those who tuned in on them. Fleet truckers used the channel to exchange company gossip as well as traffic reports and other small talk of mutual interest. Feisty independent truckers had traffic reports too, and a wonderful way of keeping in contact with their pals.

For years, the truckers had Channel 19 as their own (unofficial) private party line. It didn't take long for motorists ("4-wheelers") to find this all so attractive and inviting that they insisted on being a part of the scene. They wanted to engage "18-wheelers" in conversation. Eventually, the public adopted Channel 19 for general in-transit communications use on the Interstates.

The big rigs are still evident on Channel 19, but nowhere nearly to the same extent as before. One reason is that many large

truck fleet companies (Churchill Truck Lines Inc., and St. Johnsbury, are two examples) have gone out of business. The large trucking companies using the Interstates today are a fraction of the number that used them in the 1970's.

The Teamsters, representing 120,000 union members, claims that deregulation of trucking in 1980 cost them 100,000 members. There are 40 presently unionized long-haul trucking companies, and 23 of those are considered to be major ones. Since 1980, about 30,000 non-union trucking companies have started up. Most of these are relatively small companies.

Another reason Channel 19 has less trucker talk is, to be frank, some truckers eventually became weary of the incessant "outsider" chatter on a CB channel that they had once considered their own turf. Those who remain on Channel 19 either enjoy it there, or rely on it to obtain local road directions.

Quite a few 18-wheel drivers appear to have shifted up to CB Channel 21 (27.215 MHz) to escape from the chaos of Channel 19. These truckers seem less inclined to converse with four-wheelers than those operating on Channel 19. By tuning around,

it's possible to hear what appears to be truckers yakking over various unauthorized frequencies between 26.735 MHz and 26.955 MHz. Of these frequencies, 26.735 MHz is the busiest. During skip openings, 26.735 MHz has sounded as busy as CB Channel 19.

The Fleets

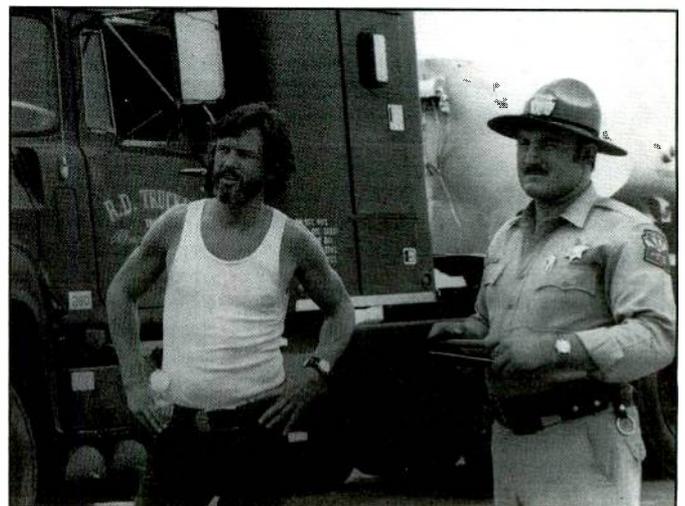
Long-haul trucking companies operating fleets using the Interstates invariably have their own two-way radio systems. This is in addition to the numerous long-haul trucks equipped with cellular phones, and some even use satellite communications equipment.

Two-way systems operated by the various companies are used so that dispatchers can communicate with drivers, and drivers can communicate with one another, as necessary. Of all of the numerous categories of stations and radio services scanner users have been told about, until now these systems have been ignored. This is odd, especially since the graphic and colorful CB communications of long-haul truckers have captured the public's imagination for nearly 20 years.

Time to change that. Here are charts



Big rigs rolling along our Interstates provide gutsy monitoring, but you have to know where to listen now that many have fled CB Channel 19.



Truckers using CB's inspired countless songs, TV series, and films. Here, Kris Kristofferson (left) appears as a crusty long-haul trucker in the 1978 movie, "Convoy."

ABF Freight System

43.92 MA
 44.06 MO
 44.34 NC
 157.57 US
 154.60 US
 159.51 CA PA
 159.54 AR
 159.57 NM
 159.585 FL
 159.615 TX
 159.63 CT
 159.66 OH
 159.675 TN
 159.72 LA TX
 159.78 CO MO
 159.825 AR LA MI OH
 159.87 PA
 159.96 OK
 160.035 NY OH
 160.065 IL
 160.095 AR
 160.20 AL CA
 467.75 US
 467.775 US
 467.80 US
 467.825 US

Carolina Freight Carriers

44.10 PA
 154.57 IL NC
 154.60 NC
 159.51 SC
 159.525 NY
 159.54 NJ OH
 159.57 PA VA
 159.585 FL
 159.615 OH PA
 159.645 FL NJ SC
 159.675 US
 159.705 NC
 159.72 FL NY VA
 159.735 FL MA
 159.765 NY
 159.795 NC TX
 159.885 NC
 159.915 GA
 159.945 OH
 159.96 NC
 159.975 VA
 160.005 MD
 160.02 US
 160.035 PA
 160.065 CA
 160.11 AL NY SC
 160.14 FL MI
 160.155 GA IL NC
 160.17 NJ
 160.185 GA
 160.20 OH

Consolidated Freightways

44.18 OK
 44.32 PA
 44.42 TX
 151.625 US
 154.57 US
 154.60 US
 159.51 OK
 159.525 OK WA
 159.615 OK
 159.645 RI
 159.66 IN
 159.675 TX

159.72 MO
 159.735 TX
 159.75 MN OH
 159.81 UT
 159.825 KY
 159.87 AZ TX WA
 159.90 AL IL WA
 159.93 AL GA
 159.945 AL
 159.99 CT GA
 160.005 IL
 160.05 FL
 160.14 CA
 160.155 CA WI
 160.20 AL
 467.875 US
 467.90 US
 467.975 US
 469.50 US
 469.55 US
 855.1375 US
 855.6875 US
 855.8875 US

Preston Trucking Company

44.02 MD VA
 44.10 DE
 44.22 PA
 154.57 US
 159.555 OH VA
 159.57 NY PA
 159.585 DE PA
 159.615 PA
 159.645 NJ
 159.675 PA
 159.705 US
 159.795 MI
 159.885 IL OH PA
 159.945 OH
 159.065 PA
 160.125 OH PA
 160.14 OH
 160.155 MD

Roadway Express

44.44 GA
 151.925 US
 151.955 US
 154.57 US
 154.60 OH
 159.495 NC SC TX
 159.51 AL
 159.525 PA TX
 159.54 IN OH
 159.555 IN OH TN
 159.57 MI OH
 159.585 AL IN NY OH PA
 159.60 NJ
 159.615 MI MN NM
 159.63 OH VA WI
 159.645 AZ OH
 159.66 AZ IL LA MS NC
 OH OR PA SC
 159.675 AL
 159.69 IN LA
 159.705 CT MO
 159.72 PA TN
 159.735 CT
 159.75 MA NC
 159.765 GA IL NC NJ OH TX
 159.78 TN
 159.795 KY NY
 159.81 OH
 159.84 CT
 159.87 IL SC

159.885 GA PA
 159.90 GA MA PA
 159.915 NC TX
 159.93 MD NY
 159.945 TX
 159.96 AR CO
 159.975 OH SC TX
 159.99 AZ FL SC TX
 160.005 MA
 160.02 AL
 160.035 DE MA
 160.065 MI
 160.08 FL MD MO OK PA WI
 160.095 OH PA RI
 160.11 KY
 160.125 FL IL NJ
 160.14 OK TX
 160.155 NC
 160.185 CT FL IL MI NY OH
 160.20 MI TN WI
 467.85 US
 467.875 US
 467.925 US
 469.50 US
 469.55 US

TNT Bestway Transportation

159.51 TX
 159.585 CA
 159.78 CA
 160.185 AZ

TNT Dugan, Inc.

43.88 KS

TNT Holland Motor Express

159.675 IN
 160.185 OH

TNT Red Star Express

43.86 PA
 44.00 NY PA
 44.08 MD
 44.12 MA
 44.22 MD NY PA
 44.30 NH PA
 44.38 PA

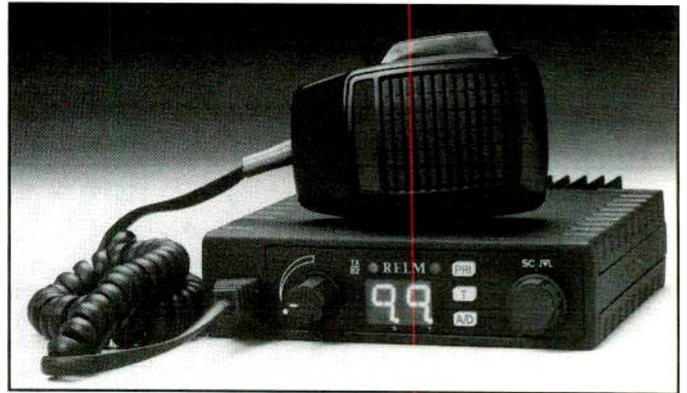
Yellow Freight System

(Company uses many 800 MHz trunked systems.)

43.94 AL
 154.57 US
 154.60 US
 159.615 TN
 159.795 MN
 159.855 IL WI
 160.035 GA OK
 160.05 OH
 160.08 TN
 457.775 US
 457.825 US
 467.775 US
 467.80 US



Uniden's PC-76XL is a ruggedized heavy-duty CB radio designed especially for use by professional truckers.



The RELM Mini-Com SM series programmable scanning transceivers are available in 16 or 99 channel versions. Models are produced for the VHF-high band, plus others for the UHF band.

showing all the low and high band VHF road frequencies used by selected large trucking companies, along with the states where the indicated frequency should produce activity at least in certain areas of those states. Frequencies shown as "US" are available for use throughout that trucking line's entire operational area, and could include the use of mobile or handheld radios. Frequency listings showing those available for system-wide ("US") usage cover all bands, including UHF and conventional 800 MHz.

Among the companies listed here are the so-called "big four" nationwide trucking companies: Yellow Freight, Roadway, Consolidated Freightways, and ABF. Information for Yellow Freight presented is brief because that company relies so heavily upon 800 MHz trunked communications. Trunked 800 MHz systems are only in limited use for long-haul Interstate highway communications, also many scanner hobbyists cannot easily monitor 800 MHz trunked systems. Therefore, this information has not been included here.

According to Kneitel's *Top Secret Registry of US Government Frequencies*, in addition to these frequencies, other relevant channels worthy of attention in con-

nection with long-haul would trucking include the following:

Interstate Commerce Commission on 409.20 MHz.

National Highway Safety Administration found on 36.15, 40.26, 40.39, and 40.97 MHz.

National Transportation Safety Board heard on 165.7625, 166.025, and 418.20 MHz.

Popular Trucker Radios

Many radios we have seen in use by truckers indicate that multi-channel programmable transceivers are popular. The RELM Model RH-256NB, for instance, is a 25-watt mobile and base radio fully programmable scanning transceiver. With its 16-channels, built-in CTCSS encoder/decoder, it can operate anywhere between 148 to 162 MHz.

RELM's *Mini-Com Plus SM* series mobile transceiver provides 16 or 99 channel scanning versions in two different models. The SMV40 is a 40-watt programmable transceiver for the 150 to 174 MHz band. The SMU25 is a 25-watt programmable transceiver for the 450 to 482 MHz frequency range.

The *Mini-Com SM* series includes CTCSS and DCS capabilities, talk-around mode, channel lockouts, and a priority channel. Options such as DTMF decode and Two-Tone Sequential decode for talk-back paging can be added.

RELM transceivers are carried by communications dealers, including many *POP-Comm* advertisers. They are a product of RELM Communications, 7707 Records Street, Indianapolis, IN 46226. Phone: 1-800-874-4665.

Uniden makes a ruggedized heavy-duty CB radio especially for the long-haul trucker market. This radio, known as the PC-76XL, is available from all dealers carrying Uniden CB equipment, including those at major truck stops.

Truckers also like police scanners, as well as radar and laser detectors. Some apparently use unauthorized *footwarmers* (linear amplifiers), as well as so-called "export" transceivers.

A visit to a large truck stop near an Interstate will show several different brands and types of VHF, and other transceivers in use. Which specific frequencies may be used in any given radio, a visitor might see there is a matter for pure speculation. It's not a suitable topic to survey random truckers about. Most drivers regard such information as nobody's business but their own.

Try out the frequencies for the states shown in our charts. We also suggest searching the frequency ranges most often used by, or at least designated for use by, long-haul truckers. These include 26.735 to 26.955 MHz (AM and SSB); also FM from 43.86 to 44.44 MHz, and 154.495 to 160.20 MHz. Some of the frequencies in the 43.86 to 44.44 MHz range are shared with stations in other radio services.

Just because the big rigs aren't as prevalent on CB Channel 19 as they once were, it doesn't mean they're gone. Long haul truckers number among the most active, colorful, and lively communicators going. Follow them to their other frequencies and look them up sometime. ■

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CIRCLE 89 ON READER SERVICE CARD



Selected English Language Broadcasts

Summer—1994

BY GERRY L. DEXTER

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

Time	Country/Station	Frequency	Time	Country/Station	Frequency
0000:	BBC	5975, 6005, 6175, 7325, 9590, 9915, 11750, 12095, 15260		(45) Vatican Radio	9745, 9860, 17605, 7335, 9650
	RFPI, Costa Rica	7375USB, 9375USB, 13630USB, 15030USB	0200:	RAE, Argentina	11710
	Radio Havana Cuba	6010, 9815 USB		V of Free China, Taiwan	5950, 9680
	China Radio Int'l	9780, 11715		R. Romania Int'l	6155, 9510, 9570, 11830, 11940
	Spanish National Radio	9540		R. Cairo, Egypt	9475, 11660
	Radio Norway	9675, 11925		(30) R. Netherlands	6020, 6165, 9845, 9860, 11655
	(30) VOIRI, Iran	9022, 11790, 15260		R. Finland Int'l	11755, 15185
	AWR, Costa Rica	9725, 11870		(Sun) R. Norway	6120, 7165
	R. Canada Int'l	5960, 9755, 11940		(30) R. Yugoslavia	9580
	R. Prague, Czech Republic	5930, 7345		(30) R. Portugal	9555, 9570, 9600, 9705, 11870
	R. Yugoslavia	9580, 11870		(30) R. Budapest, Hungary	5970, 9835, 11910, 15220
	(40) R. Nacional Venezuela	9540		(45) R. Tirana, Albania	9580, 11840
	KWHR, Hawaii	15595	0300:	R. Educacion, Mexico	6165 (English/Spanish mix)
	R. Pyongyang, N. Korea	11335, 13760, 15130		Radio New Zealand	15120
	(30) R. Netherlands	6020, 6165, 9840, 11665		Radio Bulgaria	9850, 11675
0100:	Radio Bulgaria	7455, 9700		HRVC, Honduras	4820
	R. Budapest, Hungary	5970, 9835, 11910, 15220		Radio Cultural, Guatemala	3300
	Radio Moscow	7205, 9505, 9530, 9765, 9815, 11665, 11790, 12050		TIFC, Costa Rica	5055
	Swiss R. Int'l	6135, 9650, 9885, 12035		R. Austria Int'l	9870
	(30) R. Tirana, Albania	9580, 11840		China Radio Int'l	9690, 9780, 11715
	RAI, Italy	9750, 11800		Radio Prague, Czech Rep.	5915, 5930, 7345, 9405, 9810
	R. Japan	5960, 11860, 15195, 17775, 17810, 17845		(40) V of Greece	5970, 9380, 9425
	(30) R. Austria Int'l	9655		Swiss Radio Int'l	6135, 9650, 9885, 12035
	R. Korea, S. Korea	7550, 15575		UAE Radio	11945, 13675, 15430
	HCJB, Ecuador	9745, 15115		R. Canada Int'l	6010, 9755
	(30) R. Finland Int'l	11755, 15185		R. Japan	11885, 15325
	Slovak R., Slovakia	5930, 7310, 9810		R. Lesotho	4800
	(30) R. Sweden	9695, 11820	0400:	Voice of Turkey	9445
	(30) V of Greece	5970, 9380, 9425		R. Romania Int'l	6155, 9510, 9570, 11830, 11940
	(30) R. Netherlands	9845, 9860, 11655		Voice of America	7265, 7280, 7405, 9575
	Deutsche Welle, Germany	6040, 6085, 9650, 9700, 11865			
	R. Ukraine Int'l	7195, 7240, 9505, 9685,			

Time	Country/Station	Frequency	Time	Country/Station	Frequency
	R. Botswana	4830, 7255		R. Korea, S. Korea	6145, 9650, 9980
	R. Prague, Czech Rep.	7345, 9485, 9810, 11990		(30) R. Vlanderen Int'l, Belg.	15540, 17540
	Kol Israel	9435		R. Finland	11735, 15400
	(30) R. Nigeria	4770		AWR, Costa Rica	5030, 9875, 11870
	HCJB, Ecuador	9745, 15155, 17740, 21455		Kol Israel	15640, 17575
				(30) R. Thailand	9655, 11905
0500:	V of Nigeria	7255	1200:	R. Iraq Int'l	15180, 17740
	(30) Georgian Radio	11910		R. Australia	6020, 6080, 7240, 9580, 9710, 15630
	Radio Lesotho	4800		R. Finland	15400, 17740
	(30) R. Austria Int'l	6015, 6155, 13730		(30) R. Bangladesh	13615
	V of Nigeria	7255		R. Tashkent, Uzbekistan	5945, 9540, 15220, 17745
	Radio Havana Cuba	9510		Radiobras, Brazil	15445
	(30) Radio Austria Int'l	6015, 9870		China Radio Int'l	9715, 11660, 15210
	CBC Northern Service	9625		(30) R. France Int'l.	13640, 21645
	Deutsche Welle, Germany	5960, 9515, 9670, 11705		R. New Zealand	9700
	R. Japan	11725, 11740		(30) V of Vietnam	9840, 12020, 15010
				(30) SLBC, Sri Lanka	9720, 15425
0600:	Radio Korea, S. Korea	7275, 11945, 15155	1300:	(30) R. Vlanderen Int'l, Belg.	17555, 21810
	GBC, Ghana	4915		KNLS, Alaska	7355
	V of the Mediterranean, Malta	9765		(30) R. Tashkent, Uzbekistan	9540 15220, 17745
	Radio Kiribati	9825		(30) R. Finland	15400, 17740
	Vatican Radio	6245, 7250		R. France Int'l	11910, 15405, 17650
	(30) R. Vlanderen Int'l, Belg.	9925		(35) Voice of Greece	15630, 17515
	R. Canada Int'l	6050, 6150, 9740, 9760, 11905		UAE Radio	13675, 15320, 15435, 21605
	ELWA, Liberia	4760		AWR, Russia	11855
	Channel Africa, S. Africa	7230, 17710			
	ELWA, Liberia	4770			
	R. Prague, Czech Rep.	7345, 9505, 11990			
0700:	Wings of Hope, Lebanon	11530	1400:	V of Mediterranean, Malta	11925
	(40) TWR, Monaco	7385		R. Iraq Int'l	15250
	V of Free China, Taiwan	5950		V of the Mediterranean, Malta	11925
	(30) Vatican Radio	7250, 9645		RTV Morocco	17595
	Radio New Zealand	9700		R. Canada Int'l	11935, 15315, 15325, 17820
	(15) HCJB, Ecuador	9745, 11925, 21455USB		(45) R. Ulan Bator, Mongolia	7260, 13780
	R. Moscow, Russia	7165, 9890		FEBC, Philippines	11995
				R. Jordan	9560
				All India Radio	7412, 9950
0800:	Radio Australia	5995, 6020, 6080, 7240, 9580, 9710, 11720, 15240, 17695	1500:	R. Algiers Int'l	11715, 15205, 17745
	KNLS, Alaska	7365		FEBA, Seychelles	9810, 11710, 15330
	SIBC, Solomon Is.	5020, 9545		(40) V of Greece	15630, 15650, 17525
	CFRX, Canada	6070		R. Sweden	15190, 15240, 21500
	(50) TWR, Monaco	9480		Polish Radio	7285, 9525, 11840
	(30) R. Austria Int'l,	6155, 13730		R. Pyongyang, N. Korea	9325, 9640, 9977, 13785
				TWR, Guam	15610
0900:	(10) R. Ulanbator, Mongolia	11850, 12015		V of Ethiopia	9560
	FEBC, Philippines	11690		Channel Africa, S. Africa	7270, 15240
	R. Vlanderen Int'l, Belgium	5910, 9905, 13675		(30) All India Radio	7412, 9850, 10330
	Radio One, Singapore	5010, 5052, 11940		R. Portugal	21515
	(10) R. Ulan Bator, Mongolia	11850, 12015		KTWR, Guam	15610
	AWR, Italy	7230	1600:	(30) HCJB, Ecuador	17790, 21455USB, 21480
	KTWR, Guam	15200		R. France Int'l	6175, 11705, 12015, 15530, 17620, 17795, 17850
1000:	V of Vietnam	9840, 12020, 15010		R. Pakistan	9470, 11570, 13665, 15515, 15555, 17555
	(30) Radio Korea	11715		BSKSA, Saudi Arabia	9705, 9720
	AWR, Costa Rica	5030, 9725, 13750		Voice of America	9700, 11920, 12040, 13710, 15255, 15320, 15410, 15445, 17790
	Voice of America	5985, 9590, 11915		(30) Vatican Radio	11640, 15090
	Kol Israel	17545		UAE Radio	13675, 15320, 15395, 21605
	Radio New Zealand	9700			
	FEBC, Philippines	9800, 11685	1700:	Voice of Azerbaijan	15240
	(30) UAE Radio	13675, 15320, 15425, 21605		Georgian Radio	11910
1100:	R. Singapore	9530		Channel Africa, S. Africa	11750
	R. Japan	6120, 9610, 15445		Kol Israel	7465, 11587, 11675, 15640
	R. Pyongyang, N. Korea	6576, 9977, 11335		R. Pakistan	11570, 15550
	HCJB, Ecuador	9745, 11925, 21455		R. Moscow	9505, 9540, 9880, 11705, 11940, 11960, 12050, 15180,
	R. Jordan	13655			
	NBC, Papua New Guinea	9625			

FT-11R/41R 2m/70cm Handhelds

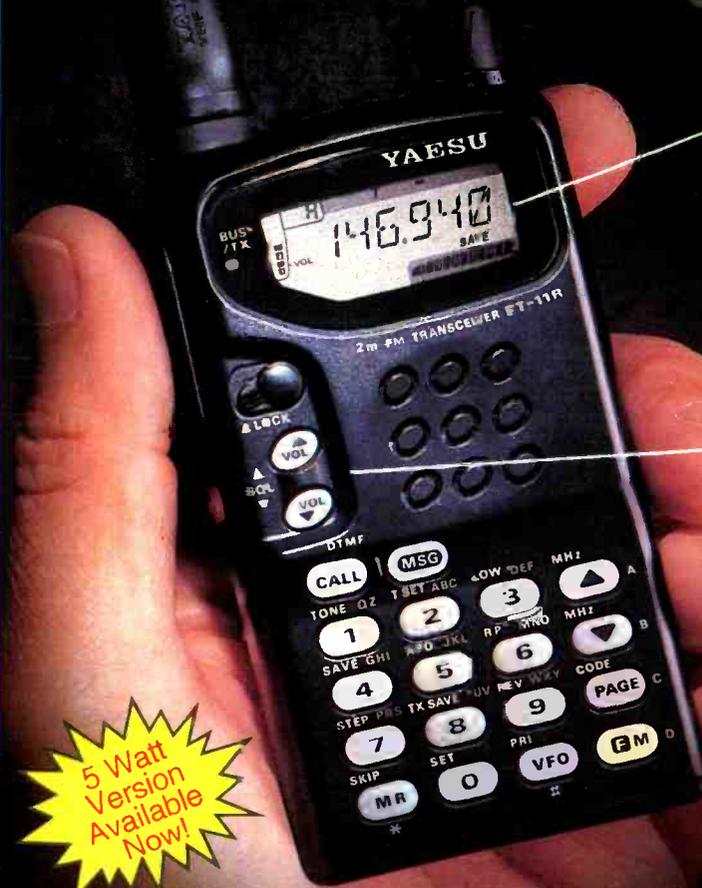
- **Frequency Coverage:**
Wide Receiver Coverage:
FT-11: 110-180 MHz RX,
144-148 MHz TX
FT-41: 430-450 MHz RX/TX
 - Selectable Alpha Numeric Display
 - New Compact Battery Design
4.8V produces 1.5 Watts
9.6V produces Full 5 Watts*
 - 150 Memory Channels
(75 when Alpha Numeric)
 - AM "Aircraft" Receive
(110-136 MHz)
 - Small Compact Size w/ Easy Operation (measures only: 4"H x 2 1/4"W x 1"D)
 - Rx/Tx Battery Savers
 - High-efficiency MOS FET Power Module
 - Large Back-Lit Keypad and Display
 - Up/Down Volume/Squelch Controls
 - Built-in DTMF Paging/Coded Squelch
 - Automatic Power Off (APO)
 - **Accessories:**
FNB-31 4.8V, 600 mAh Battery
FNB-33 4.8V, 1200 mAh Battery
FNB-38 9.6V, 600 mAh Battery
FBA-14 6 AA Size Battery Case
FTS-26 CTCSS Decode Unit
NC-50 Dual Slot 1-Hour Desk Charger
CA-10 Charge Adapter (required w/ NC-50)
- *FT-11 Only.
FT-41, 3.5 Watts

"Look, alphanumeric display and a 4.8V battery. Terrific!"

"Small and thin - with a full sized keypad! How'd they do that?"

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First time for Yaesu HT Full function LCD combines letters and numbers.

NEW Up/Down Thumb Control with Volume and Squelch Bar Graph. No other radio has this. Back lit, too!

NEW Compact Battery Design 4.8V gets you 1.5 Watts. A first for amateur radio.

5 Watt Version Available Now!

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World's smallest size HT with a full sized keypad
Measures only: 4"H x 2 1/4"W x 1"D

"Small" is relative, isn't it? It could mean size - which in this case it does. And, it could mean "reduced", which it doesn't! Nothing missing from the hot new FT-11R HT from Yaesu except bulk! You're going to wonder just how all the features of this full-function radio fit in. Until you remember Yaesu pioneered 2-way radio micro technology.

To see what this really means to you,

check out all the new features. Like the alphanumeric display. This Yaesu HT first, lets you tag your favorite frequency by name, call sign or number. Or, the new "voltage stingy" battery. It's an industry first for amateur radio. Smaller and compact, the 4.8V battery gives you 1.5 watts on TX. And, if that's not enough, there's an optional drop in, dash mount battery charger.

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AOR AR1000XLT 1000 Channel Continuous Coverage Receiver

\$419 *Order now while supplies last!*

The latest version of the famous AR1000 series scanners, one of the most popular scanners on the market. This top quality, feature packed portable allows the user to tune into all the action with continuous coverage of .5 to 1300 MHz (no gaps). Features include: lock-out search and scan, cigarette lighter plug cord, belt clip, case, flex antenna, and earplug. Covers AM and W/N FM. Operates from 12 VDC (AC adapter included) or included NiCad pack. VFO knob or keypad tuning and 1000 channels. 6.7" x 1.4" x 2.6", 10 oz.

AOR AR3000A HF/VHF/UHF Communications Receiver

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100 kHz all the way up to 2036 MHz (no gaps). Listen on any mode including NFM, WFM, AM, USB, LSB and CW. 400 memory channels, search and scan speed is an unprecedented 50 increments/second. RS-232 port is provided to enable full remote control. Includes telescopic whip (BNC antenna input) and DC lead. Powerful 1.2 Watts of clear audio.



AOR AR2800 .5 to 1300 MHz Scanner

\$459

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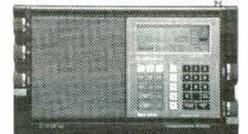
The AR2800 covers .5 to 1300 MHz with 1000 channels. Ten scan banks, and ten search banks. Covers AM, narrow and wide band FM, plus SSB. Works on DC or AC with supplied adapter. An antenna and mounting bracket is included for your convenience in mounting the unit mobile. 2 1/4" x 5 5/7" x 6 1/2".



Grundig Satellit 700 Shortwave Receiver

\$449

The Satellit 700 is Grundig's most sophisticated portable world receiver available. It features phase-locked synchronous detection circuitry for seamless AM, FM, LW and Shortwave reception from 1.6 to 30 MHz. The unprecedented 120 factory pre-programmed frequencies for worldwide reception makes tuning into the world's shortwave broadcast almost as simple as touching a button. You also have 512 alpha numeric user-programmable memory positions which can be expanded to 2048 memory positions so you can build your own favorite-station radio archive. With PLL tuning, selectable wide/narrow band width filter, and a redesigned and vastly improved synchronous detector, the Satellit 700 offers unparalleled reception, sensitivity and selectivity. The 700 comes equipped with a built-in NiCad battery charger, the Grundig shortwave frequency guide, and a one-year warranty covering parts and labor.



Sony ICF-2010 World Band Receiver

\$347

The 2010 is the world's best-selling shortwave radio, and for good reason. This radio introduced the synchronous-detector circuit that revolutionized shortwave-listening. Full-band AM/FM/aircraft band coverage with 32 memory presets. Includes the world's most accurate tuning system with direct-entry as well as tuning knob convenience. Also includes a 24 hour alarm clock with sleep timer and programmable turn-on. This radio is regarded by all leading authorities as the best portable on the market. Includes earphone, AC adapter and external antenna adapter.



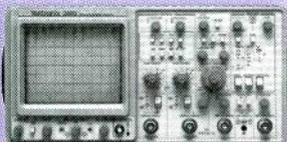
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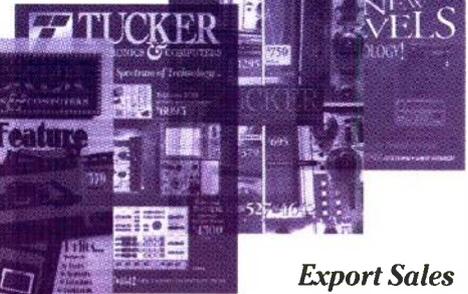
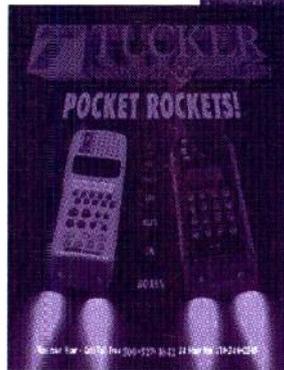
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**Grundig
YB-400
Shortwave
Receiver**
\$239

The new Yacht Boy 400 was hailed as "the best compact shortwave portable tested" by the 1994 Passport to World Band Radio. It covers AM, FM stereo, and shortwave from 1.6 to 30 MHz continuously. 40 randomly programmable memory presets allow for quick access to favorite stations. The multi-function LCD display shows simultaneous display of time, frequency, band, automatic turn-on and sleep timer. A full feature clock, alarm and timer shows time in 24 hour format and even has a sleep timer programmable in 15 minute increments. Receiver performance is where this one really shines however. It features sensitivity and selectivity that no other receiver in this price range can match. Get what everyone's been talking about—the new YB-400!

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**Sony ICF-SW7600G
World Band Receiver**
\$189

Sony brings together some of their most innovative features in this outstanding, low cost receiver. Now, for the first time, the remarkable synchronous detection feature is available in a receiver for less than \$200! Not only do you get fade-free shortwave reception, but also SSB and FM stereo! Covers 150 kHz to 30 MHz continuously as well as AM and FM broadcast. You can tune via direct entry from the keypad or the up-down control. The receiver performance is typical Sony quality with dual conversion superheterodyne circuitry. Tuning is in 1 kHz steps with a large LCD display. Includes 22 station presets, a built-in clock with sleep timer and a large 3" speaker. Comes complete with compact antenna and guide book. One of the most exciting new receivers in years!



**Sony ICF-SW100S
World Band Receiver**
\$359

This new receiver gives you outstanding performance in a radio small enough to fit in your shirt pocket. It is the smallest radio available that features synchronous detection. This ultimate travel radio is perfect for taking abroad with its world time clock that is adjustable to any time zone by setting it to the names of major cities around the world. It can also wake you up every morning with its built in dual clock/alarm. Keeping track of each of its 50 memories is a snap because you can store the name of the station on the LCD display. Covers 150 kHz to 30 MHz continuously as well as AM broadcast and FM stereo. Comes complete with AC power adapter, stereo headphones, power supplied active antenna, shortwave guide and carrying case. Measures only 4 3/8" x 11/16" x 2 7/8".



**JIM PSU 101
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\$59

This quality, custom-designed combination desk charger and regulated power supply unit securely holds your scanner in a handy position. It charges the radio's internal NiCads without overcharging and powers it from standard 117 VAC house current. Works with the AOR 1000XL most Bearcat and Realistic scanners.



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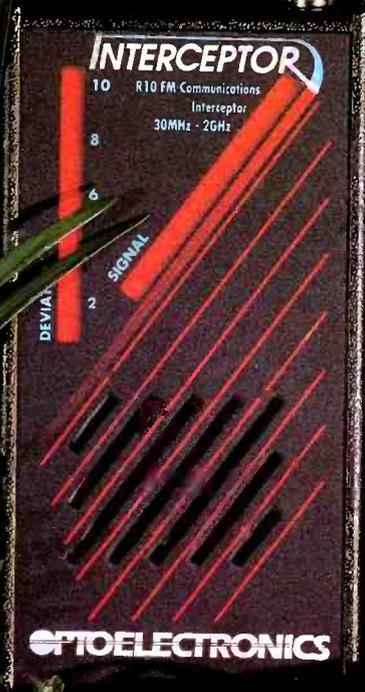
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- Check relative signal strength.
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- Use built in speaker or earphone/headphones.

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The R20 is a compact RF signal strength detector with a 10 segment bargraph display. There is also an audio output from the detector that is processed for constant volume for use with ear phone.

The audio output is useful for room sweeps where in close proximity to a transmitter a quieting effect can be heard due to detector saturation.

Transmitters can be easily checked for output and AM modulation.

- The 10 segment LED bargraph responds to all RF signals with nominal 3dB increments
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DC440 Decoder	\$259.
CX12 RS-232C Interface Converter (Interface DC440 to PC)	\$ 89.

Time	Country/Station	Frequency	Time	Country/Station	Frequency
	(30) Vatican Radio	15290, 15385, 17605, 17735 11625, 15090, 17730		R. Galaxy, Russia	11880
				R. Yugoslavia	6100, 9505
				(15) Radio Cairo, Egypt	9900
				(30) Kol Israel	7465, 9435, 11587, 11603, 11675, 15640, 15650, 17575
1800:	RAE, Argentina	15345		(30) R. Vilnius, Lithuania	9675, 9710
	Radio Kuwait	11990		R. Bulgaria	6085, 9700
	BSKSA, Saudi Arabia	9705, 9720		(30) R. Canada Int'l	5995, 7260, 11945, 13650, 13670, 15140, 15325, 17820
	(40) Voice of Greece	15650, 17525			
	WHR	9590, 13760			
	R. Nacional, Brazil	15265			
	(Sun) R. Norway	9590, 11860	2200:	V of Free China	9850, 11915
	(30) R. Sweden	6065, 9655, 15145		R. Canada Int'l	5960, 9755
				(30) R. Yugoslavia	11830
1900:	HCJB, Ecuador	17490USB, 17790, 21455USB, 21480		R. Bulgaria	11720, 15330
	(30) R. Netherlands	17605, 21590		R. Vilnius, Lithuania	9675, 9710
	(30) VOIRI, Iran	9022, 15260		(45) R. Yerevan, Armenia	7440, 9705, 11920
	Spanish National Radio	15375		R. Ukraine Int'l	7195, 7240, 9505, 9745, 9860
	Kol Israel	7465, 9435, 11585, 11603, 11675, 15640, 15650, 17575		R. Havana Cuba	6180
	R. Japan	9535		V of UAE	9605, 9770, 11885
				(45) All India Radio	9910, 11715, 15110, 15145
				KWHR, Hawaii	17510
2000:	(Sun) R. Norway Int'l	9590	2300:	V of Turkey	9445
	(30) Kol Israel	7465, 9435, 11587, 11603		(30) R. Vlanderen Int'l, Belg.	9930, 13655
	(05) R. Damascus, Syria	12085, 15095		R. Pyongyang, N. Korea	11700, 13650
	(45) All India Radio	9910, 9950, 11620, 15265		(30) R. Netherlands	6020, 6165
	(30) R. Cairo, Egypt	15375		(35) V of Greece	9425, 11595, 11645
	Swiss Radio Int'l	9885, 12035, 13635, 15505		R. Vilnius, Lithuania	11750, 12040
	R. Kuwait	13620		R. Canada Int'l	5960, 5995, 9755, 13670
	(30) R. Canada Int'l	13650, 13670 15325, 17820		(Sun) R. Norway	6120,
2100:	(30) R. Dniestr Int'l, Moldavia	9620		(30) V of Vietnam	90840, 12020, 15010
	(10) R. Damascus, Syria	12085, 15095		AWR, Costa Rica	5030, 9725, 11870
	Radio Havana Cuba	17760		R. Pyongyang, N. Korea	11700, 13650
	(Sun) Radio Norway	15165		R. Yerevan, Armenia	9480, 9685, 11970 (partial) ■

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SPECIFICATIONS:

Power Required: 12 to 14 VDC @500 mA; 120 VAC adaptor Incl.
Audio Power Output: 2.5 W @ 10% THD (8 ohms)
Audio Selectivity: Peak/notch 30 dB or greater, 0.3-6 kHz
Squelch Hold: 0-10 seconds
Noise Limiter: Adjustable-threshold pulse noise clamp
Tape Activator: Audio activated (VOX), 3 second hold
Tape Output: 500 mV P-P @ 600 ohms (nom.)
Headphone Jack: Universal mono-wired stereo jack
Dimensions: 10-7/8"W x 6-7/8"H x 7-1/4"D

The Grove engineering team has created the most revolutionary audio accessory on the communication market: the SP200 Sound Enhancer.

Housed in a stylish, solid oak cabinet hand crafted in the mountains of North Carolina, the SP200 is sure to enhance any room and radio receiver. The control panel, constructed of sturdy, black aluminum, has been designed for optimum ease and convenience when tuning and refining signals.

The SP200 combines a powerful audio amplifier, top-of-the-line speaker, and an adjustable filter system in one to create the most versatile and precise listening environment ever available to radio enthusiasts. The keen peak/notch filter system and advanced noise limiter allow the listener to pull clear and distinct signals out of the haze of interference and background noise, while the adjustable bass and treble provide the flexibility to create just the sound you want. FSK, RTTY, packet, FAX, CW and all other data systems are enhanced while interference and electrical noise are reduced or even eliminated by the analog audio processor.

The SP200 also comes equipped with a stereo/mono headphone jack, for private listening, and an automatic tape activator so that you never have to miss anything.

Try the new Grove SP200 Sound Enhancer with your receiver, scanner, or transceiver and enjoy the latest in speaker sophistication; you'll agree this is truly a keynote speaker!

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The Drake SW8 World Band Shortwave Receiver

Are you looking for a communications receiver that's portable, yet good enough for serious listening in a desktop application? If so, take a look at R. L. Drake Company's new SW8 world band shortwave receiver. The SW8 joins the highly successful R8 communications receiver in Drake's shortwave receiver product line.

Overview

The SW8 is a microprocessor controlled, synthesized receiver that covers 500kHz to 30MHz AM, LSB, and USB, the 87MHz to 108MHz FM broadcast band, and the 118MHz to 137MHz VHF AM aeronautical band. Sensitivity and selectivity are excellent across all bands. Frequency stability is +/-10 ppm from 0 to 50 degrees Celsius. Power input requirements are 120VAC with supplied plug-in AC adapter or by six internally mounted "D" cell batteries. A built-in 41-inch telescoping whip antenna is included, as is a front panel mounted speaker. The dimensions are 11.5 inch W x 5.25 inch H x 13 inch D with an approximate weight of 10 pounds. A detachable carrying handle is even included for portable use!

Using dual-conversion on AM and SSB (single-conversion on FM), the SW8 offers three standard electronically switched I.F. bandwidths of 6kHz, 4kHz, and 2.3kHz. Dynamic range is specified at greater than 95db from 500kHz to 30MHz in SSB with a 2.3kHz bandwidth at 20kHz signal spacing. The seven-digit backlit LCD (liquid crystal display) provides frequency resolution to 100Hz in the AM broadcast, aeronautical, and shortwave band. The FM broadcast band offers 50kHz resolution. The LCD front panel displays all pertinent operational information. A vertical bar graph S-meter, shortwave meter band designation, and memory channel scan info are displayed as well. Other SW8 features include: 70 independently programmable and scannable memories, two 24 hours clocks, and two programmable event timers. The clock and timer settings are also maintained for up to 30 minutes after a power failure.

With the exception of the power switch/volume control, tone control, and tuning knob, all front panel controls are pushbuttons. Separate pushbuttons control band selection, up/down frequency control, mode selection, bandwidth selection, 20db attenuator, AGC (automatic gain control) setting, synchronous detector selection, backlighting, and various memory and timer functions. The tuning knob offers a speed proportional tuning rate. The faster the knob is rotated, the faster the tun-

ing speed! Power connections, external antenna connectors, aeronautical band squelch control, line audio out connector, and other lesser used switches are located on the rear panel of the receiver. A cover located on the bottom plate of the SW8 provides access to the battery compartment. Overall, the SW8 is quite a well thought out mechanical layout!

Operation and Performance

The SW8 can be "on the air" in a matter of minutes after opening the shipping container. The well written owner's manual clearly explains all normal operating, programming, and scanning functions in full detail. User ergonomics rank very good to excellent.

When first "powered-on," the unit defaults to 10000.0kHz AM in the shortwave band with the 6kHz filter selected. This "start-up feature" allows you to properly set the inboard 24 hour clocks to WWV. The front panel mounted speaker and tone control contribute to the SW8's excellent audio fidelity. Tuning across all bands and modes, the SW8 proved its worth in meeting or exceeding its published specifications. With direct keypad frequency entry, memory scanning,

and frequency selection by use of the front panel tuning knob, the SW8 is a joy to tune!

Although slight synthesizer noise was noted, as well as some internally generated "birdies," neither caused any problems with weak signal reception in the "real world." The 2.3kHz bandwidth filter position makes shortwave broadcast DXing a pleasure, as well as providing a wide-bandwidth filter for CW (Morse code) reception. The SW8's synchronous detector makes listening to fading shortwave and AM broadcast band signals an enjoyable experience.

Summary

R. L. Drake Company has come up with another winner in the SW8! From its well constructed interior and "user friendly" controls to its pleasing "on the air" performance, the SW8 delivers the goods! The SW8 offers excellent world band receiver performance, AM aeronautical band coverage, AND FM broadcast band coverage in one versatile and reasonably priced package. The SW8's list price is \$599.00. For more information, please contact R. L. Drake Company, P. O. Box 3006, Miamisburg, OH 45343 (800) 968-7426.

Reviewed by POP'COMM Staff



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CALIFORNIA, STATE OF	KME-315	75 7800	FX1
CALIFORNIA, STATE OF	KME-315	75 9600	FX1
CALIFORNIA, STATE OF	KSC2945	154 3200	FB
CALIFORNIA, STATE OF	WNB9336	155 4750	FB
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CALIFORNIA, STATE OF	KNEB203	857 9375	FB
CALIFORNIA, STATE OF	WNN-3451	858 2625	FB2
CALIFORNIA, STATE OF	WNN-3451	859 2625	FB2
CALIFORNIA, STATE OF	WNN-3451	860 2625	FB2
CALIFORNIA, STATE OF	KNB4873	860 7375	FB2
CALIFORNIA, STATE OF	WPEC561	867 5375	FB2
FIRE			
CALIFORNIA, STATE OF	KPC-1	33 6600	FX1
CALIFORNIA, STATE OF	KPC-1	33 9600	FX1
CALIFORNIA, STATE OF	KQF617	154 1600	FB2
LOCAL GOVERNMENT			
CALIFORNIA, STATE OF	WNN-0748	37 2600	FB2
CALIFORNIA, STATE OF	KJS-712	153 7550	FB2
FORESTRY CONSERVATION			
CALIFORNIA, STATE OF	WNL2478	44 6400	FB2
CALIFORNIA, STATE OF	KWE503	44 8000	FB
CALIFORNIA, STATE OF	KWE503	44 9600	FX1
CALIFORNIA, STATE OF	KBN4547	151 2500	FB2
CALIFORNIA, STATE OF	KBN4547	151 3550	FB2
CALIFORNIA, STATE OF	KBN4547	151 3650	FB2
CALIFORNIA, STATE OF	WNL2479	151 4150	FB2
CALIFORNIA, STATE OF	KVY51	159 2700	FX1
CALIFORNIA, STATE OF	KVY51	159 3000	FX1
CALIFORNIA, STATE OF	KVY90	159 3300	FX1
CALIFORNIA, STATE OF	KVY51	159 4050	FX1
CALIFORNIA, STATE OF	WDC761	169 5000	FX0
CALIFORNIA, STATE OF	KOC293	171 9250	FX0
HIGHWAY MAINTENANCE			
CALIFORNIA, STATE OF	KAEP576	453 8500	FX0
CALIFORNIA, STATE OF	WGL627	47 2000	FB
CALIFORNIA, STATE OF	KXCB25	452 9750	FX1
CALIFORNIA, STATE OF	WPC-4772	453 8500	FX0
COUNTY GOVERNMENT			
POLICE			
DEL NORTE, COUNTY OF	WCL-735	154 8150	FX1
FIRE			
DEL NORTE, COUNTY OF	WNLG296	154 0100	FX1
DEL NORTE, COUNTY OF	WNLG297	154 2500	FB
DEL NORTE, COUNTY OF	WNLG296	154 4150	FB2
DEL NORTE, COUNTY OF	WNLG257	154 4450	FB
LOCAL GOVERNMENT			
DEL NORTE, COUNTY OF	WNLN647	39 8200	FB
DEL NORTE, COUNTY OF	KS-224	153 0600	FB2
DEL NORTE, COUNTY OF	WNL691	154 0850	FB
DEL NORTE, COUNTY OF	WNL691	154 0850	FB2
DEL NORTE, COUNTY OF	WNL691	155 0850	MO1
SPECIAL EMERGENCY			
DEL NORTE, COUNTY OF	WCL656	462 5250	FX2
DEL NORTE, COUNTY OF	KIB954	463 0000	FB
DEL NORTE, COUNTY OF	KIB954	463 0250	FB
DEL NORTE, COUNTY OF	KIB954	463 0500	FB
DEL NORTE, COUNTY OF	KIB954	463 0750	FB
DEL NORTE, COUNTY OF	KIB954	463 1000	FB
DEL NORTE, COUNTY OF	KIB954	463 1250	FB
DEL NORTE, COUNTY OF	KIB954	463 1500	FB
DEL NORTE, COUNTY OF	KIB954	463 1750	FB
HIGHWAY MAINTENANCE			
DEL NORTE, COUNTY OF	WZJ219	156 2400	FB2
DEL NORTE, COUNTY OF	KA48363	159 0150	MO
CRESCENT CITY			
FIRE			
CRESCENT FIRE PROTEC	WNKJ623	154 2500	FB
CRESCENT FIRE PROTEC	WNKJ623	154 2800	MO
CRESCENT FIRE PROTEC	WNKJ623	154 4450	FB
LOCAL GOVERNMENT			
CRESCENT CITY, CITY OF	KDV790	156 0000	FB
SPECIAL EMERGENCY			
AIR MED EVAC	WNCX894	155 2200	FB
DEL NORTE AMBULANCE INC	KD20629	150 7750	MO3
DEL NORTE AMBULANCE INC	WPCB896	155 1750	FB
DEL NORTE UNITED SCHOOL DIS	WNVW708	155 2050	FB
SUTTER COAST HOSPITA	WNC0425	155 2350	FB
SUTTER COAST HOSPITA	KNDV810	463 0000	FB
SUTTER COAST HOSPITA	KNDV810	463 0250	FB
SUTTER COAST HOSPITA	KNDV810	463 0500	FB
SUTTER COAST HOSPITA	KNDV810	463 0750	FB
SUTTER COAST HOSPITA	KNDV810	463 1000	FB
SUTTER COAST HOSPITA	KNDV810	463 1250	FB
SUTTER COAST HOSPITA	KNDV810	463 1500	FB
SUTTER COAST HOSPITA	KNDV810	463 1750	FB
KLAMATH RIVER			
FIRE			
KLAMATH FIRE PROTECTION DIST	KNAI938	153 7700	FB
SMITH RIVER			
FIRE			
SMITH RIVER FIRE PROTECTION	KJS725	154 2500	FB
MISCELLANEOUS			
AF AERONAUTICAL RADIO INC	WCE68	130 2500	FA
AF AERONAUTICAL RADIO INC	WGN95	139 5500	FA
ALC ALIOTO FISH CO INC	WHU790	158 8000	FB
AMERICAN DEFENSE SERVICES	WNN2343	158 8000	FB
ARCATA REDWOOD CO	WR1801	154 5400	FB
ARCATA REDWOOD COMPANY	KMB577	48 8400	FX1
ARCATA REDWOOD COMPANY	KMB577	49 3200	MO
ARCATA REDWOOD COMPANY	KMB577	49 2000	FB2
ARCATA REDWOOD COMPANY	KMB577	451 7185	MO
ARCATA REDWOOD COMPANY	KMB577	458 7125	MO
BAKER CHOPPING	KAE2796	152 3950	MO
BERNIE OYLE	KD2269	152 3950	MO
BER-TEC BROADCASTING INC	WLP748	848 1750	FX
BER-TEC BROADCASTING INC	WLP748	848 1750	FX
BETTENDORF TRUCKING INC	WNC6216	153 7350	FB
BETTENDORF TRUCKING INC	WNC6216	158 4150	FX1
BETTENDORF TRUCKING INC	WNC6216	158 5100	FX1
BETTENDORF TRUCKING INC	WNC6216	158 5100	FX1
BLISS, ROBERT M BLISS DOROT	WNN1934	151 8650	FB
BLUE STAR GAS CO	WKS84	158 1800	FB
BROWN RICHARD	WNL805	153 2000	FB
C & C EXCAVATING	WNL410	481 8150	FB

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Radio: Way Back When

What Became of One of the Most Obscure Broadcasting Stations in the U.S.A.?

BY ALICE BRANNIGAN

We thought it would be interesting to track the history of one of the many low-powered back-room broadcast stations that populated the band in the early days of radio. Looking around for an appropriate candidate, the most obscure little station we could find was KGCX, Vida, Montana. Although licensed as commercial broadcasters, such stations were often not much more than one-person hobby operations.

Vida, Montana, is in McCone County, which is in the northeastern part of the state. The nearest community is Wolf Point, 16 miles to the north. In October of 1926, when KGCX first went on the air, Vida had a population of only 50 souls.

In 1926, Vida was, by far, the smallest community in the US to have a licensed commercial broadcast station. Radio maps of the US issued in 1927 usually showed a vast expanse of western territory virtually devoid of dots representing broadcast stations, except for the one designating KGCX. In addition to lacking electric power lines, indoor plumbing, and a number of other metropolitan conveniences, Vida also suffered from a lack of public transportation and wasn't served by any railroad or bus line.

The road to Vida came from Wolf Point. After crossing the bridge over the river, travelers rode on a rough dirt surface, like most rural Montana roads then (and some now). Half way to Vida, the route passed through Burch, a ghost town. In the spring, summer, and fall the road to Vida was often

a sea of mud. In the winter, with the temperature holding below zero, it was usually blocked by snow drifts. In other words, you could hardly get to Vida.

If a person without transportation needed to get to Vida, they might be able to hire someone in Wolf Point to take them in their touring car. Or, they might try to arrange for a ride with the mailman, a local farmer, or a peddler. Few outsiders went to Vida, Montana, though.

Station KGCX was first licensed to operate on 1250 kHz, but was ordered to 1230 kHz in June, 1927. The licensee was the First State Bank of Vida. It ran only 7.5 watts, was built for \$125, and was operated by the town banker, E.E. Krebsbach. He had the makeshift station sitting on his rolltop desk in the bank building. The KGCX microphone was made from a candlestick-style telephone. A phonograph provided the music. This was accomplished by holding the microphone in front of the phonograph. Station power was generated by a 32-volt farm light plant. The antenna system was all of 40 feet high.

After a day's work, Vida-area farmers would tune KGCX in on their crystal sets or regenerative receivers to hear the local news and gossip, plus a few recordings. Early operation was very informal, and the financial rewards were small. Krebsbach once accepted a rooster for advertising a farmer's sale. In the absence of area telephones, farmers often used KGCX to communicate with other area residents.

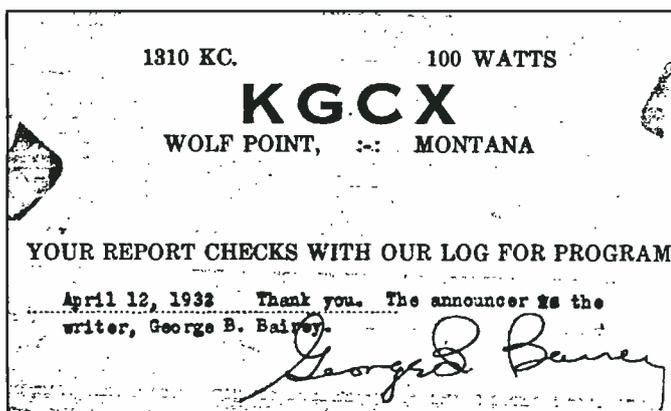
Once, a distinguished US Senator drove to Vida in order to clutch the KGCX microphone and campaign for re-election. A few weeks later, his challenger showed up and spoke over the station, but the signal was weak and few people could hear him. This was discovered to be the result of a loose screw in the antenna system, and attracted several complaints of deliberate sabotage to the challenger's campaign by KGCX's owner.

Because Vida was so inaccessible, visits from the District Radio Inspector (coming from Seattle) were rare, although the station was to have been inspected every six months. In the spring of 1928, however, Krebsbach received a telegram from the RI telling him to meet the next morning's train arriving at Wolf Point's Northern Pacific RR depot. Krebsbach hurriedly rounded up a First Class Operator and went to meet the train. Soon as they returned to Vida, the RI set up his equipment.

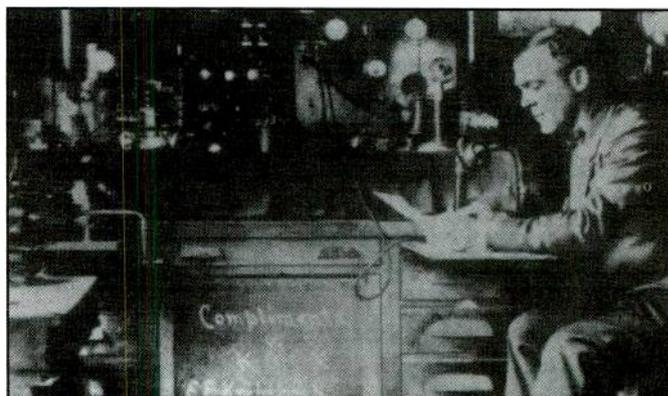
The RI was displeased to observe that KGCX was operating on 1252 kHz, which meant that the station had never bothered to switch to 1230 kHz, its reassigned channel. Worse, it had drifted 2 kHz off its previously authorized frequency.

In a national frequency shake-up that took place during November of 1928, KGCX was reassigned to 1370 kHz, then, soon after was again shifted to 1420 kHz.

In 1929, the station received permission to move to 4th and Main Streets, in Wolf Point. It was allowed to increase its power



A rare 1932 QSL card from 100 watt KGCX, Wolf Point, Montana. (Collection of the late Joe Hueter.)



Here is E.E. Krebsbach in 1926 with the very first KGCX transmitter. The 7.5 watt broadcast station was on his desk in the local bank at Vida, Montana (population 50).



The original KGCX audience consisted only of the farmers in the immediate area of tiny Vida, Montana.



Experimental station W2XUV, receiving a newsphoto from the mobile photo unit operated by The New York Daily Mirror.

to 100 watts and operate on 1310 kHz.

Wolf Point, which then had a population of 2,500, is an authentic Old West frontier cow-town located within the large Foot Peck Reservation. The Reservation is the natural home of Assiniboiné Tribe, and enforced home of Yankton Sioux who were moved there from South Dakota. The area has been open to settlement by the general public for many years. Traditional Wolf Point events are the yearly *Opeta-Ye-Teca Indian Celebration*, and the annual *Wild Horse Stampede* rodeo.

Krebsbach ordered all of the parts for the new KGCX transmitter by mail order. As a promotion stunt, when the individual components began to arrive by train, they were put on display in the show windows of local stores. The Chinese restaurant found the big plate transformer created much comment and was an ideal prop to lean their menu against.

Bert Hooper, Chief Engineer of CKCK, Regina, Sask., Canada, came to Wolf Point to assemble the new transmitter. He did the job in three days and sleepless nights.

One of KGCX's more dramatic services to its listeners was to warn ranchers in the area when adjacent nearby Missouri River ("The Big Muddy") was on a rampage. The meandering river had a habit of changing its channel without warning, and in the spring, it often piled up large chunks of ice ("freaks") into jams, resulting in floods as the water backed up.

In Wolf Point, KGCX associated with an oil company and located in that firm's service station. Listeners got used to occasional background noises such as dented fenders being pounded out and tire irons crashing to the concrete garage floor. In its early Wolf Point days, the station had a "flat-top" antenna with its maximum signals radiated towards the east and west. In 1936, KGCX shifted over to 1450 kHz, upping its power to 250 watts. By 1938, KGCX was running 1 kW into a 183 foot vertical antenna.

The oil company promoted the station by maintaining an aircraft with "KGCX"

written beneath its wings in enormous letters. The aircraft roamed the area for a couple of miles in all directions. The barnstorming aircraft would show up at all fairs, carnivals, circus grounds, rallies, celebrations, and other gatherings to give away cans of oil, and sell sightseeing rides of \$1 each.

Sparse population in the Wolf Point area, coupled with adverse business there, brought KGCX into a financial crisis in the early 1940's. In 1941, when the station's gross income was only \$500, it became apparent that something needed to be done immediately. Krebsbach looked at a map and decided to pick up his station and move it 50 miles southeast to Sidney (population, 5,000), with auxiliary studios in Williston, North Dakota (population 10,000).

This move was accomplished in October of 1942, with KGCX on 1480 kHz, operating with 1 kW from the Suckstorff Building, 109 South Central Avenue. A complication arose when a major piece of station equipment that had always worked beautifully in Wolf Point staunchly refused to work at all in Sidney, despite heroic attempts to coax it back into action. It took an entire month to put KGCX back on the air after it was moved from Wolf Point to Sidney.

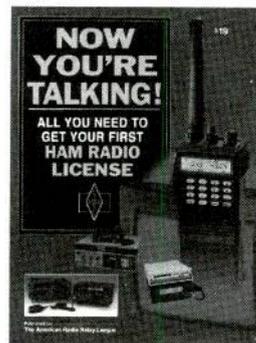
Another problem arose in 1948 when permission was obtained to increase power to 5 kW and erect a second antenna tower in order to protect a distant station from interference. The transmitter location was 4.5 miles northeast of Sidney. A consulting engineer was brought there to properly locate the new tower. After considerable slide-rule manipulation, he selected the precise spot and the job of erecting the 200-foot tower was completed. When the final turnbuckle had been tightened on the last guy wire, he stepped back to admire his work. As a final check, he again consulted his slide rule. That's when he learned that he had made a monumental error with the result that the whole tower had to be taken down, piecemeal, then re-erected at a spot some 12 feet away.

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During the 1950's, KGCX had an air personality who lived in the fast lane. Some days he would appear for work looking semi-comatose from lack of sleep. At times, he would nod off during a record. When the recording ended, the KGCX airwaves would be completely silent. If station owner Krebsbach happened to hear this while he was driving, he would have to race to the nearest town to locate a phone in order to call the station to waken the fellow and get things moving again.

KGCX remains on the air from Sidney, operating with 5 kW (1 kW at night) on 1480 kHz. The station runs a country and western format, with daily farming news. The present licensee is KGCX, Inc. An amazing odyssey, indeed, from being a totally obscure little back-room hobby station to a modern broadcaster that has adapted, survived, grown, and thrived for nearly 70 years!

Just because KGCX had left Wolf Point and moved to Sidney, it didn't mean that E.E. Krebsbach had forgotten the station's former location. In 1957, when business conditions improved at Wolf Point, Krebsbach returned after an absence of 15 years. There he built a sister station to KGCX. This was KVCK, a new 1 kW station on 1450 kHz. This station continues in operation, now under the ownership (since 1992) Wolf Town Wireless, Inc.

E.E. Krebsbach started out 68 years ago with a 7.5 watt desktop station in a tiny



The New York Daily Mirror's Radio Car, as it looked in 1948. It was equipped with several different communications systems, including an early version of the mobile telephone.

Montana farming community so remote people couldn't even get there. He displayed acumen, ingenuity, grit, integrity, and a strong commitment to his listeners. His legacy survives in the form of the two AM stations he created, both of which now have co-owned FM stations.

People hear a lot about the good works of broadcast pioneers like KDKA's Dr. Frank Conrad, RCA's Gen. David Sarnoff, and those to whom we all owe considerable gratitude. But remember, broadcast

history is also the hard work and dedication of many other successful people. These are broadcasters whose names we don't hear, whose worthy efforts never made national headlines. To our way of thinking, E.E. Krebsbach remains one of those unheralded heroes of early broadcasting. This column salutes Mr. Krebsbach and those many wonderful people like him.

FAX of Life

With the scrap of remaining space left this month, I wanted to squeeze in a look at an experimental mobile news radio unit that was in use 46 years ago. This was well ahead of its time.

This station was operated by a now-defunct tabloid paper, the *New York Daily Mirror*. The paper's chief photographer had a Jeep mobile photo unit outfitted with a two-way VHF Link FM system that could be used for voice, and also to transmit FAX images back to the newsroom. Using the FAX, the *Mirror* could scoop other papers by flashing pictures of sports events and breaking stories as soon as the prints were developed in the vehicle's photo-lab.

The unusual system was authorized in 1948 under experimental license W2XUV, which operated on 152.75 MHz.

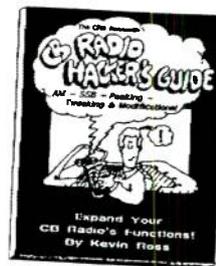
Tune in next month. We will have a revealing story and rare photos concerning one particular series of American military experiments that relied upon radio. These began at the end of World War I and continued for more than 20 years, well into the darkest days of World War II. At the time, some aspects were considered secret. For their era, they were like science fiction. Even by modern standards, very impressive. You'll agree.

This column always appreciates your old-time radio and wireless QSL's (originals or copies), photos or postcards, station lists, stories, questions, memories, and additional information. ■

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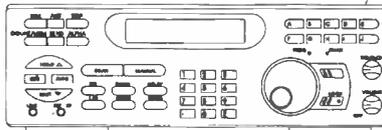
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- ANTMMPJ magnet mount scan antenna with BNC connector \$29.95
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- ANTSGMOTJ glass mount scanner antenna with Motorola jack \$29.95

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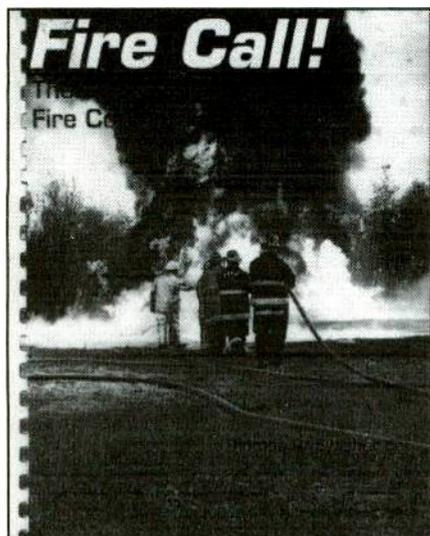
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Hot Topic

Of the many things to be monitored on a scanner, fireground comms always provide unique, edge-of-seat excitement found nowhere else. Firefighters battling a blaze, rescuing people, positioning equipment, coordinating their efforts, and summoning additional apparatus when things get out of control, makes for high drama taking place in real-time. You don't need those puny re-enactments that you see on TV shows. Your scanner makes you a part of the real thing, and from a safe distance.

In his illustrated book, *Fire Call!, The Guide to Monitoring Fire Communications*, author Thomas R. Swisher, Jr., adds to the thrills of scanning the fire radio service by helping you locate the best fire-fighting action, then providing you with information that lets you best understand what you're hearing.



Fire Call! explains fire radio systems, the organization of a fire department, basic fire communications, where to find fire frequencies, fire department operations, fire apparatus, firefighting terminology you'll hear on your scanner, even EMS definitions. You'll also learn all about the particular responsibilities and conditions applicable to the many scanner hobbyists who monitor the fire radio channels.

Numerous photos, charts, and illustrations go along with the well-written text. You'll be able to get a clear and concise understanding of what you're hearing with *Fire Call!* at your side. If you aren't yet into fire radio monitoring, this could be the book that makes you a convert.

Tom Swisher is an expert in fire communications. Naturally, he's a firefighter. In addition, Swisher has been the consultant on the radio systems being developed for a number of fire departments. Knows his subject matter well, and it shows in *Fire Call!*

This book was written specifically for scanner monitors.

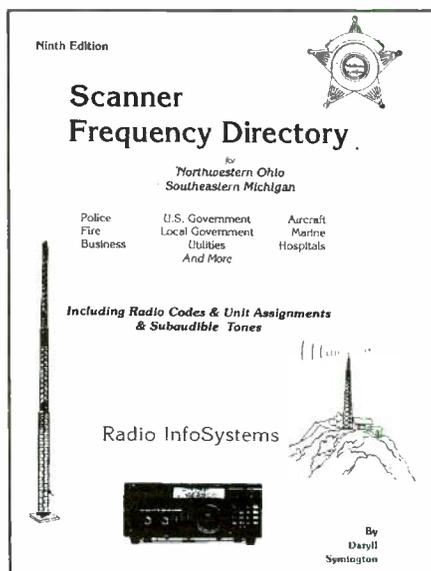
Fire Call! is \$17.95, plus \$4 shipping and handling (\$5, Canada). Residents of NY State please add \$1.87 tax. Order it from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. VISA/MC welcomed. Phone orders: 1-800-656-0056. Canada/AK/HI orders: (516) 543-9169. FAX orders: (516) 543-7486.

Ohio/Michigan Specialized Scanner Data

The 9th Edition of Darryl Symington's *Scanner Frequency Directory for Northwestern Ohio and Southeastern Michigan* has arrived. This covers 13 counties in Ohio, seven Michigan counties (including those in which Detroit is located), as well as the nearby Canadian area around Windsor, Ontario.

The 109-page publication, updated and revised from previous editions, contains thousands of frequencies for law enforcement, emergency, maritime, medical, power utilities, taxis, tow trucks, etc., including 800 MHz trunked services.

Darryl's directory is topped-off with useful bonus information, thanks to his own intensive monitoring, as well as contacts with other scanner owners. His book provides numerous PL/DPL tones, service codes, frequency usages, car assignment numbers, and other vital facts. Listings are sorted by location, then cross-referenced according to frequency.



This is a useful directory prepared by an active scanner hobbyist who really knows his onions. Appears to be accurate and comprehensive.

Scanner Frequency Directory for Northwestern Ohio and Southwestern Michigan, 9th Edition, is \$11.95, plus \$3 for UPS (or \$4 for those who prefer 4th

Class mailing instead). Order it by mail from Radio Infosystems, P.O. Box 399, Holland, OH 43528.

How Low Can You Get?

Can you work worldwide DX using a 1-watt transmitter? Is it possible to make contacts of more than 1,000 miles while running mere milliwatts? Volume 2 of *Low Power Communications: Advanced QRP Operating*, edited by Richard Arland, K7YHA, deals with such matters in eight chapters (130 pages).

LOW POWER COMMUNICATIONS



Volume 2 Advanced QRP Operating

Edited by
Richard Arland, K7YHA

- with
- AA2U
 - N4BP
 - WB9TBU
 - KA3QK
 - WA6VPE
 - K7IRK
 - K5VOL
 - K6MDJ
 - W4THU
 - W8SVGE

TIARE PUBLICATIONS

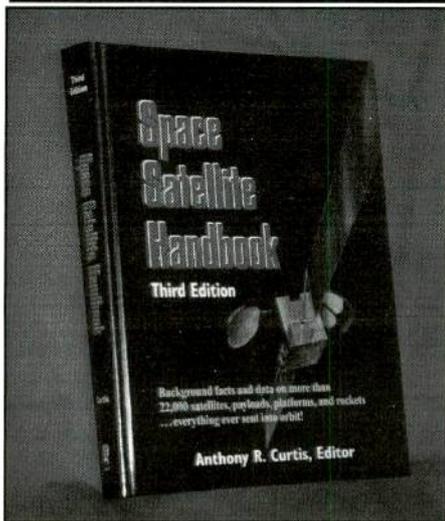
This is an illustrated book (photos, charts, and diagrams), that provides information on low power (QRP) DX'ing, contesting, DX'peditions, satellite comms, Field Day operations, etc. There are special antennas for QRP fans, and it tells how to run QRP using solar power. Each chapter is written by a ham who specializes in that particular area of endeavor.

QRP looks like an exciting challenge. It's something to do while the finals in your 1 kW rig cool off after a hard day in the 20 meter battleground. This book is prepared by a panel of QRP authorities, so it's definitely recommended.

Low Power Communications: Advanced QRP Operating, Volume 2, is \$19.95. It is carried by some radio book dealers, or it may be ordered directly from Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147. Add \$2 for shipping/handling (\$3 foreign). VISA/MC are OK. Phone orders: 1-800-420-0579 from 8 a.m. to 6 p.m. Central Time. (By the way, Volume 1 in this series is \$14.95, plus \$2 s/h, \$3 foreign. Volume 1 covers basic QRP operating.)

Space Buff's Guide to the Universe

Space Satellite Handbook, 3rd Edition,



by Anthony R. Curtis, provides descriptions or listings of the more than 22,000 satellites, payloads, platforms, rockets, and pieces of space debris launched into orbit or space by all nations since the Soviets sent up *Sputnik* in the late 1950's. This book is not a directory of radio frequencies.

This 346-page illustrated book provides a detailed account of the thousands of artificial objects that remain in orbit. Also listed are thousands of objects no longer in orbit. Information provided by NASA and other agencies includes each satellite's official international number, popular name, launch date, and nation of origin. Orbital parameters and tech data include period, inclination, apogee, and perigee.

The handbook supplies a snap course in space satellite history, including in-depth explanations of the various types of satellites, including SAR, communications, weather, navigation, military, spy, science/technology, research, oceanography, and amateur radio, broadcasting, and others, plus shuttles and deep space probes.

Throughout the large book, Tony has sprinkled many little sidebars and gems of incidental satellite knowledge that add to the overall usefulness and completeness of the work. The volume also includes charts, diagrams, tables, maps, timetables, drawings, and an index.

This hardcover book is wall-to-wall information, all of it quite fascinating to anyone with an interest in the cosmos. Again, it is not a radio frequency guide. Please do not write to me saying that you got this book and liked it, but were disappointed because I said it contained satellite frequencies. A different book, *The Outer Space Frequency Directory*, is filled with satellite and similar frequencies. That book was reviewed in our July issue.

Space Satellite Handbook, 3rd Edition by Anthony R. Curtis is priced at \$39.00, plus \$7.75 shipping and handling. Add sales tax if you live in Calif., Ill., N.J., Penna., or Texas. Order it from Gulf Publishing Company, Book Division, Dept. L1, P.O. Box 2608, Houston, TX 77252-2608. Phone orders: (713) 520-4444.

Statewide Scanner Almanac Series

We got a look at one of the entries in the new *Frequency Almanac* series of "scanner frequency callbooks." The one we saw was the California Edition, which had 823 pages of listings covering from 30 MHz to 2,000 MHz (2 GHz).

This directory covered virtually all FCC-licensed public safety, transportation, broadcast auxiliary, GMRS, maritime shore, experimental, power utility, business, and industrial stations throughout the entire state. This includes trunked systems. Listings are arranged by county name, and shows the license type, licensee name, call letters, frequencies authorized, and kind of usage authorized on each frequency. In the back of the book there is a frequency cross-index for public safety and broadcast auxiliary licensees.

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Also included in the book is statewide ham repeater frequency data, aircraft and marine channel usage information, as well as general information on cellular phone channels, plus an overall band allocation table showing 30 to 1,300 MHz.

The edition sent here for review had an enormous amount of information. They really packed it with data. There is a special individual *Frequency Almanac* made up for each state. Because some states are larger or more heavily populated than others, the number of pages in the various directories will (naturally) vary from state to state. The prices for each state's directory reflect this, and are within three ranges.

We liked the look of this series, and the comprehensive state-by-state intensive-data listings approach that has been taken. Refreshing, needed, and welcome.

Directories for the most populous states (CA, FL, IL, NY, TX) are \$24.95. The least populous states and areas (DC, DE, HI, ME, NH, PR, RI, SD, VI, VT, WV, WY) are \$9.95. All other states are \$19.95. Be sure to add shipping, which is \$5.95 by UPS, or \$3.95 by Fourth Class Mail. These can be ordered from U.S. Scanner Publications, P.O. Box 14923, Portland, OR 97214-4923. Phone: 1-800-890-6999.

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Ham Radio on the Run!

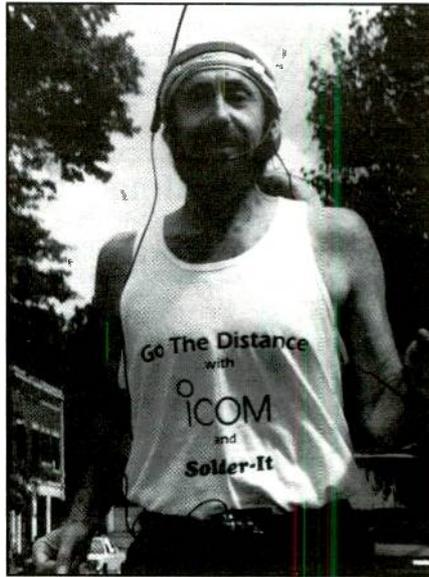
Amateur Operator's "Ham-Style" Marathon Run Benefits Kids With Cancer

BY DEENA MARIE AMATO, ASSOCIATE EDITOR

Ham contacts travel new paths, as hundreds of QSO's were logged by a Ham while participating in a nationally-known marathon! In addition to his usual running attire of spandex and running shoes, 47-year old ham operator Fred Doob, AA8FQ, recently ran the Los Angeles Marathon fully equipped with his ICOM IC-W21AT strapped to his waist, in effort to raise money for the Children's Cancer Research Fund.

In addition to his radio, Fred ran the 26.2-mile marathon course with an HS-51 headset/boom mic connected to his ICOM hat, and held a specially modified PTT control which was used to communicate and change frequencies throughout the race. Fred decided to run "ham-style" because it would be a great way to make the time pass. "I needed something to take my mind off of the pain!" began Fred. "Really good runners concentrate on their speed. We slower runners focus on ignoring the pain and finishing the race. I figured this way I could do two hobbies I enjoy—running and making contacts."

During the four hours and 50 minutes it took Fred to complete his run, he made a total of about 400 contacts. It was these QSO's plus individual pledges that helped Fred and ICOM raise close to \$3000. "Under normal conditions, my average completion time is three hours," said Fred. "The radio equipment made the marathon



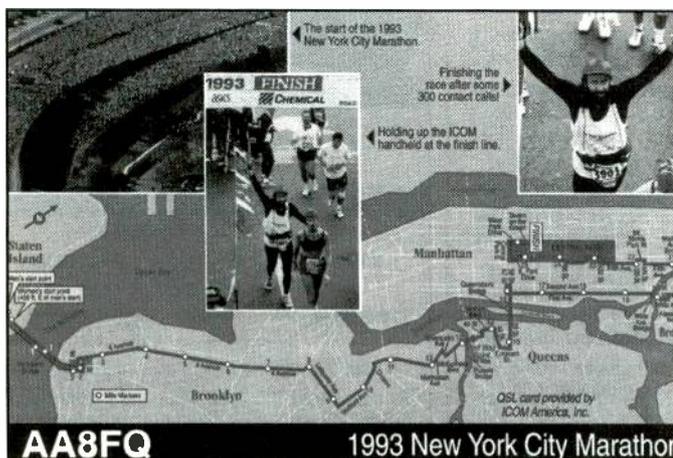
Fred Doob "goes the distance" and seems pleased with his accomplishments in both the Los Angeles and New York City Marathons.

much more challenging, and a bit more stressful. For instance, talking to the hams and taking down call signs while running definitely interrupts your concentration to pace yourself."

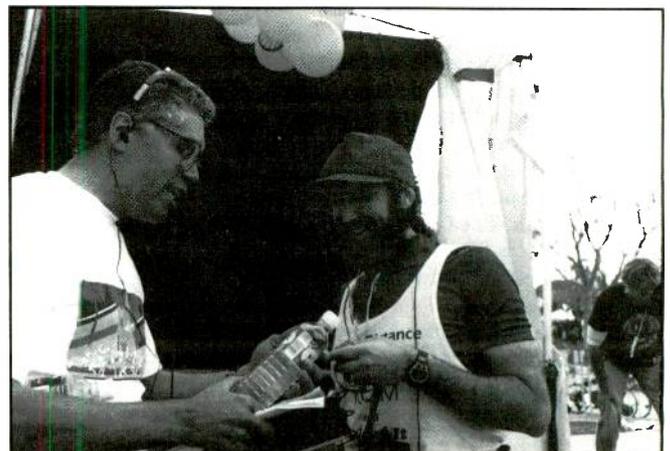
While running, he went from repeater to repeater, utilizing the Henry Radio repeater on 146.67, TRW on 447.000, the Los Angeles Veteran Administration repeater on 447.325, WWCX on 445.925, and the 146.52 MHz simplex. As he changed frequencies in each city, his "Net Control" (also known as the people he had scattered throughout different cities), logged which QSO's hit best, and kept organization as to calls coming in one at a time. "I would only talk briefly to the hams making contacts, just to let them know I received them," he said. All other announcements and pledge information were then handled by Net Control. Each ham who contacted Fred during his run received a special commemorative Los Angeles Marathon QSL card.

The Los Angeles Marathon was Fred's second try at successfully getting hams involved in his charity project. After competing in the New York City Marathon for nine consecutive years, he decided to run New York's 1993 race for charity, but this time adding his "ham twist." Fred convinced ICOM to sponsor him for New York's marathon, and the company agreed to donate \$5 per contact to the Memorial Sloan-Kettering Cancer Center.

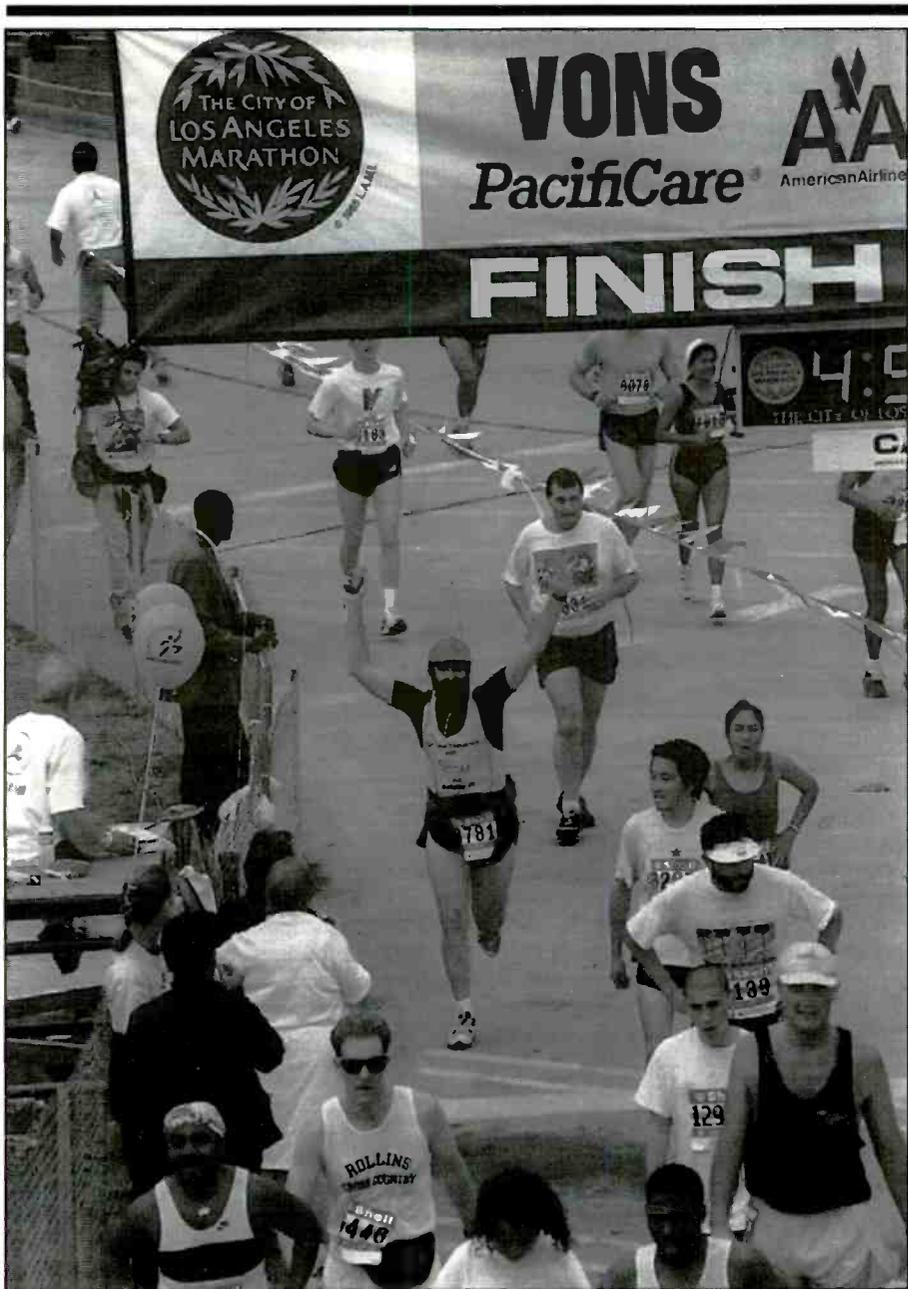
Charlotte Alderton, Advertising Manager of ICOM America Inc., says ICOM was interested in sponsoring Fred during both



All hams making contact with Fred during the 1993 New York City Marathon received an official QSL.



An encouraging word and bottled water are always welcome after a 26-mile race!



Fred shows the "thrill of victory," as he crosses the L.A. Marathon finish line—radio equipment intact!

marathons because he fit the bill as being both a hobbyist and physically fit. "Fred is a longtime ham, licensed since 1958; and he is in great shape, considering he runs an average of six miles a day for almost the last ten years," said Charlotte. "He is active in both hobbies, and we think the two make a great combination!"

Fred was able to make 300 contacts and raised \$2500 during the New York City Marathon. "The New York experience was great. The involved hams were very supportive, and because of the positive turnout, ICOM was all for doing it again in L.A.," explained Fred.

Even though it was Fred who ran the race, others were victorious during the Los Angeles Marathon, especially the children for whom Fred ran the race. Hams were

encouraged to pledge \$1 or more per mile, and in return they earned an ICOM race hat similar to the one worn by Fred during the marathon, and a syringe of Solder-It Silver Solder Paste. And once again, ICOM donated \$5 per contact. "We have counted close to \$3000 to date," said Fred.

After participating in two successful marathons, both Fred and ICOM representatives hope ICOM will continue to sponsor Fred. "Right now it is not set in stone, however it is mutually beneficial to continue backing Fred," said Charlotte. "We have a conditioned runner using our equipment, and he is getting hams involved in helping to raise money for children with cancer. At the same time, we are adding to the fun of ham radio, as well as donating to a good cause. It is a good match!"

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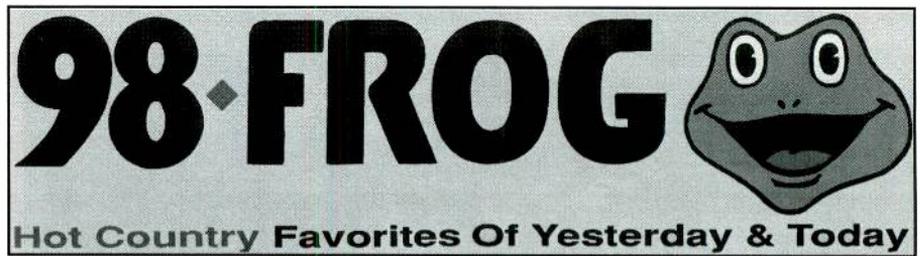
DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Sound of Music: In the April column, a reader asked about reported legal problems encountered when a retail merchant played a local broadcast station's programming for its customers. He said that a merchant in his town was sent a letter demanding a fee for a license issued by the station that would then allow such use during business hours. He wondered if any of our readers had ever heard of this.

Several interesting comments arrived. Randy Kaeding, K8TMK, is the Chief Engineer of WCSY/WCSE, South Haven/Bridgman, Mich., and he tells us that Paul Harvey told a story about four years ago that relates to this.

Harvey told of a barber shop owner being sued by ASCAP (American Society of Composers, Authors, and Publishers), and BMI (Broadcast Music Incorporated), the music composers' two royalty associations; for playing a local radio station in his establishment. The way Randy understood that situation, it would have been okay for a radio to be playing for customers to hear so long as it was a single, self-contained unit. Once extension speakers began to be run to various locations, then problems arose. The barber had installed a second speaker near another chair in his shop.

A letter from Cary Levine, of Marlboro, New Jersey, mentions that he once worked



WGNE-FM/98.1, Daytona Beach, Fla., is one of several hot country music stations identifying with that famous frog. (Courtesy Emory Schambers, Edgewater, Fla.)

in a large retail pharmacy in New York City where an FM broadcast station was played over the public address system. He says that either ASCAP or BMI (he can't recall which) persisted in demanding that the store pay licensing fees. Eventually the pharmacy allowed them to come to their facility to count the speakers and set a fee. Cary recalls that 10 to 15 years ago, a large chain of stores selling casual clothing was sued for the same thing. It spent several years in the courts, but Cary believes the store lost.

From Wilkes-Barre, Penna., a comment from Tom Carten notes it is his understanding that stores can have up to four loudspeakers without having to pay royalties to composers' associations (generally ASCAP and BMI). He has heard that more speakers than that and the use of the licensed

property (music) becomes such that the composer can reasonably expect to be compensated. Commercial broadcasters all pay a percentage of their gross income to the composers (via ASCAP and BMI) for the use of their music; college stations pay a flat fee for a license to use the music.

Tom Carten points out that such fees are how composers earn their living.

A letter from Tim Rand, of Paragould, Ark., mentions that he was in radio station ownership for 19 years, and has since worked in the music business. Tim advises that it is, indeed, illegal to play music from a radio in a business for customers unless permission is obtained from the copyright holders of the music. This is done by obtaining licenses from ASCAP and BMI. Information can be obtained from the licensing

Pending AM Call Letters

Now	Seeks	
KJBX	KRFE	Lubbock, TX
WCEO	WDJC	Birmingham, AL

Changed AM Call Letters

New	Was	
KHBL	KZEP	San Antonio, TX
KHTK	KRAK	Sacramento, CA
KHVH	KIKI	Honolulu, HI (830 kHz)
KICI	KDNT	Denton, TX
KIKI	KHVH	Honolulu, HI (990 kHz)
KINT	KSVE	El Paso, TX
KKOH	KROW	Reno, NV
KKTK	KSTR	Junction, CO
KNFX	KQAQ	Austin, MN
KNTB	KDFL	Lakewood, WA
KNTE	KLDY	Lacey, WA
KRCV	KOH	Reno, NV
KUYU	KSES	Yucca Valley, CA
KWTR	KOPY	Georgetown, TX
KXYQ	KZYQ	Milwaukie, OR
WCKM	WCKJ	Augusta, GA
WEGP	WTMS	Presque Isle, ME
WGMP	WOGL	Philadelphia, PA (ex-WCAU)
WKIM	WCKJ	Augusta, GA
WLSN	WWGZ	Lapeer, MI
WOAM	WXCL	Peoria, IL
WRVE	WGY	Schenectady, NY

Seeking Changed AM Facilities

KSIR	Brush, CO	1010 kHz	Seeks 25 kW/280 watts
KURS	San Diego, CA	1040 kHz	Seeks nights with 63 watts
WBRW	Bridgewater, NJ	1170 kHz	Seeks daytime drop to 229 watts
WKPA	Lynchburg, VA	1170 kHz	Seeks drop to 2.5 kW.
WRDZ	Cleveland, OH	1260 kHz	Seeks daytime increase to 10 kW
WYSL	Avon, NY	1030 kHz	Seeks 1040 kHz, 2.5 kW/500 watts

Changed AM Facilities

KCKC	San Bernardino, CA	1350 kHz	Increased nights to 600 watts
KIQI	San Francisco, CA	1010 kHz	Operating with 15/1.5 kW
KLEY	Wellington, KS	1130 kHz	Added nights with 1 kW
KNOW	Minneapolis, MN	1330 kHz	Increased to 9.7/5.1 kW
KSCB	Liberal, KS	1270 kHz	Dropped night power to 30 watts
WCCF	Punta Gorda, FL	1580 kHz	Increased days to 350 watts
WGOV	Valdosta, GA	950 kHz	Dropped night power to 63 watts
WHRT	Hartselle, AL	860 kHz	Moved to 890 kHz, increased days to 5 kW
WKBL	Covington, TN	1250 kHz	Dropped power to 800 watts
WMMN	Fairmont, WV	920 kHz	Dropped night power to 200 watts
WNQM	Nashville, TN	1300 kHz	Increased days to 10 kW
WOLF	Syracuse, NY	1490 kHz	Dropped power to 620 watts
WSGH	Lewisville, NC	1040 kHz	Dropped nights with 182 watts



Mediumwave listening post of Tim Land, Kingsport, Tenn.



WCOS/97.5 is a great country music station in Columbia, S.C. Their bumper sticker is an unusual shape. (Courtesy Tom Land, Tenn.)

divisions of ASCAP and BMI in Nashville or New York.

This proved to be a lively topic. The responses from readers were much appreciated, serving to bring up an interesting broadcast-related subject that surely had not occurred to many people.

Airport Station: If you're near or passing through Miami International Airport, tune your FM receiver to 102.3 MHz. The Florida Assn. of Broadcasters, the State of Florida, and The Greater Miami Conven-

tion and Visitors' Bureau have combined to run this low-power station as a test lasting through next March.

No music or commercials here, just a repeating tape loop commercial continuously providing motorists' safety tips, emergency information, and local road directions. This information, in six languages, is intended to give visitors increased security following recent assaults when some have become lost while driving, and ended up where tourists aren't welcome.

Thanks to our regular contributor, Elmer Wallesen, of La Grange Park, Ill., for this piece of information.

Out With the Old: A couple of famous old broadcasting call letters drifted into oblivion this month. GE's historic (since 1922) WGY, Schenectady, New York, evolved into a station known as WOBB. Station KOH, known by those call letters since 1928, of Reno, Nevada, is now KRCV. Philadelphia's wonderful WCAU went on the air in 1922 and used those call letters

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See our other ad on page 35

Applied for Permits to Construct New FM Stations

AK	Houston	92.1 MHz	6 kW
AL	Sheffield	89.9 MHz	1 kW
CA	Los Molinos	101.7 MHz	6 kW
CA	Madera	91.1 MHz	7.5 kW
CA	Point Arena	102.3 MHz	
FL	Indian River Shores	97.1 MHz	
IL	Warsaw	89.5 MHz	10 kW
IN	Crown Point	90.5 MHz	27.5 kW
IN	Veedersburg	92.9 MHz	6 kW
LA	Amite	96.5 MHz	6 kW
MA	Woods Hole	89.3 MHz	8 kW
MN	Roseau	102.1 MHz	50 kW
NY	Alfred	101.9 MHz	1.3 kW
OH	Defiance	88.5 MHz	19 kW
OK	Sulphur	90.7 MHz	3 kW
PA	Villanova	89.1 MHz	2 watts (WXVU booster)
PR	Juana Diaz	104.7 MHz	100 watts (WKAQ booster)
TN	Monterey	104.7 MHz	3.4 watts
TX	Monterey	95.1 MHz	3 kW
WA	Moses Lake	91.5 MHz	7.2 kW

Issued Permits to Construct New FM Stations

AR	Waldo	99.1 MHz	6 kW
FL	Gifford	94.7 MHz	3 kW
FL	Monticello	91.9 MHz	6 kW
GA	Mt. Vernon	101.7 MHz	6 kW
ID	Pocatello	103.3 MHz	90 watts (KFTZ booster)
MN	Proctor	107.7 MHz	77 kW
NY	Brockport	105.5 MHz	3 kW
OR	Myrtle Point	94.1 MHz	2 kW
TX	Ingleside	107.3 MHz	3 kW
VA	Kenbridge	90.9 MHz	1 kW

New FM Call Letters Issued

KAHG	Hudson, LA
KORI	Mansfield, LA
KLVH	Leavenworth, WA
WAHJ	Holly Hill, FL
WAKH	Ivanhoe, FL
WDKR	Maroa, IL
WJTD	McArthur, OH

Pending FM Call Letter Changes

Now	Seeks	
KCHT	KOQQ	Bakersfield, CA
WOLF-FM	WOLV	Houghton, MI

Changed FM Frequencies

KQNS-FM	Lindsborg, KS	95.9 MHz	Moved to 95.5 MHz, 15.5 kW
KTNT-FM	Edmund, OK	97.7 MHz	Moved to 97.9 MHz, 6 kW
KVRH-FM	Salida, CO	92.1 MHz	Moved to 92.3 MHz, 13.5 kW
WERB	Berlin, CT	103.5 MHz	Moved to 94.5 MHz

Applied to Change FM Frequencies

KKOL	Hampton, AR	107.1 MHz	Seeks 106.5 MHz, 17.5 kW
WTGA-FM	Thomaston, GA	95.3 MHz	Seeks 101.1 MHz, 6 kW
WWUN-FM	Clarksdale, MS	101.7 MHz	Seeks 101.5 MHz

Changed FM Call Letters

New	Was	
KBMJ	KDWG	Hardin, MT
KBOB	KFMH	Muscatine, IA
KDIG	KXHM	Orland, CA
KEGE	KRXX-FM	Minneapolis, MN
KEJJ	KCOU	Columbia, MO
KFLW	KFLD	St. Robert, MO
KIKY	KRGT	Hutto, TX
KIYS	KJBR	Jonesboro, AR
KJWL	KAGZ	Fresno, CA
KKJZ	KKBK	Lake Oswego, OR
KKLV	KHHH	Honolulu, HI
KKRO	KPXR	Anchorage, AK
KKZQ	KISK	Lowell, AR
KLCQ	KVVV	Healdsburg, CA
KNFX-FM	KNFX	Spring Valley, CA
KPWX	KERC	Clovis, NM
KQUL	KABE	Lake Ozark, MO
KRAK	KRAK-FM	Sacramento, CA
KSVE	KINT-FM	El Paso, TX
KTND	KKUR	Ojai, CA
KTST	KQOL	Oklahoma City, OK
KUJJ	KQOL	Spanish Fork, UT
KVLC	KWQQ	Hatch, NM
KXYQ-FM	KXYQ	Salem, OR
KZNY	KAIR	Crane, TX
KZZQ	KBBM	Winterset, IA
WBHG	WWSS	Meredith, NH
WCMG	WLXP	Marion, SC
WEXP-FM	WAEI	Plattsburgh, NY
WHGG	WPGT	Roanoke Rapids, NC
WKVE	WKYN	St. Mary's, PA
WLDE	WJLT	Ft. Wayne, IN
WLFX	WZJO	Ocean Pines, MD
WLHN	WIVM	Elwood, IN
WLXT	WMBN-FM	Petoskey, MI
WLXV	WWLZ	Cadillac, MI
WMGR-FM	WJAD	Jonesboro, AR
WNHI	WCNH	Belmont, NH
WOBB	WSGY	Tifton, GA
WOGK	WMMZ	Ocala, FL
WPBH	WKNB	Port St. Joe, FL
WXCL	WXCL-FM	Pekin, IL
WXLQ	WJTK	Gorham, NH
WXVE	WCCZ	Spangler, PA
WZJM	WJMO-FM	Cleveland Heights, OH

Cancelled

KHEN	Caldwell, TX	95.1 MHz	3 kW
WCSP	Crystal Springs, MS	590 kHz	500 watts
WONO	Walterboro, SC	105.3 MHz	3 kW

until a couple of years ago. After some 70 years, the renowned WCAU callsign was dumped and the station turned into WOGL. That callsign has now been ditched in favor of the equally undistinguished call, WGMP.

What's behind this seeming callous disregard for the sacred relics of broadcast history? Obviously, some stations feel that a contemporary all-new image is important. They believe this image can be maintained only after removing or replacing the sym-

bols that linked the station to the past. "The past" could mean the 1980's, 1960's, 1930's, 1920's, last year, or whatever time frame the station hopes to replace.

Totals: At last count, in the USA, there were 4,934 AM broadcasters; 4,986 FM broadcasters; 1,666 educational FM broadcasters; and 2,141 FM translators and boosters. There were 559 commercial VHF TV stations; 123 educational VHF TV stations; 2,334 VHF translators; and 512 VHF

LPTV broadcasters. In additions, there were 593 commercial UHF TV stations, 243 educational UHF TV stations; 2,458 educational UHF TV translators; and 955 UHF LPTV broadcasters.

Tower of Power: AM station KURS/1040, Chula Vista, Calif., was issued an FCC Notice of Apparent Liability (NAL) in the amount of \$20,000 for what the agency alleged were "repeated violations" of the rules relating to operating power limitations.

According to FCC documents, the agency claims their San Diego and D.C. offices received an anonymous complaint "which alleged that the management of KURS had instructed station personnel to reduce their operating power at sunset, but to increase the power back to the daytime level after the local FCC office in San Diego had closed for the day." KURS is required to reduce its operating power at sunset to protect other co-channel stations at nighttime. As a result, KURS is authorized to operate with 9.5 kW during daylight hours, and 4.5 kW after sunset.

The FCC reports that they investigated this complaint, taking field-intensity measurements on 10 dates. The agency alleges that their measurements on each occasion indicated that the station, "was, in fact, operating at approximately their authorized daytime power level."

Please Remit: In May of last year, the FCC sent an NAL to KBAC-FM, Las Vegas, N.M., in the amount of \$20,000. This was because the agency claimed that, in violation of the regulations, the station's main studio was not located within the principal community's contour.

KBAC-FM sought a reduction of the amount, admitting the FCC finding, but suggesting that the forfeiture amount was too high. The station explained to the FCC its aggressive efforts to relocate its facilities after the initial correspondence was received from the agency in June, 1991. It took until March of 1993 to negotiate for and establish the appropriate facilities in Las Vegas, following many difficulties and disappointments. KBAC-FM did make the change, and also pointed out that because they are a station serving a small community and market, the \$20,000 is excessive.

For the FCC's part, the agency explained that there was a basic forfeiture of \$10,000 for the rule violation. There was an additional \$10,000 tacked on because the agency felt that "the violation continued over a substantial period of time." The FCC was displeased that the station needed an official letter in order to comply with the rules in the first place. Moreover, the FCC emphasizes that market size is not a factor in downward adjustment criteria. All of this meant that the FCC denied the request for any reduction in the fine.

A Minor Victory: WBHT-FM, Mountaintop, Penna., requested a reduction of the \$5,000 NAL they were given for violation of the FCC regulation requiring that before broadcasting a phone conversation live, or recording it for broadcast, a licensee must inform any party to the call of the licensee's intention either to record the conversation for broadcast, or to broadcast the call simultaneously with its occurrence.

WBHT-FM did not dispute that one of its deejays recorded a conversation and put it on the air without informing the other party of the intended broadcast. However,

the station pointed out that it was one isolated minor incident for which an apology was issued, and from which no harm or embarrassment resulted.

The FCC contended that they consider such incidents an invasion of privacy, and therefore it should not be considered minor. Nevertheless, the agency took into account that WBHT-FM has a good record of compliance with FCC rules. On that basis, the station's fine was reduced from \$5,000 to \$3,500.

Not much, we'll admit. On the other hand, \$1,500 saved is far better than dropping a hammer on your foot. Think about it.

Now that the matter has been brought up, we wonder how television news programs get around this FCC regulation. We often witness TV consumer advocates and investigative reporters calling up crooked home repair companies, phony charities, discriminatory real estate agencies, boiler-room investment operators, telemarketing scams, and others. We get to hear both sides of the conversations, and these people are obviously unaware that they are being recorded for later broadcast. Why are networks and major television stations permitted to do this, while independent radio stations get clobbered for an occasional slip up? Radio stations should collect a few of these TV broadcast tapes as evidence so they can claim selective enforcement of FCC regulations.

An Odd Situation: As this is written, there's a pending sale of 50 kW clear channel WOWO/1190, Fort Wayne, Ind. The proposed purchaser is the owner of 10 kW daytimer WLIB/1190, New York City. The FM outlets of both stations are part of the deal, but it appears that the use of 1190 kHz is the main reason for WLIB's \$2.3-million offer.

WLIB serves the large and lucrative New York City metro area, but must sign off at sunset to protect WOWO's clear channel signal. WLIB would like to remain on the air at night. One way of doing this might be to purchase WOWO and request the FCC to switch the 50 kW clear channel status of 1190 kHz to New York City, then cut the power of WOWO. Or, WOWO could be shut down completely. The FCC would have to establish a new policy, so this needs some watching.

WOWO has been operating since 1925 and is relied upon for information by many in the various areas of agriculture. WLIB was established in 1942 and has become a major voice addressing the African-American community.

This information came from Fred Butt, Syracuse, Ind. We send our sincere thanks

Back Next Month: That's a wrap for August. Please pass along your AM/FM station bumper stickers, station photos, news clippings, format changes, questions, and ideas. ■

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SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

The summer's just about over—what did you hear on your scanners this season? Did you take a handheld unit along to an amusement park? Did you lay on the beach or at the pool with a handheld tuned in to lifeguards or local activity? Did you visit a national park and find some new frequencies used by rangers? Or did you travel to big cities and tune in exciting police and fire communications?

After you get home and recuperate from those vacation trips, how about writing up those fabulous frequencies and sending them in to us here at *POP'COMM* so others can enjoy your finds. We'd love to share your information with our other readers.

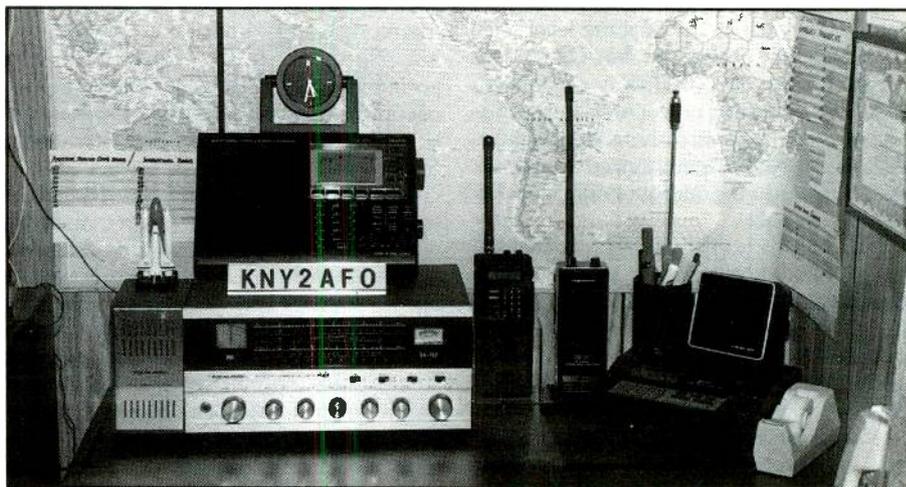
In the meantime, it's never a bad time to check the connections on your outside antennas, as well as the antennas themselves. Summer storms could have caused damage to the antennas' elements or water could have seeped into the connectors, causing shorts and corrosion. While it's warm out, take advantage of good weather to make the antenna repairs. Be sure your antennas are firmly attached to their hardware so they can withstand the brisk winds of winter, too. After fall comes, it may be too late to do your antenna work, especially if cold weather comes early.

Mailbag

Herb Raemsch of Mountoursville, Pennsylvania, writes in to update frequencies we've listed for the new Pennsylvania State Police radio system. He says that the Mountoursville barracks is using 154.655 for base and 158.910 mobile.

Herb also says he knows what frequencies are used locally for emergency management in his area, but he wants to know what frequencies are used by the Pennsylvania Emergency Management Agency (PEMA). While the former civil defense agency used 45.16 on a statewide basis, PEMA now uses 453.525 statewide with repeaters located all across the state. PEMA also uses 158.835 for mobiles on a statewide basis. There might be additional frequencies PEMA could use (and 155.475, a police mutual aid frequency, would be a logical choice) in a large emergency, so be sure to search the bands when there's a major emergency in your local area. Also keep an ear on the input frequency for the 453 MHz repeaters on 458.525 in case PEMA should be using that channel outside repeater coverage areas.

Twelve year old Branden Watson of Eden, New York, always reads *Scanning VHF/UHF* when he gets his copy of *POP'COMM* to learn more about the hobby. Here are some frequencies he likes listening to in New York: Buffalo police—



Richard Westfall, Registered Monitor KNY2AFO, uses this listening post at his home in Ithaca, New York. Richard started monitoring in October 1993 and also enjoys SWLing. Scanners include a Uniden Bearcat 100XLT and a 170XLT.

460.325 (Channel 1, traffic), 460.350 (Channel 2, detectives), 460.425 (South), 460.475 (North), 460.025 (car to car); Eden police, 154.040; Hamburg police, 155.790; Hamburg fire control, 46.20; Erie County sheriff—460.450 (Channel 1, North and Central), 460.075 (South) and 460.200 (cars).

Branden also says he's been having trouble finding frequencies used by New York State Police frequencies for Erie County. We checked and found that the state police in Erie County use Troop A's frequency, 155.505 for base and 155.535 for mobile. The dispatch channel is referred to as F-1. Other frequencies used statewide by the New York State Police include: 154.665 (F-2, car to car), 154.695 (F-3, emergency channel for bulletins and broadcasts), 155.565 (F-4, Bureau of Criminal Investigation and data), 155.370 (F-5, municipal radio dispatch), varies (F-6, tactical and surveillance, usually 154.845), 155.475 (F-7, NYSPERN nationwide emergency), 155.625 (F-8, data). It should also be noted that New York State Police vehicles are being equipped with 128-channel radios, so there may be additional frequencies in use, particularly those used by the towns and counties the troopers patrol.

Larry Larmer of Barrie, Ontario, says he likes to listen to trucking frequencies from 159.495 to 160.200. At present, he is collecting truckers' "handles" from across North America. If anyone can help Larry with his list while they monitor the trucking frequencies, write to him at: 28 Donald St. U78, Barrie, Ontario, L4N4S6, Canada.

Sue Wilden of Columbus, Indiana, checks in once again to say: "Several months back, I wrote asking to see if anyone knew the 'B-4' frequency for the Bartholomew County, Indiana, Sheriff's Department.

You were absolutely right—they use a frequency licensed to the county highway department, 151.085, which is why no one ever hears them go to that channel during the day. My Pro-46 sure has been a lot of fun at my new job assignment. Thanks for your help!" Glad to be of assistance, Sue. Don't forget that trick: If your local police or sheriff switches to a particular frequency at night only and you can't find it, check road department or local government frequencies. They are bound to be there since those frequencies are rarely used except during daylight hours.

Bob Burnett of Jacksonville, Florida, writes to inquire about the Registered Monitor program, which this column usually gets up to a half-dozen requests for every month. Registered monitors receive distinctive call letters, such as my own, KPA3CA, which identify them as a serious monitor when writing to others, especially when seeking verification letters or QSLs.

For more information on the Registered Monitor program, write to CRB Research Books Inc., P.O. Box 56, Commack, N.Y. 11725. Tell them *POP'COMM* sent you!

William H. Norris of Topeka, Kansas, says that he and his wife, Carole, have two handheld scanners that they listen to all the time. However, they had a problem deciding where to place the scanners in the car while driving. They tried on the seats, between the seats, and even on the dashboard (which allowed the radios to slide around). For long trips or around town, the couple could not find a suitable location where the radios could be heard well or could be seen to determine frequencies being heard.

Carole Norris came up with an idea that works. She purchased an adjustable locking plastic cup holder from their local Wal-Mart store and lined the inside of the cup

holder with weather stripping to pad the radio from the plastic. They placed the holder on its side and mounted it to the dashboard with Velcro.

"The scanner fits snug in the cup holder and the lock keeps it securely in place," William says. The scanner sits on its side with the speaker and frequency display facing the passenger and driver. The radio sits high enough in the vehicle and the transmissions can be heard well, too. The Norris' scanner is connected to a trunk-mounted antenna to enhance reception. The idea is excellent and substitutes nicely for any commercially produced handheld radio holster for the vehicle.

William Norris also passes along some of the couple's favorite frequencies for the Topeka area: 460.475, Topeka police F-1; 460.400, Topeka police F-2; 460.350, Topeka police F-3; 460.250, Topeka police F-4; 460.200, Topeka police F-5; 44.98, 44.94, 44.82 and 154.580, Kansas State Police; 39.68, Shawnee County Sheriff; 462.975, Medevac Tac 2; 463.175, Medevac information; 154.430, Topeka fire; 463.675, Heartland Park raceway F-1; 464.800, Heartland Park raceway F-2; 462.050, Heartland Park raceway F-3; 462.150, Heartland Park raceway F-4.

For those scanner buffs who have access to America Online computer service, Northeast Scanners have set up weekly and monthly scanner conferences. Les Mattson, the editor and publisher of the club's

monthly newsletter, says that those with an interest in scanners and discussing the hobby with others via computer can log onto America Online's Ham Radio Conference from 8:30 to 9:45 p.m., Eastern Daylight Time. The group also gets online at the same times the last Saturday of each month (for those who cannot get online during the weekly sessions!).

The online conferences usually revolve around topics such as new products, trunking systems, publications, modifications, frequencies and more. Each session ends with an open discussion.

If you are a member of America Online, there is no additional charge to access this conference. If you want to try out this scanner chat session, you can join America Online by calling (800) 827-6364, and requesting free software. New members get 10 free hours of online use and the first month is free. There are many scanner files available for downloading on America Online, too. Just check in to the Northeast Scanners conference for more information.

What are your favorite frequencies? Do you have any scanner-related questions? Do you have any listening tips worth passing along to your fellow readers? How about sending in a photo of your listening post or antenna farm? Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, *Popular Communications*, 76 N. Broadway, Hicksville, N.Y. 11801-2909, or e-mail to scan911@aol.com through Internet. ■

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WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

We've stepped into summer with both feet now, but don't let the great weather keep you from the dials completely. As you can see from the logs this month there's a lot of good stuff being heard out there!

The many US religious broadcasters keep adding transmitters like some of us do QSLs! KSDA at Guam will have another 100 kW puncher on the air in a month or two. And we understand that WJCR in Kentucky has a third unit on the air and a fourth on the way. One that apparently isn't going to happen, though, is Gene Scott's station in Anguilla. Seems the government of Anguilla denied him a license based on environmental concerns. Weren't the antennas already in place?

There's a new station on the air from Liberia. ELRL—the radio station of the Liberia Communications Network, owned and operated by something called International Promoters and Associates. The facility, once used by Charles Taylor's National Patriotic Front, is now licensed under Taylor's National Patriotic Reconstruction Assembly government. ELRL broadcasts on 6090 but no schedule has been announced. You might check for it around 0600 or 0700. Other currently active Liberian stations are ELBC, which signs on at 0655 on 7275 and longtime religious broadcaster ELWA, using 4760 from 0600.

Russian shortwave broadcasting continues in a constant state change. Here are a few of the newer stations and program services disguised as stations:

Radio Lena, in Yakutsk, operates from 0300 to 1000 on 5920 and 6155.

Radio Nadezda, a women's radio service, airs at 0400 on 9490, 9645, 9730,

11655, 11665, 11705, 11740 and 11965 and 2000 to 2200 on 7255, 11965, 12015. Address: ul Pyatnitskaya 25, Moscow 113 326.

Radio Al-Risalah is an Islamic program based in Moscow and aired from 0800 to 0900 on 15550, 17635 and 17710. The address is the same for Nadezda, above.

Radio Republic of Sakha, from Yakutsk, broadcasts on 7215 between 0800 and 1000 and 2000 to 2200.

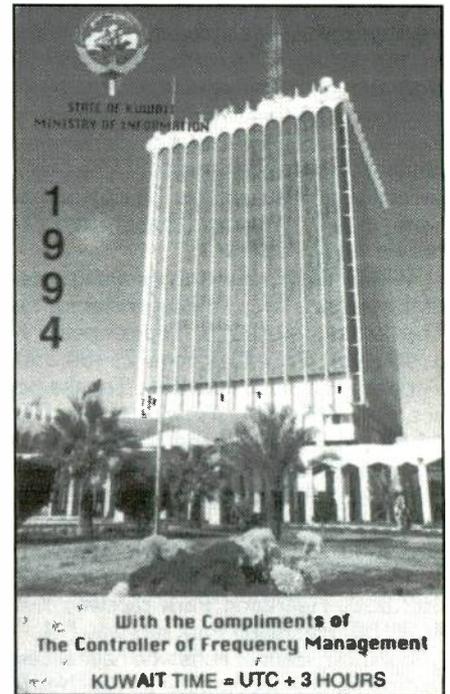
Radio Radonezh is the station of the Russian Orthodox Church and airs on 9795 at 1600 to 1700. It uses the same address in Moscow as the other stations mentioned above.

Radiostantsiya Tsentr uses 12010 from 0630 to 0700 and 7170 between 1630 and 1700. Address is Andrey Nekrasov, Radiostantsiya Tsentr, ul Nikolskaya 7, Moscow 103 012.

Radio Alef, PO Box 72, Moscow, 123 154, airs Sundays, Tuesdays and Thursdays from 1700 to 1800 on 17890.

The State Broadcast Radio Communications Company Number Two (they still love those Orwellian names!) operates out of St. Petersburg and relays several stations over its 200 kW transmitter, including Voice of Russia on 21775 from 0830 to 1400; Radio Mayak from 0600 to 1400 on 15360; Radio Nadezhda on 12015 from 2100 to 0100, 9680 from 1100-1500 and 5905 at 2000—0000. Also Radio Rossi, 7335 from 2030 to 0000. They want reports sent to GPR-2 Verification QSL Service, Akademika Pavlova St. 13A, St. Petersburg 197 376, Russia.

Speaking of Russia, Adventist World Radio now offers a special QSL endorse-



Radio Kuwait's 1994 pocket calendar pictures the Ministry of Information building.

ment if you can manage to pick up any of the feeder broadcasts of its programs. These are apparently being used by the Russian engineers to feed the program from AWR's studio in Tula to the various shortwave transmitter locations. Check these frequencies at various times: 9770, 8005, 8040, 10855, 11575, 12175, 13365, 13820, 15660, 16300 and



Radio Canada International

Broadcast Coverage Map/Carte de rayonnement

Target Areas	Régions cibles
1 Central, Eastern and Western Europe	1 Europe centrale, Europe de l'Est et de l'Ouest
2 Asia and the Pacific	2 Asie et Pacifique
3 Latin America	3 Amérique latine
4 Caribbean	4 Antilles
5 Africa	5 Afrique
6 United States	6 États-Unis

Shortwave Transmitter Sites Émetteurs ondes courtes

A Sackville, New Brunswick	A Sackville, Nouveau-Brunswick
B Daventry, England	B Daventry, Angleterre
C Sines, Portugal	C Sines, Portugal
D Yamato, Japan	D Yamato, Japon

Program feed by radio  Alimentation par ondes hertziennes

Program feed by satellite  Alimentation par satellite

Radio Canada International reaches the world from its transmitters in Sackville, NB and relays in England, Portugal and Japan.



This field of tulips is one of Radio Netherlands' series of Floral QSL cards. (Thanks to Trevor Fletcher, Alberta)

18870. Reports should go to AWR Special Projects, Dr. A.M. Peterson, 903 Tanninger Dr., Indianapolis, IN 46239.

Mexico's Radio Educacion now has a DX program, in English. It's on Thursdays at 0400, Sundays at 0600 and Mondays at 1030 on 6165.

Iran's now high power transmitter site is on the air, which probably explains the new frequencies we're noting. The site is at Sirjan, in southeast Iran. Eventually it will have ten high power shortwave transmitters and eventually will carry programs in 40 languages. VOIRI currently broadcasts in 19. The 0000 to 0130 evening broadcast to North America recently opened up on 7100, in parallel with long-used 9022.

Radio Budapest has re-arranged their way of doing things. Their English service broadcasts are now only half an hour in length and air (for North America) at 0100 and 0230. Frequencies are 5970, 9835, 11910 and 15220.

Another station making changes after many years of doing things in a particular fashion is RAI. English to North America, which used to begin at 0100 now starts at 0050. The broadcast is still just 20 minutes long, however. RAI is now using the BBC Ascension Island relay for its service to Central and South America. This airs at 0130-0230 on 11765 and 15395.

A new relay station should come on the air from French Guiana any time now. Swiss Radio International will use this new facility to improve reception in Central America, as well as the western part of North America.

It was good to meet reporter Errol Urbelis at the Winter SWL Fest in Pennsylvania last March. Errol would like to contact other listeners in his area and his past appeals haven't drawn anyone out. You

can contact him at 563 Meadow Rd., Kings Park, NY 11754-5009.

Del Flemmer, of Washington, sends a note with his loggings saying he was a disc jockey at AFAN McMurdo, Antarctica back in the 1980s. AFAN's station used to operate on 6012.

Please keep those cards and letters coming! Your logs are always welcome—but please list items by country, double or triple space between them and include your last name and state abbreviation after each log—otherwise they just can't be used. The door is also open to program schedules, station news, comments and questions and, certainly, spare QSLs and shack photos we can use as illustrations.

Here are this month's logs. The broadcast language is assumed to be English unless indicated otherwise (FF=French, SS=Spanish, AA=Arabic, etc.) Times are UTC, which is five hours ahead of EST (0100 UTC=8pm EST).

ALASKA—KNLS, 7365 at 0821 with religion in EE/JJ. (Flemmer, WA)

ALBANIA—Radio Tirana, 9760//11745 at 0157 in Albanian with IS. ID, news, organ music. (Lamb, NY) 11840 at 0135. (Rocker, NY)

ARMENIA—Radio Yerevan domestic service on 4040 at 1225 with news, music, ID in Armenian. 9480 at 2346 with news, music in EE. Off at 2357 with address. (Flemmer, WA)

ASCENSION ISLAND—VOA relay, 7105 at 0355. Into BBC World service at 0359 and off at 0414. (Lamb, NY)

BBC relay, 15400 at 2012 with EE lesson, jazz, quiz show. (Lamb, NY)

AUSTRALIA—VL8A, Alice Springs, 2310 at 1145 with Australian country. (Maywoods, KY)

VL8K, Katherine, 2485 at 1145. Poor. (Maywoods, KY)

Radio Australia, 5995 at 1230. (Rocker, NY) 6020 at 1230; 11695//11800 at 1447. (Low, TX) 7240 via Brandon at 1420. (Flemmer, WA) 11660//13605 at 2158 with IS, into CC: 15365//17795//21740 at 2331. 15530 at 2232 in Indonesian. (Lamb, NY)

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11800 at 1253. (Maywoods, KY) 21525 at 1524 with "Asian Focus." (Jeffery, NY)

AUSTRIA—Radio Austria Int'l, via Canada, 6115 at 0535. (Flemmer, WA)

BELGIUM—R. Vlaanderen Int'l, 5910 at 2058 into EE. 5950//9925 at 2029 with IS, into SS. 11740//13655 at 2126 into FF and into EE at 2343. (Lamb, NY) 11740 at 1330, 15445//17775 at 1300. (Rocker, NY) 13655 at 2325. (Maywoods, KY) 17590 at 1400. (Johns, TX)

BENIN—ORTB, 4870 at 2233 in FF. (Maywoods, KY)

R. Parakou, 5025 at 0600 in FF with hilife music. (Urbelis, NY)

BHUTAN—Radio Bhutan, 5030 at 1155 to 1215 with news, Hindi-type music. (Urbelis, NY)

BOLIVIA—Radio Fides, 9625 at 1123 in SS with news and ID. (Maywoods, KY)

Radio Abaroa, 4712.7 at 1006 with Andean vocals, buenas dias, flutes, time check, ID. (Paszkievicz, WI)

BOTSWANA—VOA relay, 12080//15625//17640 Greenville at 2025 in FF with ID. Into Hausa at 2030. Also 13710 at 1915. (Lamb, NY)

BRAZIL—Radio Nacional, 15445 at 1310 in EE. (Northrup, MO)

Radio Nacional Amazonia, 11780 in PP at 1238. (Maywoods, KY)

Radio Universo, 6060 at 0106 in PP. (Maywoods, KY)

Radio Alvarado, tentative, 2460 at 0300 with sports in PP.

Radio Brazil Tropical, 5015 at 0853, ID and jingle. (Maywoods, KY)

Radio Gaucha, 11915 at 0015 in PP with ID, mentions of Brazil, Amazonia, Curitiba, ID 0030. (Paszkievicz, WI)

Radio Integracao, 4765 at 0240 to 0404 sign off, with phone requests, vocals, ID. (Paszkievicz, WI)

Radio Marajoara, 4955 at 0241 in PP with Brazil pops, announcements with echo, ID, frequency. Off at 0302. (Lamb, NY)

Radio Aquidauana, 4795 at 0856 in PP with guitar, IDs, jingle, talks. (Lamb, NY)

Radiodifusora Roraima, 4875 at 0007 in PP with ID, frequencies, mention of Boa Vista, possible sports event. (Lamb, NY)

Radio Clube do Para, 4885 at 0839 in PP with long talks, canned IDs. (Lamb, NY)

Radio Cancao Nova, 9675 at 2051 in PP with Christian music, religious talk, ID. (Lamb, NY)

Radio Educacao Rural, 4755 at 0045 in PP with ranchera and Brazilian pops, IDs. (Lamb, NY)

Swiss Radio Int'l, via Brasilia on new 5905 at 0101 in EE. Included site ID. (Lamb, NY)

Radio Murumbi, 9665 at 0945 with music and news in PP. (Flemmer, WA)

China Radio Int'l, Brasilia relay, 17755 at 0105 in SS. (Flemmer, WA)

BULGARIA—Radio Bulgaria, 7455//9905//11660 in SS at 2154, into PP at 2200. Also 9700 in EE at 1831 and 2245. (Lamb, NY) 9700 at 2130. (Low, TX)

BURKINA FASO—RTV Burkina, 4815 at 2245 with talks in FF, drums. (Maywoods, KY)

CAMEROON—CRTV, Douala, 4795 at 0430, woman announcer to 0500, FF. (Maywoods, KY)

CANADA—Radio Canada Int'l, 9755 at 2303. (Zamora, NM) to Mideast at 2217 on 11945//13650//13690//15325. (Lamb, NY) 13650 at 2154, 15260 at 2130, 17840 via England at 0004. (Jeffery, NY)

Radio Japan via Sackville on 6120 at 1105. (Flemmer, NY)

CBC Northern Service, 9625 at 2235. (Flemmer, WA)

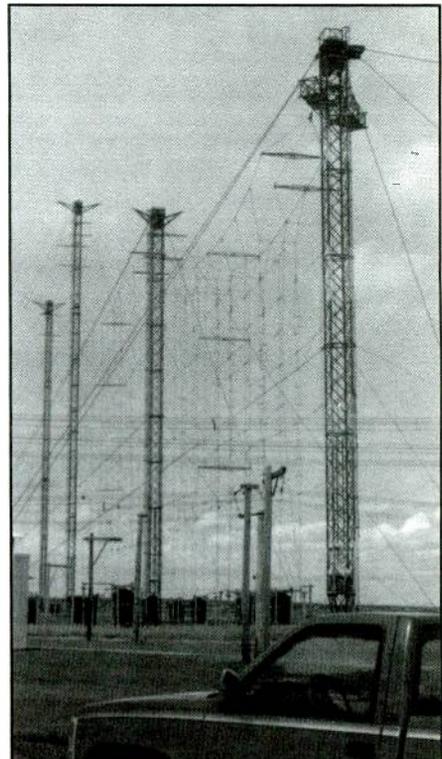
Canadian Forces Network via RCI at 0320 on 6000. (Rocker, NY)

CKZU relay CBU on 6160 at 2100. (Flemmer, WA)
 CFRX relay CFRB, 6070 at 0700; 1235. (Flemmer, WA); 1255. (Low, TX)

CANARY ISLANDS—Radio Uno relay, 11430 USB in SS at 1926. (Maywoods, KY)

CENTRAL AFRICAN REPUBLIC—RTV Centrafricaine, 5033.6 at 0530, FF ID, possible news. (Maywoods, KY)

CHAD—Radio National Tchadienne, 4904 at 0542, 0605, FF and African pops. (Maywoods, KY);



A few of the antennas at RCI's Sackville, NB transmitter site. (Thanks to Gary Hubert, Ontario)

Urbelis, NY)

CHINA—China Radio Int'l, 9690 via Spain at 0325. (Flemmer, WA) 9780 via Mali at 0300 sign on. (Zamora, NM) 9690//9780//11715 (Mali)//11775 (spur?) at 0347. (Lamb, NY) 21545 at 0006. (Jeffery, NY)

Xizang PBS, Lhasa, 4750 at 1133 in CC with talks, ID, time pips. (Maywoods, KY) 5240 at 1200 in CC. (Urbelis, NY)

CPBS, 6840 at 2320 in CC. (Low, TX) 9380 in CC to Taiwan at 0116. (Flemmer, WA)

Voice of Jinling, 4875 at 1209 in CC. (Maywoods, KY)

Qinghai PBS, 9780 at 0150, domestic service in CC. (Flemmer, WA)

COLOMBIA—La Voz del Cinaruco, 4865 in SS

Abbreviations Used in Listening Post

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

at 0201; 0236; 0527. (Maywoods, KY; Low, TX; Flemmer, WA)

Caracol Bogota, 6150 at 0220 in SS. QRM. (Maywoods, KY)

Ecos del Combeima, 4785.7 kn SS at 0044, "Colombia—Combeima." (Maywoods, KY)

COSTA RICA—AWR/Radio Lira, 9725 at 0146 in SS with contemporary Christian music, talks, ID for Radio Lira and Radio Mundial Adventista. (Lamb, NY) 1253 with Voice of Prophecy program. Into SS at 1301. (Zamora, NM) Radio For Peace Int'l, 7375 at 0630. (Flemmer, WA)

Spanish National Radio relay, 17870//17890 in SS at 2200 with news. (Flemmer, WA)

Faro del Caribe, 9645 with news in SS at 0945. (Flemmer, WA)

CROATIA—Croatian Radio, 5895 at 2159 in Croatian and EE with ID, announcements, Croatian Radio News. (Jeffery, NY)

CUBA—Radio Havana Cuba, 6010 at 0312. (Maywoods, KY) 6180 at 0440 to past usual 0500 closing. (Low, TX) 11875 at 2007 in PP. (Lamb, NY) 13660 at 0407 in EE. (Jeffery, NY) 15165 at 2146 with DX program. (Off at 2158. (Zamora, NM)

Radio Rebelde, 5025 in SS at 0250; 0305; 0446. (Maywoods, KY; Low, TX; Flemmer, WA)

CYPRUS—BBC relay, 15575 at 1500 sign off. (Low, TX)

CZECH REPUBLIC—Radio Prague, 7345//9420 at 2213 and 9420 at 1807. (Lamb, NY)

DOMINICAN REPUBLIC—Radio Amanecer, 6025 at 0329 in EE with religious program and sign off. (Lamb, NY)

ECUADOR—Radio Centinela, 4770 at 0230 in SS with ID. (Maywoods, KY)

Radio Centro, tentative on 3290 at 0304 in SS. (Maywoods, KY)

Ondas Quevadenas, 3325 at 1133 in SS with ID, lively Latin music. (Maywoods, KY)

Radio Baha'i, 4950 at 1127 in SS with brass band,

ID, talk, Ecuadorian folk music. (Lamb, NY)

Radio Quito, 4920 at 2359 in SS with IDs, frequencies. IS. (Lamb, NY)

Radio Federacion, 4961 at 1140 in local dialect, children singing, ID, possible religious talk. (Lamb, NY) HCJB, 6205 to Europe at 0710. (Flemmer, WA) 15270 at 1714; 2138. (Maywoods, KY; Zamora, NM)

ENGLAND—BBC, 5975 via Antigua at 0400, 9515 via Canada at 1559, 17830 at 0321 and 17840 via Antigua at 0021. (Jeffery, NY) 9915 at 2047. (Lamb, NY) 11750 at 2200. (Low, TX) 17880 African Service at 1838. (Vaage, CA)

EQUATORIAL GUINEA—Radio Nacional, 5004 at 2100 in SS with hilife. ID, news. (Urbelis, NY)

Radio Africa No. 2, 7190 at 0500 in EE with religious programs. (Johns, NY) 7200 at 2240. (Maywoods, KY)

FINLAND—Radio Finland Int'l, 11735 at 1250 and 17740 at 1300. (Rocker, NY) 15400 at 1435. (Low, TX)

FRANCE—Radio France Int'l, 15155//15195 at 1245. (Rocker, NY) These plus 17620 at 1536 in FF. (Lamb, NY) 15195 at 1902. (Maywoods, KY)

FRENCH GUIANA—RFI relay, 17860 at 1300 s/on in SS. (Zamora, NM) 1310 in SS. (Northrup, MO) 1541 in FF. (Flemmer, WA)

RFO Guyane, 5055 at 0336 in FF with music, ID, news. (Lamb, NY) 0730. (Urbelis, NY) 5056 at 0505; 0620. (Maywoods, KY; Flemmer, WA)

China Radio Int'l relay, 11680 at 0425. (Flemmer, WA)

Radio Japan relay, 9657 at 0950. (Flemmer, WA)

GABON—Africa No. One, 17630 at 1325 in FF. (Northrup, MO) 1544. (Lamb, NY)

Radio France Int'l relay, 12015 at 1605. (Flemmer, WA)

GERMANY—Deutsche Welle, 3995 in GG at 0513. (Low, TX) 7275 via Nauen at 0433. (Flemmer, WA) 9545 via Antigua at 0337. (Jeffery, NY) 11850 via Nauen in AA at 2010. (Lamb, NY) 17860 at 1901

in GG. (Vaage, CA)

Radio Free Europe, 15115 at 1521 in Bulgarian. (Lamb, NY)

GHANA—GBC, 4915 at 2235; 0619. (Maywoods, KY; Flemmer, WA)

GUAM—KSDA/Adventist World Radio, 7455 at 1558 with sign off, address in Hong Kong. (Flemmer, WA) 11980 at 1440 in CC. (Low, TX)

KTWR/Trans World Radio, 11805 at 0917 with religious program. (Flemmer, WA)

GUATEMALA—La Voz de Nahuala, 3362 at 1144 with man in SS, marimbas. (Maywoods, KY)

Radio Maya de Barillas, 3324.8 at 1030 in SS with talk and folk music, many IDs. (Williams, AL) 1152. (Maywoods, KY) 0144 with talks, ID, buenos noches, time check. (Paszkiewicz, WI)

Radio Buenas Nuevas, 4800 in unidentified language at 0056. (Maywoods, KY)

Radio Cultural/TGNA, 3300 at 1040 in SS with music, ID. (Flemmer, WA) 0148 in EE with Christian music, religious program. (Lamb, NY)

Radio Tezulutlan, 4835 at 1115 with drama in unidentified language, ID in SS, into SS folk music. Also 0218. (Williams, AL)

0155. (Maywoods, KY) 0320. (Lamb, NY)

GUINEA—RTV Guineenne, 7125 in FF at 2330. (Johns, TX)

HAWAII—KWHR at 0600; 1225. (Flemmer, WA; Rockery, NY)

17555 at 0000. (Johns, TX)

WWVH time station, 1000 at 0447. (Maywoods, KY)

HONDURAS—Radio Litoral, 4830 at 0545 with ID, Latin music, talk. (Urbelis, NY)

La Voz Evangelica, 4820 at 0131 with religious program in SS. (Maywoods, KY)

Radio Luz y Vida, 3249.8, 0310 with Bible Hour. (Maywoods, KY)

HONG KONG—BBC relay, 15280 at 0007. (Lamb, NY) 21715 at 0325. (Flemmer, WA)

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HUNGARY—Radio Budapest, 9835 at 2210. (Rocker, NY)

INDIA—All India Radio, 4860 at 1220 with Hindi music, news in EE at 1230. (Urbelis, NY) 4910 (Jaipur) at 1220. (Urbelis, NY) 7412//9910//9950//11620 at 2110. (Lamb, NY) 9950 at 2048. (Maywoods, KY) 11620 at 2100. (Rocker, NY) 15135 at 1315. (Northrup, MO)

INDONESIA—RRI Ujung Pandang, 4753.4 in II at 1126. (Maywoods, KY) 1300. (Johns, TX)

IRAN—VOIRI, 7100 at 0105 with talk about Islamic customs, local music, ID, IS. Into SS at 0128. Also 15084//15365 in Farsi with presumed home service relay. (Lamb, NY) 9022 at 0109. (Flemmer, WA) 9575 at 1226. (Maywoods, KY)

ISRAEL—Kol Israel, 7460 at 0505 replacing 7465. (Rocker, NY) 9435 at 2215. (Maywoods, KY)

ITALY—RAI, 6005 at 0059, into FF at 0114 and II at 0130. Also 7275 at 0533 with IS, bells, ID and into RR. (Lamb, NY)

11800 in II at 2350. (Rocker, NY) 21535 with soccer on Sundays 1400 to 1600 and 21560 to Canada in II at 1400 to 1425. (Rampulla, FL)

Italian Radio Relay Service, 11765 at 0200. (Rocker, NY)

JAPAN—Radio Japan, 6125 (via England) and 15430 at 2302 (Lamb, NY) 9535 at 1515 and 1700. (Low, TX) 1705 via Canada at 1430, 11880 at 2104, 17845 at 0328 and 21545 at 1409. (Jeffery, NY) 11925 at 2130. (Rocker, NY) 17810//17845 at 0110. (Flemmer, WA)

JORDAN—Radio Jordan, 11940 in AA with IDs, middle eastern music, Islamic religious programming. (Lamb, NY)

KUWAIT—Radio Kuwait, 9840 at 2035 in AA. (Maywoods, KY)

New 11990 at 1830; 1957 in EE. (Rocker, NY; Lamb, NY)

LEBANON—King of Hope, 6280 at 0245. (Maywoods, KY)

LESOTHO—BBC relay, 3255 at 0258 sign on; 0305. (Urbelis, NY; Maywoods, KY)

LIBERIA—ELWA, 4760 at 0730 with religious program. (Urbelis, NY)

LIBYA—Radio Jamahriya, 15415 at 2025 in AA with news and national anthem. (Flemmer, WA)

LITHUANIA—Radio Vilnius, via Russia, 7150 at 0000. (Low, TX)

MADAGASCAR—Radio Netherlands relay, 9895 at 1505. (Flemmer, WA) 11655 at 0115 to South Asia. (Low, TX)

MALAYSIA—Radio TV Malaysia, 4845 at 1420 in CC with music. (Flemmer, WA)

MALI—China Radio Int'l relay, 11715 at 0325. (Flemmer, WA)

15130 at 1630 to South Africa. (Low, TX)

RT Malienne, 4782.8 in FF at 2236 and 0558. (Maywoods, KY)

MAURITANIA—ORT de Mauritanie, 4840/4845 (switching back and forth from day to day), 0735 with guitar and AA chants. (Urbelis, NY) Presumed this, 2316 in AA with local music, talks, news. (Lamb, NY)

MEXICO—Radio Educacion, 6185, SS/EE, 0630; 0712. (Rocker, NY; Flemmer, WA)

Radio Mil, 6010 at 0925 in SS with news, music, ID. (Flemmer, WA)

MOROCCO—VOA relay, 15245 at 1630 to Europe. (Low, TX) 17785 in FF at 2200. (Lamb, NY)

Radio Medi Un, 9575 at 0135 with music in AA/FF; 1200 in EE. (Flemmer, WA; Maywoods, KY)

MYANMAR (BURMA)—Radio Myanmar, 4725 at 1145 in Burmese, music and talk. (Urbelis, NY)

NAMIBIA—Namabian Broadcasting Corp., 3290 at 2341 with African and US pops. (Maywoods, KY)

NETHERLANDS—Radio Netherlands, 9895 at 1503. (Flemmer, WA)

NETHERLANDS ANTILLES—Radio Netherlands relay, 9590 at 0329. (Jefferys, NY) 21515 at 1750. (Rocker, NY) 1923 for Africa to sign off when switched to 17605. (Vaage, CA)

NEW ZEALAND—Radio New Zealand, 15115 at 0405. (Maywoods, KY)

NIGER—La Voix du Sahel, 7155 at 0610 in FF. (Maywoods, KY)

NIGERIA—Voice of Nigeria, 7255 at 0459 with African news, ID, drums, world news and commentary. (Lamb, NY)

NORTH KOREA—Radio Pyongyang, 4780 at

1200 sign on with anthem, ID at 1203. (Maywoods, KY) 11335//13760 at 0001. (Lamb, NY)

Korean Home Service, 2850 at 1200; 1205 in KK. (Urbelis, NY; Flemmer, WA)

NORTH VIETNAM—Voice of Vietnam, 4960 at 1205 in VV with music, //1059. (Urbelis, NY)

NORTHERN MARIANAS—KHBI/Monitor Radio, 9425 at 1245 with letters program, beamed to Australia. Off at 1258. (Zamora, NM) 9430 at 0120. (Flemmer, WA) 17865 at 0004. (Jeffery, NY)

OMAN—BBC relay, 11760 at 0913 with ID for mideast service. (Maywoods, KY)

PAPUA NEW GUINEA—NBC, 9675 at 1212 talk and music. (Maywoods, KY)

Radio Enga, tentative, 2410 at 1140 in Pidgin. (Maywoods, KY)

PARAGUAY—Radio Nacional, 9735 in SS at 0020 with music, ID. (Flemmer, WA)

PERU—Radio Andina, 4995 at 2339 in SS, Andean music, mentions of Andina. (Maywoods, KY)

Radio Continental, 6055 at 0107 in SS with news. (Maywoods, KY)

Radio Satellite, 6724.3 in SS at 0250 with Andean music, birthday greetings. (Maywoods, KY)

Radio Eco, 5098 in SS at 0920. (Flemmer, WA)

Radio Atlantida, 4790 in SS at 1100 with comment and Latin pops. (Williams, AL)

Radio Ancash, 4991 at 0415 in SS with time checks, musica Peruana, mentions of Huaraz, possible sports scores, ID. (Paskiewicz, WI) 0757 in SS with folk music, ID, jingle, talks, Latin pops. (Lamb, NY)

Radio Tingo Maria, 4759.1 at 1057 in SS with talk, flutes, ID. (Paskiewicz, WI)

PHILIPPINES—Raydo Philipinas, 15190 at 1820 with pops in Tagalog. Also 17760 at 0320 in EE with news, ID and off 0330. (Flemmer, WA)

VOA relay, 6110 at 1730. (Flemmer, WA) 9760 at 1304. (Zamora, NM) 15185//15290//17735//17820 at 0045 in Special English, Off 0100. (Lamb, NY)

Radio Veritas Asia, 9515 at 1242 in PP/EE. ID and off at 1255. (Zamora, NM)

FEBC, 9400, possibly ex-9815, 2229 in CC. ID, IS and off at 0000. Also 15450 at 0006. (Lamb, NY) 11995 at 1555 with ID, off at 1600. (Flemmer, WA)

PORTUGAL—Radio Portugal, 9570//9635//11840 at 2013 in PP, sports coverage. (Lamb, NY) 15200 at 1440 in PP. (Maywoods, KY)

Radio Free Europe via Gloria, 11770 at 1619 in Bulgarian. (Lamb, NY)

Radio Liberty relay, 5985 at 2143 in RR. (Lamb, NY)

Deutsche Welle relay on 6130 at 0202; 11740//11865 (Malta) at 0134. (Lamb, NY)

ROMANIA—Radio Romania Int'l, 9690 at 2120. (Rocker, NY)

RUSSIA—Radio Moscow, 7105 at 1430. (Zamora, NM) 7150 at 2300, 7185 at 0100, 11980 at 1230, 12020 in FF at 1445. (Low, TX) 11750 at 2355 and 17760 at 1500. (Rocker, NY) 12050 at 0211. (Lamb, NY)

RS Byelarus relay on 17605//17690 at 0035 in Belarus. Then Radio Ukraine from 0100. (Flemmer, WA)

RWANDA—Deutsche Welle relay, 11740 at 1921. (Low, TX) 15425 at 2140 to close at 2150. (Flemmer, WA)

Radio Rwanda, 15340 at 2030 in FF with frequencies, ID in EE at 2059. (Johns, TX) 2049 with times and frequencies in various languages. Off 2059. (Maywoods, KY)

SAUDI ARABIA—BSKSA, 11780 in AA at 1635. (Lamb, NY) 15060 at 1628 in AA. (Flemmer, WA)

SEYCHELLES—BBC relay, 15420 at 1443 to East Africa. (Low, TX)

SINGAPORE—Radio Singapore Int'l, 9530 at 1154 with Australian pops, ID. (Maywoods, KY) 1234 with news, financial markets, local music. (Zamora, NM)

Radio One, 6155 at 1405 with sports, weather, ID "We're in touch so you're in touch—Radio One," and pops. (Zamora, NM)

1300 with news. (Johns, TX)

BBC relay, 3915 at 1617, 11750 at 1056 and 17790 at 0202. (Flemmer, WA) 9740 at 1444 and 11955 at 0022. (Lamb, NY)

SLOVAKIA—AWR, 7270 at 0105 with religious programming. (Lamb, NY)

Radio Slovakia Int'l, 5930//7310//9810 at 0102

with address, ID, features. (Lamb, NY)

SOUTH AFRICA—Radio Oranje, 3230 0300 to 0405 in Afrikaans with pops, IDs, commercials. (Urbelis, NY)

Radio Orion, 3230 at 0405 in EE/Afrikaans with pops, IDs, commercials, phone-ins. (Lamb, NY) SABC. 4810 at 2319. (Maywoods, KY)

Channel Africa, 3220//5955 at 0358 with African music, ID, news. Also 5955//9585 at 0250 with IS and sign on. ID. (Lamb, NY)

SOUTH KOREA—Radio Korea, 15575 at 0250 in SS. Into Korean at 0300. (Flemmer, WA)

SPAIN—Radio Exterior Espana, 5970 (via Costa Rica) at 1235 in SS "La Hora de America." (Zamora, NM) 9540 at 0015 with DX program. (Rocker, NY)

SRI LANKA—Radio Japan relay, 9535 at 1600. (Flemmer, WA)

SUDAN—Radio Omdurman, 7200 in AA at 0300. (Johns, TX)

SWAZILAND—Trans World Radio, 3240 at 0300 in Shona. 3335 at 0300 in PP. (Urbelis, NY) 7215 at 0420 in African language. Off at 0430. (Flemmer, WA)

SWEDEN—Radio Sweden, new 6000 at 0336, then on 6195 a day later. Also 6040//9850 at 0330. (Rocker, NY)

SWITZERLAND—Swiss Radio Int'l, 3985 at 0500. (Rocker, NY)

6110 at 2030 closing. (Low, TX) 7480 via China at 1340 in FF, into Italian at 1400. Also 13635 at 1700 sign on and 15505 at 1815 in GG. (Flemmer, WA)

SYRIA—Radio Damascus, 15095 at 2115. (Flemmer, WA)

TAHITI—Radio Tahiti, 11827 at 1050 in FF. (Maywoods, KY)

11827//15167 at 0152 in FF with country, US pops, ID, news, reggae, Tahitian music. (Lamb, NY)

TAIWAN—Voice of Free China via WYFR, 5950 at 0325, 11915 at 2231. (Jeffery, NY) 1610. (Low, TX) 15345 at 0300. (Flemmer, WA)

Family Radio via Taiwan, 5275 at 1256 in CC. (Flemmer, WA)

TANZANIA—Radio Tanzania, 5050 at 0400 with ID, news. (Paszkievicz, WI) 0330 sign on in EE. (Johns, TX)

THAILAND—VOA relay, 9715//11965 (Philippines) at 1401 in CC. Also 11705 at 1455 to close at 1559. (Lamb, NY)

TOGO—Radio Lome, 5047 in FF at 2246, 0627. (Lamb, NY)

TUNISIA—RTT Tunisienne, 7475 at 0430: 0520 in AA. (Johns, TX; Flemmer, WA)

TURKEY—Voice of Turkey, 9445 at 2141; 2300. (Lamb, NY, Rocker, NY)

UGANDA—Radio Uganda, 4976 at 0335 with news at 0400. (Urbelis, NY)

UKRAINE—Radio Ukraine, 6010//7195//7240//9505//9745//9860 at 2208, 17725 at 1600 in Ukrainian. (Lamb, NY) 7195 at 2243. (Rocker, NY) 15135 at 1825 in Ukrainian. (Flemmer, WA)

UNITED ARAB EMIRATES—UAE Radio, 15395 in AA at 1753 with Koran, mideast music, ID, news. (Lamb, NY)

Voice of UAE, Abu Dhabi, 9605 at 2215, AA music, man in EE. (Maywoods, KY)

UNITED STATES—VOA feeder, 19379USB for Portugal-9760 at 2024 with "Music USA." (Lamb, NY)

VATICAN—Vatican Radio, 9600//11830 at 2249, 9605 at 0059 with IS, ID, into SS to Latin America. 11640//15090 at 1512 in Hindi, into Tamil at 1520. (Lamb, NY)

VENEZUELA—Ecos del Torbes, 4980 in SS at 0309. (Maywoods, KY)

Radio Rumbos, 4970, SS at 2108. Lots of trilled R's. (Maywoods, KY) 9600 at 0117. (Flemmer, WA)

Radio Tachira, 4830 in SS at 0134. (Maywoods, KY) 4831 at 1057. (Flemmer, WA)

Radio Mara, 3375 in SS at 1045 with music and short radio play. (Williams, AL)

YEMEN—Radio Sana'a, presumed, 9780 in AA at 2057 with news, possible ID, Koran, anthem and off at 2115. (Lamb, NY) 2135 with mideast music, ID at 2149:30 and call to prayers. (Maywoods, KY)

YUGOSLAVIA—Radio Yugoslavia, new 6195 at 0101. (Lamb, NY)

11700 at 2315. (Maywoods, KY)

ZAMBIA—Radio One, 4910 at 0300 with fish eagle IS, ID in EE every five minutes. (Johns, TX)

That's it! Now, one—two—three—raise

your glass and toast the following who carried the load this month:

Daryl E. Rocker, Herkimer, NY; Marie Lamb, Brewerton, NY; David Williams, Birmingham, AL; Dave Jeffery, Niagra Falls, NY; Bjorn F. Vaage, Granada Hills, CA; Mark A. Northrup, Gladstone, MO; Errol Urbelis, Kings Park, NY; Larry R. Zamora, Albuquerque, NM; Andy Johns, Mansfield, TX; the Maywoods DX Team

(DXpedition consisting of Ed Shaw, Jerry Johnson, Charles Everman, Dr. Joel Roitman, Jim McClure, Loy W. Lee, John Hofferdorfer and John Long, all of Kentucky and Jerry Lineback, Georgia); Del Flemmer, Tacoma, WA; Joseph Rampula, Miami Beach, FL; Sheryl Paszkiewicz, Manitowoc, WI and Brad Low, Jacksonville, TX.

Thanks to all! Until next month, good listening!



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Wilson 1000 CB Antenna Has
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Many CB antennas lose more than 50% of the power put into them. The power is wasted as heat loss in the plastic inside the coil form and not radiated as radio waves.

We have designed a new coil form which suspends the coil in air and still retains the rigidity needed for support. This new design eliminates 95% of the dielectric losses. We feel that this new design is so unique that we have filed a patent application on it.

In addition, we use 10 Ga. silver plated wire to reduce resistive losses to a minimum.

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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Aug. 21, 1987

Wilson Antenna Company Inc.
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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 K40 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	1.45	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

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About This Bandwidth Thing

I recently got a letter from a reader suggesting a way to get more stations on the AM broadcast band (540 to 1600 kHz, soon to be 540 to 1700 kHz). This reader noted that stations on the AM band are spaced at 10 kHz intervals (540, 550, 560, etc.), and suggested that one way to get more stations on that band would be to space stations at 5 kHz intervals (540, 545, 550, 555, etc.). This reader said this shouldn't be a problem, since most radios today have digital dials and finding the new frequencies should be easy. This reader also asked me to publish my opinion of his idea in this column.

Okay, I'll publish my opinion: that idea is one of the dumbest I've heard in a long while. Why do I feel this way? Because of something called bandwidth.

Bandwidth is how much space a signal occupies. When you tune to a signal on 9500 kHz, the signal actually occupies frequency space above and below 9500 kHz. The amount of space the signal occupies is called bandwidth. The bandwidth of a signal can be as little as 100 Hz for a CW signal to over 150 kHz for a FM stereo signal. The amount of bandwidth a signal occupies will vary depending to how the signal is modulated and the maximum audio frequency (if any) the signal contains.

I didn't think my reader's idea was dumb just because I'm a slovenly churl of a man. No sir, I've got bandwidth on my side this time. Let's see why.

Signals Need Room

It's easy to fall into the trap of thinking that signals take up no additional frequency space other than their operating frequency. After all, stations announce only one precise frequency, like 1240 or 9750 kHz. No station says anything like "from 1235 to 1245 kHz with a carrier frequency of 1240 kHz, this is KXXX." Yet such an announcement would be a lot closer to the truth. The unmodulated carrier from a transmitter occupies very little frequency space, less than 100 Hz. As soon as we start modulating it in any way—even something as simple as turning the carrier on or off to transmit Morse code—the resulting signal will take up more frequency space. The more complex the things we try to do with the carrier, such as trying to transmit music with high audio frequencies, the more frequency space the signal will occupy.

When referring to the station's frequency, it is the carrier frequency of the signal. This is the frequency of the signal if no modulation were applied. The carrier frequency denotes the frequency of SSB signals,

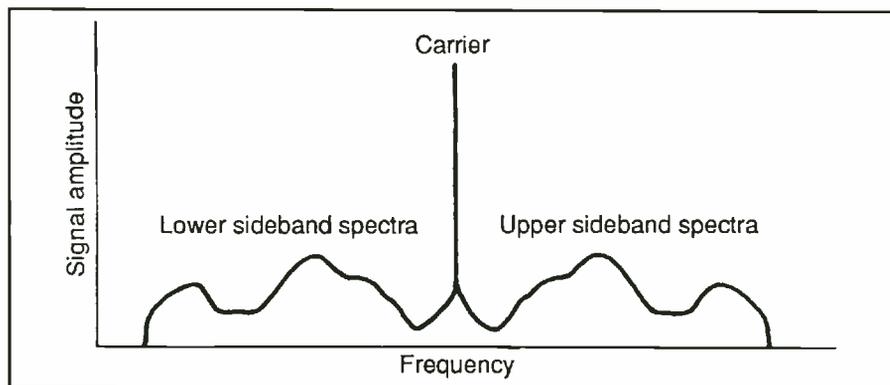


Figure 1

which have no carrier. In such cases, we're referring to the frequency the carrier would have called if it were actually present!

The bandwidth of a signal generally increases in direct proportion to the amount of information we try to pack in the signal. The reason why a CW signal occupies only a few hundred Hertz is that it contains very little information; after all, we're only producing dits and dahs (dots and dashes)! But the bandwidth of a CW signal will increase by a few Hertz as we send CW at a faster rate, since we are putting more "information" into the signal by sending faster. Television signals are loaded with "information" and thus require several MHz of signal space.

If you have a receiver with different selectivity bandwidths, you can get a good idea of how a signal is spread about a carrier frequency by selecting the narrowest selectivity of your receiver and then tuning slowly across an AM signal like one from a local AM broadcast band station. You'll notice that the signal begins to rise in strength as you tune toward the center frequency, reaches peak strength at the center frequency, and then decreases in strength as you tune away from the center frequency. This gives you a good idea of the spectrum of a radio signal. The spectrum is how we describe the distribution of the energy of a radio signal using the carrier frequency as a reference point.

Signal Spectra

Figure 1 shows what we might see if we were to take an amplitude modulated double sideband signal with full carrier (in other words, plain old AM) and display it on an instrument such as an oscilloscope. In Figure 1 we see the spectrum of the AM signal like we discussed in the previous paragraph. Notice, the strongest signal peak will be around the carrier frequency. Since the carrier normally occupies two-thirds of an AM transmitter's power, this is to be ex-

pected. However, look at those frequencies on either side of the carrier frequency. There are two waveforms on either side of the carrier; one is lower than the carrier in frequency, the other is higher in frequency. However, the two waveforms are otherwise identical. These waveforms are the sidebands of the AM signal.

You can see that the frequency space occupied by the carrier is extremely narrow and plays a negligible role in determining the bandwidth of an AM signal. What determines the frequency space occupied by the sidebands? It's the frequency of the audio signal used to modulate the AM signal; the sidebands will each occupy as much frequency space as the highest audio frequency used to modulate the carrier. Suppose the AM signal is being modulated by steady 5000 Hz (5 kHz) tone. Such a tone will produce a sideband occupying 5 kHz above the carrier frequency as well as another 5 kHz sideband below the carrier frequency, meaning the total bandwidth occupied by the signal would be 10 kHz.

This explains why my reader's suggestion for spacing AM stations each 5 kHz just wouldn't work; there would be far too much interference unless the maximum audio frequency was cut back to such a low value (like 2.5 kHz) that music programming would be a waste. Even voice communications would be impaired.

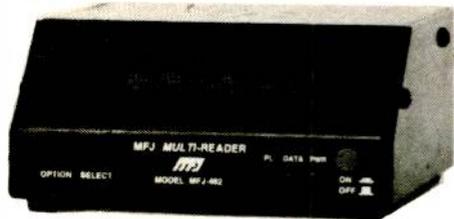
Other Bandwidths

The bandwidth occupied by other types of signals will vary. As you might guess, the bandwidth of a single sideband (SSB) signal will be half of an AM signal modulated by the same audio frequency. In other words, the bandwidth of a SSB signal will be equal to the highest audio frequency that modulates it.

Since a CW signal is produced just by turning the carrier of a transmitter on and off to produce Morse code characters, its

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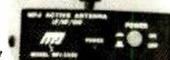
Rival

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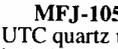
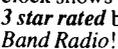
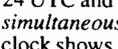
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POP'COMM'S World Band Tuning Tips

July—1994

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2390	R. Huayacocotla, Mexico	1100	SS	6100	Deutsche Welle, Germany	0400	GG
3200	TWR, Swaziland	0300		6105	R. Universidad de Costa Rica	0300	SS
3210	R. Mozambique	0300	PP	6117	La Voz del Llano, Colombia	0900	
3235	R. West New Britain, P. New Guinea	1100		6120	R. Japan via Canada	1100	
3250	R. Luz y Vida, Honduras	0200	SS	6130	CHNX, Halifax, Canada	0500	
3255	BBC, Lesotho	0400		6135	R. Santa Cruz, Bolivia	1000	SS
3270	Ondas del Oriente, Ecuador	1015	SS	6165	R. Netherlands via Bonaire	0400	
3280	La Voz del Napo, Ecuador	1000	SS	6175	Faro del Caribe/TIFC, Costa Rica	1000	SS
3300	R. Cultural, Guatemala	0300		6180	R. Nacional Mendoza, Argentina	0830	SS
3315	R. Manus, P. New Guinea	1130		6185	R. Educacion, Mexico	0600	SS
3320	Radio 2000, S. Africa	0100		6195	BBC via Singapore	1200	
3355	TWR, Swaziland	0259	s/on, PP	6205	HCJB, Ecuador	0300	
3362	LV de Nahuala, Guatemala	1045	SS	6235	R. Quisqueya, Dominican Rep.	0200	SS
3370	R. Tezulutlan, Guatemala	1100	SS	6245	Vatican Radio	0640	
3375	R. Nacional, Sao Gabriel	1000	PP	6576	R. Pyongyang, N. Korea	1130	
3380	R. Chortis, Guatemala	1130	SS	6790	CPBS, Beijing, China	1100	CC
3385	Educadora Rural, Brazil	0930	PP	6890	R. Bosnia Hercegovina	0030	
3925	R. Tanpa, Japan	1030	JJ	6900	Turkish Meterological Service	0500	TT
3980	VOA, Germany	0400	GG	7125	R. Russia	0200	RR
3995	Deutsche Welle, Germany	0400	GG	7125	Cyprus Bc. Corp (wknds)	2230	Greek
4300	R. Naylamp, Peru	1045	SS	7150	Capital Radio, S. Africa	0330	
4460	R. Norandina, Peru	0300	SS	7160	R. Qatar	2100	AA
4600	R. Perla del Acre, Bolivia	0230	SS	7180	AWR, Slovakia	0659	s/on
4735	Xinjiang PBS, China	1130	CC	7190	R. Africa, Eq. Guinea	0500	s/on
4760	R. Frontera, Venezuela	1030	SS	7200	Rep. of Sudan Radio	0300	AA
4760	ELWA, Liberia	0555	s/on	7250	Vatican Radio	0600	
4765	RTVC, Congo	0355	s/on, FF	7255	V of Nigeria	0500	
4770	R. Nigeria, Kaduna	0500		7265	Sudwestfunk, Germany	2200	GG
4775	R. Tarma, Peru	0958	s/on, SS	7270	AWR, Slovakia	0230	Hindi
4790	R. Atlantida, Peru	0130	SS	7275	RAI, Italy	0500	II
4800	R. Lesotho	0400		7275	ELBC, Liberia	0655	s/on
4805	Rdf. Amazonas, Brazil	0030	PP	7345	Czech Rep. Radio	0700	
4810	R. 2000, S. Africa	0230		7365	KNLS, Alaska	0830	
4815	RTV Burkina, Burkina Faso	0600	FF	7375	RFPI, Costa Rica	0300	
4830	R. Tachira, Venezuela	0200	SS	7455	R. Bulgaria	2300	
4835	RTV Malienne, Mali	0600	FF	7475	RTT Tunisienne, Tunisia	0500	AA
4845	R. Mauritania	0600	FF	9165	R. Omdurman, Sudan	0255	sign on, AA
4851	R. Luz y Vida, Ecuador	1000	SS	9375	RFPI, Costa Rica	24hrs	USB
4870	ORTB, Benin	0500	FF	9420	Voice of Greece	0130	GG/EE
4885	Ondas del Meta, Colombia	0200	SS	9435	Kol Israel	0500	
4895	LV del Rio Aruca, Colombia	0130	SS	9440	R. Prague, Czech Rep.	0330	
4895	R. IBP, Brazil	0600	PP	9445	Voice of Turkey	2330	TT
4900	RTV Guineenne, Guinea	0600	FF	9475	R. Cairo, Egypt	0200	
4910	Zambia Broadcasting Corp.	0345	lang.	9480	TWR, Monaco	0730	
4915	GBC, Ghana	0600		9495	Radio France Int'l	2030	FF
4920	R. Quito, Ecuador	0300	SS	9505	R. Record, Brazil	2300	PP
4950	R. Bahai, Ecuador	0930	vern	9510	R. Romania Int'l	0200	
4960	VORGAN, Angola clandestine	0447	s/on, PP	9510	R. Tashkent, Uzbekistan	1200	
4975	R. del Pacifico, Peru	1100	SS	9530	R. Singapore Int'l	1100	
4980	Ecos del Torbes, Venezuela	0200	SS	9535	R. Japan	1400	
5020	Solomon Is. Bc Corp.	0700		9540	R. Nacional Espana, Spain	0100	
5020	ORTN, Niger	0530	FF	9540	R. Tashkent, Uzbekistan	1200	
5025	R. Transamazonica, Brazil	0930	PP	9560	R. Jordan	1500	
5030	Bhutan Broadcasting Service	1200		9570	R. Portugal	0230	
5035	R. Almaty, Kazakhstan	1200	Kazakh	9570	R. Romania Int'l	0230	
5047	RTV Togolaise	0524	s/on, FF	9575	Radio Medi Un, Morocco	0730	FF
5050	R. Tanzania	0400		9580	R. Tirana, Albania	0230	
5056	RFO, Fr. Guiana	1000	FF	9580	Africa No. One, Gabon	2200	FF
5060	R. Nac. Progreso, Ecuador	0300	SS	9585	Channel Africa	0250	s/on
5320	China National R.	1300	CC	9610	RTV Rwandaise	0400	FF
5700	R. San Ignacio, Peru	0130	SS	9625	CBC Northern Service	1600	
5895	Croatian Radio	0800		9630	Spanish Nt'l Radio via Costa Rica	0200	SS
5900	R. Vlaanderen Int'l, Belgium	0000		9635	R. Portugal	0230	
5900	Kol Israel	0445	AA	9640	Ecos del Torbes, Venezuela	1100	SS
5960	R. Japan via Canada	0300		9645	R. Bandeirantes, Brazil	0000	PP
5995	R. Australia	1200		9650	R. Korea, S. Korea, via Canada	1130	
6000	R. Guaiba, Brazil	0800	PP	9650	Channel Africa, S. Africa	0400	PP
6005	RAI, Italy	0100		9655	R. New Zealand Int'l	1300	
6015	R. Austria Int'l, via Canada	0530		9675	NBC, Papua New Guinea	1200	
6020	R. Australia	1200		9675	R. Japan via Fr. Guiana	0830	
6040	R. Cl. Paranaense, Brazil	0800	PP	9685	R. Ukraine Int'l	2300	Ukrainian
6050	HCJB, Ecuador	0700	PP	9690	China Radio Int'l, via Spain	0300	
6055	R. Prague, Czech Rep.	0700		9700	R. New Zealand Int'l	0800	
6060	R. Nacional, Argentina	0500	SS	9715	VOA relay, Thailand	1400	CC
6060	RAI/Radio Uno, Sicily	0530	II	9725	RAI, Italy	0100	
6095	Vatican Radio	0250		9745	HCJB, Ecuador	0730	

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
9746	R. Bahrain	1300	AA	13720	AWR, Guam	1600	non-EE
9750	R. Korea, S. Korea	1200		13750	AWR, Costa Rica	1200	s/on
9755	Radio Canada Int'l	0000		13750	Reshet Bet, Israel	1415	Yiddish
9760	R. Tirana, Albania	0330	Alb.	13760	R. Pyongyang, N. Korea	0000	s/on
9765	V of Mediterranean, Malta	0630		13785	R. Pyongyang, N. Korea	1500	
9770	R. Australia	1500		13835	INBS, Iceland	1230	Icelandic
9779	Rep. of Yemen Radio	2100	AA	13830	Croatian Radio	1800	
9780	China Radio Int'l, via Mali	0300		15050V	R. Patria Libre, clandestine	2130	SS, irr.
9810	R. Slovakia Int'l	0100		15090	Vatican Radio	2245	s/on
9810	FEBA, Seychelles	1500		15100	FEBC, Philippines	1400	EE/others
9815	Radio Havana Cuba	0200	USB	15115	Radio New Zealand Int'l	0200	
9830	R. Jordan	1900	AA	15130	R. Pyongyang, N. Korea	0000	
9840	R. Kuwait	2100	AA	15165	R. Havana Cuba	2145	
9860	R. Australia	0700		15168	R. Tahiti	0300	FF/TT
9880	R. Austria Int'l	0130		15175	FEBA, Seychelles	1100	AA
9885	Swiss R. Int'l	0100		15185	R. Finland Int'l	2300	
9900	R. Cairo, Egypt	2230		15195	R. Ukraine	0030	
9930	KWHR, Hawaii	1200		15200	RFI, France via Fr. Guiana	2300	SS
9955	WRMI, Miami	due on		15235	V of Great Homeland, Libya	2000	AA
9965	R. Caiman, anti-Cuba	0200	SS	15240	Channel Africa, S. Africa	1600	
9990	R. Cairo, Egypt	1800	AA	15240	R. Sweden	1330	
10011	V of Vietnam	1300	CC	15260	VOIRI, Iran	0030	
11402	INBS, Iceland	2300	Icelandic	15270	HCJB, Ecuador	1930	
11430	R. Uno relay, Canary Islands	2100	SS (USB)	15305	UAE Radio, Abu Dhabi	2340	
11550	RTV Tunisienne, Tunisia	1600	AA	15315	R. Canada Int'l	1430	
11570	R. Pakistan	1600		15325	R. Japan via Fr. Guiana	0300	
11610	AWR, Solovakia	1700		15340	Rdf. Rwandaise, Rwanda	2000	FF
11620	All India Radio	2000		15345	RTV Marocaine, Morocco	1800	AA
11625	Vatican Radio	0630		15345	RAE, Argentina	0200	SS
11645	Voice of Greece	1600	Greek	15350	R. Luxembourg	1800	GG
11650	FEBC, Philippines	2300		15395	UAE Radio, Dubai	1330	AA
11660	Radio Australia	1500		15400	R. Finland Int'l	1330	
11665	R. Netherlands, Madagascar	0030		15410	VOA, Morocco relay	2200	s/off
11680	China Radio Int'l via Fr. Guiana	0400		15420	R. Tashkent, Uzbekistan	1200	
11690	FEBC, Philippines	1200	VV	15425	SLBC, Sri Lanka	1500	
11700	R. Pyongyang, N. Korea	2300		15445	Radiobras, Brazil	1245	EE
11710	UAE Radio, Abu Dhabi	2330	AA	15445	R. France Int'l	2300	FF
11710	RAE, Argentina	0200		15475	Africa Number One, Gabon	2100	FF
11725	R. Korea, S. Korea	1000	SS	15505	Swiss Radio Int'l	1500	
11730	BSKSA, Saudi Arabia	2230	AA	15515	R. Portugal	1900	
11750	Channel Africa, S. Africa	0500	PP	15520	R. Bangladesh	1330	
11755	R. Finland Int'l	0130		15565	R. Australia	1200	
11780	BSKSA, Saudi Arabia	1730	AA	15575	R. Korea, S. Korea	0030	
11785	Rdf. Nacional, Colombia	1900	SS	15610	KTWR, Guam	1500	
11790	V of UAE, Abu Dhabi	2000	AA	15630	V of Greece	1430	GG/EE
11800	R. Australia	1300		15640	Kol Israel	1400	
11800	RAI, Italy	0100		15650	Voice of Greece	1830	
11805	KTWR, Guam	0930		15675	R. Copan Int'l, Honduras	2300	SS
11815	Spanish Ntl Radio via Costa Rica	0100	SS	15770	ISBS, Iceland	1230	Icelandic
11825	R. Tirana, Albania	2200		17490	HCJB, Ecuador	1000	
11827	R. Tahiti	0300	FF/TT	17500	RTV Tunisienne, Tunisia	1330	AA
11830	R. Anhanguera, Brazil	0800	PP	17510	KWHR, Hawaii	2300	
11835	HCJB, Ecuador	0700		17535	V of Greece	1430	GG/EE
11840	R. Japan	1100	JJ	17590	R. Finland	1430	
11850	R. Denmark via Norway	1530	DD	17595	R. Cairo, Egypt	1200	
11865	R. Norway Int'l	0300		17620	R. France Int'l	1600	
11870	AWR, Costa Rica	1400		17630	Africa No. One, Gabon	1430	FF
11880	R. Galaxy, Russia	2100		17670	Swiss Radio Int'l	1500	
11885	UAE Radio, Abu Dhabi	2330		17690	R. Ukraine Int'l	0100	
11890	R. Oman	2100	AA	17705	R. Havana Cuba	2130	SS
11895	Voice of Turkey	2300		17730	Swiss R. Int'l, via Brazil	0000	
11910	R. Australia	0615	s/on	17740	R. Finland Int'l	1430	
11915	R. Gaucha, Brazil	0000	PP	17745	R. Algiers, Algeria	1930	
11945	R. Canada Int'l	2100		17745	R. Tashkent, Uzbekistan	1200	
11950	Kazakh Radio	0000		17760	R. Havana Cuba	2130	
11975	R. France Int'l	1600		17775	R. Romania Int'l	1300	
11985	UAE Radio, Dubai	2100	AA	17790	HCJB, Ecuador	2130	
11990	R. Kuwait	1800		17805	R. Romania Int'l	1730	
12005	RTT Tunisia	1400	AA	17810	R. Japan	2300	
12035	Swiss Radio Int'l via Gabon	2000		17820	R. Canada Int'l	1300	
12050	R. Cairo, Egypt	0300	AA	17845	Spanish Foreign Radio	1500	SS
12085	R. Damascus, Syria	2030		17870	R. Sweden	1500	
12160	WWCR, Tennessee	2300		17875	R. Canada Int'l	2030	
13590	R. Pakistan	1600		17880	R. Finland Int'l	1300	
13605	Capitol Radio via UAE, Abu Dhabi	2230		17890	Spanish National R. via Costa Rica	2130	SS
13615	R. Bangladesh	1230		17900	R. Portugal	2000	PP
13620	R. Kuwait	2000		21455	HCJB, Ecuador	1330	
13625	KWHR, Hawaii	1800		21515	R. Portugal	1500	PP
13635	Swiss Radio Int'l	1700		21520	R. Pakistan	1100	
13660	R. Havana Cuba	0200	USB, EE	21535	RAI, Italy	1600	II
13675	UAE Radio, Dubai	1630		21590	R. Netherlands, Bonaire	1800	
13680	Deutsche Welle, Germany	1600		21605	R. Yugoslavia	1230	
13690	R. Canada Int'l	2200		21625	Radio Sweden	1330	
13715	R. Havana Cuba	2200	SS, USB	21740	R. Australia	2330	

bandwidth will be narrow. A typical CW signal occupies less than 150 Hz of space. The bandwidth of a CW signal will increase as the CW sending speed increases. A RTTY signal's carrier remains "on" continuously and is shifted back and forth between two fixed frequencies to form RTTY characters. The bandwidth will depend on the amount of the shift (such as 1700 Hz) used, and this is also true of other digital modes such as AMTOR, ASCII, etc.

The carrier also stays "on" continuously in an FM signal, with the carrier swing above and below the unmodulated (or center) carrier frequency. The amount of this swing, known as deviation, depends on the highest audio frequency we want to transmit. For voice communications, like those you can hear on a scanner, a deviation of 5 kHz is normally used and such signals have a bandwidth of 10 kHz. For commercial FM broadcast stations, the deviation is 75 kHz, with a total bandwidth of 150 kHz.

Playing Around with Bandpasses

These various bandwidths explain why many receivers have multiple selectivity bandpasses. You usually get best reception when the bandwidth of your receiver matches the bandwidth of the received signal. For example, most receivers have a SSB selectivity position of about 2.5 kHz or so. This is a good match for the band-

width of most SSB signals. If you tried to use the SSB selectivity position with an AM signal, the audio quality of the received signal would be heavily degraded since only a portion of the signal could pass through the receiver bandpass. However, the audio quality of a SSB signal wouldn't be improved by using a wider AM selectivity bandpass like 6 kHz. All that would happen is that more background noise would be heard along with the signal, since the SSB signal wouldn't occupy the entire 6 kHz of the selectivity bandpass.

This doesn't mean that you should always use the "correct" selectivity bandpass for a given mode. Using a narrower bandpass can be a good idea if a signal has heavy interference. For example, using a SSB bandpass with an AM signal may be the best way to receive that signal under heavy interference. The audio of the received signal may be "clipped" and sound poor, but it may at least be understandable. A wider bandpass, like 4 or 6 kHz, would let more of the signal through but also causes too much interference for the signal to be understandable. In some cases, you can even use a narrow RTTY bandwidth—like 1.8 kHz or so—to receive AM signals. The audio will be muffled and hard to understand, but at least you can hear some audio. Using a wider bandpass also makes sense in some situations. For example, I normally tune for CW signals using a wider selectivity bandpass, like the one I normally use

for SSB. When I locate the CW signal I want, I then narrow my receiver selectivity bandpass down to 500 Hz or so.

Splatter and Other Junk

A common problem is "splatter" from adjacent stations. Normally, you may be hearing a station without any interference, but sometimes hear distorted bursts of speech and music from stations nearby at certain times. This problem is especially prevalent on the AM broadcast band if you have a strong station on a frequency adjacent to the one you want to hear. This is caused by the modulation of certain stations briefly exceeding 100% on peaks of songs and other loud sounds. When the modulation exceeds 100%, the transmitter emits spurious signals on frequencies outside the normal signal bandwidth. Unfortunately, there's not much that can be done if you suffer from splatter. Using a narrower receiver bandpass won't help, since the splatter signals will fall in the bandwidth of the signal you want to receive. Splatter is found on some other types of signals, such as SSB; it's a problem on the ham bands when hams use excessive speech processing and microphone gain.

It's hard to think of a radio signal as occupying some "room," but it does. Understanding bandwidth not only explains why stations can't be packed along the dial like sardines, but also helps you select the best receiver bandpass for a given signal. ■



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CIRCLE 70 ON READER SERVICE CARD

GETTING STARTED AS A RADIO AMATEUR

Getting Started on 6-Meters

Six meters (50-54 MHz) is commonly called the Magic Band by hams who operate there. Its greatest "golden age" to date was in the 1960s, but with the flood of new technicians, it may rise to glory once again!

All it takes is both the proper equipment and information. In this month's column, 6-meter expert Ken Neubeck, WB2AMU, shows you how to get started right:

For most of 23 years as a ham, I thought 6 meters was an oddball band. I'd had some exposure to it at Field Day, but the spark never flared into full-fledged activity.

About three years ago, however, I found a complete 6-meter multimode rig at a flea market. The price was less than \$100!

Once I figured out the rig and the various 6-meter calling frequencies, I worked a few local hams and a bunch of contesters in the ARRL September VHF QSO party. But still, there was nothing to convince me that long-range contacts were commonplace. The band seemed quiet almost 90% of the time.

Sporadic-E Propagation

When I finally heard my first Sporadic-E opening in June of the following year, my whole perspective changed! Sporadic-E is a common 6-meter long-distance mode. And when it's hot, it's hot. You can make contacts of more than 1,000 miles with low power.

Sporadic-E propagation has fascinated hams and scientists for decades. Sporadic-E propagation follows a seasonal pattern and is caused by the formation of ion clouds in the E-layer of the ionosphere. The clouds act like huge floating mirrors for radio signals, refracting (bending) them back to earth great distances from their points of origin. The clouds come and go depending on various conditions. Their erratic behavior is why we call the propagation they provide Sporadic-E.

I'm often annoyed by hams who assume that 6 meters is useless when the sunspot cycle is at its low ebb—as it is now. Yes, global F-layer propagation (the most common HF long-distance propagation mode) disappears, but Sporadic-E is strong throughout the entire solar cycle!

During the summer of 1993, I worked a number of double-hop Sporadic-E openings from my home on Long Island into the West Coast and even Europe. I worked CU1AZ in the Azores with just 10 watts and a dipole! Sporadic-E is especially good for low-power work. There is less signal loss because of the efficiency of Sporadic-E refraction.

In 1993, I counted more than 70 days of Sporadic-E openings from May through August (summer months are best, and there are occasional winter openings, too). Most Sporadic-E openings take place mid-day or early evening.

A Great Local Band, Too

Six meters is greatly under-used as a local communications band. There is more than 2 MHz of FM repeater space available, yet you'll be lucky to hear one or two repeaters in use at any given time. Even the weak-signal modes such as CW and SSB should be more popular. The sad part about this lack of local activity is that 6 meters has excellent groundwave characteristics. You can routinely work stations up to 50 miles away using only 50 watts of power (or less).

Equipment Options

There is an equipment availability problem on this band that is slowly being addressed by the manufacturers. Newer HF rigs such as Kenwood's TS-690 include 6 meters as an option. Used gear is sometimes hard to find, but it's out there if you keep your eyes open. Remember, other rigs may require fixing!

The Yaesu FT-690 Mark II and the Kenwood TS-60 are currently the only single-band, 6-meter all-mode transceivers on the market. They're in the \$650-\$1100 price range and are small enough to pack in a suitcase for portable or mobile work.

As more hams learn about how much fun 6 meters is to operate, you'll see a bigger selection of radios—perhaps even a 2-meter/6-meter dual-band transceiver.

Antennas for 6 meters are easy to build. A half-wave dipole for 50.1 MHz is only 112 inches long. A quarter-wave vertical is just 56 inches in height. Six meters is an ideal band for antenna experimentation. Beam antennas with two or three elements are easy to build and rotate (and inexpensive to buy), and they work quite well.

Getting the Feel of 6 Meters

One challenging aspect of 6-meter operation is education. New hams often have a difficult time learning about the excitement this band has to offer. The only solution is to take matters into your own hands. If you have a receiver with 6-meter capability, tune to 50.110 or 50.125 MHz and listen for SSB activity. You'll also find that

52.525 MHz is an active FM simplex frequency. Try monitoring during the late afternoon and early evening hours.

Some new hams are negatively influenced by what they hear from veterans concerning television interference on 6 meters—particularly in areas where Channel 2 is active. It's true that TVI was a serious problem in the past, but things have changed.

I don't want to oversell the long-range capability of 6 meters. Sporadic-E or F2 propagation is not an everyday occurrence as it can be on the HF bands. It's not given that you can routinely contact any part of the world on 6 meters since the band is open to skip communication less than 10% of the time. The challenge is to be there when an opening occurs!

Listening to 6 meters sharpens your radio sense and your monitoring skills. Not only should you monitor the SSB calling frequencies, you should also hunt for beacon signals in the 50-50.1 MHz range. Beacons are the navigational buoys of the ham bands. They're typically low-power CW stations that transmit repeatedly on one frequency. On 6 meters, they are particularly valuable because you can use them to spot band openings. Beacon lists can be found in the *ARRL Repeater Directory* and the *ARRL Operating Manual*.

A Band is a Terrible Thing to Waste

Six meters is becoming extremely popular in several European countries because their hams were recently granted access to the band. Activity in Europe and Japan far exceeds activity levels in the U.S. (What's our excuse? Six is a band that can be accessed by everyone except Novices, yet it's the least-used VHF ham band.)

Aside from casual operating, lots of experimental work is being done on 6 meters. Not only are the many interesting phenomena such as Sporadic-E and Auroral propagation, but other activities such as moonbounce and radio control have also carved out niches on 6 meters.

If more hams knew how much fun 6 meters can be and how easy it is to build decent antennas, I think they would be pleasantly surprised. As the sunspot count stays low over the next few years, HF band conditions will be depressed. Why not give 6 meters a try. See how much fun you can have.

Why not indeed? Send your QSL cards, letters and photos to me at ARRL, Department PCN, 225 Main Street, Newington, CT 06111. See you on 6 meters! ■

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

VOA's Global Satellite System

Many foreign broadcasters use satellites to distribute their signals worldwide. This includes Voice of America (VOA), the leader in satellite system use, which is expanding its worldwide network.

According to David Shibben, Chief of the Satellite Interconnect System (SIS) for the United States Information Agency (USIA), "The end of the Cold War has meant many more demands for the dissemination of news and information. Technological advances now make it possible to dramatically increase the satellite system capacity with virtually no increase in operating costs. VOA has saved millions of dollars annually by utilizing satellites."

VOA is using a smart multiplexer system from Timeplex Federal Systems, Inc. Timeplex LINK/2+ equipment will be used to establish a 19-node network with sites in 15 countries, which will more than double the existing system capacity to meet growing demands with virtually no increase in annual operating expenses.

"The Ascom Timeplex LINK/2+ Systems provide the capability for multiple simplex transmission links with both simplex and full duplex channel conductivity as required for our various applications," stated Mary Beth Goosman Theisen, Project Manager of SIS Management Division of

VOA. "VOA uses the simplex transmissions as our global infrastructure for transmitting radio programming from VOA's Washington D.C. headquarters to four major gateway stations for distribution. From these gateways, the programs are transmitted via several other satellite distribution systems to hundreds of local AM and FM radio stations around the world."

Besides the combined simplex/duplex capability, the LINK/2+ system also provides a dynamic bandwidth capability resulting in greater throughput by automatically reallocating bandwidth from one application to another. This is depending on current need.

The enhanced network will enable VOA to expand the number of program channels, as well as improve broadcast quality. The new network will provide VOA integrated voice, data and video teleconferencing, furnishing up to 84 simplex, 7.5 kHz bandwidth radio program channels. This will more than double the duplex data channel capacity on each station.

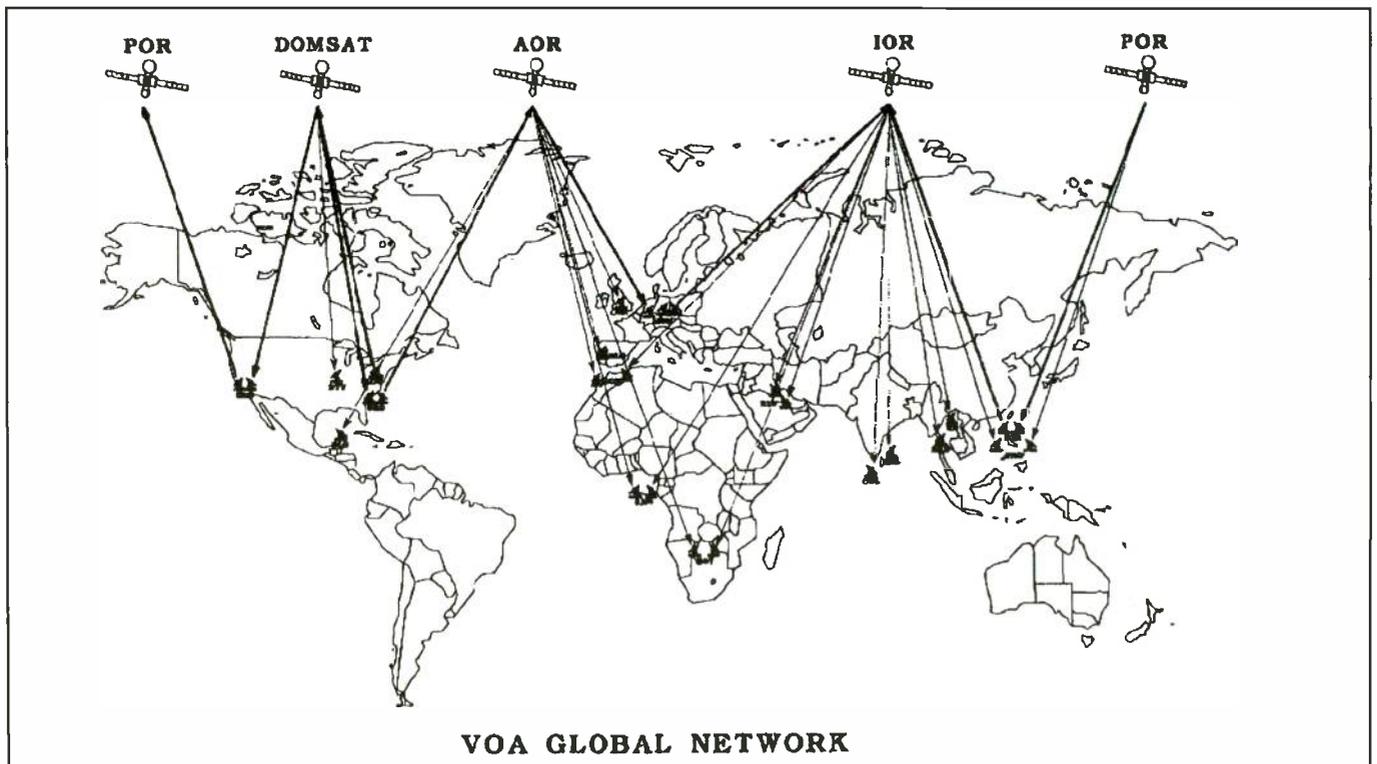
Data channel conductivity between Washington D.C. and the remote sites is used for a truly global Wide Area Network (WAN). This provides instantaneous communications between Washington engineering, support staff and remote sites, and

direct remote site to remote site communications. Data channels are also used for Remote Video Monitoring (RVM). Both send immediate information back to Washington on the condition of this global satellite system.

Furthermore, the enhanced network's redundancy and routing capabilities are designed for virtually 100 percent program channel availability from Washington D.C., to the 18 relay station sites located around the world.

Timeplex Federal Systems, Inc., is a wholly-owned subsidiary of Ascom Timeplex. It specializes in networking solutions for the federal government, and is a subcontractor to COMSAT Technology Services (CTS) for this global system upgrade. VOA is the international radio service of the USIA. COMSAT Corporation, an international communications information and entertainment-distribution service company, is both the largest owner and user of the Inmarsat and Intelsat communications satellite networks.

Intelsat has 15 satellites in geostationary orbit and over 700 earth stations at 500 sites, in 159 countries. Originally, Inmarsat provided satellite links to commercial shipping. Today however, both Inmarsat and Intelsat supply transponders to commercial



VOA GLOBAL NETWORK

POR = Pacific Ocean Region

GROUND STATIONS

Delano, California
Tinang, Philippines
Poro, Philippines

DOMSAT = Domestic Satellite

GROUND STATIONS

Delano, California
Bethany, Ohio
Greenville, South Carolina
Washington, D.C.

AOR = Atlantic Ocean Region

GROUND STATIONS

Bellze
Greenville, South Carolina
Wofferton, United Kingdom
Gloria, Portugal
Munich
Morocco
Sao Tome, Africa
Botswana

IOR = Indian Ocean Region

GROUND STATIONS

Munich
Morocco
Sao Tome, Africa
Botswana
Kuwait
Colombo, Sri Lanka
Chilaw, Sri Lanka
Bangkok, Thailand
Udom, Thailand
Tinang, Philippines
Poro, Philippines

This key illustrates VOA's Global Network's routing capabilities and its instantaneous communications.

shipping and commercial airlines.

VOA uses the domestic satellite Space-net 2, located at 69°W, for relays in the U.S. According to Thomas Harrington's book, *Satellite Radio*, VOA uses transponder 3 and has audio subcarriers on 5.95, 6.15, 7.34, 7.43, 7.52, and 7.61 MHz.

NASA News

NASA continues to expand its cooperation with the Russian Space Agency. Col. Kenneth D. Cameron (USMC) has been selected to manage NASA operational activities at Star City, the cosmonaut training center, and at the Russian Space Control Center, in Kalingrad. Cameron will work with engineers and flight controllers on the U.S.-Russian cooperative programs. He will supervise astronaut training and devel-



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RG MINI 8X BLK or CLR UV JACKET16/ft	.14/ft
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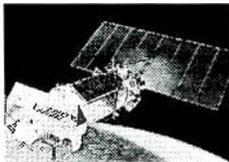
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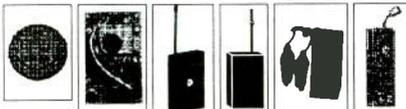
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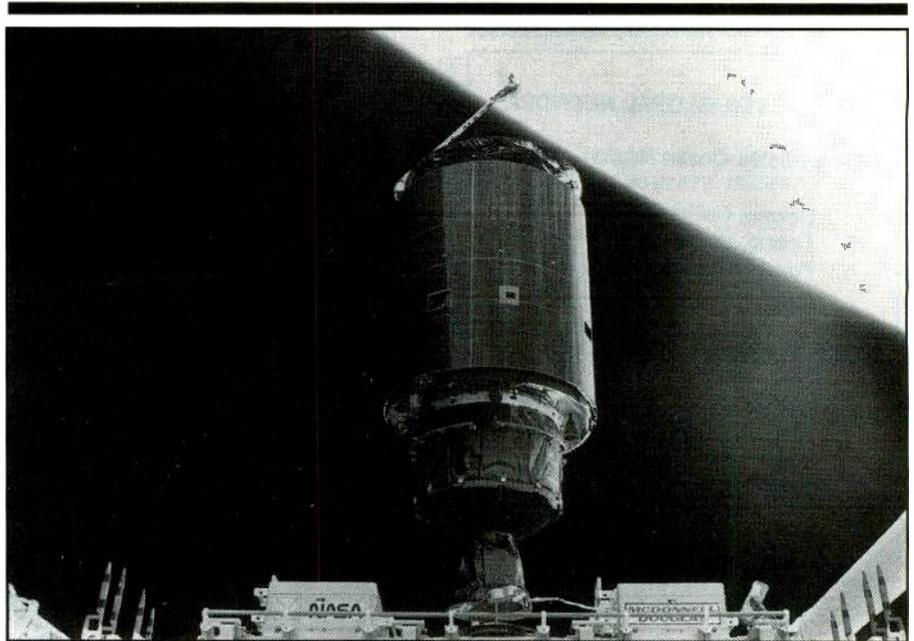
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CX-102	Miniature Camera w/Audio	up to 5 Mile	15MW	\$247
AD-700	Mic	up to 5 Mile	15MW	\$125
AD-600	Mic	up to 5 Mile	15MW	\$115
AD-500	Tel.	up to 2.5 Mile	400MW	\$155
AD-400	Mic	up to 2.5 Mile	400MW	\$155

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CIRCLE 51 ON READER SERVICE CARD



The Intelsat VI F-3 communications satellite spins slowly out of Endeavor's cargo bay to begin its "new life."

op training materials for the joint Shuttle/Mir mission. Cameron is expected to command one of the early shuttle flights to the Mir space station.

Astronauts Norman Thagard and Bonnie Dunbar were named to the first Mir space flight. They are scheduled to fly a Soyuz spacecraft to Mir in March 1995. Three months later the crew of STS-71 will dock Atlantis to Mir. This will be the first of 10 flights planned through 1997.

NASA now has a gateway to Moscow. A new capability for video teleconferencing between NASA and the Russian Institute of Space Research (IKI) has been established at Brown University in Providence, R.I. Brown University is a long-time supporter of NASA and Russian space research, and has had teleconferencing capabilities with Russia for years. They use a Russian Intersputnik satellite to accommodate two-way, live video teleconferencing with IKI. NASA also has the ability to link all of its 15 sites to the network, including each of its international partners, such as the Space Agencies of Europe, Japan, and Canada

This announcement was made by the Office of Space Communications which is responsible for planning, development and operation of worldwide communications, command, navigation, control, data acquisition, telemetry and data processing for all NASA programs. See you next month!

Intelsat/Inmarsat Locations

Indian Ocean Region (IOR)
Intelsat F12 60°E

Intelsat F5 63°E
Marecs 64.5°E
Intelsat F7 66°E
Marisat F2 72.5°E

Atlantic Ocean Region (AOR)

Intelsat F2 001°W
Marisat F1 15°W
Intelsat F6 18.5°W
Intelsat F4 21.5°W
Intelsat F10 24.5°W
Inmarsat II F1 26°W
Intelsat F11 27.5°W
Intelsat F1 31°W
Intelsat F4 34.5°W
Intelsat F15 50°W
Intelsat F13 53°W
Intelsat F12 60°W

Pacific Ocean Region

Intelsat F1 174°E
Inmarsat F2 176.5°E
Intelsat F6 177°E
Marecs A 177.5°E

Intelsat Frequencies

3.705-4.198 GHz downlink
10.954-11.698 GHz downlink
5.929-6.423 GHz uplink
14.004-14.491 GHz uplink

Marisat Frequencies

1.535-1.542 GHz downlink
4.192-4.200 GHz downlink
1.636-1.644 GHz uplink
6.417-6.425 GHz uplink

Inmarsat Frequencies

3.600-3.621 GHz downlink
4.180-4.200 GHz downlink
6.410-6.441 GHz uplink

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 N. Broadway, Hicksville, NY 11801.

Our August Winner

This month's winner is Franklin Fulk, KB8ANX, of Wharton, OH. He reminisces, and tells us this story:

"I got interested in radio communications at an early age, using only tin cans and a piece of string.

"When I was nine years old or so, I got a small AM radio with a long wire antenna, and all I could pick up was a local radio station. Then one night I hooked the antenna to the telephone finger stop and I pulled in Del Rio, Texas!

"I entered the U.S. Navy in 1960, and got sent to a communications school at Imperial Beach, California. (More time to experience the hobby first-hand!)

"About 25 years ago, I got a Lafayette HA 600-A SW receiver and had lots of fun with it. Even better though, later I got a



Franklin Fulk put his CW training to good use and now is known over the airwaves as KB8ANX.

Kenwood R-2000—joy of joy—with digital readout!

"When I look at copies of *Communications World* or *Communications Handbook* now, I remember that good SW magazines were not too plentiful then. Then one day I saw a magazine called *Popular Communications*. Hooray! A monthly magazine devoted to the hobby!

"Finally about seven years ago, I put my old CW training to good use, as I am now KB8ANX.

"I have many pleasant memories of tin cans, telephone finger stop antennas, and the discovery of a super communications magazine. *Popular Communications* has become a legend, and hats off to Tom Kneitel, the 'Rush Limbaugh' of POP'COMM!" ■

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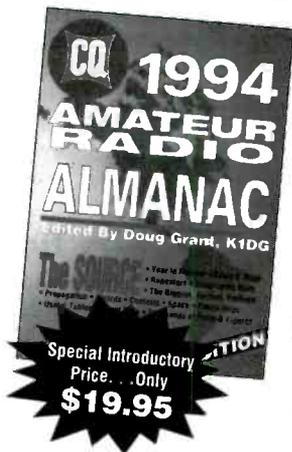
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TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLPHONES, PCS, PAGERS & PERSONAL COMMUNICATIONS

On January 6th, a few days after the January issue of *POP'COMM* hit the newsstands with a cover story about cordless phone eavesdropping, Motorola warned users of unsecured cordless phones that "eavesdroppers may be on the line."

In a press release, the company mentioned that the calls are not protected under federal privacy laws and can be received over baby monitors, other cordless phones, and "by anyone with a scanner." They went on to advise that "there are now more than 20 monitoring enthusiast clubs around the country, which even hold conventions to share the latest monitoring techniques." They observed that there are several publications that publish information on how to eavesdrop on cordless phone calls. *Monitoring Times* was the only one named.

Motorola also claimed that 46% of American households own at least one cordless phone. They reported that a survey of owners indicated that while 83% knew their calls could be intercepted, less than half (46%) were concerned their conversations actually would be overheard. Many weren't concerned, Motorola's survey showed, "because they thought eavesdropping on a cordless phone call was illegal."

Motorola's survey confirms that the perpetually uninformed public continues to make cordless phone monitoring one of the best games in town.

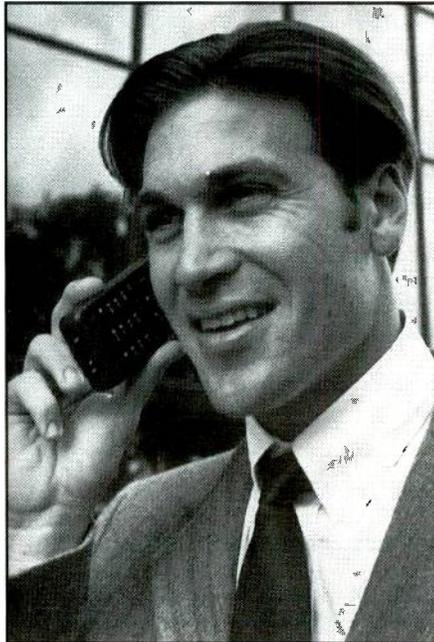
Unplugged

An anonymous reader from Miami, Fla., passed along a news clipping describing how the police in North Miami Beach walk through the parking lots at busy shopping malls. They are looking for portable cellphones in parked cars, hoping to spot them before would-be thieves do. All too often, a portable cellphone left unattended in a parked car invites a broken window and theft of the phone.

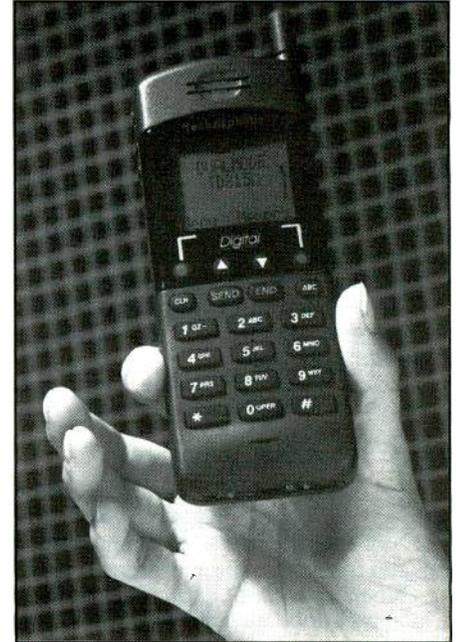
Surprisingly enough, this even happens when the vehicle owner has taken the trouble to hide the cellphone beneath the car seat. Problem is they either forget, or are too lazy, to unplug the power cord from the car's cigarette lighter. So there's a power cord running from the cigarette lighter to a point beneath the seat, and that doesn't fool too many potential thieves.

When the police see this, they place a warning notice on the windshield. It looks like a parking ticket, but it reads, "I almost had to write a burglary report on this vehicle. I can see your car phone and that means a thief can too! Please remember to keep the phone OUT OF SIGHT!"

My advice, mentioned here previously, is to replace the cigarette lighter into its socket. Do this every time the car is parked.



A Technophone engineer demonstrates the company's new TD-815 dual mode cellphone.



The Technophone TD-815 digital/analog cellphone is quite a little handful of electronics.

To a would-be thief, spotting an empty cigarette lighter plug in a parked car implies that there is probably a cellphone, radar detector, or other electronic doodad hidden somewhere in the vehicle.

Cut Off

A reader in Atlanta, Georgia, asks what an "early disconnect penalty" is. There has been much effort expended to convince consumers that cellphones are as convenient, easy to use, and private as hard-wired telephones. This has caused the confusing misconception that cellular and regular phone services are very much alike in virtually all respects. Not true.

Should you decide you don't want your home telephone, you can disconnect your service on rather short notice and that's the end of it. You don't have a contract for your home phone service. Cellular services, however, are provided under a contract between the supplier and the customer. You don't always pull the plug on your cellular service quite so casually.

Customers usually aren't aware of the disconnect penalties that are associated with most cellular service contracts. Although contracts differ from company to company, one major supplier offers a one-year contract on service (excluding special promos), and a two-year contract on rental of equipment. There's a \$200 penalty for early termination of the one-year service contract, and \$100 for early termination of the two-year rental contract.

According to that company's contracts, both penalties may be assessed should a customer deactivate a phone within the first year of service. After the first year, the only applicable penalty is for rental equipment. This penalty would be waived in the event the customer returns the rental equipment and also provides proof of having moved to another geographic area.

Tuned In

Last month we looked over several devices offered to law enforcement and security agencies for cellular surveillance. Another series of devices is intended for single and multi-cell interception.

These log the numbers of incoming and outgoing calls, and the two multi-cell (voice/data) units track calls from cell to cell.

The three models are a single cell unit with a memory of 40 phone numbers. There is one that will track through four cells, and has a memory for 250 phone numbers. A third unit can track calls through eight cells, and also has a memory of 250 phone numbers.

These units are from Tele-Movil, 327 Imperial Avenue, Calexico, CA 92231. Phone (619) 357-7077. We don't know for certain if sales are restricted to certain purchasers, but most likely the company deals only with law enforcement agencies.

Do You Read Me?

When manufacturers deliver cellphones

to wholesalers, distributors, and retailers, the handsets all display a bar code indicating each individual cellphone's ESN number. Unfortunately, many manufacturers use non-standard bar codes that must be converted by hand because they aren't compatible with bar code readers expecting to be faced with standard formats.

A new CelluBar quickly reads out the manufacturers' ESN bar codes and automatically converts them into a standard 11-character ESN, including the manufacturer's prefix. The information is also entered in the CelluBar's memory, so that it may later be downloaded into an inventory computer, and/or to print out bar code labels.

CelluBar interfaces with any existing computer system software via an ASCII file download. A complete, stand-alone inventory control system is also available.

For more information on the CelluBar, contact Scancom, 3515 Massillon Rd., Uniontown, OH 44685. Phone, 1-800-733-0058.

Twice the Modes, Half the Size

Technophone's TD-815 is a lightweight handheld cellular, less than an inch thick and weighing in at only around 8 oz. Yet, it is a fully functional analog and digital cellular. Technophone tells me that the TD-815 is the smallest, lightest, full-featured dual-mode cellphone available.



Panasonic's KX-F390 combo 900 MHz cordless phone and FAX is intended for the home-based office.

Digital cellular (in addition to standard analog) service is already available throughout Florida, as well as Portland, Seattle, Las Vegas, and Chicago. Markets in Los Angeles, New York City, San Francisco, Den-

ver, and in Texas will soon be on-line with digital cellphone facilities, along with continuing analog service.

The TD-815, despite its advanced circuitry, remains user friendly and uncompli-

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There are some well known CW/RTTY Decoders with limited abilities and high prices, complete with expensive PROMS for upgrading, but then there is CODE-3. It's up to you to make the choice, but it will be easy once you know more about CODE-3. CODE-3 works on any IBM-compatible computer with MS-DOS with at least 640kb of RAM, and a CGA monitor. CODE-3 hardware includes a complete audio to digital FSK converter with built-in 115V ac power supply and RS-232 cable, ready to use.

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- SWED-ARQ-ARQ-SWE
- ARQ-E/ARQ1000 Duplex
- ARQ-N-ARQ1000
- Duplex Variant
- ARQ-E3-CCIR519 Variant
- POL-ARQ 100 Baud
- Duplex ARQ
- TDM242/ARQ-M2/4-242
- TDM342/ARQ-M2/4
- FEC-A FEC100A/FEC101
- FEC-S • FEC1000 Simplex
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(See our ad on page 31 & 33)

cated to operate. The large, informative prompt display and the unit's relatively few push-button controls, means the TD-815 could be operated "cold," that is, without a user's manual. One is included, anyway.

There are up to 125 alphanumeric memory locations, including 99 speed dial memory slots and recall by name. With the optional extended use battery, the set delivers up to three hours of talk time and 50 hours standby. It has a six NAM capability, a call indicator light for when the ringer is silenced, voice mail and DTMF dialing, call status indicators, and credit call from memory. Connectors are available to hook up a portable computer, FAX, or to send E-mail. A car installation kit with hands-free operation is an available option.

The TD-815 carries an MSRP of \$899. This is a hell of a lot of radio for something that fits in the palm of your hand. Comes from Technophone Corporation, 1801 Penn Street, Melbourne, FL 32901. Phone (407) 952-2100.

900 MHz FAX/Cordless Phone

What won't they think of next? Panasonic has introduced an integrated FAX and 900 MHz cordless telephone. This device is called the KX-F390. Panasonic's national marketing manager, Anna Galasso, told me that it was designed to be of particular use to the rapidly growing market consisting of persons who have an office in their home. The company feels that adding a secure-voice cordless 900 MHz phone to a FAX, allows such a person to make and receive calls, access messages, and receive calls without being tied to the desk.

The folding design of the handset makes it very portable, allowing it to be carried in a pocket. An incoming FAX call can be re-routed to the base by pressing the keypad's "Fax" button. The KX-F390 offers full handset-to-base intercom. A privacy ring mode can be activated. In that mode, the unit recognizes incoming calls from important callers who have been told how to cause the unit to ring in a special way. This way, during a time when an unimportant call would intrude on a day's work, the busy person need answer only those calls that are wanted.

Plenty of other terrific features are in this aid to the person with a home office. If Panasonic could only teach this thing to make coffee and run to the post office to buy a sheet of stamps, they'd revolutionize the home office industry.

The KX-F390 is available from Panasonic's large network of dealers. It costs \$1,300.

I'm always looking for input from readers concerning cellars, pagers, cordless phones, and other personal comms devices. Also on the watch for press releases regarding new products and services. Keep POP'COMM posted. ■

FOR THE HANDICAPABLE COMMUNICATIONS HOBBYIST

Hello again. Is the frantic summer schedule running you ragged? Is your favorite team falling further and further behind in the pennant race? Why not take a break with a tall, cool libation and the latest installment of *HandiChat*?

This time, we're dipping into the mailbox, but first I need to make a correction to the February column. In listing my shack equipment, I inadvertently transposed the manufacturer's name of my station timer. The proper name is Advanced Concept Development. Since I will doubtless have reason to mention this innovative little company in these pages sometime in the future, I might as well get it right.

August A. Stellweg of Orangeburg, New York follows up on my passing reference in the February column to network broadcasting in the 1950's. "Have Gun Will Travel," starring John Dehner in the lead role, was indeed a direct (though far less successful) spin-off of the Saturday night TV show starring Richard Boone. "On the other hand, the radio version of 'Gun Smoke' was not a spin-off of the TV series." The nation first became acquainted with the residents of Dodge City in April, 1952, and the program lasted until June, 1961, making it surely one of the last surviving radio dramas. (Actually, Columbia Broadcasting and National Public radio have made periodic attempts to revive the genre over the last 30 years. Most have been quite good, but none have seriously challenged the supremacy of TV.)

While the late William Conrad's noble baritone was perfect for radio, his physique did not convey the popular impression of the man on horseback. Thus James Arness rode into our living rooms in September, 1955, remaining a fixture there for the next two decades. In fact, some of us still enjoy his periodic visits in a series of TV movies. Thanks for furnishing those dates, Gus, and for paying such close attention. Last but not least, thanks for the kind words about the column.

A reader in Tulsa who wishes anonymity is putting an old receiver to a new use. The RCA RZC75 (popularly known as the "audio receiver") was introduced in 1970. This AM/FM tabletop, also included a VHF varactor-type tuner for TV channels 2-13, and VFO for UHF. All controls were marked in braille, and the owner's manual was available in both braille and large print. The AC line cord doubled as a VHF-UHF antenna, an external unit could be connected to a pair of 300-ohm terminals on the back panel. Its only serious performance flaws were feedback at moderately high AF gain levels on the UHF TV band, and the lack of any kind of audio output jack. The

latter exclusion was all the more regrettable, since the receiver's fidelity was quite good. Unfortunately, at an MSRP of around \$80, sales were sluggish, and by 1973 the product was discontinued—with all remaining units going for fire-sale prices; I got mine for under \$25.

According to our source in Tulsa, the analog UHF tuner does a credible job receiving cellular telephones. In fact, he still owns two working units, and keeps a couple of others around for spare parts. Actually, sir, you are not the first to mention this fringe benefit. Let's see, the last time I checked, mine was in good working condition. Perhaps I'll blow the dust off and... , but promise you won't tell anyone!

Carol Siegel of Baltimore writes that she is an avid SWL, morse code aficionado, and part-time code instructor, although not yet a ham. She particularly enjoys the tropical band, and any DX from the African continent. She has traveled to Kenya, and would like to visit other African nations, especially Nigeria. Her receiver of choice is a Kenwood R-2000, and she is a faithful reader of Gerry Dexter's *Listening Post* column. Not surprisingly, other interests include science, law, and politics. Anyone wishing to correspond with Carol on any or all of these subjects can contact her at 6839 Parsons Avenue, Baltimore, MD 21207-6423. Thanks, Carol. Always glad to be of help, and keep reading.

Also from Baltimore, Charles Biell is concerned that most of today's audio equipment—stereo receivers, tuners, etc.—is not user friendly for blind people. He states that he has contacted Panasonic, Radio Shack, and Aiwa about the possibility of adding digitized speech to at least some of their components, but reports that the response has been underwhelming. Well Charles, the bad news is that you are probably right. I don't expect receivers, tape decks, or CD players to become chatty anytime soon. The good news is that things are, when you stop to analyze it, much better than you appear to believe.

As I stated in my introductory column last February, I really believe today's solid-state synthesized equipment is easier to use than ever before. Many stereo tuners feature direct keypad entry. Virtually all have an automatic scan mode, tune in fixed increments, and are accurate to a fault. Therefore, while you may not be able to see the frequency readout, you can bet the farm it will be on target. You say that blind people must pay for features they are unable to use. How many sighted people can program a VCR? You are self conscious about asking for help. That is understandable, but the time to request assistance is

when contemplating an equipment purchase. Most audio showrooms are staffed by competent, knowledgeable people who would be more than happy to answer questions, and demonstrate specific features. Even off-price merchants such as Walmart or the various wholesale clubs can often provide help. In fact, Walmart's company policy mandates such help. If you wish to call ahead, this might further facilitate matters. Remember, it's your money. You have every right to ask questions, and a dealer who will not answer them does not deserve your business. Finally, your entire life has been an exercise in adapting, and you probably know more than you think you do. Basically, despite their cosmetic diversity, most present-day components share many features and functions.

Charles' concerns are not unique. Some handicapped hams, SWL's, and scanner buffs—or those attempting to assist them—often wonder just how much adaptive equipment is necessary. Those with profound hearing loss or limited dexterity require adaptive devices to send and receive code. Blind people can benefit from audio frequency readouts and/or meters. But when all is said and done, don't undersell flexibility and ingenuity.

Allow me to illustrate. My TS140S lacks the direct frequency readout and synthesizer options available on other models. But as those who have used Kenwood rigs probably know, they briefly mute their audio at fixed intervals—usually every 25 or 50 kHz. I also took advantage of the transceiver's general coverage capability. With sighted help, I stored the 5 through 20 MHz WWV frequencies in the first four memory slots, thereby providing a handy frame of reference. Another simple trick: if a radio's band switch toggles between "Band" and "MHz" mode, the latter is usually simpler. Going from 15 MHz to 16 MHz is easier than going from 20 meters to 17 meters, then not knowing exactly which frequency you have landed on. Of course, computer control is a viable option with any modern HF rig, equipped with an RS-232C serial interface.

Well that's it for now gang. You are off to a good start. As you can see, feedback is vital to the ongoing success of this exercise. Got any questions, comments, tips? Is there something unique about your shack that could benefit or be of interest to others? Drop us a line. Braille, print, or MS DOS ASCII diskettes are all acceptable. I'm waiting to hear from you. Once again, the address is Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2953. For now take care, and I'll be back when the leaves start to turn. ■

27 MHz COMMUNICATIONS ACTIVITIES

Road King isn't the CB handle of an 18-wheeler, it's a new amplified CB mic in the Turner by Telex line of products.

They tell me that this is the only hand-held amplified CB mic with compression. The *Road King RK-76* is designed for folks looking for more talk power (higher average output power within legal limits), better readability, and better range.

The RK-76's speech compression feature allows the transmitter to operate at higher average modulation for greater power and range. A slide-type adjustment, located on the top-rear of the microphone, adjusts the amount of speech compression (that is, the compression ratio) for maximum best results with existing background noise, voice levels, and talking distances from the mic. A cardioid electret mic helps to reject unwanted ambient noise.

Another feature of the RK-76 is an automatic, user-selectable end-of-transmission "roger beep" tone. The mic can be set to generate one of three different roger beeps each time the PTT button is released. At those times, the transmitter remains on the air for an additional 1/8 of a second in order to transmit the distinctive tone, then switches to receive. This tone can be easily deactivated if desired. Many operators like the tone because when signals are weak or a channel is noisy, the tone offers a confirmation that it's time for the other operator to transmit. Other operators like roger beep because it sounds sharp.

The *Road King RK-76* CB mic carries an MSRP of \$74.95, including a dashboard mounting bracket and hardware. Turner by Telex products are carried by many leading CB dealers.

For more information, contact Telex

Communications, Inc., 9600 Aldrich Avenue South, Minneapolis, MN 55420. Phone (612) 884-4051. Or, you can circle 101 on our Readers' Service.

No Power to the People

US Marshals, assisted by FCC personnel from the Dallas office, seized about \$150,000 in illegal electronic equipment from three dealers in northern Texas. This included 265 CB linear amplifiers, some as powerful as 1,500 watts. There were also 200 non-type-accepted ("export") transceivers. The seizures were in Weatherford and Mingus, Texas. The FCC reports that federal law provides criminal penalties for those caught selling illegal CB equipment. First offenders could receive fines of up to \$100,000, a year in jail, or both.

From Readers

A letter from *Grim Reaper*, Holliston, Mass., tells a sad tale. He's into CB and scanners, REACT, Neighborhood Watch, and uses comms in connection with a construction service. His CB antenna is mounted on the roof, but there are problems. He reports that, "I live next to power wires. When they are buzzing, all I hear is 20 lbs. of static." He wants to know if we have any suggestions.

The buzzing comes and goes, rather than being continuous. It might be caused by a "dirty" (electrically, that is) oil burner, refrigerator, air conditioner or other electric motor operating on a cyclic basis. If the noise is occasional, it might come from a hair dryer, dishwasher, laundry machines, vacuum cleaner, or other household appliances. Most likely, the problem is located

on your side of the electric company's power transformer. Could be in your own home. Check that possibility.

Power line noise filters (Radio Shack 15-1111 or equivalent) should be put on all radio equipment. The chassis of radios should all have good electrical grounds.

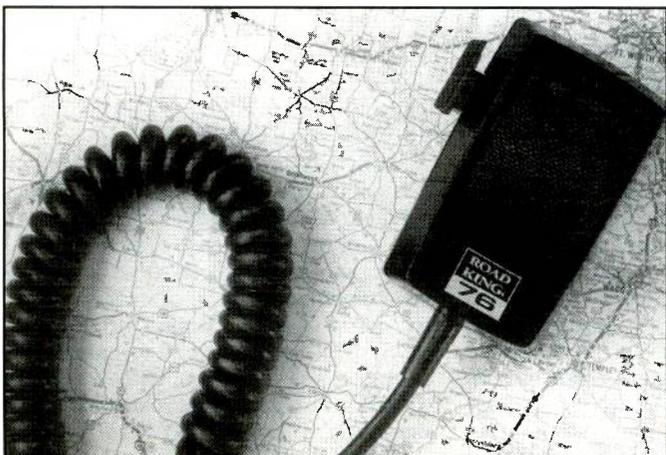
Suitable filtering should be installed on or in the equipment causing the buzzing. Best bet is to let an electrician do that. If these remedies bring no results, or if the source of the noise can't be easily pinned down, call your electric power utility and explain the problem. They'll send someone to investigate, inasmuch as the noise could be coming from their own equipment.

Power line filters on your radios presume the noise is sneaking in through the power lines, which is a common entry point. If it is also entering via nearby power lines, the best relief will be by locating its source and cleaning up the motor generating the hash. Secondly, get a receiver with the best noise reduction circuitry available. Unless readers can offer better or additional ideas, the next thing we'd decide to do would be call Allied Van Lines and move to a nearby town.

Channel News

A fine letter from Blair "Jim" White, KB5RWS, of Santa Fe, New Mexico regarding specialized uses for different CB channels (as discussed here last March). This letter tells us about the GoldWing Road Riders Association (GWRRA), and international group of GoldWing owners. GWRRA was formed for the purposes of boosting the image of motorcycling, and promoting safe riding practices through education.

GWRRA members are usually CB-



The Road King RK-76 mic offers speech compression.



The Gonset G-12 had 4-channels and was a fine set, but wasn't glitzy enough to become a CB star. (Photo by D. Gillespie, Toledo, Ohio.)

equipped (many happen also to be licensed hams). Channel 1 is where you're most likely to hook up a GWRRA member, although Channels 2 through 5 have also been known to show activity during their Wing Ding (national convention).

In March we had wondered about the status of Channel 13 as the RV frequency. Several years back it had been promoted for that purpose by The Good Sam Club, which used to even have a Channel 13 RV decal. A letter from The Good Sam Club in response to this brought clarification. Gretchen Watkins, Good Sam Administrator, advises us that the organization still does some promoting at its rallies, but no longer designates it as an RV'er channel because profanity and generally undesirable conversations became too prevalent. Those things didn't go over too well with their members.

The Good Sam Club is the world's largest RV owners' organization. Their address is P.O. Box 500, Agoura, CA 91376. Phone: (818) 991-4980. This is a fine group of good folks.

Oldies, But Goodies

The first CB radio owned by D. Gillespie was a birthday present consisting of Gonset

G-12. Boy, talk about cherishing a gift. That was in 1971, and D.G. still owns this radio. These days the radio no longer has its original base mounting bracket. D.G. would very much like to locate and purchase another Gonset G-12, but he would like it to be complete with the bracket. If you can help, contact him at: D. Gillespie, 1455 S. Reynolds, Suite 262, Toledo, OH 43615. He also wants to purchase a Lafayette HB-444/25A.

For the record, Gonset was a popular manufacturer of VHF ham equipment. In the earliest days of CB radio (late 1958, early 1959) the company was one of the first to bring out a CB rig, the CB-11. This was a well designed and built single-channel set that came along so early in the game that a standard numbering system for CB channels didn't exist. All Gonset G-11 radios came ready to operate on 27.065 MHz (presently Channel 9, but years before it was designated as an emergency channel). Gonset marked 27.065 MHz sets as "Channel 11." Their numbering system had included the radio control channels above Channels 3 and 7.

The G-11 was a flop because of Gonset's feeble CB marketing efforts and the set's blah single-channel capability. In

1961, the G-12 came out. This was a four-channel version of the G-11 and sold for \$149.95. The G-12 was a decent enough four-channel radio, but few people cared. Gonset allowed it to remain on sale for many years. The drab four-channel G-12 was left behind in the cloud of dust created by glitzy CB sets evolved by many other companies. Those CB sets featured 23-channel transmitters, tunable receivers, meters, switches, bells, knobs, buttons, dials, and blinking lights.

Gonset was originally located in Burbank, Calif. By the 1970's, it had become a division of Aerotron, Inc., of Raleigh, N.C.

James R. Cade, 26521 Ridgemoor Rd., Sun City, CA 92586, is still looking for a copy of the owner's manuals for the old Browning 23 base unit and R-27 receiver. He will pay copying costs.

Inside Information

Ever wonder how the FCC decides how, when, and where to send its inspectors? A piece of the puzzle seems to have surfaced, as contained in a letter the FCC wrote to a CB'er in a small Kentucky community. His taxi cab company had received an inspection and subsequent fine because the FCC claimed the taxi used a linear ampli-

This is to certify that radio communications were established between your station and

43 ROMEO PAPA 379

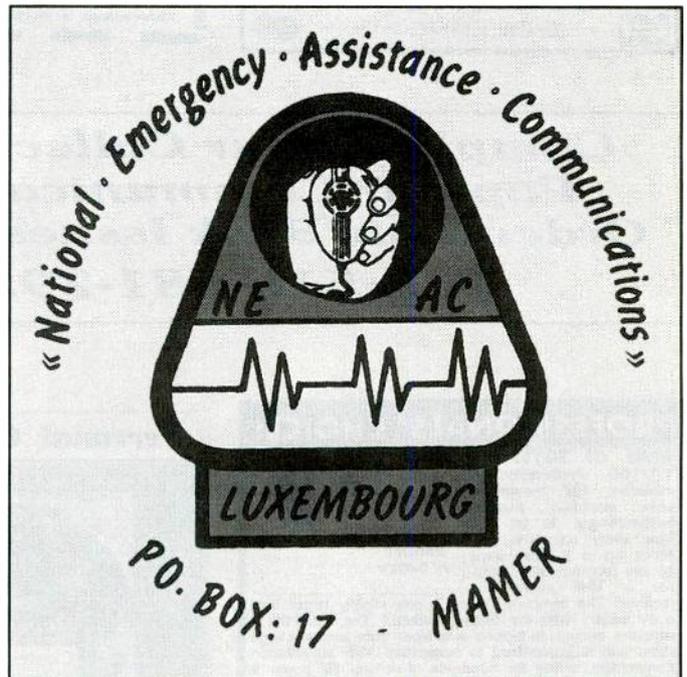
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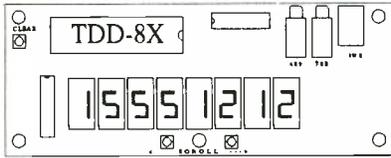
◀ Overseas QSL of the month: 43-RP-379, Steven, of South Australia. Passed along to us by Bert, SSB-35F, of Texas.

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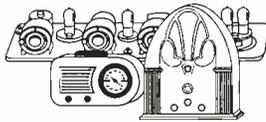
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fier. The owner of the taxi said the mobile linear was necessary in order to maintain CB communications at the edges of the wide area being served.

He eventually settled the fine with the FCC, but asked why they had shown up in his remote area. Richard Smith, Chief of the FCC's Field Operations Bureau explained, "Your town was selected for the inspector's visit as part of a zip code survey. The Commission's staff is too small to visit all towns and cities on a regular basis. Certain zip codes are selected and the towns in those zip codes are visited. Your station was selected for inspection because it was located in a targeted zip code area and the antennas of your station were readily visible. Since your town is distant from our inspector's home office, his time was quite limited. He was able to visit only a few of the stations in your town."

We have heard of being born under an unlucky star. Looks as though it's also possible to be under the influence of a malevolent zip code, as well as an evil antenna. Horoscopes should list those unlucky zip codes. Now if CB'ers could only discover some isolated speck of real estate overlooked when they gave out zip codes. Aren't there any unlisted zip codes?

Opening Up SSB

A letter from Bill, OS-262, in Harrisville, New Hampshire, looks towards the day the FCC frequencies above 27.405 MHz (Channel 40) are opened up for SSB use. He would like to see licenses issued to SSB operators for the use of these frequencies, which are now heavily used around the world for hobby communications.

We'll second the motion, Bill, but this isn't the first time the same idea has been run up the flagpole. Unfortunately, the FCC has never been inclined to either expand CB beyond 40 channels, or providing special consideration to sidebanders. There had been numerous pleas from the AM and sidebanding communities for even a few designated SSB channels when the CB service was being expanded from 23 to 40 channels. Isolating AM and SSB operations on different channels would have created better communications for all concerned, but the agency wasn't concerned. The agency's response was to demand that new AM-only radios be capable of operating on all 40 channels.

Our impression is the FCC isn't inclined to go out of its way to accommodate persons or groups having anything to do with 27 MHz communications. Keeping this in mind, we endorse Bill's plan and encourage him to continue to plug away if he feels there's a chance.

Why not drop us a letter, QSL card, or your CB shack photo? We find the input from readers useful in preparing the column, and look forward to hearing from our 27 MHz friends.

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

It seems that Voz de Renamo, the station of the Mozambique National Resistance, has left shortwave. At least the relay carried over Swazi Radio (6155) has been discontinued. Reports say that the Renamo station will continue to operate on a non-shortwave frequency. Information about the Renamo situation is a bit incomplete and confusing, so stay tuned. We hope to be able to provide more details at a later date.

Radio Dnestr International, which we thought had left the air, is still active. Check for an English language broadcast on 9620 at 2130 to 2200. It may be that just the 0330 broadcast on 7105 had been discontinued. This station is the voice of the Russian separatists in Pridnestrovye, the Trans-Dnestria region of Moldavia.

The National Radio of the Saharan Arab Democratic Republic has left 11320 and moved to a much busier spot—11800. The station supports the Polisario Front which seeks an independent republic for the Moroccan-controlled Western Sahara.

There's a new Libyan clandestine reported active, operated by the National Front for the Salvation of Libya. Some years ago NFSL had a station called the Voice of the Libyan People. The National Front seeks the ouster of Gaddafi and the establishment of a democracy in Libya. At this point we don't have times, frequencies, or even a firm name for the station, which is said to be operating from a Middle Eastern site. It's unclear whether this is a program relayed by an existing station or a transmitter actually operated by the NFSL.

A recent check showed that jamming signals continue to operate against two of the anti-Castro voices—Radio Caiman and La Voz del CID. Caiman is active between 1200 and 1500 and again in the evenings from 0100 to 0400 (a repeat of the morning segment) all on 9965. CID operates almost round the clock, using 6305, 7341, 9942, 11635 and 11941 at various times.

KWHR in Hawaii continues to air Forum for Democracy, produced by the Vietnamese Restoration Party. It is broadcast in Vietnamese from 1400 to 1430 on 9930.

The Voice of Free Tajikistan is scheduled in half hour blocks at 0300, 0600, 0900 and 1400 in Tajik and Russian on a frequency varying between 7088 and 7090.

Rwandan clandestine Radio Muhabura now operates on 6275 (ex-6400) from 0400 to 0530 and 1000 to 1135. Also on 6285 at 1715 to 2005. A handful of determined North American clandestine signal hunters have dug this one out during the 0400 broadcast.

Echo of Hope, the South Korean clandestine beamed to the north, now operates with three hour broadcasts beginning at 0800, 1100, 1400 and 2000, all on 3985.

NFSL Publication

November/December 1991

NFSL

THE NATIONAL FRONT FOR THE SALVATION OF LIBYA

NEWSREPORT



Gaddafi Dismisses Lockerbie Indictment

UTA: Gaddafi's Agents Indicted

African Workers Expelled from Libya

US Report Outlines Gaddafi's Terrorism

Dialogue in Pursuit of Freedom

VOLUME VIII ISSUE NO. 6

The National Front for the Salvation of Libya is reported to have a new anti-Gaddafi station on the air.

plus 0300 on 6348. The Voice of the People broadcasts from 0900 to 1100, 1200 to 1400, 1500 to 1700 and 2000 to 2200 on 3912, in addition to 2300 to 0100 and 0300-0500 on 6600.

The Colombian clandestine Radio Patria Libre is now using 6530 around 0330-0110. It's also active on 6260 (variable) from 1130 to 1210. The 15050 "international service" is apparently a Saturday only deal, at 1330-1410 (although it's also been heard in the 1900 to 2100 frame); a 6600 variable is used on Sundays from 1500 to 1540. It now uses the slogan "Voice of the new Colombia—a voice for the Camilist Union Army of National Liberation."

The Khmer Rouge station, Voice of the Great National Union Front of Cambodia had dropped a rebroadcast of a program by the Cambodian National Union Party and replaced it with a program in Thai, at 0130 to 0200 and 1330 to 1400, all on 5408. Careful checking will sometimes turn this one up during the North American morning broadcast.

The Haitian program Radio 16 Desnam is now heard on 15420 via WRNO, at 2200 to 2300. The signal was formerly aired on 7355.

Here's an address which should work for A Voz da Resistencia do Galo Negro (Voice of the Resistance of the Black Cockeral, aka VORGAN): Free Angola Information Service, 1629 K st. NW, Washington, DC 20006, attention Jaime Vila Santa.

The former El Salvador clandestine Radio Venceremos, now a licensed broadcaster finds the legitimate road is a difficult one, according to an article in the *Toronto Globe and Mail*. Finding sponsors, paying bills and trying to make it as a commercial operation is turning out to be harder than surviving as a clandestine broadcaster in the jungle. Donations from overseas have dwindled to near nothing and now the station has to make it go in a market that has some 70 other broadcasters. The station no longer wants to be identified with the FMLN, for which it was the spokesman during the civil war. Thanks to Harold Sellers of the Ontario DX Association.

We welcome your clandestine news in the form of loggings, schedules, background information, addresses and QSL news—and photocopies of QSLs or other clandestine-related items we can use as illustrations in this column!

Until next month—good hunting! ■

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Britain once had 13 weather ships in the Atlantic Ocean. They provided weather conditions to the mainland weather forecasting offices, navigation information for aircraft, and carried out search-and-rescue operations. The fleet was reduced through the years until only one weather ship remained, and that one may soon be making its last voyage.

Britain's Defense Ministry told the Meteorological Office earlier this year that it was considering freezing the \$200 million budget allocated to the weather folks every year. Of that amount, \$1.5 million goes toward operating the weather ship Cumulus. A news item in the London Sunday Telegraph newspaper last March said that Marr Vessel Management, which maintains the Cumulus for the Met Office, was told to take cost-cutting measures.

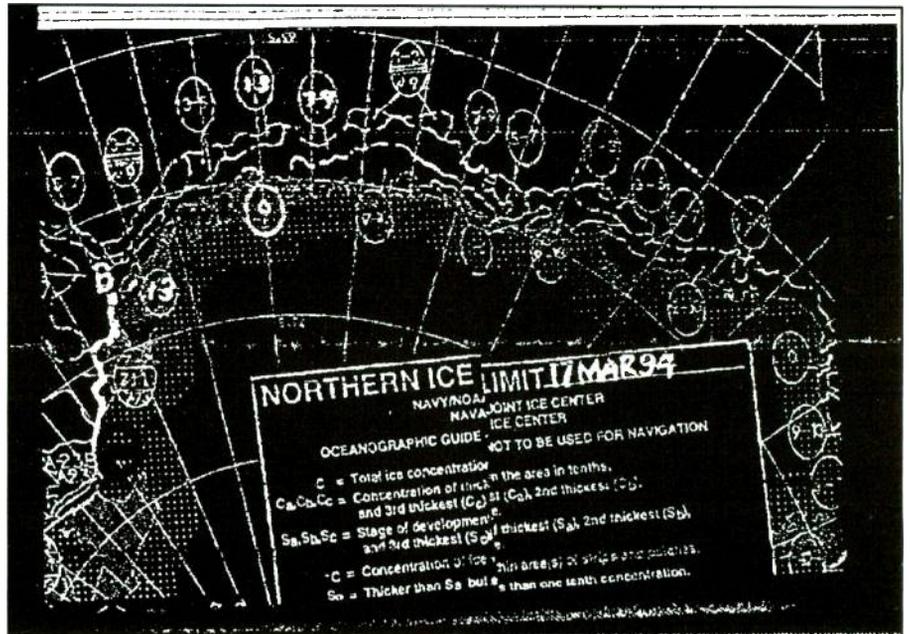
The Cumulus carries five scientists and sails the North Atlantic. Six weather balloons are launched daily to test weather conditions approaching Britain from the west. Weather forecasters say that eliminating the Cumulus would affect forecasting accuracy for Britain and the rest of Europe because the ship provides some weather information that cannot be gotten from satellite photos.

Murmuring Murmansk

Its maritime call signs are UDK and UMW, however, the identifier may as well read R.I.P. for Rest (or Rust) In Peace, for hard times have fallen upon the place known as the world's largest Arctic city—Murmansk, Russia.

When the former Soviet Union reigned supreme, this city of 450,000 residents was heavily subsidized in nearly every aspect of life by the government. Life has drastically worsened since Russia became an independent republic at the end of 1991. And it doesn't look like paradise anymore for monitors of RTTY communications to and from the city's shortwave radio maritime station.

"Once among Russia's mightiest and most attractive ports," *The New York Times* newspaper reported in April, "Murmansk now sits practically idle, the rusting hulls of a dozen ships rotting in the harbor. Thousands of workers at the enormous Murmansk Fish Cannery, one of the largest in the world, have lost their jobs because of changes in the country's economy. Most of the rest simply get paid for doing nothing. Hundreds of commercial vessels have been junked and sold for scrap."



Northern Ice Limit chart of Pretoria Meteo, South Africa, ran on 13538 kHz. Printout was made in negative polarity. (From Robert Hall of South Africa.)

Update on AFA05

In the October 1993 and March 1994 RTTY columns, I said that U.S. Air Force SITFAA station AFA05 appeared to be located at Miles City, Mont., and was relocated there after Hurricane Andrew flattened Homestead AFB, Fla., where AFA05 was originally situated.

It now seems, I am told, AFA05 is operating out of Miles City, Fla., not from the Montana wilderness. My ever-trusted atlas, which has since been discarded into a recycling bin, had a listing for the Montana location, but not the Florida one. A letter from Buck (WD4ILS) sets the record straight as to where AFA05 is to be found.

Buck writes, "With respect to the (relocation of AFA05), be advised that there is a Miles City, Fla., as well, and that it has been the home of more mobile relay systems on its various towers than one could shake a stick at. Miles City is located on Florida state route 29, about 2.7 miles north of its intersection with Interstate Hwy. 75, formerly called state route 84—the infamous Alligator Alley."

"Please also note that this location is in direct line with Bonita Springs, Fla., with respect to Homestead AFB. Wasn't there once a SITFAA station there on a trial basis?" Buck continues.

"Like your other readers, I can hardly imagine a SITFAA station in Montana. I

could see relocating to an inland Florida site such as Miles City, Fla., out of the way of the big winds and rising water," he says.

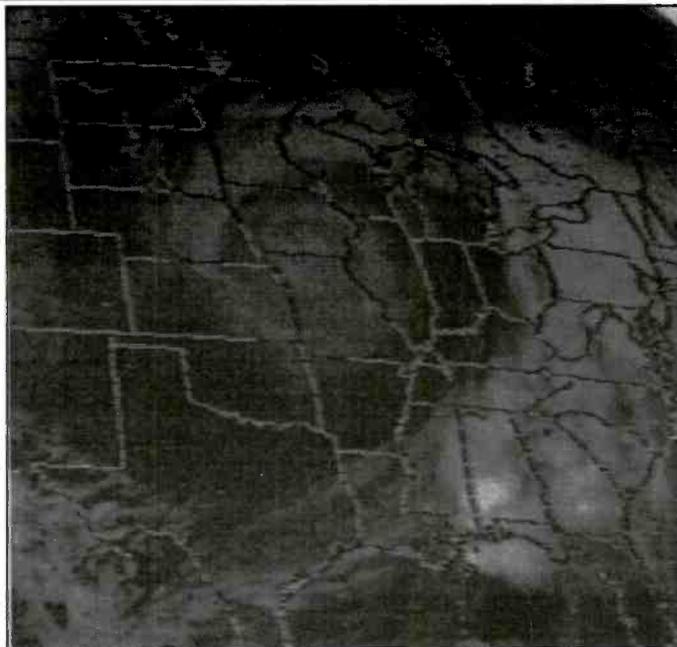
"Miles City is hardly a hamlet; more like a wide spot along state route 29, and most of the transmitters there are locked in concrete block vaults surrounded by chain link fencing. This is the 'main' site for the Collier County Sheriff's Dept. radio system (controlled from Naples, the county seat) and several other agencies," he says, noting that he lived and worked in the area as a youngster.

A ribbon of Teletype tape to you, Buck, for shedding more light on the whereabouts of AFA05. The Air Force chose to remain silent on the matter when I made an inquiry several months ago. No matter, the facts always seem to surface somehow, thanks to readers such as you.

Montreal Navtex

Writing from Ohio, Richard Baker says that on March 31 he heard a Navtex broadcast from Montreal, Quebec Province, Canada, at 0740 UTC on 518.0 kHz. He enclosed a copy of the 20-minute broadcast in which messages were in English and French.

Circuit identifiers are "WA" and "TA." English is used along with the "WA" ident, and French with the "TA." A Navtex message sent at 0742 UTC read, "Navtex ser-



NOAA-11 weather satellite photo (left) shows circular cloud and pattern over Iowa, Missouri and Illinois. Photo captured on 137.620 MHz at 1718 CDT. The GOES weather satellite view (right) ran at 1806 CDT on Spacenet 3, transponder 17, and shows the area of detail in the NOAA photo. (From Robert Margolis.)

vice on 518 kHz from Montreal Quebec is provided on trial basis only. The transmitter identification is W for English and T for French." Another message at 0757 UTC read, "Le service Navtex sur 518 kHz a partir de Montreal Quebec est presente-

ment offert sur une base d'essai seulement. L'identification du transmetteur est W for l'anglais et T pour le francais."

Navtex warnings out of Montreal are for ships using the St. Lawrence Seaway.

Ary Boender of The Netherlands took

the month off from RTTY monitoring, devoting much of his time instead to procuring shortwave radiofacsimile charts. He sent some of those charts to us and we'll be showing them in the months ahead. Meanwhile, Ary says he came across a

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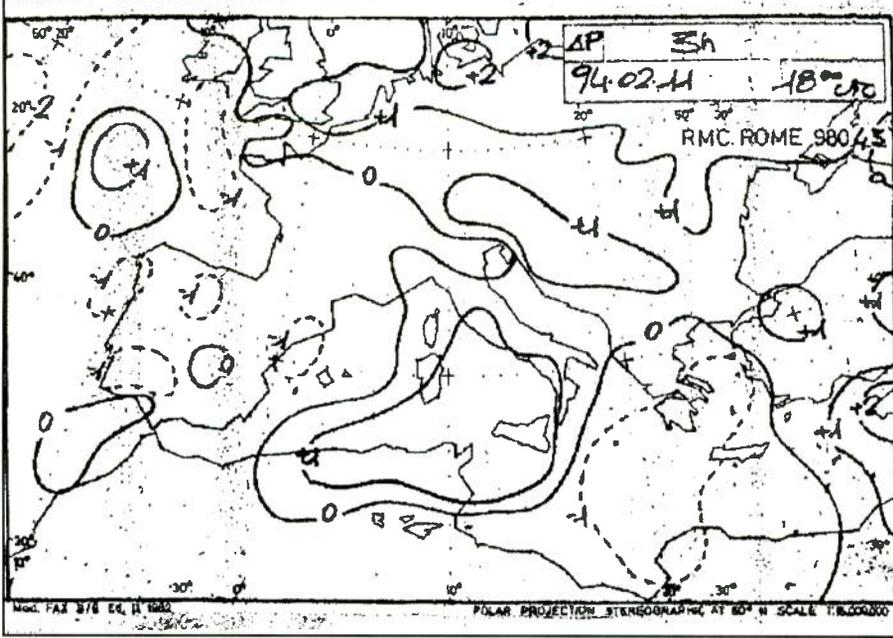
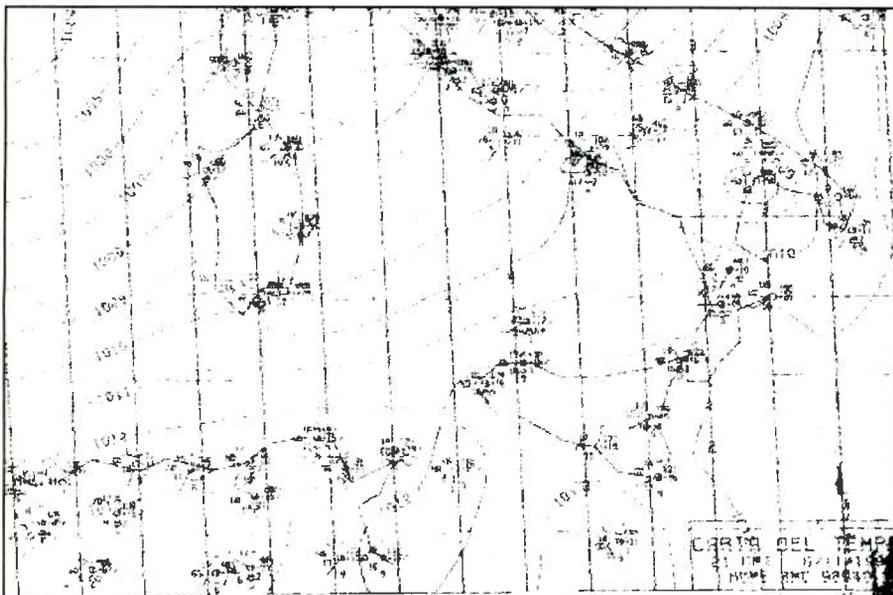
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Weather charts from Rome Meteo, Italy. Top chart submitted by Steve Wielgos of Indiana, bottom by Ary Boender, of The Netherlands.

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

- 4002.3: YRR2, Bucharest Meteo, Romania, w/coded wx at 2200, 413/50. (R.H.)
- 4203.5: UPJY, NIS Professor Logachev, w/tlx tfc at 0356, 170/50. (R.B.) Russian research ship—Ed.
- 4903.0: DHM44, Gregel Meteo, Germany, heard at 1243, 100 baud. (L.D.)
- 5400.0: Un-ID w/encryption, 250/81 at 2200. (R.M.)
- 5437.0: FDY, French AF, Orleans, France, w/RYRY & "le bricks," 50 baud at 1608. (L.D.)
- 6274.0: YLCL, ship Kurska, w/TG's to Riga R., Latvia, ARQ at 0210. No data re ship available. (R.M.)
- 6336.3: GYA, Royal Navy, London, England, w/test tape, 860/75 at 0838. (R.B.)
- 6385.0: CKN, Canforces, Vancouver, B.C., w/NAWS marker, 860/75 at 0842. (R.B.)
- 6838.0: OMZ66, Czech Emb., Bratislava, Slovakia, w/RYRY, ID, & nx re Slovakia, 100 baud at 1605. (L.D.)
- 6890.2: "RFFABC," Mindefense, Paris, France, w/msgs to "RFFVAT," French Forces, Incirlik, Turkey, ARQ-M2/200 at 1542. (L.D.)
- 6972.3: YOG59, Rompress, Bucharest, Romania, w/nx in FF at 1711, 500/50. (R.H.)
- 7520.1: BZP57, Xinhua, Yuryumqi, China, w/nx in EE at 1940, 379/75. (R.H.)
- 7524.0: TYE, ASECNA, Cotonou, Benin, w/"de TYE" at 0400, ARQ-M2/96. (R.B.)
- 7580.2: VVD57, New Delhi Meteo, India, w/coded wx at 1933, 342/50. (R.H.)
- 7642.2: "RFFP," French Forces, Paris, France, using ARQ-M2/200 mode at 1535. (L.D.)
- 7658.0: YZD, Tanjug, Belgrade, Yugoslavia, w/nx in EE at 2214, 418/50. (R.B.)
- 7806.0: YZD7, Tanjug, Belgrade, w/nx in EE, 418/50 at 2241. (R.B.)
- 7823.0: Un-ID idling at 2227, ARQ-M2/200. (R.B.)
- 7850.5: ZAA, ATA, Tirana, Albania, w/RYRY, 518/50 at 1800. (R.H.)
- 7900.0: 9VF39, PIAB, Singapore, w/nx in GG at 1740, FEC-A/96. (L.D.)
- 8104.8: Interbeton, Rijswijk, Netherlands, w/kg a Nigerian oil rig at 1755, ARQ. (R.H.)
- 8270.8: Un-ID using packet radio at 0143. (R.M.)
- 8271.8: Un-ID using packet radio at 0238. (R.M.)
- 8398.0: SQIW, ship M/S Uniwersytet Slaski, w/ARQ tlc at 0045. (R.B.) Polish ore car.—Ed.
- 8399.5: EWIJ, ship Kandalakshsky Zaliv, w/TG at 0034, 150/50. (R.B.) Russian cgo ship—Ed.
- 8402.0: EWFB, ship Krymsk, w/msg via Kaliningrad R. at 0506, 170/50. (R.B.) Russian cgo ship—Ed.
- 8430.5: DCN, Norddeich R., Germany, w/ARQ phasing sig + CW ID at 0323. (R.B.)
- 9076.7: "RFFAB," Mindefense, Paris, France, w/nx in FF, //10103.7 & 13886.7 kHz, at 1855, ARQ-E3/192. (L.D.)
- 9104.0: Czech Emb., Moscow, Russia, w/msgs to Prague, 100 baud at 1440. (L.D.)
- 9106.5: IPG20, MFA, Rome, Italy, w/5L grps to Vienna, Austria, ARQ at 0817. (L.D.)
- 9126.5: IPG20, MFA, Rome, w/msgs to var. embs & cons, ARQ at 1257. (L.D.)
- 9204.0: "V5G," MFA, Bucharest, Romania, w/circulars to var. embs at 1605, ROU-FEC/164.5. (L.D.)

RTTY station on 6935.0 kHz at 0930 UTC, sending EGWR weather data at 75 baud, and he wonders if it was AJE, the U.S. Air Force Air Weather Station at Croughton Air Base, England. That's who it was, Ary. Gee, I like the easy questions!

Stax of Fax Dept.

The weather station at NPM, Pearl Harbor Naval Base, Hawaii, is now called Naval Pacific Meteorology and Oceanography Center, a name change similar to one introduced by sister station NAM, Norfolk Naval Base, Va., earlier this year. On Mar. 1, NPM released a new schedule for its Fleet Facsimile (FFAX) Broadcast.

Eighty-two radiofax products are issued 24 hours daily, with broadcasts from 0600

to 1600 UTC on 4855 kHz, and 1600 to 0600 UTC on 21785 kHz, from the transmitter site at Honolulu. Continuous broadcasts can be heard airing on 6453 and 9090 kHz from the Stockton, Calif., transmitter, and on 8494 kHz from the Adak, Alaska, transmitter. Schedules are sent daily at 0000 UTC.

For further information, write to the meteorology and oceanography center at Box 113, Pearl Harbor, HI, 96860-5050.

Loggings contributors this month are Richard Baker of Ohio (R.B.), "L.D." of Germany (L.D.), Robert Hall of South Africa (R.H.), and Robert Margolis of POP-COMM (R.M.)

RTTY Intercepts:

5180.0: ZSC, Cape Town R., RSA, w/Navtex & Navarea 7 warnings at 2027, FEC. (R.H.)

9283.0: Italian Emb., Belgrade, Yugoslavia, w/mgs to Rome at 1001, ARQ-E/96. (L.D.)

9288.0: DML, MFA, Bonn, Germany, w/mgs to Beirut, Lebanon, & Ankara, Turkey, ARQ-E/192 at 1438. (L.D.)

10103.7: "RFFAB," Mindefense, Paris, France, w/circulars to African & European mil. outposts, ARQ-E3/192 at 1830. (L.D.)

10255.3: Un-ID idling, ARQ-E3/48 at 0606. (R.H.)

10344.0: Un-ID, poss "6XM8," w/encryption to sta. on 10749.5 kHz at 1738, ARQ-E/288. (L.D.)

10444.0: "V5G," MFA, Bucharest, Romania, w/encryption at 1029, ROU-FEC/164.5. (L.D.)

10638.9: RFQP, French Forces, Djibouti, w/"controle de voie," ARQ-M2/200 at 2000. (R.H.)

11042.0: "G8T," French Emb., Belgrade, Yugoslavia, w/5L grps to Paris, FEC-A/192 at 1053. (L.D.)

11047.0: "G8T" testing to Paris +5L grps, FEC-A/192 at 1044. (L.D.)

11050.0: "D2Z," French Emb., Budapest, Hungary, testing to "P6Z," Paris, at 1116, FEC-A/192. (L.D.)

11436.0: Un-ID w/encryption, 170/110 at 0003. (R.M.)

12480.5: 5BJB, the Cypriot bulk car Seaboni, w/tlx t/c, ARQ at 1600. (R.M.)

12482.0: KPSB, the Amer. cgo ship Coronado, w/ARQ t/c at 2003. (R.M.)

12493.5: Y5EJ, the German gen'l blk car Riesa, w/msg to WLO at 1853, KEOD, the Amer. ship Nuevo San Juan, w/tlx at 1835. Both ARQ. (R.M.)

12494.5: SQEO, the Polish bulk car General Madalinski, w/tlx's at 2057, ARQ. (R.M.)

12496.5: LXBY, the Luxembourgier cntnr ship Cornelis Verolme w/tlx via WLO to Antwerp, ARQ at 2009. (R.M.)

13419.0: Un-ID, poss "C37A," w/encryption at 1239, ARQ-E/288. (L.D.)

13875.5: HGX55, Hungarian Emb., Algiers, Algeria, in DUP-ARQ to HGX21, Budapest, at 1057. (L.D.)

13886.7: RFFI, Mindefense, Paris, France, w/reception rpt in FF to Libreville, Gabon, ARQ-E3/192 at 1514. (R.M.)

13917.0: Polish Emb., Tripoli, Libya, chitchatting w/another sta., POL-ARQ at 1233. (L.D.)

13996.7: STK, Khartoum Air, Sudan, w/RYRY w/o ID, 386/50 at 1248. (R.H.)

14354.0: "V5G," MFA, Bucharest, Romania, heard at 1333, ROU-FEC/164.5. (R.M.)

14357.5: GFL24, Bracknell Meteo, England, w/wx data, 400/50 at 1435. Temporary move from usual freq. of 14356 kHz. (R.M.)

14391.0: CLP1, MFA, Havana, Cuba, w/5L msg that was interrupted several times before completion, 480/75 at 1511. (R.M.)

14400.0: Czech Emb., Algiers, Algeria, w/5F grps & text in Czech, 100 baud at 1300. (L.D.)

14410.0: German Emb., Brasilia, Brazil, w/encryption, ARQ-E/96 at 1258. (R.M.)

14448.0: SNN299, MFA, Warsaw, Poland, w/tlx's to Polish diplo missions in Toronto, Montreal, Vancouver & Ottawa, POL-ARQ at 1450. (R.M.)

14670.2: "RFFVAT," French Forces, Incirlik, Turkey, w/mgs to Paris at 1543, ARQ-M2/200. (L.D.)

14760.1: NNN0MSD, USMC MARS, San Diego, Calif., w/MARSGrams, Pactor at 2018. (R.M.)

14830.0: Un-ID w/encryption, 170/40.5 at 1410. (R.M.)

14892.0: Czech Emb., Rabat, Morocco, w/routine t/c at 1240, 200 baud. (L.D.)

14970.3: SAM, MFA, Stockholm, Sweden, w/tlx to emb. in Belgrade, Yugoslavia, SWED-ARQ at 1557. (R.H.)

15862.7: "TNSX," French Emb., Tunis, Tunisia, in ARQ6-90/200 mode at 1500. (L.D.)

15930.5: PWB, Belem Navrad Brazil, w/"Exercise BIPT" t/c, 835/75 at 1158. (R.H.)

15935.3: SUA91, MENA, Cairo, Egypt, w/nx in FF, 425/75 at 1025. (R.H.)

16135.6: BZR66, Xinhua, Yuryumqi, China, w/nx in EE at 1223, 403/75. (R.H.)

16137.0: Un-ID w/RYRY, 1827-1855, 461/75. (R.M.)

16143.7: RFLI, French Navy, Fort de France, Martinique, w/"non protege" msg at 1949, ARQ-

E3/192. (R.M.)

16212.2: Un-ID w/5L mgs w/hdrs that begin "11177..." Was 485/75 at 1609. To CW for s/off at 1619. (R.M.)

16289.3: Un-ID w/5L grps, FEC-A/192, VFT, at 1434. (L.D.)

16293.0: TAD, MFA, Ankara, Turkey, heard at 1118, FEC-A/144. (L.D.)

16296.0: Turkish Emb., Dakar, Senegal, w/mgs re Guinea-Bissau & 5L grps, FEC-A/144 at 1430. (L.D.)

16317.0: NATO, Izmir, Turkey, w/foxes, 10 count, RYRY, & "This is Izmir tech control with fox test..." Was 75 baud at 1340. (L.D.)

16371.0: Polish Emb., Athens, Greece, in POL-ARQ at 1247. (L.D.)

16622.5: UUUU, RTMS Ivan Burmistrov, w/TG's, 170/50 at 1556. (R.B.) Ukrainian fct trawler—Ed.

16688.5: HCQO, the Ecuadorean fruit car Bonita, w/ETA Lisbon msg at 1620, KNJK, the Amer. tnkr Omi Dynachem, w/AMVER at 1805. Both ARQ. (R.M.)

16700.5: 9HLO3, ship Dalmacija Frigo, w/AMVER from the Panama Canal at 1820, ARQ. (R.B.) Maltese reefer—Ed.

16787.1: PNA, Manila, Philippines, w/nx in EE, inc. volcano wrngs, FEC at 0930. (R.H.)

16798.0: LYJU, the Russian ves Aougoustis Berzhin, w/gk Ventspils, 170/50 at 0925. (R.H.)

17400.0: MKD, RAF, Akrotiri, Cyprus, w/foxes to MUH49, 75 baud at 1158. (L.D.)

17437.5: Un-ID, poss "C37A," w/encryption, ARQ-E/288 at 1214. (L.D.)

17447.0: NKW, USN, Diego Garcia, w/PHWR wx data + tropical cyclone warnings for Indian Ocean, 75 baud at 1610. (L.D.)

17478.0: Romanian Emb., Algiers, Algeria, in ROU-FEC/164.5 mode at 1313. (L.D.)

17479.0: "V5G," MFA, Bucharest, Romania, w/encryption & circulars, ROU-FEC/164.5 at 1505. (L.D.)

17985.0: Saudia, Jeddah, Saudi Arabia, w/Jepesen wx data to Saudia flight, 100 baud at 1146. (L.D.)

18037.2: Un-ID, poss Egyptian diplo, w/pages of 5L grps, ARQ at 1440. (R.H.)

18279.3: HBD20, MFA, Bern, Switzerland, w/t/c in FF for emb. at Accra, Ghana, ARQ at 1035. (R.H.)

18420.0: "7A1," Czech Emb., Baghdad, Iraq, w/mgs to Prague, 1142-1148, 100 baud. S/off w/"7A1/CR+++" (L.D.)

18480.0: Czech Emb., Cairo, Egypt, w/5F grps, 100 baud at 1150. Also heard another day at 1139 w/mgs to Prague at 200 baud. (L.D.)

18490.0: SAAM, Moscow, Russia, w/TG's from Moscow & St. Petersburg to SAAB, Bellingshausen, Torg-11/100 at 1223. This sta is QRV daily until around 1300 UTC. T/c usually consists of TG's to Antarctica and synoptical wx data from ECMF, LFPW, & AMMC. Torg is a synchronous 11-bit RTTY mode using an ITA-2 alphabet w/3d shift Cyrillic. (L.D.) I heard the same sta. using the same mode at 1018. (R.H.)

18568.5: "KWO," an un-ID sta., begins xmsn at around 1155 UTC almost daily, & usually sends encrypted mgs fol'd by op mgs in EE in ARQ-E/96 mode. (L.D.)

19255.2: "RFFVAT," French Forces, Incirlik, Turkey, w/mgs to RFFABCT, RFFUBI, RFFXOC & RFFUBA, ARQ-M2/200 at 0950. (L.D.)

19418.7: RFFI, Mindefense, Paris, France, w/5L grps to French Guiana on 19646.7 kHz, ARQ-E3/192 at 1438. (R.M.)

19506.5: Indonesian Emb., Ankara, Turkey, in ARQ mode at 1043. (L.D.)

19597.5: EAE220, MFA, Madrid, Spain, w/mgs to Beirut, Lebanon, Twiplax at 0908. (L.D.)

19646.7: RFLIRT, French Forces, French Guiana, w/5L grps to Mindefense Paris on 19418.7 kHz, ARQ-E3/192 at 1452. (R.M.)

19672.0: Polish Emb., Lagos, Nigeria, w/op mgs to Warsaw & long periods of idling, POL-ARQ at 1146. (L.D.)

19685.0: "NDJA," French Emb., N'Djamena, Chad, w/5L grps to Paris, ARQ6-90/200 at 1150. (L.D.)

19731.8: PCW1, MFA, The Hague, Netherlands, w/5L grps, ARQ at 1125. (R.H.)

19870.0: 4UZ, UN, Geneva, Switzerland, w/mgs at 1358, ARQ. (R.B.)

19911.0: "PTI 2," un-ID sta w/5L grps, FEC-A/192, VFT, at 0732. (L.D.)

20020.0: German Emb., Madrid, Spain, calling German Emb., Bern, Switzerland, ARQ-E/96 at 1312. (L.D.)

20059.5: CLP1, MFA, Havana, Cuba, w/circulars in SS & EE to African embs, 500/50 at 1459. (R.M.)

20095.3: Un-ID using unk RTTY mode at 1434. Sounded like Sitor-A, but wasn't. (R.H.) It might be POL-ARQ, Bob. I've logged Polish diplo stas near this freq. using POL-ARQ, which sounds somewhat similar to Sitor-A—Ed.

20130.7: "566" w/RYRY, 75 baud at 1126. (L.D.)

20348.3: ORI, PTT, Brussels, Belgium, w/tlx t/c to Gecamines, Lubumbashi, Zaire, as propagation was via backscatter, ARQ-M2-242/96 at 1100. Was // 19576.2 kHz. (L.D.)

20427.0: "NDJA," French Emb., N'Djamena, Chad, w/5L grps to Paris, ARQ6-90/200 at 1124. (L.D.)

20447.0: CLP1, MFA, Havana, Cuba, w/mgs & 5F grps to emb. in India, 50 baud at 1809. (L.D.)

20500.0: Un-ID, poss "C37A," w/encryption, ARQ-E/288 at 0947. (L.D.)

20617.0: OMZ, MFA, Prague, Czech Rep., w/mgs to Montreal, 200 baud at 1534. (L.D.)

20800.0: "NCSE," French Emb., Nicosia, Cyprus, w/5L grps to Paris at 1218, FEC-A/192. (L.D.)

21807.3: YOV28, Rompress, Bucharest, Romania, w/nx in EE at 0800, 400/50. (R.H.)

22291.0: V7AB7, Marshall Islands cgo ship Lake Tahoe, w/tlx at 1505, ARQ. (R.B.)

22381.6: HEB18, Bern R., Switzerland w ch./freq. list & t/c list, FEC at 1439. (R.H.)

22814.0: "NCSE," French Emb., Nicosia, Cyprus, w/5L grps at 0948, FEC-A/192. (L.D.)

23992.5: ZRH, Cape Town Navrad, RSA, w/foxes & RYRY to CCM, Magallanes Navrad, Chile, at 1429, 50 baud. (L.D.)

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YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Information released by the International Telecommunication Union indicated that these nine new ITU members joined the organization in 1993: Czech Republic, Georgia, Slovakia, Kazakhstan, Micronesia, former Yugoslav Republic of Macedonia, Turkmenistan, Eritrea, and Andorra. As of the end of 1993, there were a total of 182 ITU members.

Simon Mason, England, has reported a most unusual phonetic alphabet station he has heard on 5530 kHz with a daily sked at 2000 UTC. With the aid of a tape from a friend in France who could hear the signal somewhat better, Simon was able to determine that the station was using an old ARRL phonetic alphabet from the late 1940's, e.g., Adam, Baker, Charlie, etc. A heavily accented YL announces the callsign Nancy Adam Susan. If a message is to follow, Queen Thomas is announced. Usual ending is Robert Adam which is the reverse of AR. Timing the format it looks like this: 2000-2003 NAS (repeated), 2003 QTC, 2204 NR3, 2005 GR11 and into 5L groups. RA at completion of message.

Richard Baker, OH, has provided some additional information about the CSS ships. "In information received from both the Bedford Institute and a QSL letter from CSS Hudson, they state that the CSS can stand for 'Scientific Ship' or 'Survey Ship,' depending on the role the ship has.

CSS Hudson is a Scientific ship. There are a total of seven CSS ships working out of Bedford; three of which I mentioned last month. The other four are CSS E.E.



Dr. Harold Cones serves as a committee member, banquet emcee, and forum speaker for the Kulpsville, PA, Winter SWL Festival each year.

Prince, CGDK; CSS FCG Smith, CG3006; CSS Matthew CFC5481; and CSS Navicula, CG2364. The Bedford Institute of Oceanography is Canada's largest center for ocean research and is owned by the Department of Fisheries and Oceans (DFO)."

On another subject, Richard had this to say, "As you know, I'm a big QSL'er of naval ships. I finally QSL'ed a SSN. A QSL veri letter from the USS Pargo (SSN-650) indicates this Sturgeon-class attack sub is scheduled for decommissioning in September 1994. The Pargo had earlier this year completed the first purely scientific mission

to the North Pole and holds the current record for most surfacings through the ice on a polar mission."

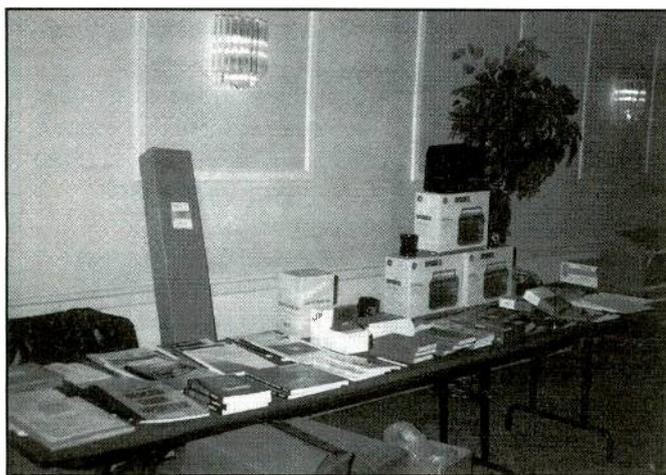
Richard sent in a breakout of his QSL figures. I have added all the categories and out of 1100 requests, he received 708 verifications for an impressive 64.4% rate.

Charles Nevel, PA (ex-WSC and ex-WSL reporter), commented on the 17113 kHz logging in the March 1994 column. "The listing for Portishead Radio-GKB3 is slightly misleading. The numeral 3 following GKB is not part of the call sign. It refers to the channel number (3) being monitored for calls. Currently there are 10 calling channels for ships. GBK scans channels 1, 2 (Atlantic area), and channels 3, 4 (worldwide) sequentially. This is a peculiarity of Portishead. In most other cases a number following call letters would be part of the call sign."

The confusion is caused perhaps because several reference aids, including some ITU publications, do not make the distinction stated above.

The opportunities for QSL'ing various military service facilities continue to shrink as units are deactivated, bases are closed, and ships are decommissioned.

According to a short piece written by Norman Polmar in the April issue of the U.S. Naval Institute monthly magazine, *Proceedings*, the only new naval construction called for in the Clinton defense budget for the 1995 fiscal year is for four ships. A nuclear powered carrier and three missile destroyers. This is the lowest construc-



Partial view of door prizes at Kulpsville Festival. POP'COMM editor Tom Kneitel, and column authors Gerry Dexter and Harry Helms all contributed their books. Thanks fellows!



Registered Monitor card from Carmen Narde. Monitoring equipment is a Kenwood R-2000 receiver with an N/S 125 foot longwire.

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)

tion figure for the U.S. Navy in 45 years. Also, by the year 2000, all cruisers and destroyers not having vertical launch systems will possibly no longer be in service.

W.H. Oldfield, OH, sent in a logging and advised, "Long time reader of POP'COMM—first-time writer. Have been DX'ing off and on since the mid-1930's. Now listen on a Sony ICF-2010."

Basil Shelley, CA, informs us that he now has a 100 foot longwire antenna at a height of about 20 feet, and has added a MFJ-959B antenna tuner plus a ground to his equipment.

UTE Intercepts. All Times in UTC.

- 227:** Beacon SJY, San Jacinto, CA. (Polhamus, CA)
- 231:** Beacon LG, Long Beach (Daugherty Fld), CA at 2022. (Vaage, CA)
- 245:** Beacon AN, San Diego, CA. (Polhamus, CA)
- 253:** Beacon UR, Burbank, CA. (Polhamus, CA)
- 266:** Beacon LLN, Levelland, TX at 1941. (Farley, NM)
- 269:** Beacon OSX, Kosciusco, TX at 2028. (Farley, NM)
- 278:** Beacon OS, Los Angeles International, CA at 2031. (Vaage, CA); Beacon XSD, Tonopah, NV. (Polhamus, CA); Beacon UBA, Baracoa, Cuba at 0523, 1000 Hz DSB; Beacon ADG, Adrian, MI at 0537. (Crabill, VA)
- 284:** Beacon MXR, Raton, NM at 1935. (Farley, NM)
- 285:** Beacon NE, Newport Bay West Jetty Light 3, CA at 2032. (Vaage, CA)
- 286:** Beacon GD, Goderich, Ontario, Canada at 1056. (Crabill, VA)
- 290:** Beacon YSZ, Coral Harbour, NWT, Canada at 0609. 1000 Hz. (Crabill, VA); Beacon OLR, Chickasa, OK at 1935. (Farley, NM)
- 294:** Beacon SB, Santa Barbara, CA. (Polhamus, CA)
- 300:** Beacon PPR, Pointe A Pitre, Guadeloupe at 0627. (Crabill, VA)
- 302:** Beacon CWS, Conway, AR at 1204. (Crabill, VA)
- 303:** Beacon YPP, Parent, Quebec, Canada at 1040. 400 Hz. (Crabill, VA)
- 308:** Beacon CI, Channel Island Harbor South Jetty Light 2, CA at 2038. (Vaage, CA)
- 314:** Beacon OI, Oregon Inlet, NC at 0856. New freq.; ex-298. (Crabill, VA)
- 317:** Beacon IN, Winston-Salem, NC at 0530. (Crabill, VA)
- 320:** Beacon W, Cape San Blas, FL at 0556. (Low, TX)
- 326:** Beacon MCY, Mercury, NV. (Polhamus, CA)
- 335:** Beacon MK, Marion, VA at 0022. New ID; ex-MYX. (Crabill, VA)



PAŃSTWOWA AGENCJA RADIOKOMUNIKACYJNA
ZARZĄD KRAJOWY

DWM- 5314 / 309 / 93

Warszawa, 1993.09.23

Mr Hugh M. HAWKINS

USA

In reply to your letter we have the pleasure to confirm the reception of our station G D Y M I A - R A B I O call sign S P H 4 1 on ... 8 4 4 2 ... kHz in ... on ... at ... UTC. The station was transmitting ... with the power of ... kW, using ... antenna.

Thanks for your report

Yours faithfully

Hugh Hawkins, MS, had to wait almost four years to receive this QSL letter.

- 337:** Beacon NA, Santa Ana John Wayne, CA at 2044. (Vaage, CA)
- 338:** Beacon MRK, Rayville, LA at 0526. (Crabill, VA)
- 346:** Beacon YXL, poss new freq for Sioux Lookout, Ontario, Canada, from **405** kHz. Hrd at 0751. (Crabill, VA)
- 347:** Beacon AIK, Aiken, SC at 0425. (Crabill, VA)
- 353:** Beacon LWT, Lewiston Municipal, MT at 0937; Beacon ZES, Cape Scott CG, BC, Canada at 0940. (Vaage, CA)
- 356:** Beacon ME, Meridian, MS at 0916; Beacon RCX, Ladysmith, WI at 1156; beacon SKI, Sauk City, IA at 1222. (Crabill, VA)
- 357:** Beacon EYA, Jacksonville, FL at 1154, DSB. (Crabill, VA)
- 359:** Beacon CZB, Casey, IL at 1147. (Crabill, VA)
- 360:** Beacon AWM, Wst Memphis, AR to 0946. (Crabill, VA)
- 362:** Beacon SWY, Albemarle, NC at 0904; Beacon EW, New Bern, NC at 0954. (Crabill, VA)
- 368:** Beacon IX, Olathe, KS at 1130. DSB, shown as SSB in Guide. (Crabill, VA)
- 369:** Beacon CXU, Camilla, GA at 0420. (Crabill, VA)
- 371:** Beacon RYV, Watertown, WI at 1057. DSB, SSB, in Guide. (Crabill, VA)
- 374:** Beacon EKG, Carlsbad Palomar, CA at 2049. (Vaage, CA)
- 379:** Beacon MDE, Cincinnati, OH at 0440; Beacon FZI, Fostoria, OH at 0023. (Crabill, VA)
- 386:** Beacon GMA, Dalton, NH at 1126. (Crabill, VA)
- 387:** Beacon 6E, Grand Manan, NB, Canada at 1128. (Crabill, VA)
- 400:** Beacon ENS E, Cipres, Ensenada, BCN,

- Mexico at 2055. Sig strong enough to be hrd in Los Angeles at noon time. (Vaage, CA)
- 407:** Beacon BVV, Brookhaven, MS at 1003. (Crabill, VA)
- 410:** 3EKK9, MV Oriental Venture (tanker) hrd 0745; V7AA3, MV Falcon (oilier) hrd 0756. Both in CW wkg DFA, unlocated German station. (Boender, Netherlands)
- 413:** Beacon CBC, Anahuac, TX at 0344. (Ed.)
- 414:** Beacon LDQ, Lebanon, TN at 1110. (Crabill, VA)
- 439:** DVSW, MV New Prospect (cargo ship) wkg Oostende Radio in CW at 1615. (Boender, Netherlands)
- 2182:** SQEB, MM Huta Agoda (bulk carrier) wkg ZBM, Bermuda Harbor at 0615 re crewman w/chest pains. Vsl is 115 miles W. of Bermuda. Later QSY 4125 kHz. NMN13, USCG Group Cape Hatteras, NC at 0657 wkg F/V Linda adrift w/blown engine w/6 POB, QSY 2670 kHz. NMF44, Southwest harbor Group at 0717 clg/wkg "Cutter 615," re F/V Ryon Gregory rqst to be relieved of tow of F/V Lady Marie. Suspect Cutter referred to was NJPJ, USCGC Reliance (WMEC-615). All USB. (Baker, OH)
- 2207:** Vessel of ZEEVAARTSCHOOL w/Nav-Com Den Helder at 1118 in USB w/comms re navigational training in North Sea. (Boender, Netherlands)
- 2227:** IGJ42, Italian Navy Augusta w/CW mkr VVV IGJ42 at 2144. (Boender, Netherlands)
- 2716:** Vsl Harvey Ranger wkg Snapper Base at 0704 in USB for 0700 position ck. (torpedo recovery vsl, private contractor). (Baker, OH)
- 2869:** San Francisco ATC wkg United-941 at 0403. (Shelley, CA)
- 3195:** SLHFM "R" in CW at 1825. Hrd transmission for many hours. (Boender, Netherlands)
- 3678:** SXH, Khandia, Greece (Navy) in CW at 2358

w/VVV SXH. (Boender, Netherlands)

3803: VQXI. u/i stn in CW at 0100. (Boender, Netherlands)

4030: CW stn at 1915 sends rapid dashes for 5 mins foll by 771 x3 21 21 33 33 and into 5F cut numbers. (Mason, England)

4071: Foll vsls. wrkd WOM, Pennsco. FL: C6CM7, SS Norway (Norwegian Cruise Lines) at 0338; NRDW, USS DeWert (FFG-45) at 0332; LATE4, Emerald (Norwegian tanker) at 0338; IBCR, M/N Costa Romantica, Costa Cruise Lines newest cruise ship at 0355. All in USB. (Baker, OH)

4089: CW stn at 2000 with 558/00. Off at 2005. (Mason, England)

4090: Hotel wkg Sierra re contact & advises, "I hold that to be your snooper." Then passes course/speed. Latest UN Haitian Ops freq hrd 0220 in USB. (Baker, OH)

4110: Foll vols. wkd KMI (4402 kHz): C6CP, Viking Serenade, (Royal Caribbean Cruise Lines) at 0440; C6TV, M/S Statendam (Holland-America Line) at 0651; C6IP2, Crystal Harmony [Crystal Cruises] at 0906; ELJV7, cruise ship M/S Nordic Empress (Royal Caribbean C/L) at 0046. All in USB. (Baker, OH)

4331: WCC, Chatham, MA in CW at 0622 w/VVV-QSX mkr. (Low, TX)

4370: WLO, Mobile, AL in LSB at 0600 w/tfc list & wx. (Shelley, CA)

4485: YL/Bulgarian Better at 1355 w/555 x3 313 x3 05. Then at 1400 26 05 26 05 and 75024 rptd until off at 1405. (Mason, England)

4505: Civil Air Patrol Net at 1400 in USB. Wigwam 362 was control. Calls hrd included Wigwam 512, Wigwam 368, Starfish 304, Jayhawk 5, and North Central 41. All checked in with no t/c. (Shelley, CA) The Wigwam call are Nebraska located, Starfish in Minnesota, Jayhawk in Kansas. North Central is Region 5 CAP and includes above states plus Iowa, Missouri, N & S Dakota. (Ed.)

4562: YHF2 (Mossad) in USB at 2130. (Boender, Netherlands)

4600.5: OLX, Prague in CW at 0900 w/VVV DE OLX & coded msgs. (Boender, Netherlands)

4610: YL/EE in AM at 0404 w/5F grps, each x2. (Shelley, CA)

4625: In background of 'buzzer' (which is on this freq most of the day) occasionally a CW stn appears. It sends the time (UTC +3 hrs) eg. at 2105 UTC it was sending 0005 in full CW numbers. It was about 20 secs out (of sync). (Mason, England)

4643: YL/GG in USB at 2106 after CW NNN sign on. YL said 'Gruppe 35' and went into 5F grps. (Mason, England)

5182: YL rptng Oscar Alpha from 2200-2205 w/electronic tones foll by 5F German grps, msg for 820 & 122. (Mason, England)

5427: KRH50, US Embassy, London at 1335 w/QRA mkr in CW. (Mason, England)

5649: Speedbird 292, Selcal BDEF, B747 Miami-London Heathrow w/posit report at 0435. Shamrock 132. B747 Boston-Shannon w/position report & FL 350. Singapore 025, Selcal ALMF, B747 JFK-Frankfurt w/position report & FL 370. (Heywood, Alberta, Canada)

5675: Hong Kong Volmet bcst at 1428 in LSB. (Shelley, CA)

5878.5: S4L (NCS) w/many LFL stns in USB net at 1527. (Low, TX) These are poss US Navy tactical call sings. (Ed.)

6200: USS Kearsarge (LHD-3) wkg MNM, CAMSLANT Chesapeake w/pp at 1854. NSTF, USCGC Steadfast (WMEC-623) wkg unk CommSta at 2119 for pp w/Grp Baltimore. Vsl w/ID as "the Diamond" (USS Diamond TRW-1???) wkg MNM at 2148 for rdo ck, then "xmtr #2." All in USB. (Baker, OH)

6501: CAMSPAC San Francisco clg CG Cutter Point Winslow requesting posit report and rdo ck at 0420. (Shelley, CA)

6640: New York ATC wkg Japanese Air Force 1105 at 1525. JAF 1105 gave position report & flight level & told NY he received 4 by 4. NY said he had them come in 5 by 5. (Oldfield, OH)

6677: Sydney Voornet bcst in LSB at 1430 & 1500. Bcst lasts 3 mins. (Shelley, CA)

6758: British AF Edinburgh in CW at 1813 w/CQ DE MKL & msgs. (Boender, Netherlands)

6797: YL/SS in AM at 0507 w/5F grps. (Shelley, CA)



Edmonton Area Control Center, located at the Edmonton International Airport. This center is responsible for ATC in the Province of Alberta, and most of the Northwest Territories. (Photo from Mark Heywood, Alberta, Canada.)

6840: YL/SS in AM at 0230-0240 (daily) w/4F gps. (Low, TX)

7424: Army MARS net in USB at 1815. (Low, TX)

7535: Foll ships conducted transmission tests w/SESEF Norfolk; NDEU, USS Pargo (SSN-650) at 1452; NPTR, USS Port Royal (CG-73) at 1704; NSJB, USS Ponce (LPD-15) at 1726; NAUG, USS Augusta (SSN-710) at 1739; NLYL, USNS Loyal T-AGOS-22) at 1750; unk call, USS Boise (SSN-764) at 1832; NQJ, USS Graple (ARS-53) at 1857. Primary mode is USB. (Baker, OH)

7743: OM/EE at 2100 rptng 785 785 785 1. Then at 2105 506 188 506 188 and into 5F grps. (Mason, England)

8240: PGON, M/V Orange Klipper wkg MNM, CAMSALNT Chesapeake at 1843 re F/V Assadia taking on water. Klipper is relaying VHF comms from the distressed vessel. (Baker, OH)

8297: KFS, Palo Alto (San Francisco), CA at 1455 wkg stns simplex re Malibu, CA fires. (Low, TX)

8891: United 881, Selcal FGCP, B747, Chicago-Tokyo. Korean 025, B747, JFK-Seoul, gives position, flight level 350 & ETA Seoul. Japan Air 5, Selcal

EPMQ, B747, New York-Tokyo w/position & FL 350. (Heywood, Alberta, Canada)

8984: NMN, CAMSLANT Chesapeake wkg CG 2120 w/pp fm Mobile Air re transport of 2 burn victims to Galveston for Shriner's (hospital) at 1945 in USB. (Baker, OH)

9017: Plantation clg Backhoe at 0316, later authenticates into the net. USAF SCACS Net. (Baker, OH)

10711: NPTR, USS Port Royal (CG-73) wkg SESEF Norfolk at 1749 for xmtr tests in USB. New SESF freq. (Baker, OH)

10871: SLHFMs "C, S," here at 1515 and also hrd on 8494 kHz. (Mason, England)

11176: Bayonne GHFS (Global US Transportation Cmd, TRANSCOM/Mil Tfc Management Cmd, MTMC, Bayonne, NJ) wkg RAINI-79 (C-130 which 300 NM NW of Bermuda) for pp. Hrd at 1906 in USB. USMC Camp Lejeune wkg MacDill GHFS for rdo ck at 1920 & 1930. USB mode. (Baker, OH)

11209.3: Raspy dots/dash signal in CW at 1506. (Ed.)

11282: United 807. Selcal FHEA, B747, San Francisco-Seoul, w/posit report & FL 310. Pilot said,



To: Radio AA4JN

This confirms your reception of radio transmissions from the cruise ship

NORWAY - C6CM7

Date: 27 Jun 1993 Time (UTC): 2142 Freq: 12236.0 Mode: USB

Approx. QTH: 24 N 74 W Antenna: WHIP

Voyage from/to: Miami - St. Maarten Xmtr Power: 1500 W

Remarks:

S.S. NORWAY
Radio



Chief Radio off.

Anne Lindjord
(Signature/Title)

Here is a PFC designed by Jim Navy, VA.

"Subsequent reports will be on Satcomm." (Heywood, Alberta, Canada)

12070: Corps of Engineers net w/WUG as NCS at 1601. At 1606 WUG & others QSY'd to CH 13 (16382 kHz). Made refs to CH 10. (Is CH 10 on 12070 kHz??) (Low, TX) References show conflicting info re COE channels but CH 10 may very well be 12070 kHz. (Ed.)

12216: WGY912, FEMA Special Facility Berryville, VA w/WGY905, FEMA Dist. 5, Chicago Hq and WGY908 FEMA Dist. 8 Denver for encrypted national data test. QSY'd from 10493 kHz at 1716. Voice comms in USB. (Baker, OH)

12221: YL/EE w/1-0 count and 581 from 1400-1410. After 10 tones, 'Count 225' and into 3/2 grps. At same time diff 3/2F grps on 7871/10723 kHz. (Mason, England)

12356: KZU, Gulf Fleet Marine, Havey, LA, "Harvey Base" wkg vs Atlantic Seahorse for Ops report at 1900. Wkd vs El Poncho Grande at 1906 for same. All USB. (Baker, OH)

12952.5: VIP, Perth, Australia at 2208 w/VVV mkr in CW. (Low, TX)

13285: Rainbow Radio (L.DOC) wkg Delta 11 w/position info at 1751. Wkd Delta 43 for company msg at 1801. All USB mode. (Baker, OH)

13354: ATC tells N760 that "Century Aviation requests ETA for Honolulu and number of passengers on board." Pilot responds with "3 passengers and ETA 2230." Hrd 2032. (Heywood, Alberta, Canada)

13375: YL/EE passing 5F grps at 1615 in USB. (Shelley, CA)

13555: YL/EE w/1-0 count and '443' from 1200-1210. After 10 tones 'Count 225' and into 3/2F grps. Also on 16086 kHz. (Mason, England)

13600.1: U/i CW stn at 1445 sending 2, 3, & 4 character groups in very long msg. It looks very much like Vietnamese Diplomatic t/c seen frequently & reported by other monitors. (Ed.)

13927: Eagle 01 clg any sta this net at 1648 in USB. AFBIIY responds but Eagle 01 too weak. USAF MARS. (Baker, OH)

14441.5: Foll Navy MARS workings logged

1550-2326; NNN0CNZ, USCGC Tahoma (WMEC-908) & NNN0PRQ w/QSY 14383.5 kHz NNN0CUS, USS Inchon (LPH-12) & NNN0FMN for priority pp, QSY 14391.5 kHz. NNN0EAC in USB w/Afloat & Overseas Ops Net after RTTY run of same; New net, each Fri/Sat at 1800 in RTTY, then USB. NNN0CYJ, USS Stark (FFG-31) & NNN0ERA. QSY 14477. NNN0CVM, USCGC Thetis (WMEC-910) & NNN0NUW, QSY 14470 kHz. NNN0CXN, USS Portland (LSD-37) & NNN0FMN, QSY 14391.5 kHz. NNN0CSB, USS Spartanburg County (LST-1192) answers NNN0ERA's call for afloat t/c. NNN0CUV, USS Comte de Grasse (DD-974) & NNN0EDF, QSY 14470 kHz. NNN0CZY, USS Scott (DDG-995) & NNN0UTO w/QSY to 14477 kHz. NNN0CUO, USS Spruance (DD-963) & NNN0NUW, QSY 14477 kHz. All USB mode. (Baker, OH)

14488.6: Warble jammer in CW at 1303 completely covering freq and it not possible to determine what being jammed. (Ed.)

14655: U/i CW stn at 2237 w/QRA DE X4X. Off abruptly at 2239. (Low, TX)

14749.5: YL/EE in AM at 1439 w/rptd clg of MIW 5622. When announcement stopped hrd what seemed be high speed data transmission. (Ed.)

14825: YL/SS in AM w/5F grps at 1308. Some fading noted. (Ed.)

14826: U/i CW stn at 1304 w/'844' + 5F grps. (Boender, Netherlands)

15048: Banger wkg Wrinkle w/'Immediate' msg, reads items off check-off list at 1929 in USB. ABCCC training comms, w/EC-130's. (Baker, OH)

16337.7: CLP1 (MFA, Havana Cuba) DE CLP8) Cuban Embassy, Conakry, Guinea) GA GA. CW at 1322. Other end not hrd. (Ed.)

17485: YL/EE in AM at 0134 w/4F grps. (Shelley, CA)

22280: UEUG, TH Vera Khoruzhaya clg USU (replaces UBN), Mariupol Radio, in CW at 1310 w/'USU USU DE UEUG.' (Baker, OH)

22548: FUM, Papeete Naval, Tahiti, Society Islands, in CW at 2021 w/VVV mkr. (Low, TX)

29357: Beacon RSIO at 2219. (Low, TX)

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FOCUS ON FREE RADIO BROADCASTING

Radio Free Euphoria was logged by Scott Gentry, Illinois, on 7474 at 0035 to 0105 with Captain Ganja and the Mahārishi doing a broadcast favoring the use of pot. Music included "Hair," "Something in the Air" by Thunderclap Newman, and "We Love You" by the Stones. Included the slogan, "At Radio Free Euphoria we're more than just voices, we're friends with hair." Also included a feature called the "Euphoric Poetry Roundtable" and spoof announcements for "Say Now to Drugs" bumper stickers and others.

Scott says he picked this up thanks to a phone tip from Captain Ganja himself. George Roberts in Pennsylvania heard this, too, at 0047—apparently on the same day, or at least the same broadcast.

Radio Free Wisconsin, heard by Gentry on 7405 USB at 2320 with a woman disc jockey giving info on the Heimlich maneuver. Music included "Money Talks" by AC-DC. They gave PO Box 109, Blue Ridge Summit, PA 17214.

WPIG, heard by Roberts on 7415USB at 2255 with pig noises to sign off around 2310. I believe this station has since been raided and closed by the FCC, George.

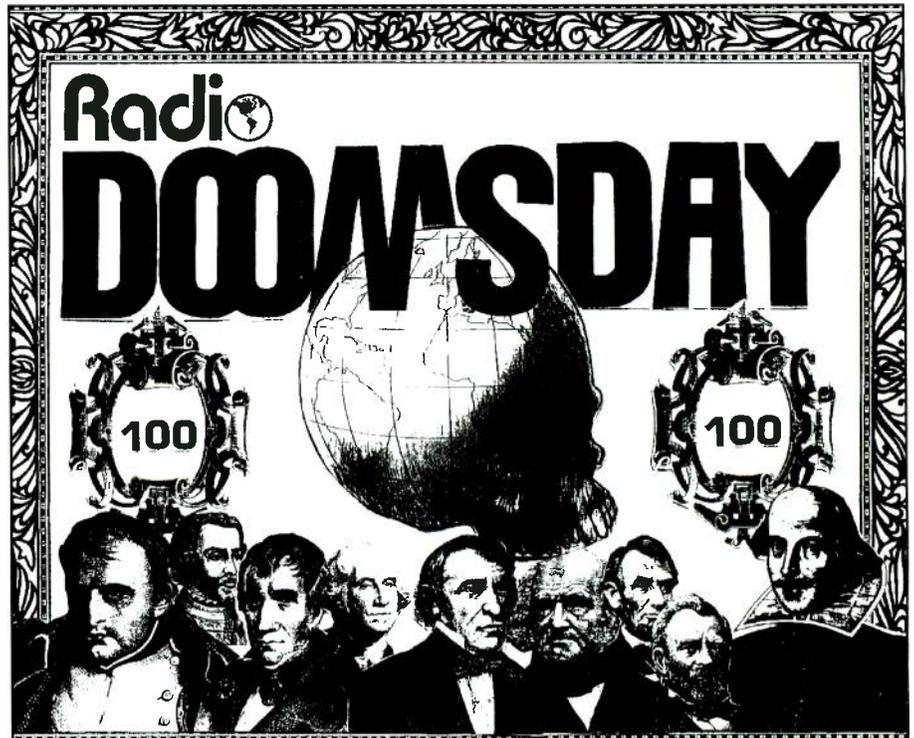
Action Radio was heard on two occasions by Gentry. The first on 7416 at 2250 with A.J. Michaels on the mother ship "off the coast of Nebraska." Music included Steely Dan and Tommy Tutone, a parody commercial for "Conan the Librarian" on TV U-62.

He also mentioned being glad he wasn't being jammed by "Lad."

Scott noted a repeat broadcast the next day, at 0005. They gave Box 493, Boys Town, Nebraska as a report address. (I expect that's phony, right?—Ed.) Dick Pearce in Vermont is a new pirate chaser and bagged his first one in the form of Action Radio, which he heard on 7415 at 2300. Dick notes the announcer (apparently Michaels) mentioned it was his first time back on the air in about a year. (Thanks, Dick. I can't help you with your unidentified noises on 6806-08. Sorry.)

Heavy Dude Radio was heard by Bill Matthieu on 7415, closing at 2300. Bill says this seemed to be a European pirate as it gave a Swedish address, which he didn't catch. (I think you're right, Bill—this was probably relayed by a US pirate transmitter.—Ed.)

WREC was another Gentry log. This was on 7465 at 0030 with host P.J. Sparx doing a special anniversary program featuring music by Cheap Trick, Weird Al Yankovich, and others. They announced both



Here's the 100th QSL issued by Radio Doomsday—after just three months of activity!

the Blue Ridge Summit and Wellsville, NY (PO Box 452) mail drop addresses.

Roberts heard Radio Doomsday on 7425 USB at 2200 with rock, and fake, humorous commercials. The host went by the name "Nemesis" and closed with, "If you enjoyed the broadcast half as much as we have, we've enjoyed it double."

Jack Sheldon, Michigan had Omega Radio on 7444USB from 0130 tune in. Host Dick Tator broadcasting rock music, various audio clips of Gulf War coverage, and two or three anti-Clinton bits, belches, whistles and other sound effects.

Gentry reports WJLR at 2307 to 2357 on 7417LSB with Dave Stone doing a show he said was dedicated to the "RNI" (Radio Newyork International) crew. Music included numbers by the Beatles and Roger Waters. Also "Power to the People" interval signal. (Readers probably know that the "RNI crew" were involved with the MV Fury and the FCC raid the ship suffered some months back.—Ed.)

Fake Radio USA was another Gentry logging, at 2250 to 2321, 2250 to 2321, heard on 7416. Scott says the broadcast featured a lot of "crude" comments about Radio USA, Mr. Blue Sky, Andrew Yoder, John Arthur and George Zeller.

Roberts had Radio Kaos at 2110 on 7425 with heavy echo effects, rock music, Steve Martin bits, occasional use of a computerized voice, "R & R comes out of Kaos." No mail drop address was given, or at least none was heard.

Christian Rock Radio was another Gentry logging, on 7416 at 3229 to 0000. It signed on right after Action Radio (above) and the program was largely an interview with a heavy metal Christian rock band. They gave the Wellsville address for reports.

Matthieu logged CRSM on 7425 at 2210 with host Rob Roy playing Scottish rock numbers and talking about various aspects of Scottish culture, as well as a list of Scottish events scheduled for Montreal. IDs for "World Wide Scottish Radio" and is relayed in Europe by the Belgian International Relay Service. The address is P.O. Box 293, Merlin, Ont. N0P 1W0, Canada.

If you're actively chasing pirate broadcasters I'd sure like to add your logs into this column! Drop me a line and let me know what you are hearing! I also need pirate station photos and copies or samples of pirate QSLs to include in these pages. Let's hear from you soon and often, OK?

In the meantime, happy pirate chasing. See you next month! ■



Books and Videos

The Quad Antenna

Hams love antenna books and this book is no exception. Written by world renowned author Bob Haviland, W4MB, The Quad Antenna is the authoritative technical book on the design, construction, characteristics and applications of Quad Antennas. Discover how to easily build a quad antenna for your station that will help you fill your log-book with rare DX that you have only dreamed about before.

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The Packet Radio Operator's Manual

This book is written by CQ columnist and Amateur Radio Packet authority Buck Rogers, K4ABT. An all new introduction and guide to packet operation, it is the perfect single source, whether you're an advanced user or just starting out. Learn about packet radio without all the technical jargon. Also included are detailed hookups for dozens of radio/packet controller/computer combinations, making this book the definitive resource for the active packet user.

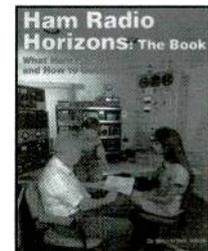
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Ham Radio Horizons: The Book

Written by Peter O'Dell, WB2D, this is a book about ham radio that every beginner can enjoy! If you want to get in on the fun and excitement of Amateur Radio, Ham Radio Horizons is the perfect way to get started. HRH is full of tips from expert hams in: DXing, Contesting, Serving the Public, Ham Radio in Space, Experimenting, Digital Communications — you name it! This exciting book is an excellent gift to a prospective ham or for use in your club's licensing classes and library.

Order No. BHOR..... \$12.95



The Vertical Antenna Handbook

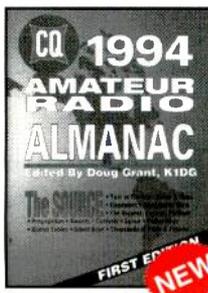
Take advantage of the 20 years of research and practical experience of naval communications engineer Capt. Paul H. Lee, USN(ret), N6PL. Learn the basic theory, design, and practice of the vertical antenna. Discover easy construction projects such as a four-band DX vertical or a broadband array for 80 meters. Ever wonder how to build a functional directive vertical system? Paul Lee can get you started today!

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1994 Amateur Radio Almanac

If you're like most hams, you'll be fascinated by the thousands of facts, tables, graphs, maps, and other information to be uncovered in the CQ 1994 Amateur Radio Almanac. CQ's Almanac puts it all right at your fingertips, providing a resource that you'll refer to over and over again. This is one book you can't be without!

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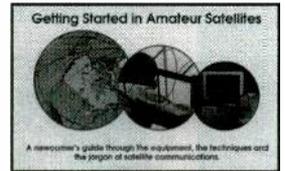
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This introduction to Amateur Radio is an excellent complement to the Ham Radio Horizons book. Enjoy seeing all aspects of ham radio ranging from what it takes (and costs) to get started to how you can get your ham license. Designed for the general public, HRH is ideal for public events, presentations to community groups and as an opening to your club's licensing courses! There's no better way to introduce someone to ham radio. **Order No. VHOR.....\$19.95**



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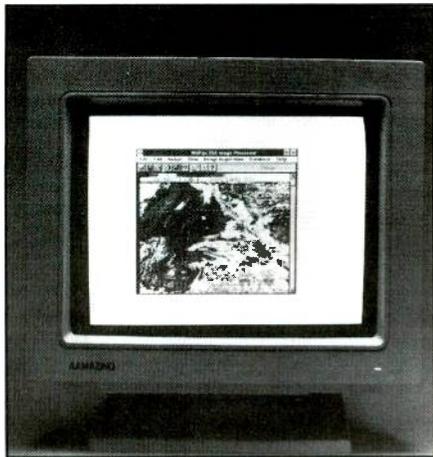
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NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



The AEA WeFax 256

AEA is proud to introduce AEA WeFax 256—a software accessory for users of their DSP-2232/1232 multi-mode controllers. AEA WeFax 256 is a Windows™ program for reception and display of gray scale WeFax images.

AEA WeFax 256 includes the following features:

- Displays in real time, true gray scale images from either the NOAA HF WeFax Service or the NOAA APT Satellite Service.
- Provides two modes of resolution—500 or 250 pixels per line—which insure that the AEA WeFax 256 imaging system will work on your setup. In addition to the real-time display mode, all incoming data will be stored in a buffer, which gives you the ability to increase the resolution after the image is received.
- Incorporates a scrollable receive buffer capable of operating in stop or loop modes.
- Includes a complete image processor that gives the user the ability to edit received images to bring out areas of interest. Enhancements include brightness, contrast, gamma, sharpness, negative, blur, false color, and many more.
- Supports BMP, GIF, PCX, TIF, and JPG image formats.
- Integrates an Auto Clock function to “wake up” your system; captures unattended transmissions.

AEA WeFax 256 requires an AEA DSP-2232 or 1232 multi-mode data controller with a receiver and antenna system for either HF, APT VHF, or microwave operation. It also requires a 386 PC-compatible computer or better, Windows 3.1, 2 MB of RAM, 5 MB of hard drive space, and a VGA 256-color display or better.

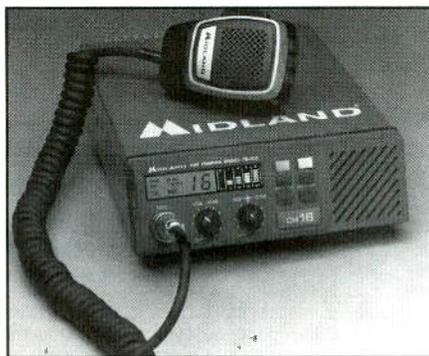
Suggested retail price for AEA WeFax 256 is \$129. AEA WeFax is available from your favorite amateur radio dealer.

For more information, please contact Advanced Electronic Applications, Inc., P.O. Box C2160, Lynwood, WA 98036. Phone (206) 774-5554, or FAX (206) 775-2340.

New Midland Marine Amateur Transceivers Now Available

End users of Professional communications equipment will be interested in an announcement by Midland Communications' high-performance under-dash and portable marine VHF transceivers and two-meter and UHF amateur portable radios now available through the company's worldwide organization of land mobile radio dealers.

The marine line includes two high-performance under-dash units. Model 78-101 is a 25-watt, 120-channel radio offering full international coverage and the user's choice of all U.S. or all Canadian frequencies, plus 10 weather channels. It also offers the company's unique Microtune II channel selection from either the front of the unit or by remote control from the microphone. Model 78-360 is an ultra-compact 25-watt radio which covers all U.S. channels and easily converts for international, European or Canadian operation.



Two hand-held VHF marine radios also are offered. An economical high-performance five-channel model, 78-202, is an extremely rugged design incorporating the new surface mount technology. Power is 1 watt, switchable to 0.1 watt low. The radio covers channels 13, 16, 22, 68, and 72 plus three weather band channels. A deluxe model, 78-205, is a miniature 5-watt 120-channel portable offering full international and U.S. coverage plus 10 weather channels. It is switchable to 1 watt low power and offers instant access to channel 16. The line also includes a unique combination unit, model 78-400, which will function as a loud hailer, intercom or fog horn system. In the hailer configuration, it offers 120 watts of peak power. It can be configured for up to four different horn alarms, and while in the intercom mode, will accommodate up to four remote units.

Users who also hold amateur radio licenses may wish to investigate Midland model 73-005, a miniature 2-meter VHF transceiver (144-148 TX & 130-170 RX) with 2 watts of power output, expandable to 5 watts; or model 73-007, similar to the

2-meter unit (only nine cubic inches in size), but covering the 70 CM band.

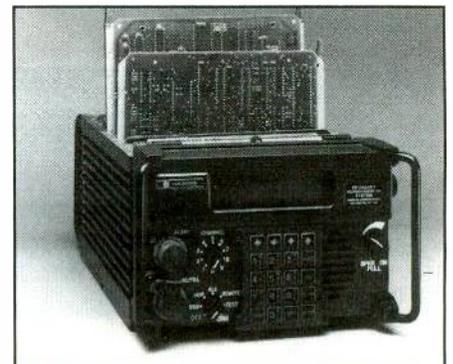
For complete information contact Midland LMR Marketing Department, 1690 North Topping, Kansas City, MO 64120, or call 1-800-MIDLAND, ext. 1690.

Harris Introduces Enhanced Digital Encryption Modules For HF Radios

Now available from Harris RF Communications is a plug-in digital encryption module for the RF-5000 FALCON-Series HF-SSB radio systems.

The RF-5151DE digital encryption option provides an embedded voice and data encryption system, which can be programmed with up to six of 1×10^{52} key codes. The encryption algorithm is driven by a pseudorandom key generator, which has a key stream length requiring millions of years recursion.

The RF-5151DE operates in the frequency hopping or single channel mode to encrypt data, fax, or digitized voice.



The RF-5000 FALCON-Series is an advanced digital HF-SSB radio, which operates in the 1.6 to 30 frequency range. FALCON-Series radios available in AN/ PRC-138 MANPACK configurations.

Harris RF Communications Division, located in Rochester, New York, is a world leader in the design, manufacture, installation, and support of advanced HF, VHF, and UHF radio equipment, COMSEC systems, digital video imaging transmission systems, turnkey systems, and networks.

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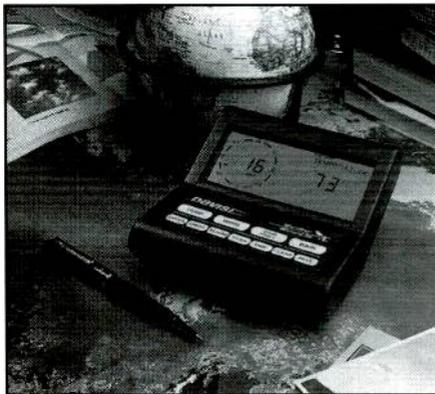
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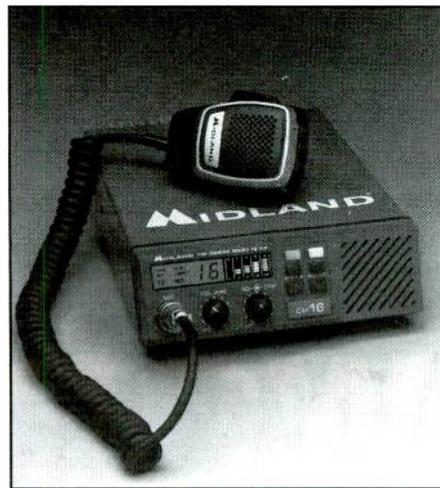
Transportable Long-Range Radio System

Harris RF Communications introduces a transportable 125-watt HF-SSB communications system housed in a suitcase small enough to fit under an airline seat.

The RF-3200ET is a complete HF system, including the transceiver, automatic antenna coupler, AC power supply and a deployable antenna, all shock-mounted in a rugged, compact carrying case. The package weighs 47 pound (21.3 kg). The radio is designed to provide reliable, rapid-de-

ployable, long-range communications for emergency response agencies, disaster damage assessment, surveillance operations and other applications requiring portability. The system can be deployed and placed into operation in under 10 minutes.

The RF-3200ET provides coverage in the 1.6 to 30 MHz bands for transmit, and 0.1 to 30 MHz for receive. The transceiver offers 249 preprogrammed factory-set channels, and 121 user-programmable channels, with nine user-programmable scan groups. All programming is executed with convenient front-panel controls, with security access codes to prevent unauthorized frequency changes. Non-volatile memory protects all programmed settings.



The fully automatic antenna coupler packaged with the RF-3200ET tunes in only 25 microseconds from memory, and also retunes automatically on VSWR degradation. The antenna coupler may be remotely located to improve RF performance and protect the operator from high voltages. The coupler is connected to the transceiver by a single coaxial cable.

When used with the optional RF-3272E internal Automatic Link Establishment (ALE) controller, the radio is as easy to operate as a standard telephone. The ALE-equipped radio automatically tunes to the frequency offering the best performance. To place a call, the operator selects the address and presses a single button. The Harris ALE system is compliant with FED-STD-1045 and interoperable with MIL-STD-188-141A adaptive systems, as well as Harris AUTOLINK-II ALE controllers.

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For more information, contact Harris Corporation, RF Communications Group, 1680 University avenue, Rochester, NY 14610. Phone (716) 244-5830.

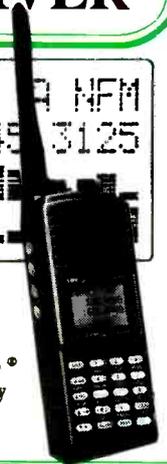


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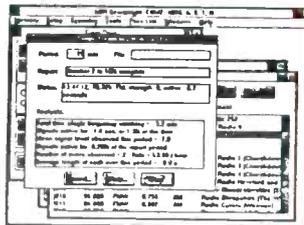
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FEATURES: •Microsoft Windows Program -foreground and background •On-line help -Windows hypertext provides info you need, also dialogues have "help" function •Fully supported Windows Sound Recording -Correctly configured compatible sound card allows recording from your receiver while scanning or analyzing frequencies. A log contains all the recordings for replay. •Unlimited number of disk based memory banks -Each memory banks contains 400 memory channels and can be uploaded or downloaded to and from the receiver. Up to 10 banks may be viewed on-screen at once and an unlimited number may be stored to disk (restricted by your space). •Copy date to & from clipboard - Bulk editing and export data base (not supplied) or other Windows applications. •Memory scan and Programmable Band Scan -Provides a histogram display showing the activity of each channel. Full control is provided including a cursor indicator and sound recording (optional).

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*Sensitivity improves with optional 500Hz CW Filter.
Selectivity: -6dB: CW, SSB, FAX @ 2.4kHz / AM @6kHz / AMN @2.4kHz / CW @500Hz (opt.)
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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: Coax 50Ω unbal., 450Ω bal., Hi-Z for whip
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Power: 12VDC -800mA(max.); 8AA NiCad or Alk (not incl.)
Size: 10"W x 3.5"H x 9.5"D; 4.8 lbs.



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Frequency: 100kHz-2036MHz
Mode: USB, LSB, CW, AM, FMN, FMW
Circuitry: Triple (USB/LSB/CW/AM/FMN) and Quadruple (FMW) conversion superheterodyne **Memories:** 400 (4 banks/100 channels)
Scan Rate: 50 ch/sec. **Search Rate:** 50 steps/sec
Sensitivity(µV): 2.5-1800MHz CW, SSB .25/AM1.0/FMN .35/FMW 3.0
Selectivity: SSB,CW 2.4kHz/ AM,FMN 12kHz
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Power: 13.8VDC, <.5A max audio, AC adapt. incl.
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AR1000XL One of the most popular scanners on the market, allows the user to tune into all the action with continual coverage of .5-1300MHz; no gaps. This is one of the most powerful scanner/receivers available!

Frequency: .5-1300MHz
Mode: AM, FMN, FMW
Memories: 1000; 10 independent banks
Tuning Steps: 5kHz-995kHz
Attenuator: 10dB (helps prevent overload)
Controls: Key pad and rotary tuning
Sensitivity: FMN <.5µV / FMW <1.0µV / AM <1µV
Power: 12VDC, AC adapt. incl., 4 NiCad incl.
Size: 6.7"W x 1.4"H x 2.6"D; 10 oz.

- Features include:**
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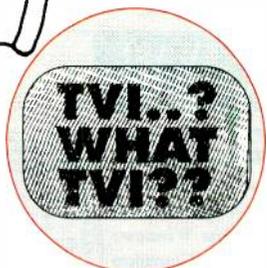
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Item # 13



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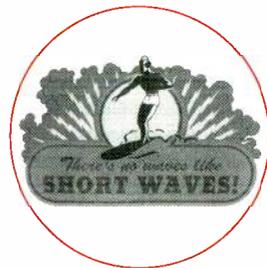
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COMMUNICATIONS FOR SURVIVAL

Highway Response With Boat GPS

Now that the global positioning system is fully operational for 24-hour-a-day satellite navigation, city and state municipalities are adding GPS gear to their budget. A central dispatcher now watches an area map of all their units in the field, and has a bird's eye view on exactly where everyone is, and where they're going.

Marine rescue agencies have added GPS boat receivers with built-in marine charts for speedy and efficient navigation to the distress scene. Detailed electronic chart cartridges containing up to 10 megabytes of marine cartographic information plug into the boat GPS receiver. This allows harbor patrols to navigate within the harbor and out to sea on an electronic chart that has the accuracy of conventional paper charts. The 10 megabytes of cartographic imagery stored on the waterproof cartridge

is plenty for most local rescue agencies to cover their jurisdiction. The yachtsman wanting an entire seaboard from one end of the country to another would step into the mega-bucks CD ROM system that gives you the coast line exactly as if you were looking at paper charts.

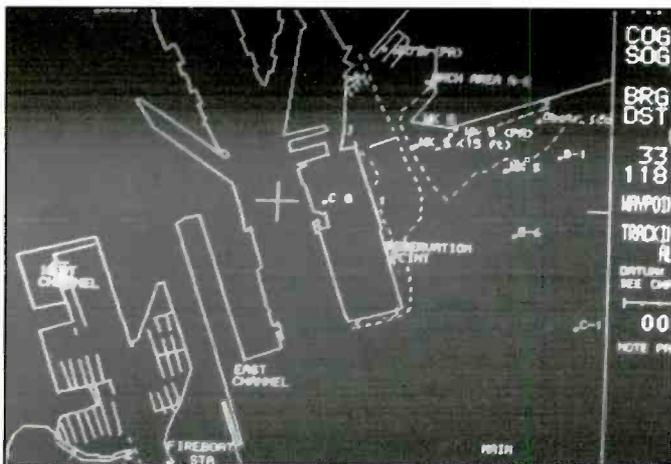
When marine GPS electronic chart displays (which sell for under \$1,000) are not running on external local-area marine chart cartridges, the set defaults to a course outline of the United States and major harbors. Most "canned cartography" of the U.S. won't let you zoom in closer than 50 miles, and all you see is the coastal outline.

One manufacturer, Lowrance Electronics, 12000 E. Skelly Drive, Tulsa, Oklahoma 74128, did something unique with major benefits for coastal and inland rescue squads throughout the country. Low-

rance gives you all of the United States with major highways, state boundaries, and local city names included within the "canned cartography," ideally suited for tracking your position as you drive down the highway to the distant response scene.

"We had a river rescue in progress, and the Lowrance GlobalMap 1000 GPS receiver and electronic chart display clearly showed the river as it crossed under the highway several miles to the east," comments Bill Alber, a reserve sheriff out of Central California. "I could see my position as a blinking X on the screen, and I could easily see how quickly I could take the highway to the river overcrossing. This gave me a definite edge in effecting a successful river rescue," adds Alber.

Only the GlobalMap 1000 from Lowrance includes the highway road maps as



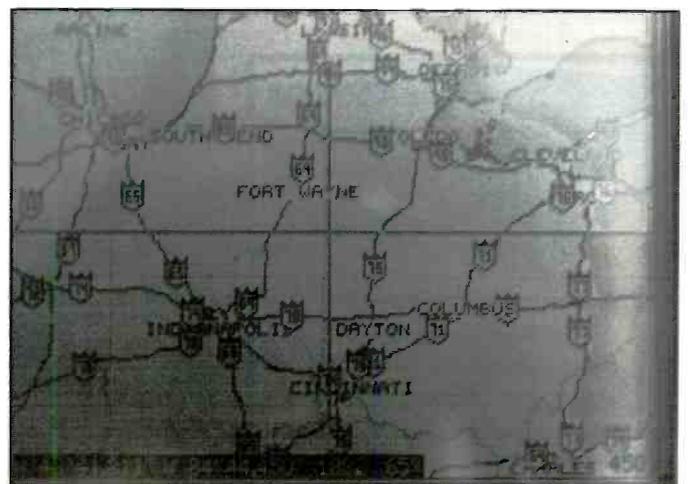
Harbor Patrol tracks a patrol boat in the center of the boat channel.



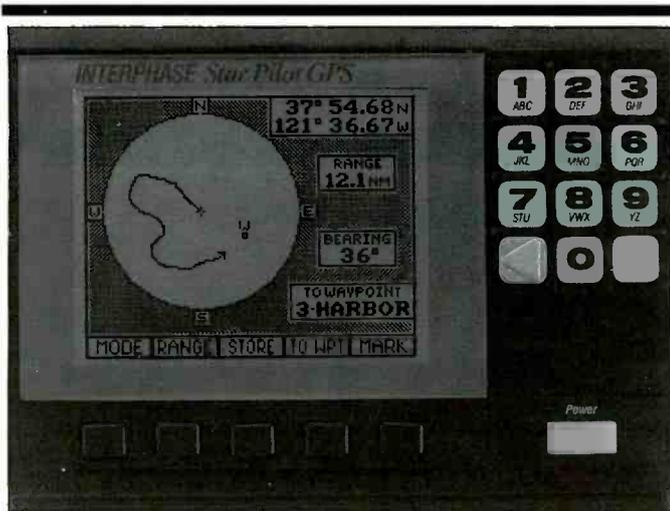
Florida rescue boat uses GPS and a chart plotter to cut down on response time to the scene.



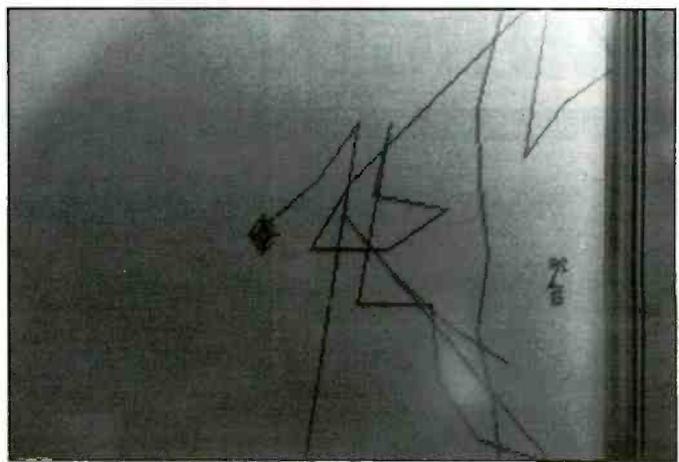
The LCD screen is excellent for daylight viewing.



Freeways are part of the built-in maps.



Search pattern for a boat sinking call.



While driving with the GPS and "Trail Plot" turned on, zig-zags are seen on the parking lot on screen.

part of the "canned cartography." That does not require the external \$150 marine chart cartridge. Part of the package is the Rockwell five-channel parallel GPS receiver. It is built into the white antenna sensor, and picks up the GPS signals.

During a recent marine electronic lecture tour throughout the country for West Marine (1-800-538-0775, seller for this GPS equipment), I found that I could put the receiver sensor antenna unit in the back inside deck of most rental cars, and it picked

up the satellites perfectly. Only once in Miami between two extremely tall skyscrapers did the signal blank out. I had no problem receiving constant navigation information even in deep valleys with tall pine trees all around me.

On the eight-mile scale, you can easily spot yourself traveling down the highway. You leave an electronic trail behind you to see where you have come from. When you turn off of a big highway, you can zoom in as close as .01 miles, and you can actually watch yourself driving around in circles on the screen. Although local surface streets are not contained within the database, your position trail continues to keep track of where you've been. And when you pull back out to eight miles, it displays where you are going in relationship to local cities and area highways. Just a note of reference—rivers show up as wandering lines in the background of the screen.

And how accurate is GPS? The receiver by itself gives you +/- 150 feet more than

half the time of your actual geodetic position. If you are conducting a search, you can create a trail of non-duplicate coverage that is within feet of your recent track. If you tie into a local U.S. Coast Guard DBR (differential beacon reception) system, you can get down to three to five foot accuracy which is plenty close enough to return to that same parking space!

While there are many types of systems out there that may give you street maps and a local database, only this inexpensive boat GPS system gives you all United States highways. The chart display runs around \$700, and the five-channel Rockwell receiver from Lowrance runs about \$600 through the West Marine discount supplier. If you need individual area marine charts, add another couple hundred bucks for the reader and chart cartridge. But get started with just the road maps and the precision of driving with GPS—it makes getting around the country or your jurisdiction fast and accurate. ■

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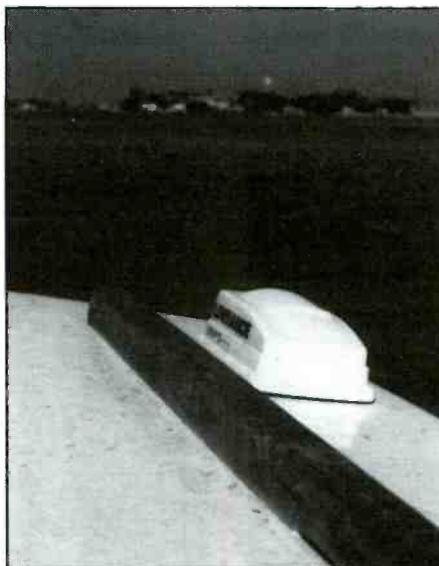


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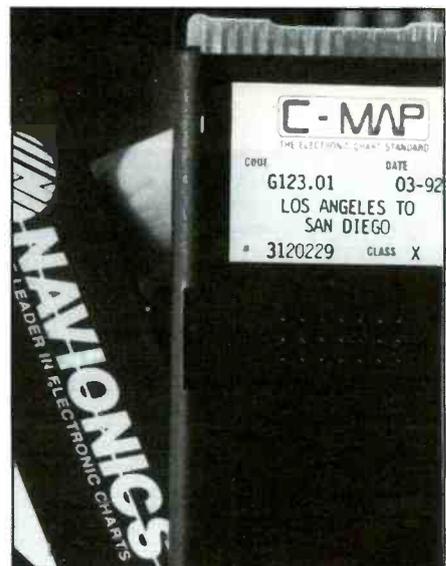
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FCC ACTIONS AFFECTING COMMUNICATIONS

FCC Proposes Further Revisions of the Rules Governing Public Mobile Services

The FCC proposed further revisions to Part 22 of its rules governing the Public Mobile Services. The Commission said the revisions put forth are intended to eliminate unnecessary information collection requirements, streamline licensing procedures, reduce the processing and review burden on the Commission's staff, ensure that licensees in the public mobile services are fully qualified to provide service to the public, and expedite the licensing of applicants for 931 MHz paging frequencies.

The FCC previously issued comprehensive changes in a *Notice of Proposed Rule-making*. In this docket, changes are found in both the licensing procedures for mobile services subject to Part 22, and the regulations governing the provision of those services. The Commission stated that the revisions are intended to further streamline and improve processing and operational rules applicable to Public Mobile Services.

Specifically, the Commission proposed further revisions to Part 22 of the rules to: 1) require cellular licensees filing FCC Form 489's to state that any extensions into adjacent markets do not cover any unserved area; 2) reduce the size of maps submitted with applications from 1:250,000 to 1:500,000; 3) eliminate licensing for international cell sites; 4) revise the requirements governing the updating of information for existing cellular systems; and 5) modify the procedures for processing 931 MHz paging applications.

The Commission said the proposed revisions to FCC Form 489 would enhance the ability of FCC staff to ensure that cellular licensee's extensions of its Service Area Boundary into an adjacent cellular market does not intrude into unserved areas. Reducing the map size required for cellular applicants would make maps more manageable for applicants, members of the public, and FCC staff, as well as save filing space.

Similarly, eliminating the listing on license authorizations of internal cell sites and narrowing the information licensees are required to submit to update the Commission's system files would reduce administration costs and improve the public's access to relevant information.

The Commission also proposed to amend the rules governing 931 MHz paging applications requiring applicants to specify the frequency for which they seek authorization. The frequency requested must be available at the time the application is filed. An accepted application would be placed on public notice, commencing a

30-day cut-off filing window for the requested frequency. Timely filed competing applications would be treated under the proposed rules as mutually exclusive. In addition, the Commission proposed that applicants for 931 MHz paging frequencies with applications pending when final rules become effective, be given 60 days from the effective date of a final order in this proceeding to amend their applications to specify frequencies for which they seek authorization. The pending applications will then be placed on public notice to permit the filing of mutually exclusive applications. Mutually exclusive amended applications and new-filed competing applications will be considered as one processing group.

The Commission proposed to subject mutually exclusive applications for 931 MHz paging frequencies filed after July 26, 1993 to the competitive bidding process. The Commission further proposed to utilize the competitive bidding process for initial applications filed before July 26, 1993 that are found to be mutually exclusive after amendment. Comments are requested, however, on whether the Commission should use lotteries for the latter group of applications. The Commission proposed to define an initial application as one that requests the location of a new facility more than two kilometers (1.6 miles) from any existing facility operating on the same frequency or an application that requests a new frequency.

Amend Table of Assignments for 450 MHz Air-Ground Stations

The FCC amended the table of assignments for the 450 MHz air-ground stations in the Public Mobile Service. It eliminated interference problems with Canada and granted Mobile Telecommunications Technologies Corp.'s (Mtel) request to move a base station in Arizona. The Commission denied the other pending requests to allocate or reallocate frequencies for air-ground service in these dockets.

Air-ground radiotelephone service in the 450 MHz band is a public radio service between base stations and airborne mobile stations. In creating the air-ground service, the Commission adopted the goal of encouraging the provision of a nationwide air-ground service utilizing the minimum amount of spectrum necessary. The Commission recognized that its allocation of 12 air-ground channels would permit nationwide service if the channels were used in sufficiently separate geographic areas.

The Canadian Government notified the FCC that it was receiving interference to its Toronto facility from the Commission's

allocation of channel 12 in Pittsburgh, PA. The Canadian Government asked the Commission to consider moving channel 10 from Washington D.C., to Pittsburgh. To avoid this interference problem, the Commission has moved channel 10 from Washington to Pittsburgh, and deleted channel 12 from the Pittsburgh area.

In addition, Canada also stated that it anticipated interference from channel 9 in Seattle, should that channel be activated. To avoid potential interference, the Commission has deleted channel 9 from Seattle.

Mtel proposed moving its facility from the Grand Canyon Airport to Williams, AZ, because of the inefficiency of operation at the Grand Canyon Airport. An engineering review of Mtel's proposal reveals that no co-channel interference would result from the move to Williams, AZ.

The Commission declined to move channel 9 from Newark, NJ, or channel 2 from Boston to Laurel Run, PA. It found that the suggested reallocations would not be in the public interest.

Additionally, the Commission reaffirmed the need for substantial co-channel separation when it declined to allocate channel 3 in Schaller, IA.

Cherry Communications to Make \$500,000 Payment; FCC Ends Investigation Into Slamming Practices

The FCC and Cherry Communications, Inc., entered into a Consent Decree which provides that Cherry will make a voluntary, non-tax deductible contribution of \$500,000 to the U.S. Treasury.

The Commission has agreed to terminate its investigation into Cherry's marketing practices which was begun after numerous informal complaints had been received from telephone customers alleging that Cherry had changed their long distance carriers without authorization.

The complaints claimed that Cherry had named itself after their primary interchange carrier (PIC) although they had not agreed to the change. This practice, commonly known as "slamming," violates Commission rules and policies. Although not admitting liability, Cherry has agreed to make the \$500,000 contribution, and withdraw a pending application for authority to operate as an international resale carrier. Cherry has also agreed to restrict its use of telemarketing and take certain other steps designed to minimize the possibility of "slamming." For example, Cherry has agreed to effect no PIC change orders until it has first obtained a Letter of Agency (LOA) from the customer. In addition, Cherry must per-

form a second verification. All LOAs will be individually verified by an agent of Cherry who will obtain the customer's oral authorization. Cherry will also send each such customer a letter by first-class mail confirming the change and providing information on general terms and conditions. It appears that Cherry is no longer engaged in the practices that gave rise to the investigation, and the Commission has not received complaints alleging further or continuing misconduct.

Although the Consent Decree does not resolve the pending informal complaints,

Cherry has stated that its policy has been to reimburse each customer for unauthorized PIC change charges that have been incurred. Further, Cherry has agreed to reimburse affected customers for any additional charges that exceeded those that would have been billed by their original long distance carriers.

Refarming of Land Mobile Bands Below 512 MHz

On November 6, 1992, the Commis-

sion released a *Notice of Proposed Rule Making* in PR Docket No. 92-235 (*Notice*) proposing major policy changes and various other technical and operational rule changes for the private land and mobile bands below 512 MHz. The *Notice* also proposed a new Part 88 of the Commission's Rules to replace and simplify Part 90. On March 1 and May 6, 1993, the Private Radio Bureau sponsored public panel discussions between the Bureau and industry to exchange views on all issues involved in this *Notice*. The comment period for the *Notice* closed on July 30, 1993. Comments federally favor improving operating efficiency in those bands, but differ on how to best achieve this goal.

The FCC said, "The Private Radio Bureau recognized the need to proceed as expeditiously as possible so that the millions of licensees of private land mobile radio systems can make equipment decisions based on full and accurate information. For a number of reasons, particularly the complexity of the issues involved in this huge proceeding, we have been unable to act as quickly as we had hoped. Although this project is still very much a high priority and is expected to be completed by the end of this summer, we are concerned that the decisions we make be ones that appropriately satisfy our public interest obligations.

"As the final rules in this proceeding have been delayed, however, we are becoming increasingly concerned that private land mobile licensees are being put in a very difficult position with respect to long-range radio system planning decisions. For example, we are aware that many licensees are being strongly encouraged by equipment dealers and others to buy new radio equipment now because of an assumption that they will have to vacate their current channel assignments, or replace their existing equipment by 1996. This is not the case. No licensees will be forced off current channel assignments in 1996 as a result of the refarming issue. In fact, no decisions have yet been finalized on how to proceed on refarming and adequate equipment amortization periods are contemplated.

"The *Notice* proposed that any new equipment purchased by private land mobile licensees before the effective date of any new rules would be able to be used for many years. While licensees are free to make decisions to move to other available frequencies or frequency bands, the *Notice* did not propose to force any licensee to vacate a current channel assignment or move to an alternative frequency band as part of the refarming proceeding."

Any questions on refarming may be addressed to Dr. Doron Fertig, Policy and Planning Branch, Private Radio Bureau, at (202) 632-6497, or Eugene Thomson, Rules Branch, Private Radio Bureau, at (202) 634-2443. ■



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CIRCLE 81 ON READER SERVICE CARD

Beaming In (from page 81)

of electronics hobbyists that did serve a useful purpose, but no longer exists.

Fact is, there has been a noticeable anti-technology backlash afoot within the general public. There are people who say they have had it up to here with things like crashing computers, balky telephone answering machines, FAX machines that cut off in mid-page, and ATM machines that seem to have been programmed by chimpanzees.

According to stories in two national newspapers, a fellow from Wainscott, New York, who claims to have had his fill of technology, has created *The Lead Pencil Club*, (a division of The Contraptionless Corporation of America). He described the organization as "a pothole on the Information Highway."

The group's founder says he feels the world is barreling headfirst into a spiritual void caused by technology. He sees society as being seduced by an overkill of things like FAX'es, video games, voice mail, e-mail, TV sets with hundreds of channels, CD and DAT players, ham and CB radios, packet radio networks, computer BBS's and networks, and scanners. He fears the day when people he terms as "technofreaks" won't want to emerge from the cocoons of their lonely rooms. They'll never depart for work, or to shop, visit friends, write checks, be entertained, or exercise.

The founder was quoted as saying, "We're in an electronic panic. Everything has to be done right now." He says friends who work for New York publishers have told him that no one will pay attention to anything these days unless it is received by FAX.

Ever since his organization began getting national publicity, he claims to have been receiving more than 100 letters each week from kindred souls asking how to become members. He tells them there aren't any dues, but he does offer a T-shirt. The shirt shows a sharpened pencil and the message, "What's the Hurry?"

For years, I've been embarrassed because I always thought I was a couch potato. When I read about this organization, I suddenly realized I'm a technofreak. I'm SUPPOSED to be a nerd. The typical nerd who never remembers that the reason my headphones always stop working is because I keep forgetting to connect them to the receiver. Yet, I believe this fellow is exaggerating just to give technofreaks a bad rap. For instance, once a month I like to come out of my room whether I need it or not.

Hope I can still remember where my window is because today I want to check to see if the acid rain has stopped falling. If so, I'm definitely putting on sunblocker lotion and insect repellent, my wide-brim hat, uV sunglasses, air pollution mask, and *Technofreak* T-shirt. Then, as soon as I can find my police whistle, I'm heading out-

side to exercise. This time, I'm determined to force that rocking chair to move. In 15 minutes I need to get back inside to catch a shortwave sked.

•••

I'm not much of a mathematician, and constantly misplace the decimal point. I don't feel so bad because now it looks as though everybody has decided the poor old decimal point should be ditched entirely. I used to describe frequencies as "155-point-79," but for the past year or so other scanner hobbyists have given me "that look" when I say things like that. It happens to be the same expression I gave people in the 1950's when they called vacuum tubes "bulbs," and speakers "horns."

Seems as though what used to pass itself off as a fairly respectable decimal point in frequencies, is now referred to in computer network terminology. Nobody knows why, so don't ask. Now it's politically correct to say, "155-dot-79."

I remember when a "dot" was that little doohicky you had to remember to put over a lower case letter "i." Now that the dot has gotten status, the FCC is stuck with a surplus of hundreds of discarded radio frequency decimal points. Your tax dollars purchased those decimal points at exactly \$123.27 each. Nobody bothered to think of that, did they?

Maybe they can donate them to the Library of Congress for use in the Dewey Decimal System.

•••

Ray Briem, N6FFT, has a great all-night talk show over KABC/790 in Los Angeles. Starts at midnight (Pacific Time) and goes to 5 a.m. At least once every year, Ray devotes a program to all aspects of the communications hobby, from hamming to SWL'ing, and scanners. Towards the end, Ray lines up several people involved in various aspects of the hobby to chat and then field phone calls from the listeners. The result is always interesting and lots of fun. This year, Ray's special midnight communications hobby program is on Saturday, August 13 (that is, it starts at midnight Pacific Time on Friday, the 12th). Gordon West will be on tap, and my guess is that Stewart Mackenzie will also be there. Other guests will be there, too. Ray was kind enough to invite me to drop by and say hello to his listeners, so I'll be there at 4:30 a.m., Pacific Time. The local southern California area call-in number is 1-800-222-5222. Wish they'd put Ray's program back on the national network where it belongs.

SWL's in southern California are invited to attend the excellent Radiocom '94 show, sponsored by SCADS (Southern California DX Society). This year the event takes place from August 31 through September 3, at the Holiday Inn, Irvine, California. For more information, contact Stewart Mackenzie, 16182 Ballard Lane, Huntington Beach, CA 92649. Tell Stew we sent you!

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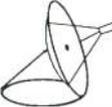
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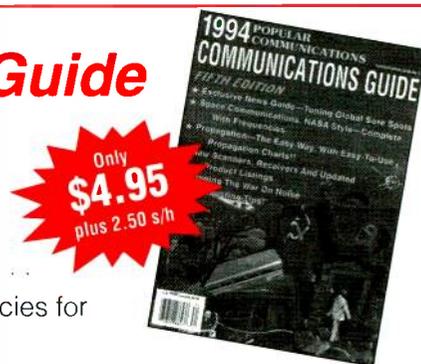
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UNIDEN BEARCAT BC-760 XLT



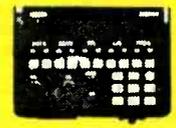
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BEARCAT 200XLT full 800 MHz coverage included, max 800 system antenna, \$160. ICFSWIS Sony antenna module controller and case, \$170. Both work error free. Fred Yoder, W-1290 Granton Road, Granton, WI 54436.

FOR SALE: BEARCAT 800 XLT. Nothing cut out. New in box. Have several. Very hard to find. When they're gone, they're gone. No more made. Each \$325, plus shipping. Call (708) 468-8007.

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ICOM™ IC-R7100

Sweeping 1800 Channels/Minute

DELTA COMM™ I-7100 communication manager and your MS-DOS computer gives you a custom interface integrated with optimized software that will not just control but will maximize the potential of your R7100. Here are a few (there are many more) examples of the advanced features DELTA COMM™ I-7100 has to offer.

- DELTACOMM™ I-7100 CYBERSCAN feature for monitoring systems employing cluster or frequency hopping techniques.
- Individually programmable database volume levels (by channel) while scanning.
- Spectrum log function will sweep a frequency spectrum, generate a histogram and log frequency/activity to screen and/or disk in real time.
- Dual squelch detect electronics integrated with DELTACOMM™ I-7100 software guarantees optimum speed and performance during a frequency search or database scan.
- Programmable signal strength threshold limits with full 8-bit accuracy allow selective monitoring and logging. Only stations having signal strength less than or greater than or within upper/lower user defined signal strength window limits will be monitored and/or logged.
- Continuously updating activity information window displays the last 19 active channels.
- Channel activity status is displayed in real time with activity log function. To determine system loading when first 5 channels are simultaneously busy, "All Trunks Busy" message is logged to disk.
- Receiver characterization with DELTACOMM™ I-7100 birdie log function automatically logs any receiver birdies prior to a frequency search operation. Birdie channels are then locked out during a frequency search operation, thus eliminating false channel logging.
- Custom interface allows selective program control of relay contact. Possible uses include activating an operator alert, switching antennas via coax relay or turning on a tape recorder when user defined frequencies are found to be active.

DELTA COMM™ I-7100 communication manager comes complete with Delta Research custom (CI-V) communication interface, UL listed power supply, manual and receiver interface cable for \$349.00 + \$8.00 (U.S.) or \$25.00 (foreign) S&H. Contact us for additional information on DELTACOMM™ communication managers for ICOM™ R7000, R71A, R72 and IC735. Performance is proportional to video card, type of computer and receiver squelch detection method.



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Wt. 14 oz.

Fax fact document # 150 **\$299.00**

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AM Broadcast to Microwave
1000 Channels

500KHz to 1300MHz coverage in a programmable hand held. Ten scan banks, ten search banks. Lockout on search and scan. AM plus narrow and broadcast FM. Priority, hold, delay and selectable search increment of 5 to 995 KHz. Permanent memory. 4 AA ni-cads and wall plus cig charger included along with belt clip, case, ant. & earphone.

Size: 6 7/8 x 1 3/4 x 2 1/2.
Wt. 12 oz.

Fax fact document # 205 **\$389.00**

TR 2500

2016 Channels

1 to 1300MHz

Patented Computer Control

62 Scan Banks, 16 Search Banks, 35 Channels per second. Patented Computer control for logging and spectrum display. AM, NFM, WFM, & BFO for CW/SSB. Priority bank, delay/hold and selectable search increments. Permanent memory. DC or AC with adaptors. Mtng Brkt & Antenna included.

Size: 2 1/4H x 5 5/8W x 6 1/2D.
Wt. 1lb.

Fax fact #305 **\$449.00**

TR 1500

Full Coverage with SSB and 1000 Channels.

500KHz to 1300MHz. Ten scan banks, ten search banks. Search lock and store. BFO. 2 Antennas. AM/NFM/WFM. Selectable increments. Tons of features, small size: 5 7/8 x 1 1/2 x 2.
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Bearcat 2500XLTA \$349.00
Bearcat 8500XLTC \$379.00
Bearcat 890XLTB \$259.00

Mobile Scanners

Bearcat 760XLTM \$229.95

100 Channel 800 MHz

Five banks of 20 channels each. Covers 29-54, 118-174, 406-512 and 806-954MHz (with cell lock). Features scan, search, delay, priority, CTCSS option, lockout, service search, & keylock. Includes AC/DC cords, mounting bracket, BNC antenna. Size: 4 3/8 x 6 15/16 x 1 5/8. Weight: 4.5lbs. Fax fact document #550

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Fax fact on above: #560

(color slide)

Trident TR-2 \$49.95

Scan/CB/Highway Patrol/ plus extra cost WX, X,K,Ka,Wide & Laser

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BC350AS \$129.00
BCT2 \$149.00
BC700AS \$169.00

Fax fact on all above: #580

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Bearcat 200XLTN \$209.95

200 Channels 800 MHz

Ten scan banks plus search. Covers 29-54, 118-174, 406-512 and 806 956MHz (with cell lock). Features scan, search, delay, 10 priorities, mem backup, lockout, WX search, & keylock. Includes NiCad & Chrg. Size: 1 3/8 x 2 11/16 x 7 1/2. Wt. 32 oz. Fax Facts # 450

Other hand held scanners

Bearcat 70XLTP 20Ch H/L/U \$139.95

Bearcat 55XLTR 10 Ch H/L/U \$99.95

Fax facts on all above: #475

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Bearcat 147XLJ 16 Ch H/L/U \$89.95

Bearcat 172XM 20Ch H/L/U/Air \$124.95

Bearcat 210 16Ch H/L/U/Air \$129.95

Fax facts on all above: #675

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16 Band digital receiver with programmable cassette recorder, BFO for SSB, AM/FM Stereo, 45 preset memories LCD display with dual time. Signal & Btt. strength indicator. Sleep timer & tone control.

Fast Fax #505

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Same as 818CS but w/o cassette.

Fax Fact #506

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Fax fact #508

(photo)

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10 band analog tuning with digital display which shows time and day for 260 cities throughout the world.

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SG-789 \$54.95

10 band analog tuning super compact and very economical.

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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



BC 200XLTM

SCANNERS



BC 760XLTM



TR 2

SHORTWAVE RECEIVERS



ATS 818CS

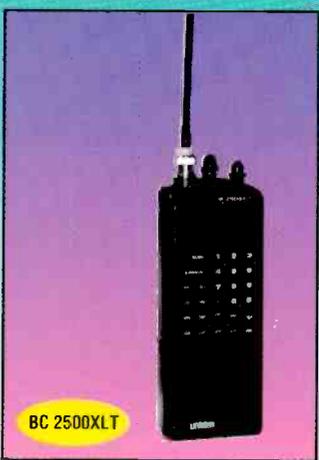


ATS 606

NEW!



BC 8500XLT



BC 2500XLT

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IC-820H FEATURES:

- Built-in Auto Satellite Functions
- All Modes in a Compact Case (9.5" W x 2.7" H x 10.0" D)
- "Plug and Play" 9600 bps Operations
- Built-in High Stability Crystal (± 3 ppm)
- Independent Controls with Sub Tuning
- New DDS for 1 Hz Resolution
- IF Shift (electronically shifts for effective interference reduction)
- Satellite Memory and Tracking Function (rev./normal tracking on main/subband)
- Doppler Compensation Function
- 10 designated Satellite Memories
- Data Jack for Packet Ops. (9600 bps)
- New Modulation Limiter Circuit
- 2 VFO's each for VHF and UHF Bands
- 50 Memory Channels
- Stereo Headphone Jacks
- 2 Antenna Connectors
- Noise Blanker
- RIT Function
- Memory Allocation Function
- Attenuator
- Programmed/Memory/Mode Select Scan
- CW Semi-Break In and Side Tone
- AF Speech Compressor (audio)
- Auto Repeater and One-Touch Functions
- Separate Main and CW Filters
- CW Narrow Filter (optional)
- Tone Scan (optional)
- 45 W (FM, CW), 35/6 W (SSB) VHF
- 40 W (FM, CW), 30/6 W (SSB) UHF

IC-820H 2 M/440 MHZ Dual Band All Mode Transceiver

The IC-820H isn't your typical base station transceiver. This all mode dual bander has compact and lightweight dimensions offering operating versatility other base stations just can't match. Mobile and field operations are ideal with this rig. But don't let its size fool you. This is a high performance transceiver with state-of-the-art construction, circuit design and cutting edge features.

ICOM's **Newly Designed I-loop DDS** (digital direct synthesizer) is employed in the PLL circuit of the IC-820H. Previous PLL circuits for 10 Hz resolution transceivers contained 2-loop circuits. The new I-loop has a single loop and **Generates a Signal with Superior 1 Hz Resolution**. ICOM's DDS PLL also contains a normal PLL as the main-loop and a DDS as the sub-loop.

Satellite operation with the IC-820H's **Built-In Satellite Functions** has never been this easy. These include **Normal and Reverse Tracking** for different modes of satellite communications; **Independent Uplink/Downlink Control** for Doppler shift compensation; **Separate Satellite VFO** and **10 Dedicated**

Satellite Memories provide quick switching from normal to satellite operation as well as easy recall of satellite and downlink frequencies.

With **Independent Controls and Indications for Both Bands**, this dual bander is as easy to operate as most single band transceivers – and exchanging the main and sub bands is just a switch away. In addition, while simultaneously receiving signals on each band, **Separate S-Meters** indicate their respective signal strengths.

The **Sub Tuning Function** can be assigned to the **RIT** or **SHIFT** control and allows you to tune automatically at variable tuning speeds. This is especially useful when searching for signals over a wide frequency range – eliminating the need for excessive rotations of the main dial.

The IC-820H's **Compact Size** enables easy installation in a shack as well as a vehicle. Overall dimensions may be small, but important points such as LCD size and space between switches are more than adequate.

An important consideration in all mode transceivers is the interference

reduction circuit. The IC-820H's **IF Shift Circuit** shifts the center frequency of the receiver passband electronically to evade interfering signals.

The IC-820H's **DATA Terminal** (in ACC socket) is connected to its modulator circuit directly. This **Data Jack supports Packet Operation** at up to **9600 bps**. A newly designed **Modulation Limiter Circuit** is employed in the modulator circuit to prevent you from exceeding the maximum deviation – even with large amounts of data.

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