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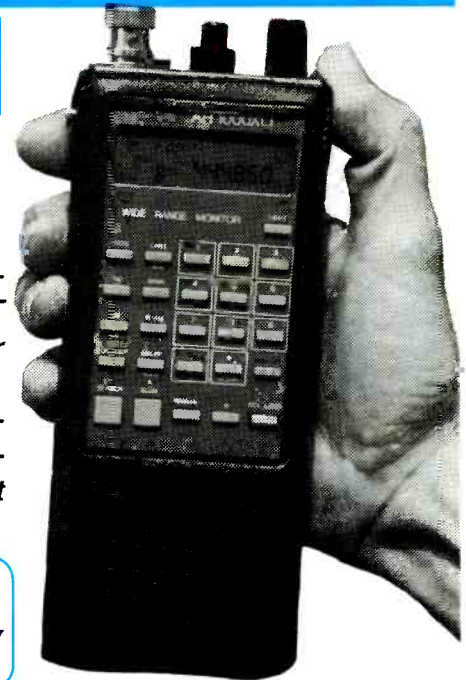
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DECEMBER 1994

VOLUME 13, NUMBER 4



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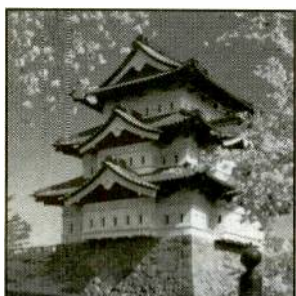
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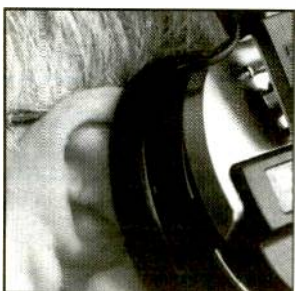
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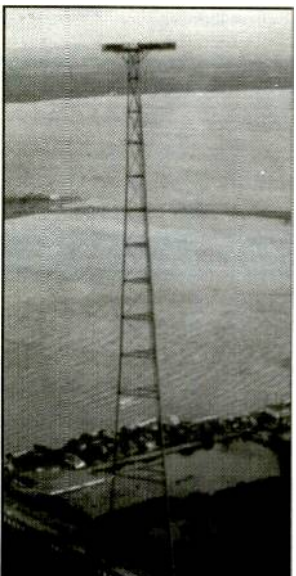
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This month's cover: Satellite ground station at NASA Johnson Space Center, Houston, Texas. Photo by Larry Mulvehill, WB2ZPI

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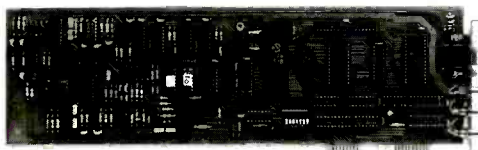
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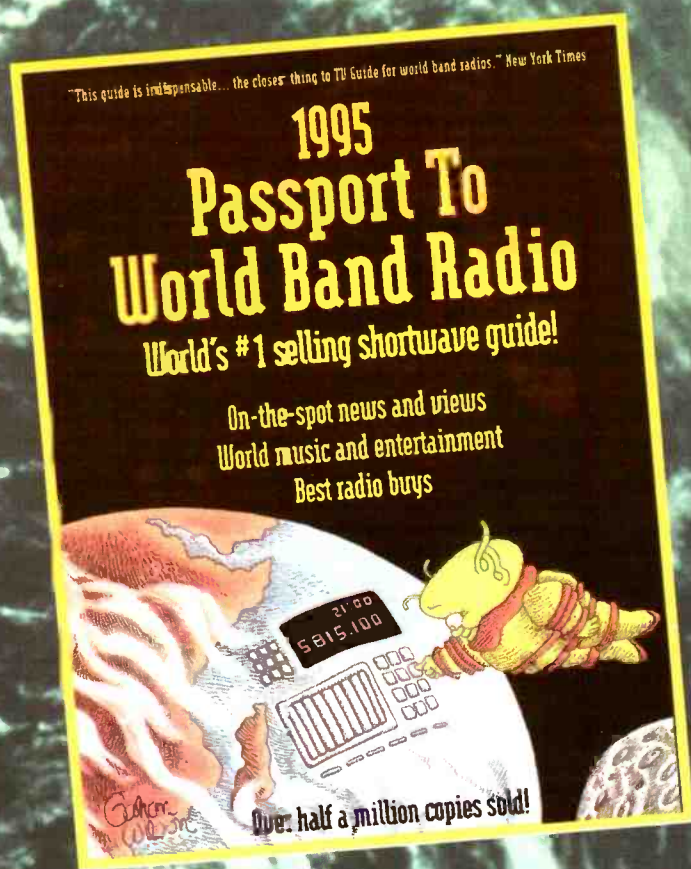
"The bible among shortwavers." *Forbes*

Passport to World Band Radio 1995 available from dealers and bookstores throughout the United Kingdom, United States and Canada, or write IBS, Box 300P, Penn's Park, PA 18943 USA (tel. 215-794-8252).

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The Puzzle Palace's Wonder Chip

Is the Clipper Chip invincible? That's the device the Feds propose to use to allow easy law enforcement agency surveillance access to all telephones. Installed at phone company switching facilities, the secret chip can be remotely controlled by the Feds from hundreds of miles away, as it selects individual phone lines to tap into.

Software used in conjunction with the Clipper Chip will permit the Feds to read scrambled voice calls, plus plaintext and encrypted FAX, telexes, and e-mail. They say they need this technology to catch the bad guys. Telephone companies are decidedly unhappy about the Feds making noises like they will have no choice but to allow Clipper Chips to be placed in use. We have been led to understand that the Clipper Chip, developed by the National Security Agency, is fool-proof. But wait! It now appears that this snooping device may have a few gaps in its own security. Or does it?

According to computer authority Clark Matthews, of *The Spotlight*, what seems to be a gross failure in the chip's design was found by Dr. Matthew Blaze, of AT&T Bell Labs, New Jersey. We are assuming the incident actually took place. An independent tester, Blaze was reported to have made a couple of trial-and-error modifications in the set up arrangement for the chip. He hadn't tried particularly hard when soon the highly touted surveillance mechanism on the chip had been defeated.

His mission was to try to hack and crack the chip, a goal he had felt would be a stiff challenge. His approach was through the chip's "Law Enforcement Access Field" (LEAF). This is a programmable area of the chip, requiring a secret "key" kept by a government agency. Each Clipper Chip has the ability to use two of these "keys." Each of the "keys" is held by a different Fed agency. One is held by the Treasury Dept., the other by the National Institute of Science and Technology. This feature assures citizens that we are protected from the abuse of unauthorized phone taps.

Supposedly, if a law-enforcement agency obtains a court order for a phone tap, it will need to obtain both of the keys in order to access a particular Clipper Chip to perform the electronic surveillance. All of this sounds very impressive. Well, it did until we heard that Dr. Blaze entered the LEAF field of the Clipper Chip almost without trying. That's because the LEAF field wasn't pro-

tected. Matthews contends, he was let right in without much fuss.

He found himself looking at a secret LEAF code programmed into the chip and held in a safe by a federal agency! So, he tried to alter the chip's LEAF serial number. The chip wouldn't accept the new number. So he kept trying different numbers. After a couple of tries, the chip caved in and graciously accepted the assignment of a bogus new serial number. It began scrambling information using its new number. Even a court order wouldn't have gotten the cops access to that information because the two Fed agencies didn't have the newly assigned "key" for that chip.

AT&T had just agreed worked out arrangements with the government to use Clipper Chips in the new secure phones used by the government. Matthews claims they were less than enthusiastic about Blaze circulating the paper about his Clipper Chip adventure. One way or another, though, a paper purporting describe those alleged events did become released. Was it true? Was it an elaborate hoax?

Computer BBS and the Internet buzzed with this story. There were questions, and lots of laughter. Many doubted that the NSA could or would be so naive as to approve the design of a super chip that would be so easily cracked and hacked. Could such a vulnerable device be the result of six years of NSA design work?

There's nothing in the chip preventing it from being hacked by others. Certainly it's not a job for a novice with a laptop. Obviously, it would require a knowledgeable person supported by an advanced computer and specialized equipment.

Clark Matthews mentioned that the chip Dr. Blaze reportedly worked on was a Capstone Chip, which is a second generation device ("Clipper Chip II"). This is more sophisticated than the original puppy. It's designed to be the brains of "Tesserae" Smart Cards, similar to the proposed "U.S. Card," that rapidly identifies of a person's stats for profiling and tracking by law-enforcement and taxation purposes.

The possibility of such an easily opened door in a supposedly high security chip would be an enigmatic oversight. It makes no sense. That means, it's worth attempting to make some sense out of the concept before becoming carried away with laughter at how dumb they were to design a dud chip.

This leaves open the suggestion the possibility that the LEAF field for "legal surveillance" was added by NSA programmers as an afterthought that nobody would feel was particularly important. It was a cosmetic feature that would work as intended, but wasn't tested very aggressively.

Why wasn't the LEAF field tested until it broke? Well, it was essentially window dressing. It serves as a nice, plausible, no-frills Trojan horse. The LEAF field makes Clipper look like it's going to fit in neatly with privacy assurances, court-orders, Constitutional rights, and legal protocols.

Like the NSA that created it, the Clipper Chip is itself a true Puzzle Palace. The folks at NSA are past masters of "smoke and mirrors technologies." The fact that the Clipper Chip was cracked and hacked so handily simply misdirects people from the real back door, which is almost certainly buried deep within the chip's maze of top secret programs and formulas. This includes the classified "Skipjack" algorithm.

The real back door will probably pop open in an instant with the NSA's own secret crypto "key," which has nothing to do with the LEAF field "keys." The true back door was carefully designed and tested, Matthews feels, and rattled so hard that it has proven itself unable to be entered by anybody or anything except for the NSA, itself. When opened, the back door will instantly expose everything on a Clipper phone line to the NSA's eavesdroppers.

As I mentioned, the Feds say the Clipper Chip is needed to allow them to read encrypted messages exchanged by persons they suspect of violating various laws.

By Presidential Order, the first actual use of the chip will be when the Dept. of Justice's new "secure" phone system goes on line. That's very weird.

Holiday Wishes

The best of wishes go out to our readers this year for the Holidays. We always appreciate the many seasonal cards that are sent to our offices.

Every year we always hope that the good will of the season will help to nudge our leaders at least an inch or two closer towards achieving world peace. And we continue to hold on to the belief that more will be done to return POW's and apparent MIA's to their families.

SEASONS GREETINGS

Branson...With a Scanner and a Fiddle

Tune In on America's Biggest Tourist Attraction

BY CHUCK GYSI, N2DUP

When the music gets hot in a once sleepy hamlet in southwestern Missouri, the scanning gets hot, too. Branson, Missouri, has become a new music mecca. It is a family town that has grown by leaps and hops. It is a town that you visit if you want to hear live music. It is a town where the scanning is fun.

Branson has become so successful in the entertainment industry that it now ranks as one of the top five tourist attractions for American travelers. More than 5.6-million visitors drop a billion dollars in the town each year. It has become the nation's "Number One" tour bus destination and the "Number Two" overall automobile destination behind Orlando, Florida, according to the American Automobile Association. And there's no reason for scanner hobbyists to leave their scanners home when visiting this music city.

What made Branson (200 miles south-east of Kansas City) such a hot bus stop



Silver Dollar City is the premier theme park attraction in the Branson area. It opened in 1960. There are several frequencies to monitor at this theme park.



Louise Mandrell hosts her grand patriotic spectacular, "Love My Country," at The Grand Palace music theater in Branson.



Barbara Mandrell uses a wireless microphone while performing at Branson's Grand Palace. Be sure to scan for the frequencies used by performers' wireless mics in Branson.

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Bearcat Scanners

Bearcat 200XLT-K Radio Scanner

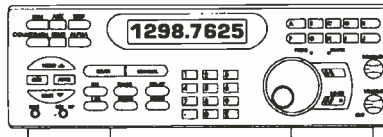
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806,000 - 823,9875, 849,0125 - 868,9875, 894,0125 - 956,0000 MHz.

Recently, the FCC amended Parts 2 and 15 of its rules to prohibit the manufacture and importation of scanning radios capable of intercepting the 800 MHz. cellular telephone service. The Electronics Communications Privacy Act prohibits the intentional interception of cellular telephone transmissions. Supplies of scanners that are capable of being easily modified to receive full 800 MHz. coverage such as the Bearcat 200XLT are in *critically* short supply. Today could be your last chance to buy your Bearcat 200XLT scanner. Signal intelligence experts, public safety agencies and people with inquiring minds that want to know, depend on the Bearcat 200XLT *handheld* scanner to intercept just about any radio transmission. You can also program frequencies such as police, fire, emergency, race cars, marine, weather, and other broadcasts into 10 banks of 20 channels each.

A modification sheet with instructions to restore full 800 MHz. coverage for our Bearcat 200XLT or Bearcat 2500XLT may be ordered for \$8.00. To order your Bearcat scanner, call 1-800-USA-SCAN.

Other Bearcat Scanners

Bearcat 8500XLT-K base/mobile \$368.95
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Bearcat 8500XLT-K Radio Scanner

Mfg. suggested list price \$689.95/CE price \$368.95
500 Channels • 20 banks • Alphanumeric display
Turbo Scan • VFO Control • Priority channels
Auto Store • Auto Recording • Reception counter
Frequency step resolution 5, 12.5, 25 & 50 KHz.
Size: 10-1/2" Wide x 7-1/2" Deep x 3-3/8" High

Frequency Coverage:
25,000 - 28,995 MHz. (AM), 29,000 - 54,000 MHz. (NFM),
54,000 - 71,995 MHz. (WFM), 72,000 - 75,995 MHz. (NFM),
76,000 - 107,995 MHz. (WFM), 108,000 - 136,995 MHz. (AM)
137,000 - 173,995 MHz. (NFM), 174,000 - 215,995 MHz. (WFM),
216,000 - 224,995 MHz. (NFM), 225,000 - 399,995 MHz. (AM)
400,000 - 511,995 MHz. (NFM), 512,000 - 549,995 MHz. (WFM)
760,000 - 823,9875 MHz (NFM), 849,0125 - 868,9875 MHz (NFM)
894,0125 - 1,300,000 MHz. (NFM).

The new Bearcat 8500XLT gives you pure scanning satisfaction with amazing features like Turbo Scan. This lightning-fast technology featuring a triple conversion RF system, enables Uniden's best scanner to scan and search up to 100 channels per second. Because the frequency coverage is so large, a very fast scanning system is essential to keep up with the action. Other features include **VFO Control** - (Variable Frequency Oscillator) which allows you to adjust the large rotary tuner to select the desired frequency or channel. **Counter Display** - Lets you count and record each channel while scanning. **Auto Store** - Automatically stores all active frequencies within the specified bank(s). **Auto Recording** - This feature lets you record channel activity from the scanner onto a tape recorder. You can even get an optional **CTCSS Tone Board** (Continuous Tone Control Squelch System) which allows the squelch to be broken during scanning only when a correct CTCSS tone is received. **20 banks** - Each bank contains 25 channels, useful for storing similar frequencies in order to maintain faster scanning cycles. For maximum scanning enjoyment, order the following optional accessories: **P5001** Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter \$14.95; **P5002** DC power cord - enables permanent operation from your vehicle's fuse box \$14.95; **M8001** Mobile mounting bracket \$14.95; **BC005** CTCSS Tone Board \$54.95; **EX711** External speaker with mounting bracket & 10 feet of cable with plug attached \$19.95. The BC8500XLT comes with AC adapter, telescopic antenna, owner's manual and one year limited warranty from Uniden. Order your BC8500XLT from Communications Electronics Inc. today.

CB/GMRS Radios



A National Weather Service (NWS) receiver with automatic emergency broadcast activation has been added to the legendary Cobra 29 CB radio. The integrated NWS receiver in the Cobra 29LTDWX will *automatically* activate to receive emergency announcements about severe weather and travel conditions. A special tone-alert signal broadcast by the NWS activates the weather receiver and overrides any CB radio reception for monitoring the warning message.

Cobra 29LTDWX-K CB/Weather Alert... \$129.95
Cobra 2000GTL-K SSB Deluxe CB Base \$389.95
Cobra HH40-K CB 40 ch. Handheld \$99.95
Uniden GMR100-K GMRS Handheld \$159.95
Uniden WASHINGTON-K SSB CB Base. \$189.95
Uniden GRANTXL-K SSB CB Mobile \$139.95
Uniden PRO538W-K CB & Weather \$59.95



Weather Stations

Now you can be your own weather reporter with the Davis Weather Monitor II. Our top-of-the-line weather station combines the most advanced weather monitoring technologies available into one incredible package. Glance at the display, and see wind direction and wind speed on the compass rose. Check the barometric trend arrow to see if the pressure is rising or falling. Push a button, and read indoor and outdoor temperature, wind chill, humidity and barometric pressure. Our package deal includes the ultra high resolution 1/100 inch rain collector part #7852-K, and the external temperature/humidity sensor, part #7859-K. The package deal is order #DAV1-K for \$479.95 plus \$15.00 shipping. If you have a personal computer, when you order the optional Weatherlink computer software for \$139.95, you'll have a powerful computerized weather station at an incredible price. For the IBM PC or equivalent order part #7862-K. Apple Mac Plus or higher including PowerBook, order part number 7866-K.

The Weather Monitor II (7440-K) comes complete with anemometer with 40 feet of cable, external temperature sensor with 25 feet of cable, junction box with 8 feet of cable, AC power adapter, detailed instruction booklet and one year limited factory warranty.



Davis Weather Monitor II 7440-K	\$334.95
Davis Weather Wizard III 7425-K	\$154.95
Davis Remote Display Unit 7815-K	\$84.95
Davis Rain Collector II 0.01" 7852-K	\$59.95
Davis Rain Collector II 0.2 mm 7852M-K	\$59.95
External Temperature/Humidity Sensor 7859-K	\$99.95
Davis Anemometer Mast Mount 7890-K	\$15.95
Weatherlink Software for IBM PC/Version 3.0 7862-K	\$139.95
Weatherlink Software for Apple/Version 3.0 7866-K	\$139.95
4-Conductor 40' (12.2 m) extension cable 7876-K	\$17.95
6-Conductor 40' (12.2 m) extension cable 7878-K	\$21.95
8-Conductor 25' (7.6 m) junction box cable 7880-K	\$14.95
8-Conductor 50' (15.2 m) junction box cable 7881-K	\$24.95
8-Conductor 100' (30.5 m) junction box cable 7882-K	\$44.95
Modem Adaptor 25-pin for communications port 7870-K	\$9.95
Car/Boat/RV Lighter Cord 7873-K	\$9.95
2400 baud modem for Weatherlink MEXT-K	\$39.95
Weatherlink language disks: Française, Deutsche, Italiana, Española 7863-K\$24.95	

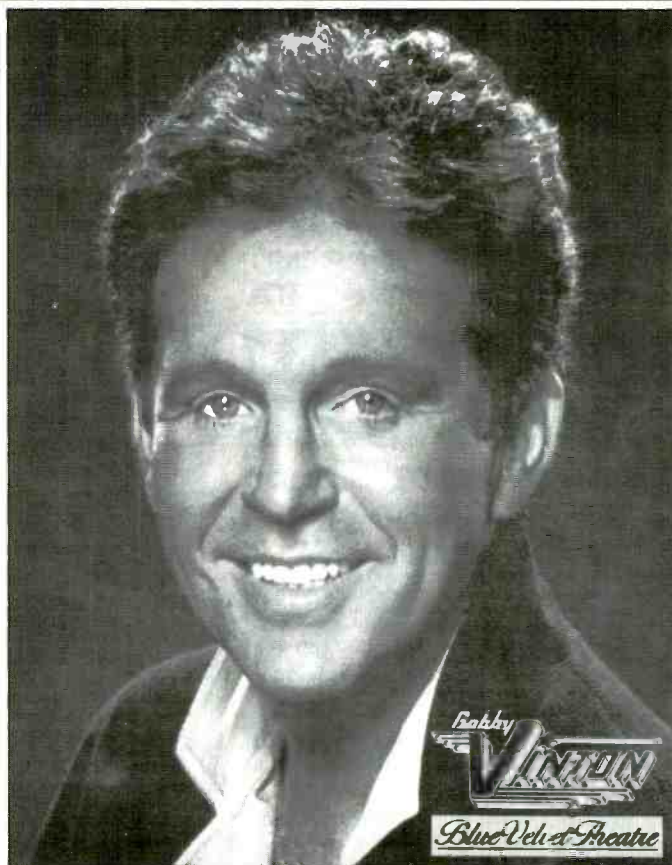
Other neat stuff

Grundig Satellit 700-K portable shortwave receiver with 512 memory & AC adapter \$389.95	
Grundig Tacht Boy 230-K digital portable shortwave receiver - 40 memory presets \$199.95	
Sangean AT800-K portable 20 memory shortwave receiver	\$69.95
Sangean AT803A-K portable shortwave receiver w/AC adapter - 9 memory presets \$148.95	
Sangean AT808-K portable 45 memory shortwave receiver	\$159.95
Sangean AT818C-K portable shortwave receiver with cassette recorder	\$209.95
Uniden ER200-K 900 MHz, 2 line cordless phone	\$289.95
Uniden EX39100-K 900 MHz, 1 line cordless phone	\$269.95
Cobra CP912-K 900 MHz, spread spectrum cordless phone	\$249.95
Bogen FR200-K Digital two-line advanced voice mail system & answering machine \$279.95	
Bogen FR001-K memory expansion module, doubles recording time to 36 minutes \$79.95	
FANS P161P-K 60 name/number caller ID, unwanted call blocker, automatic paging \$149.95	
SNI ID200-K Bouncer name/number caller ID, call reject, forward to machine	\$89.95
ICOM GP22-K handheld global positioning system (GPS)	\$599.95
WR200-K weather radio with National Weather Service storm alert	\$39.95
RELM WHS150-K VHF handheld 5 watt, 16 channel transceiver	\$339.95
RELM RH260NB-K VHF 25 watt, 16 channel synthesized transceiver	\$289.95
Ranger RC290-K 25 watt 10 meter ham radio transceiver	\$239.95
Ranger RC290-K 100 watt 10 meter ham radio transceiver	\$369.95
Uniden LD9100SW-K Super Wideband Laser/Radar Detector	\$139.95
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It's easy to order from CEI. Mail orders to: Communications Electronics Inc., Emergency Operations Center, P.O. Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add \$15.00 per radio or telephone product for U.P.S. ground shipping and handling in the continental U.S. unless otherwise stated. Add \$8.00 shipping per antenna. For Canada, Puerto Rico, Hawaii, Alaska, P.O. Box, or APO/FPO delivery, shipping charges are two times continental U.S. rates. Michigan residents add state sales tax. No COD's. No returns or exchanges after 31 days. 10% surcharge for net 10 billing to qualified accounts. All sales are subject to availability, acceptance and verification. Prices, terms and specifications are subject to change without notice. We welcome your Discover, Visa, American Express or MasterCard. Call 1-800-USA-SCAN to order toll-free. Call 313-996-8888 if outside the U.S.A. FAX anytime, dial 313-663-8888. For technical assistance to solve your communications problem, call the Communications Electronics technical support hotline for \$2.00 per minute at 1-900-555-SCAN. Scanner Distribution Center and CEI logos are trademarks of Communications Electronics Inc. Sale dates 11/1/94 - 1/31/95. Add #110194GEN Copyright © 1994 Communications Electronics Inc. * New product - available 60-90 days after receipt of order.

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Bobby Vinton, the headline act at his Blue Velvet Theater in Branson, uses a hard-wired microphone while performing on stage.

are multitudes of boozeless theaters owned by the stars themselves. Not only do these music legends possess their own theaters, it is their arena of choice for their own performances day in and day out. The theaters also host their friends for entertainment every morning, afternoon and night of the year. It is a place to come, sit back, and be entertained—and perhaps do a little scanning on the side.

What this bustling village offers the scanner listener outside of the town's emergency services is the theaters themselves. Yes, the theaters use two-way radios for various activities, from ushers to stagehands to security. And you can tune in on this action. If you want to know what's going on over at the Osmond family's performance hall, plug in 157.665. If Moe Bandy's theater is your interest, try scanning 151.745 and 154.600.

If you are in the actual hall and want to try your luck at bringing the action ever so closer to you, try scanning frequencies used by the performers' wireless microphones. For starters, try 169.445, 169.505, 170.245, 170.305, 171.045, 171.105, 171.845 and 171.905. You also may find some frequencies active in the 174 to 216 MHz band for wireless microphones.

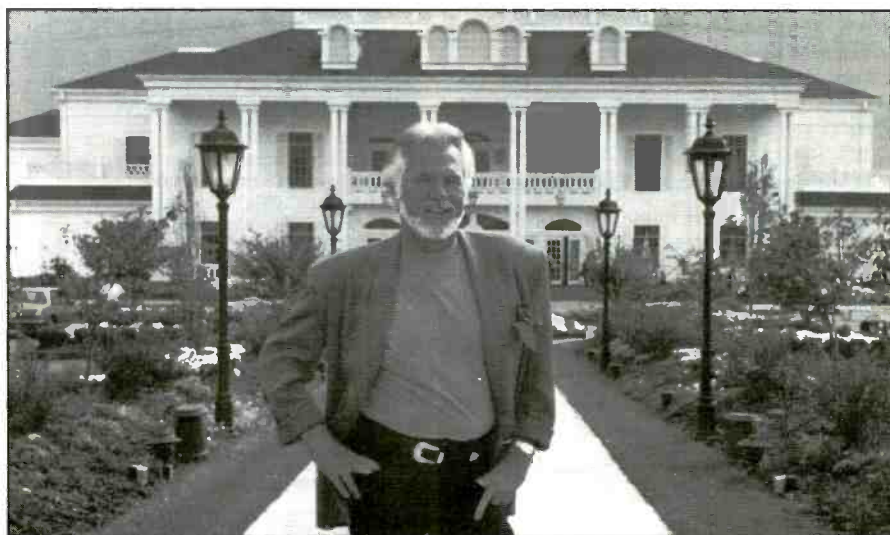
Not only are there the theaters themselves to scan, other things make Branson a wide spot in the road. There are campgrounds, amusement parks, shopping and

motels. And all that activity employs two-way radios and pagers in Branson. So, don't leave behind your scanner. You will find plenty to monitor.

The scanning promises to only get better in Branson. This Ozark Mountain community continues to grow. More music halls will crowd onto the 4.5-mile strip known as Highway 76. More activities for families will set up shop near the town. And the

town's public safety services will continue to grow to meet not only the demand by tourists, but also by those who are attracted to jobs in the community. While the housing market is lagging for workers (many find themselves living in nearby Springfield, Missouri), construction is expected to pick up.

For now, the growth is expected to continue for at least another 15 years, mean-



Country music legend Kenny Rogers is the headliner at The Grand Palace in Branson. The \$13-million theater seats up to 4,000.

Branson Music Theatres

Freq	User	Call
151.7450	MOE BANDYS AMERICANA THEATRE	WPAD872
154.6000	MOE BANDYS AMERICANA THEATRE	WPAD872
154.6000	PRESLEYS MOUNTAIN MUSIC THEATRE	WPCN819
157.6650	OSMOND FAMILY THEATER LTD	WPCT531
461.0625	FALLS THEATER PARTNERS LP	WPDN678
461.0875	BLUE VELVET PRODUCTIONS INC	WPDX982
461.5375	FALLS THEATER PARTNERS LP	WPDN678
461.9500	SHEPHERD OF THE HILLS HISTORICAL	WST724
462.0250	SHEPHERD OF THE HILLS HISTORICAL	WST724
462.7625	RAY STEVENS THEATRE	WPBT725
462.8625	RAY STEVENS THEATRE	WPBT725
463.7125	BLUE VELVET PRODUCTIONS INC	WPDX982
464.5000	MASTERCRAFT PUPPETS	WPAA284
464.5250	RAY STEVENS THEATRE	WNXA315

Branson Shopping

Freq	User	Call
151.8650	VACATION OUTFITTERS	WPAA240
461.2500	FACTORY MERCHANTS MALL	WPDX651
464.5250	76 MALL	WNYC918

Branson Inns, Resorts and Campgrounds

Freq	User	Call
151.6850	TRIBESMAN RESORT	WNKC976
151.7150	OLD SHEPHERDS CAMPGROUND INC	WPDB701
151.8050	OLD SHEPHERDS CAMPGROUND INC	WPDB701
154.5700	BEST WESTERN KNIGHTS INN	KB90803
154.5700	OZARK COUNTRY CAMPGROUND	WPAX566
154.6250	MOUNTAIN OAK LODGE INC	WNSU720
157.5600	BRANSON PROPERTIES INC	WPAY333
461.4750	TREASURE LAKE RV RESORT CAMPING	KNGY431
464.5250	76 MALL INN	WNYC918
464.5750	BRANSON INN	WNWT975
464.7125	LODGE OF THE OZARKS INC	KD42662
464.7750	TREASURE LAKE VACATION RESORT	KNGY431
464.7750	TREASURE LAKE RV RESORT CAMPING	KNGY431
464.8750	VACATION WORLD INC	WNEA221
464.8750	FALL CREEK OZARK INVESTORS INC	WNEA221
467.8125	MOUNTAIN MUSIC INN	WPDP384

Branson Entertainment Parks

Freq	User	Call
151.6850	SILVER DOLLAR CITY INC	KIF349
151.8350	SILVER DOLLAR CITY INC	KIF349
152.3000	SILVER DOLLAR CITY INC	KIF349
152.9150	WILDERNESS SAFARI INC	WNDL331
155.1300	SILVER DOLLAR CITY, CITY OF (PD)	KNCJ890
157.5600	SILVER DOLLAR CITY	KIF349
157.6200	SILVER DOLLAR CITY	WPAF824
461.0375	WHITE WATER INC	KB67168
463.8125	SILVER DOLLAR CITY	WNUV253
464.5000	MASTERCRAFT PUPPETS	WPAA284

Branson Miscellaneous

Freq	User	Call
461.0125	SHENANDOAH INC	WPCV636
461.5125	SHENANDOAH INC	WPCV636
464.8750	FALL CREEK OZARK INVESTORS INC	WNEA221
853.3125	OZARK MOUNTAIN DOUBLE	WNXZ878


Branson Tours

Freq	User	Call
157.6200	OZARK SCENIC TOURS INC	WNBU823
157.6800	OZARK SCENIC TOURS INC	WNBU823
464.6500	OZARK SCENIC TOURS INC	WNWR535

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464.5000	WNUX347	BAILLIE AND THE BOYS INC	NASHVILLE TN
469.5500	WPBT765	BILLY RAY CYRUS INC	NASHVILLE TN
469.5000	WPBT765	BILLY RAY CYRUS INC	NASHVILLE TN
464.5500	WPBT765	BILLY RAY CYRUS INC	NASHVILLE TN
464.5000	WPBT765	BILLY RAY CYRUS INC	NASHVILLE TN
469.5000	WPBA606	CISSIE LYNN SHOW	HURRICANE MILLS TN
464.5500	WPBA606	CISSIE LYNN SHOW	HURRICANE MILLS TN
464.5500	KB88073	CONWAY TWITTY ENTERPRISES INC	HENDERSONVILLE TN
469.5500	KB88073	CONWAY TWITTY ENTERPRISES INC	HENDERSONVILLE TN
464.5000	KB88073	CONWAY TWITTY ENTERPRISES INC	HENDERSONVILLE TN
469.5500	WNUP656	SKIP EWING	NASHVILLE TN
469.5000	WNUP656	SKIP EWING	NASHVILLE TN
469.5500	WNXF904	HANK WILLIAMS JR ENTERPRISES INC	PARIS TN
469.5000	WNXF904	HANK WILLIAMS JR ENTERPRISES INC	PARIS TN
464.5500	WNXF904	HANK WILLIAMS JR ENTERPRISES INC	PARIS TN
464.5000	WNXF904	HANK WILLIAMS JR ENTERPRISES INC	PARIS TN
469.5000	WNWG780	JOE DIFFIE ENTERPRISES INC	NASHVILLE TN
464.5000	WNWG780	JOE DIFFIE ENTERPRISES INC	NASHVILLE TN
464.5500	KB26334	LEE GREENWOOD INC	NASHVILLE TN
464.5000	KB26334	LEE GREENWOOD INC	NASHVILLE TN
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469.5500	KA83962	LORETTA LYNN ENTERPRISES INC	NASHVILLE TN
469.5500	WNVC369	LORRIE MORGAN INC	NASHVILLE TN
464.5000	WNVC369	LORRIE MORGAN INC	NASHVILLE TN
463.3375	KB23504	NASHVILLE NETWORK	NASHVILLE TN
463.4125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
463.5625	KB23504	NASHVILLE NETWORK	NASHVILLE TN
463.6875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
463.7375	KB23504	NASHVILLE NETWORK	NASHVILLE TN
468.3375	KB23504	NASHVILLE NETWORK	NASHVILLE TN
468.4125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
468.5625	KB23504	NASHVILLE NETWORK	NASHVILLE TN
468.6875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
468.7375	KB23504	NASHVILLE NETWORK	NASHVILLE TN
464.7125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
469.7125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
461.1875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
466.1875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
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468.7125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
463.3125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
468.3125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
461.7125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
466.7125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
464.5625	KB23504	NASHVILLE NETWORK	NASHVILLE TN
469.5625	KB23504	NASHVILLE NETWORK	NASHVILLE TN
461.6125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
466.6125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
463.5125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
468.5125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
462.0125	KB23504	NASHVILLE NETWORK	NASHVILLE TN
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461.4375	KB23504	NASHVILLE NETWORK	NASHVILLE TN
466.4375	KB23504	NASHVILLE NETWORK	NASHVILLE TN
464.4875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
469.4875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
461.7875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
466.7875	KB23504	NASHVILLE NETWORK	NASHVILLE TN
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466.7375	KB23504	NASHVILLE NETWORK	NASHVILLE TN
463.2125	KZ4452	NASHVILLE NETWORK	NASHVILLE TN
463.2375	KZ4452	NASHVILLE NETWORK	NASHVILLE TN
464.5500	KA63922	OAKRIDGE BOYS LEASING COMPANY INC	HENDERSONVILLE TN
464.5000	KA63922	OAKRIDGE BOYS LEASING COMPANY INC	HENDERSONVILLE TN
469.5000	KA63922	OAKRIDGE BOYS LEASING COMPANY INC	HENDERSONVILLE TN
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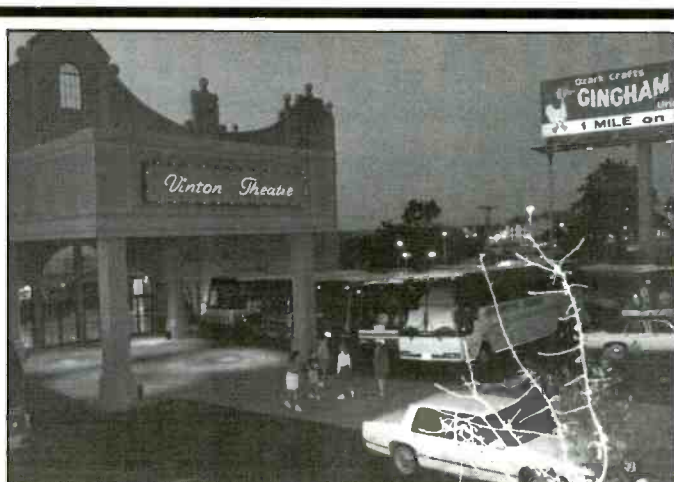
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The marquee at the Blue Velvet Theater tells visitors what they can see while visiting Branson, the music capital of the Ozarks.

Buses and cars are parked outside the Blue Velvet Theater at dusk while performances go on nightly inside the music hall.

ing this town has more to come. Dolly Parton plans to open a 1,000-seat arena in 1995; Kenny Rogers is a partner in a 240-foot showboat project; another longtime Branson family is building a \$175 million hotel and shopping center.

Today, Branson is a town with 3,706 population and up to 100,000 tourists each day. The town's first theater was built by the local Presley family in 1966. The 10 acres along Highway 76 cost the family \$15,000 back then. By 1981, there were 12 theaters operating in Branson. Roy Clark opened his theater, the first by a big-name celebrity, in 1983 and it's been high

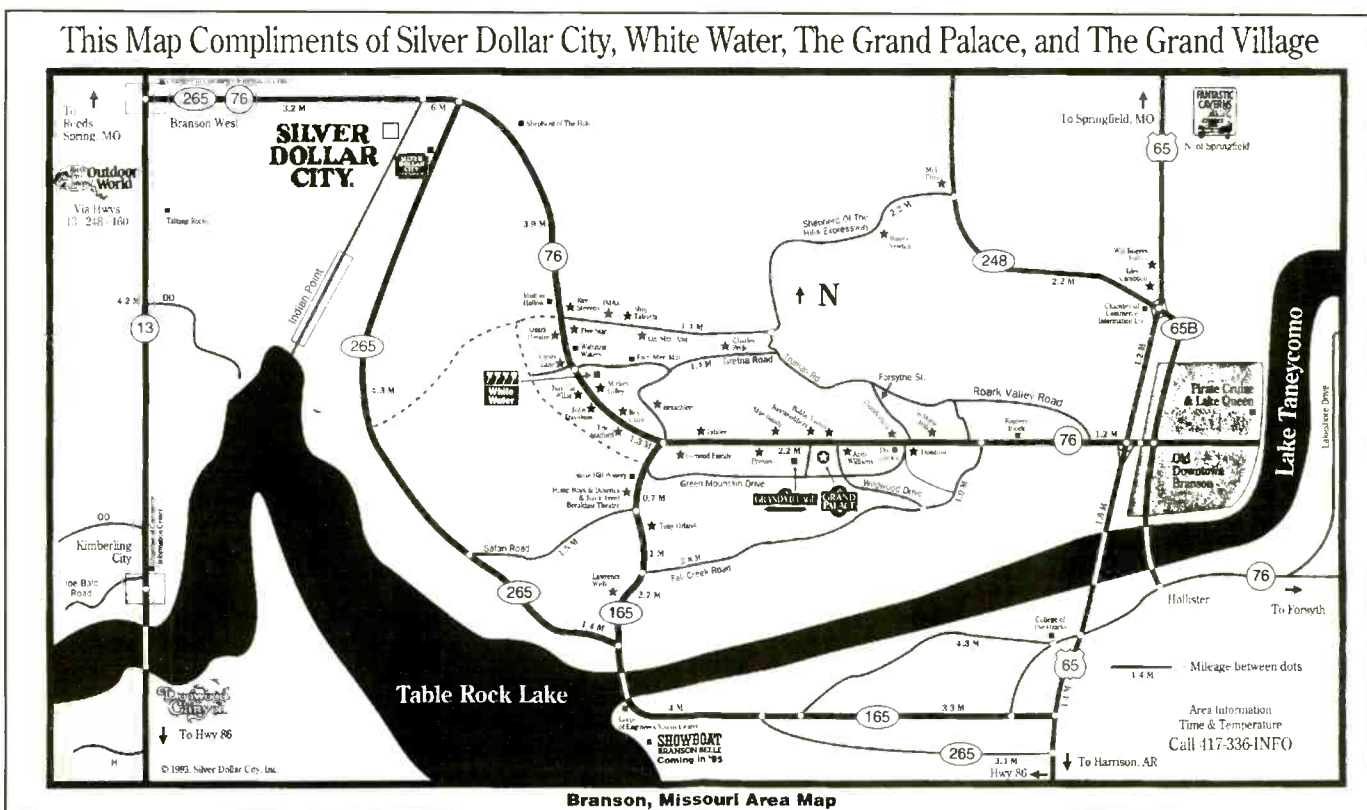
speed up hill every since.

The theaters offer performers the ability to have fans visit them for performances without taking their show on the road. For instance, a theater owner can make \$6 million to perform for only six months out of the year. Up to 10 million tourists a year are expected to be visiting Branson by the end of the decade.

Branson already boasts 19,000 hotel rooms with at least four more hotels under construction. A 50,000-seat convention center is planned and there seems to be no let-up on how big things are to come in this once-sleepy hamlet. In fact, there are peo-

ple around town who insist Elvis will be building a theater soon.

While country music has made its impression on Branson, the entertainment is wide ranging from Andy Williams to the Osmond Brothers to Russian comedian Yakov Smirnoff. Some of the more popular theaters are hosted by performers such as Bobby Vinton, Box Car Willie, Charlie Pride, Cristy Lane, Glen Campbell, John Davidson, Jim Stafford, The Lennon Sisters, Mel Tillis, Mickey Gilley, The Mandrell Sisters, The Oak Ridge Boys, Anita Bryant, Tony Orlando, Wayne Newton, Pat Boone and others.



This map shows the attractions of the Branson, Missouri area, including theme parks, shopping centers, and music theaters. Highway 76 is the main thoroughfare.

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SCOUT IT OUT!

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- Digital Filter
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Shown with optional DB32, dual band, VHF/UHF miniature antenna.....\$29.

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The Scout **\$399.**

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HandiCounter®

- High speed OE10
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- Digital Auto Capture locks counter display on first reading to pass filter
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- Arm/Store button stores & recalls frequencies
- 250MHz direct count
- Built in RS-232 Serial Port permits data logging with optional software
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Multifunction Counter

With all the features of the 3000A plus:

- Dual 50 Ohm and 1Meg Ohm input amplifiers with AC/DC coupling, ± Polarity, Trigger Level adjust, Low Pass Filter & Attenuator
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HandiCounter®

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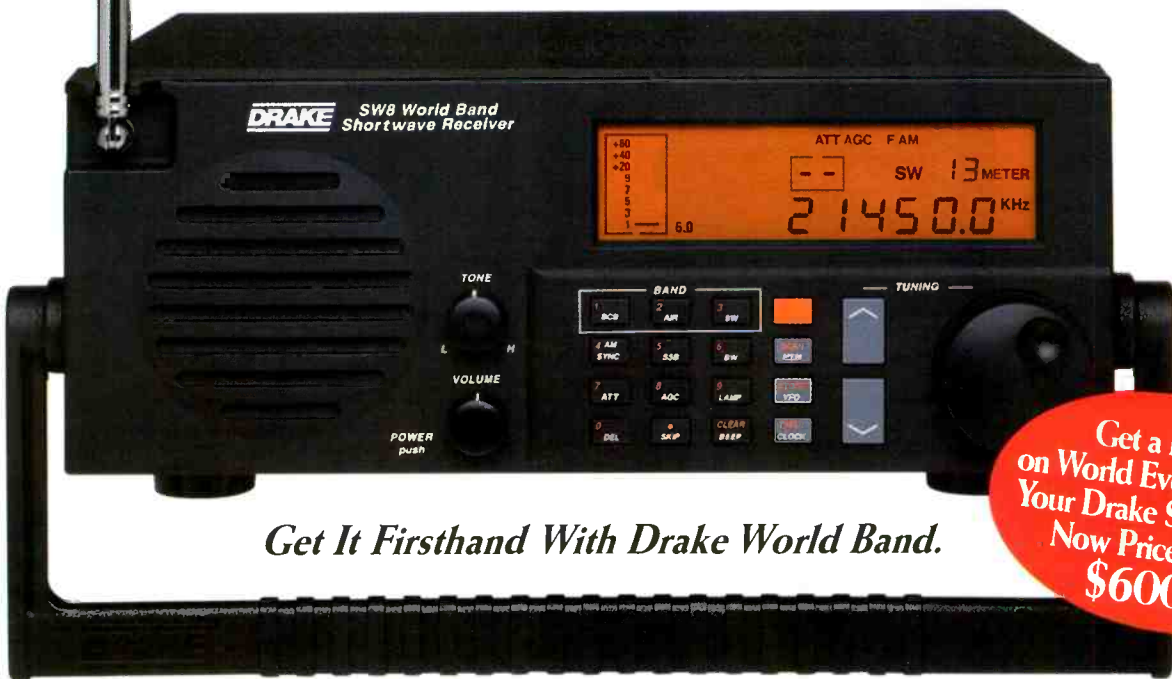
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NEW

PLL Synthesized Receiver, in a compact, ready to travel radio! Sangean once again has produced a sure fired winner with their easy presets and memo buttons!

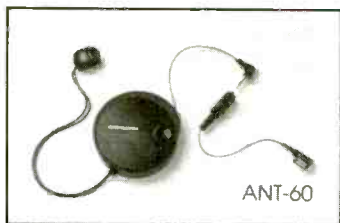
- SW1 2.3-7.3MHz, SW2 9.5-26.1 MHz, MW, FM Stereo
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- Large LCD display backlit with low battery indicator, lock switch, sleep, timer & FM stereo indication
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- Adj. Sleep timer with Alarm by radio or buzzer
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- * Portable * Clip to whip
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Perfect for the field! **EEB \$13.95**

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They said it couldn't be done...
A SWL radio w/ cassette!!
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- 1-30 MHz, 88-108MHz
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- 45 Memory Presets
- Audio Output: 800mW
- BFO for Single Side Band & CW
- Dual Time Display
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ATS818 same as ATS818CS less
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Looking for a radio with lots of FEATURES? You've found it! A Best Seller!

- 150 kHz to 30 MHz plus 88 - 108 MHz.
- FM - FM Stereo
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- Direct access to each SW band
- Full clock and alarm functions
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- 1 year warranty
- Uses 6 D cells & 2 AA cells (not incl.)
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AC adaptor (120V) included

Optional

EWP3 5 Year Ext. Warr. **\$39.95**

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Perfect for the traveller!! HIGHLY RATED BY THE EXPERTS!

- 153kHz-30MHz, 88-108MHz
- All SW bands, LW, MW, FM
- ATS Auto-tune scan: Push ATS's button... the receiver will pick out the 9 most powerful stations & place in memory by signal strength.
- 5 Tuning methods, keypad, auto/scan manual, memory, ATS
- 45 Mems: 9 LW, 9 MW, 9 FM, 18 SW
- Dual time display (local/ UTC)
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- External antenna jack
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Optional World Power AC
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ATS606 EEB \$153.95

ATS606P - Purchase the complete Sangean package: An ATS-606, the ANT60 antenna and AC adaptor/120/240

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Confessions Of A Radio Reporter

Behind The Scenes At An All-News Radio Station

BY NICK GRAY

It's not always easy being a radio reporter—come to think of it, it seldom is.

Unlike our counterparts in TV and newspaper who are expected to do maybe one story a day, we radio reporters are expected to feed the beast continuously throughout the day, and put enough “in the can” for use during the hours we’re not on duty. For an all-news or news-talk station, that can mean feeding three or four versions of up to five stories a day. During a “normal” day, a local radio reporter may criss-cross the city to cover everything from a multi-alarm fire with fatalities, to interviewing the recipient of a scholarship, to enduring a boring city council session.

The writing has to be done fast, with an eye on the clock. It means being versatile and being able to shift gears quickly. Going from being a tough questioner of a slippery politician one minute . . . to trying to coax a good, ten-second “actuality” from a shy six-year-old who’s just rescued his baby sister from a smoke-filled house.

It also means being able to boil a story down to its essence. At my station, normal news

stories should run no longer than about 40 seconds—listeners have very short attention spans.

My newspaper reporter friends are always telling me, “Man, you have got it made.”

Such comments usually come following events such as a news conference at which they’ve filled several pages of a reporter’s notebook and are looking forward to sitting at a typewriter for a couple of hours. They’ve seen me taking everything in with a tape recorder at the same news conference, knowing that all I have to come up with is enough words to fill 40 seconds on the clock.

But those words have to sum up the story succinctly, must include all of the necessary elements that make up a story—what, who, where, when and why—and it must be interesting. And, ideally, that 40-second story should contain a direct quote from the newsmaker—a piece of tape we call a “cut” or “actuality” and which our TV counterparts call a “soundbite.”

That kind of tight, to-the-point and ear-catching writing is essential to a radio reporter.

I’ve reported for newspaper and I know I can do that kind of long-form writing. But I’m not sure many of the newspaper reporters I know could do a good job of writing for radio.

Other differences between the two styles: Radio reporting is present tense, active voice and is written in a more conversational tone than is newspaper.

The radio story has to grab the listener’s attention in the first sentence, tell the listener what needs to be known about the story quickly while including those five W’s and then sign off with a “tag” consisting of the station’s standard outcue.

Doing all that in 40 seconds or less can be pretty tough, especially if there’s any background at all to the story. Sometimes the reporter has to assume that on a well-publicized story, the listener already knows the background and the reporter needs only to give the latest update. Or, failing that, the background has to be told in as few, well-chosen words as possible.

Here’s a recent example from my own experience:

A few months ago, a female police officer, Officer Davis, was assigned as the training officer for rookie Officer Jackson, fresh out of the academy. Jackson was to ride with Davis so she could show him the practical side of being a police officer. It's a common practice on virtually every police force. But, in this case, Jackson apparently became romantically enamored of his attractive training officer and started thinking of ways to impress her.

One day, as Jackson and Davis were walking through a park on patrol, the rookie officer suddenly shouted a warning to his training officer and pushed her to the ground, out of the line of fire of a supposed sniper shooting at the officers from near-by. Backup units quickly converged on the scene, along with Critical Incident investigators, Internal Affairs and even the police chief himself. The slugs found lodged in his flak-jacket and his bruises attested to Officer Jackson's role as hero, and he immediately was hailed as such.

But Officer Davis had some nagging doubts and told her supervisors of her suspicions. After an investigation and polygraph tests, Jackson admitted it was all a scheme to win the love of his training officer.

It turns out that, on the night preceding his "heroics," rookie-officer Jackson had hung his bullet-proof vest from the wall and fired some rounds into it. He also lay on the floor and hit himself in the torso with a sledge hammer, causing bruises to appear on his body.

Jackson was fired, arrested and charges filed against him.

Now, jilted Jackson wanted revenge, and he told superiors that during his street training Davis had taught him how to withhold drug evidence taken from suspects for use later to "plant" on other suspects when probable cause was lacking.

Now, it was Officer Davis who was under

scrutiny and, though she protested that it was not true, she was ordered to take a polygraph test herself. Before submitting to the test, a superior officer told her she wasn't fit to wear the uniform and forced her to remove her uniform shirt down to her thermal underwear. She passed two lie-detector tests and was cleared of any wrongdoing.

Thereupon, she sued the department, the police chief and the city . . . alleging she was humiliated and treated unjustly.

The civil suit comes to trial and it's my assignment to cover it. You tell me: How does a reporter do a 40-second report on interesting and dramatic trial testimony and include all the background that makes the story newsworthy to begin with.

One factor that helps . . . I'm expected to do at least one story per hour, so I can use a different piece of interesting testimony each time I do a report. But as for going through the whole background on each report for the benefit of listeners who may not be familiar—forget it, no way!

What are the different formats of the stories done for radio news? You may have heard the conversations on your scanner as the news desk talks to the reporter in the field. Something like, "I need a wrap at oh-five . . . you'll be first, then throw it to Joe Doaks at city hall for the sidebar."

Different stations and regions of the country may have their own slight variations. But the basic type of stories include the *reader-act* (for "actuality"); the *voice-act* or *voice-wrap* or just plain "wrap"; the *straight voicer* and the "reader."

A "reader" is just copy to be read by the anchor and this type story is seldom fed by a reporter in the field—it means the reporter doesn't get his or her voice on the air and uses no tape. For a reporter to feed just a reader

down the line to an editor kind of defeats the purpose of having another voice out there to put on the air. The only times this makes sense would be if perhaps the reporter has just been on the air and has another story that needs to get on, but he doesn't have tape. You may put it on as a reader so as not to have the same voice twice in a short time period. You may also feed a straight reader as a short headline going into a network newscast or other programming when there's no time for a full report. That way, you at least get a late-breaking story or information on the air and "tease" it as a story in which details will be upcoming later from the reporter on the scene.

A straight voicer is just the reporter's voice telling the story without the use of actualities. You may use this format when covering a trial, for example . . . when no one's talking to reporters until after the verdict.

When you *do* have tape of a newsmaker talking, and sandwich the cut between sections of your report, that's called a "wrap" or "voice-wrap" or "voice-act" or "V-A." It begins with a lead read by the anchor: More trouble today at city hall. K-X-X-X's Joe Doaks reports . . . city council members are at one another's throats.

Then, the reporter chimes in: "It's the zoo issue again. Councilman Bill Blatt insists the city not spend another penny in the effort to breed green-striped zebras, while his colleagues want to forge ahead. Blatt says the others are stubborn."

At this point the reporter releases the pause button on his Marantz and Blatt is heard venting his spleen for 8 or 10 seconds. Then, it's the reporter's turn again: "They'll settle the issue with a vote later this hour . . . and we'll bring you the result as soon as it happens. Live at city hall, Joe Doaks, K-X-X-X News."


And that's your basic wrap. Before he goes back into the city council meeting, reporter Doaks may feed a reader-act to hold them over for the rest of the hour. He'll get a tape editor or newswriter on the phone and dictate words about the zoo controversy, to be read by the anchor. It will consist of a paragraph, an actuality and then another paragraph. The editor will record the actuality onto a tape cartridge ("cart") to be punched off by the anchor or board operator at the appropriate point in the story.

Writing for a newspaper allows a reporter to really delve into a story, explore all aspects of the subject and to fully inform readers about a story or subject. There's great satisfaction in that.

On the other hand, writing for radio news is superficial and barely scratches the surface of the story . . . no more than a headline service, really. But, as for variety of the work, the radio reporter gets to learn about dozens of new subjects each month.

And when the big story breaks and the scanner comes alive, there's nothing like the feeling of knowing that thousands of people are listening to you and relying on your skills to tell them what's going on—not yesterday—but *right now!*

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Radio: The Old Days

As it Was, Way Back When

BY ALICE BRANNIGAN

Recent media reports of political unrest in Cuba bring to mind that the island nation was once the site of several early wireless stations of interest.

Undoubtedly, the first wireless facility in Cuba was the U.S. Navy's high power telegraph transmitter at Guantanamo Bay. This station, at first using the identification letters "LV," was operating at least as early as 1906 (and possibly before that). Naval records of 1919 show the station using the call letters NAW, and operating on 66 kHz with an undamped spark.

In 1924, NAW was listed as operating on 66, 76, 125, 215, 315, 500, and 2098 kHz. Through the years when LF and HF were primarily relied upon by the U.S. Navy for worldwide communications, the NAW underwent many modernization upgrades.

Cuba's first broadcasting station was known as PWX, in Havana. Commencing operation on 750 kHz on October 10, 1922, the 500-watt station was the first high power broadcasting station to go on the air anywhere in Latin America. The PWX opening day ceremonies were presided over by Cuba's President Zayas, who made a speech over the station.

PWX was run by the Cuban Telephone Company from the second floor of the former Radio Corporation of Cuba building. The four-wire antenna system on the building's roof was supported by two 125-foot steel lattice towers.

The station initially operated for three hours every Wednesday and Saturday night. Musical selections covered a wide



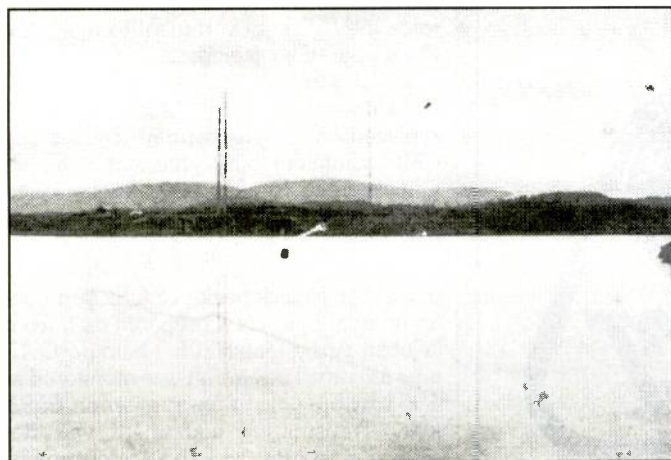
In 1927, a hurricane knocked the PWX antennas off the roof of the Cuban Telephone Building.

range of rumbas, congas, and tangos. Reception reports for the PWX programs came in from listeners as far as 3,000 miles away, and it quickly became a popular DX catch. Eventually, PWX changed frequencies to 740 kHz.

In 1927, a major hurricane roared through Havana. Insofar as PWX was concerned, this was an ill wind. The storm took

down the station's twin broadcast towers. Instead of replacing them on the roof of the three-story building, the station decided to relocate them.

In the late 1920's, Havana was becoming a popular tourist location, attracting visitors from the USA and Canada. Many casinos, night clubs, and luxury hotels were going up. PWX was therefore installed in the



The original wireless towers at Guantanamo Bay, as they appeared in 1919, when they were just tall masts.



This 1922 view of the Guantanamo Bay station shows the station having been upgraded to steel lattice towers. The photo is a souvenir card from the Battleship USS North Dakota.

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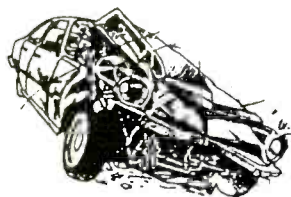
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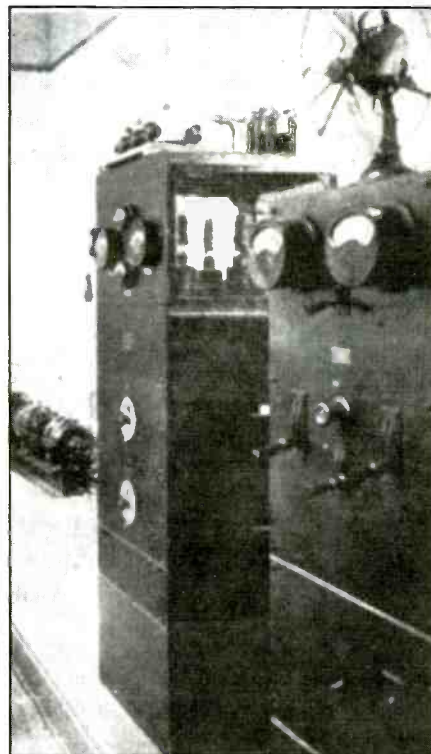
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CIRCLE 87 ON READER SERVICE CARD



The 500 watt PWX transmitter could be heard for 3,000 miles. The station had its own power generator, part of which may be seen in this 1923 photo.

new 10-story *Hotel Presidente*. More changes were also afoot as broadcasting evolved in Cuba.

Though PWX was government-sanctioned, from an official standpoint, it was a renegade. In those very early days of broadcasting, some nations' rules and regulations were either minimal, liberal, vague, or non-existent. The call letters PWX were strictly homebrewed and had been self-assigned. By chance, they had been concocted from a block assigned by international agreement to the Netherlands, and that nation was complaining. After seven years of making the call letters popular, PWX resisted giving them up. Pressure was brought to force the Cuban government to make the PWX operations legitimate.

As of January 1, 1929, the unauthorized call letters were discontinued and replaced by the appropriate call letters, CMC. Simultaneously, the station reluctantly agreed to change its frequency to 840 kHz in order to conform with international frequency usage agreements.

Our last visit with Cuba this month is no more than a quick peek at a QSL card, but an unusual one. It's a prepared card from "Cuban Army Plane 205," being a C-47 type aircraft. The aircraft was monitored in 1951 with a voice transmission on 6595 kHz. Transmitting equipment was described as an ART-13 with a 45-foot antenna. This was from the era before Castro

took power in Cuba. The QSL was earned by Tom Kneitel, New York.

Towers of Power

The U.S. Navy's station at Guantanamo Bay, Cuba, was merely one installation in a worldwide chain of similar stations. Among the more important links in this network of communications facilities was the U.S. Naval radio station at Cavite, in The Philippines.

This station was first known on the airwaves by the call letters "UT." We found it in a 1906 listing, but it may have been in use before that. The station was known as NPO by 1919, and was a high power undamped wave spark operation on 25 kHz. As time went on, we found NPO listed in 1931 records with CW on 56, 8872, and 17744 kHz.

During the 1930's, as the strategic potentials of the Pacific area began to be realized, NPO was increased in size and strength. Eventually, three 650-foot transmitting towers were constructed. NPO became a vital link in our submarine communications network. Because of this, the NPO towers were destroyed by Japanese forces in the early days of World War II. Their destruction was hard felt by the Allies.

Several years ago, reader Dick Ispen, of Napa, Calif., obtained several candid snapshots (at a flea market) showing the NPO towers. These were original photos, with handwritten notations on the reverse made by the person (probably a sailor) who snapped the photos. They are quite unique.

This important naval radio station and its three imposing towers are mentioned in the book, *Silent Victory, The U.S. Submarine War Against Japan* (Volume 1), by Clay Blair, Jr. (J.P. Lippincott Co., N.Y., 1975).

Next month we'll have a fascinating inside story on WWII radio communications in the Philippines related by one of our readers who was there!

The Way it Was

Michael Schroter, of Berlin, Germany, passed along two radio photos from the 1920's. Unfortunately, he didn't provide very much in the way of information to go along with either one. Based on what he wrote, and what can be guessed, it appears that one shows an early mobile broadcasting truck or van. A guyed six-section mast is located on the roof of the vehicle.

The second photo shows a young couple in the woods listening to a large portable radio receiver. The wind is billowing out her skirt to a revealing degree, but she's too fascinated by the radio to even realize this. The card is what passed as "naughty" humor in those days, and may have originally had a "saucy" caption describing the scene. I believe this fellow is what used to be called a shimmy inspector.

Notice:

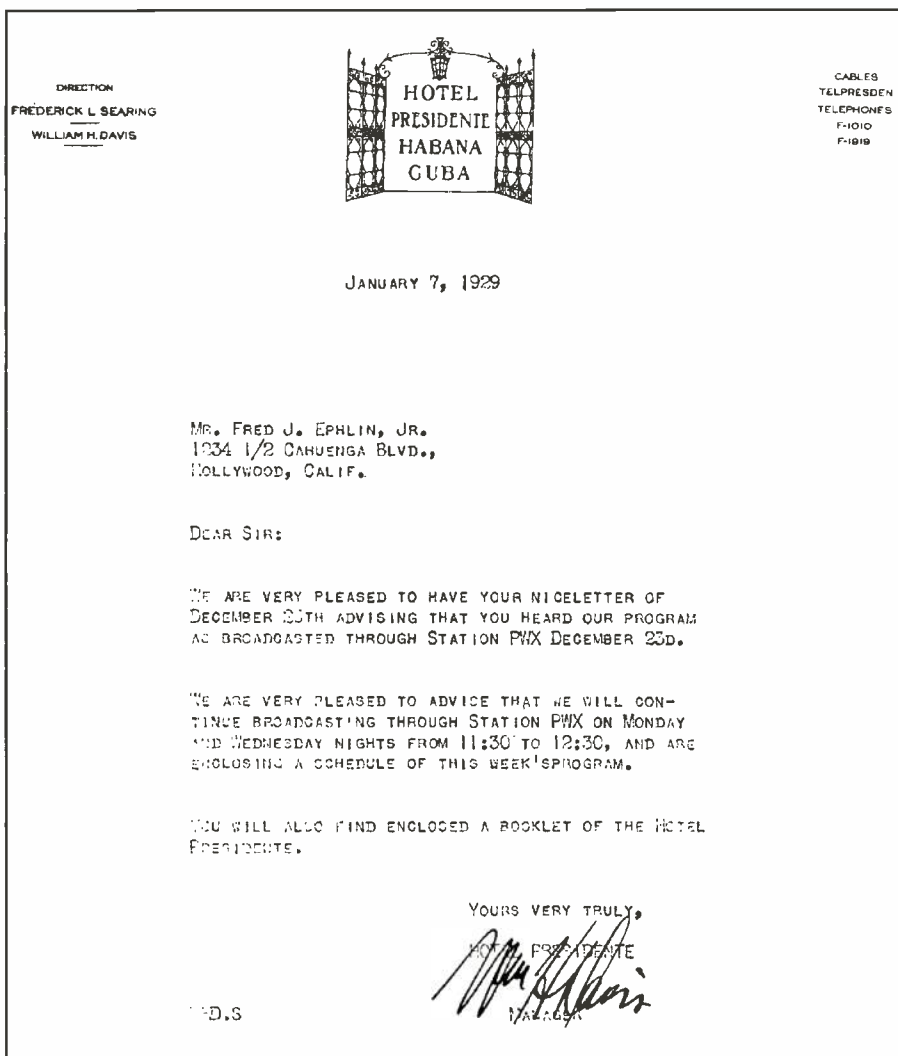
Station P W X will be C M C after January 1st.

Station C M C will broadcast regularly during the winter season on Mondays, Wednesdays, and Sundays from 8:00 to 12:00 P. M. Eastern Standard Time.



Station C M C broadcast on 357 meters 840 Kilocycles, and is controlled by the Cuban Telephone Company a subsidiary of the International Telephone and Telegraph Corporation of New York City.

In 1928, PWX was told to conform to international broadcasting agreements by changing its call letters and operating frequency. Changes were made in January, 1929 as PWX became station CMC. (From the QSL's of the late Fred J. Ephlin, courtesy of Joseph E. Brewer, Jr.)



One of the last PWX verification letters, dated January 7, 1929. This was for reception on December 23, a few days before it became CMC on January 1. (From the QSL's of the late Fred J. Ephlin, courtesy Joseph J. Brewer, Jr.)

R205

CUBAN ARMY PLANE 205

This will confirm that you have received radio signals from plane Nr. 205 on 6595kc/s on March 26, 1951 at 0022 GMT. Radiotelegraph call letters: R-205 . C-47
Remarks: ART-13 Radio Transmitter with 45' antenna airborne installation .

signed Leopoldo Infante
2do. Tte. P.A., C.A.F. Hav. Cuba.

A prepared reply card from Cuban Army Plane, which was monitored in 1951. (Courtesy Tom Kneitel, N.Y.)

"I Don't Have to Show You No Stinkin' License"

Always some interesting controversy about which station was the first American broadcaster. Notwithstanding the claims of various stations such as KQW (presently KCBS), 9XM/WHA, WRUC, and others,

Pittsburgh's KDKA has always made much of the fact that it is the world's first broadcast station. This has generally been accepted by the public and the media at face value as being factual. What confuses these situations is that most early broadcasters started out as ham or experimental stations under assorted callsigns that differed from



One of the three NPO towers, 650 feet high, also showing the causeway with the main highway at Luzon, Philippines. This was taken from the top of one of the towers.

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The island of Cavite, as seen from the top of one of the NPO towers.

their commercial call letters.

It's said that in 1916, Dr. Frank Conrad, a Westinghouse engineer, started an amateur broadcasting station in his home. This was station 8XK. The station went off the air during World War I, but was allowed to return in August, 1919. At that time, the 8XK programs consisted of music, talks, sports, and other offerings. By any definition, this was broadcasting. The station was reported by amateur operators for miles around the Pittsburgh area. Broadcaster KDKA evolved from this station.

Nevertheless, we have pointed out in these pages that Dept. of Commerce files show the first U.S. Commercial broadcasting license was issued on September 15, 1921, and it went to Boston's Westinghouse station WBZ, while KDKA's license wasn't issued to Westinghouse until November 7, that year. If you want to get official about broadcasting licenses, you'd really have to take those dates into account.

Alan S. Douglas, the radio historian who authored the series of books, *Radio Manufacturers of the 1920's* (Vestal Press,

Vestal, N.Y.), wrote to the us to observe that a February, 1921, profile of Dr. Frank Conrad in *QST* mentions his station 8XK, but says nothing of KDKA. Yet, there was a mention of KDKA on Page 51 of the May, 1921, issue of *QST*. No mention was made of its location, so it can be assumed that by May of 1921, all hams were familiar with the station. Obviously KDKA was in operation before the date its license is listed in official Dept. of Commerce records.

You might well say, "Then show me the original KDKA license so I can check the date it was issued." Well, *ahhhh...* there's a slight problem. Alan Douglas tells us that Westinghouse historians say the original license was "lost." More conservative historians simply say it "no longer exists." Given the battles of KDKA (even in the 1920's) to prove its priority, it's hard to imagine that any scrap of official paperwork establishing the KDKA's antiquity would have been lost, that is, if it ever actually existed.

The call letters "KDKA" were obviously assigned by the Dept. of Commerce, having been taken from the same sequence used for ship wireless stations licensed in 1920. So, we know the call letters were in fact official.

It stands to reason that Westinghouse wouldn't have put the station on the air without proper authority. One possibility is that they had their Experimental license (8XK), and an application pending for a

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An early German mobile radio bus or van, showing a telescoping mast on its roof. (Courtesy Michael Schroter, Berlin Germany.)



This 1920's smoothie is showing the distracted flapper his new portable radio in a windstorm. It's what passed as "naughty" humor in those days.

Commercial license. The station must have gotten some kind official Washington go-ahead before using the call letters prior to

November 7, 1921. That approval may have been no more than something informal, like a memo or phone call. In those for-

mative days of the broadcast service, things were more casual than they are today.

Alan Douglas says that so long as the call letters were official, he can't see why it makes any difference whether or not they had a little scrap of paper. If the call 8XK was valid for the same location as KDKA, then both sets of call letters may have been alternated, with the KDKA callsign being put into use right from the date of its first issuance, probably in 1920.

Douglas observes that the so-called KDKA "first broadcast" recording now in existence was actually recreated several years later. That recording may have no relevance to what was actually broadcast on November 2, 1920, which KDKA claims was its first time on the air, after earlier 8XK operation. This is a year before the first date shown for the KDKA license in Dept. of Commerce records.

Who was actually first may be a matter of perception and degrees, and there aren't any definite answers. Examination and speculation are interesting, and will always be with us.

As the Holiday season approaches, here's a wish for a safe, and happy time of the year for all our many friends. Your kind, helpful letters and information are always appreciated, and have made assembling these materials each month something regarded as a pleasure and a privilege. ■

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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

All right, let's just duck into this back alley here for another venture into the dark and sometimes dangerous world of clandestine broadcasting.

Everyone is aware of the extremely hard times Castro's Cuba is going through these days. Ironically, it seems that one of the main radio voices of the Cuban opposition is also in trouble—just when you'd expect them to be using the crop and heading full gallop toward the finish line. Not so.

Late in June, Miami's Cuban community was abuzz with the news that longtime anti-Castro broadcaster La Voz de Cuba Independiente y Democrática (CID) had actually closed—gone off the air! Apparently the problem was a lack of funds which, initially, caused a cutback in the station's operating hours (which, for many years, was on a virtual 'round the clock basis). From the beginning, most observers have assumed the station was getting the bulk of its funding from the CIA, though no real proof of that has ever been found, at least not that this writer has seen.

A few weeks after this startling news, however, La Voz del CID resumed broadcasting. Someone or some group seems to have taken pen and checkbook in hand and "done the right thing."

Initially, at least, La Voz del CID can be heard during our daytimes running to past 2300 UTC, on 9941 variable, all in Spanish, of course. Operations on other CID frequencies hadn't been confirmed at this writing but you can check 6305 between 0420 and 1200, 7340 (variable) between 2320 and 1200 and 11940 between 1208 and 2315. Frequency 9941 nominally runs from 1208 to 0415.

Use of the English language is rare amongst anti-Castro broadcasters but now

you have an opportunity to hear some on the program La Voz del Educador Cubano Libre (The Voice of the Free Cuban Educator), produced by Colegio de Pedagogos (a.k.a. the National Association of Pedagogues of Cuba in exile). This program is aired twice a week on Radio Copan International, Honduras—Tuesdays and Fridays from 1900 to 2000 (on 15675). The first ten minutes or so of the broadcast is in English. A newsletter is available from P.O. Box 451751, Miami, Florida 33245.

Also from the anti-Castro clandestine front comes the news that the Chief of Operations of the Alpha 66 group (which produces La Voz de Alpha 66) was arrested in Miami for attempting to buy stolen military equipment. This outfit has always been one of the more militant of the anti-Castro groups, always eager to do more than throw words at Castro. During the 1960's, the heyday of anti-Castro activity, Alpha 66 launched several armed efforts against the island.

Scuttlebutt has it that a new Sudanese clandestine is supposed to have gone on the air a couple of months ago, sited in a non-Arabic country. Unfortunately, at the moment that's all we know and thus that's all we can tell you.

The Democratic Voice of Burma has increased its broadcasts.

The new programs are aired via Radio Norway's transmitters at 0000 to 0030 and 0100 to 0025 on 11835. The original program is scheduled at 1400 to 1455 on 11850. The Democratic Voice of Burma issues an attractive QSL card for correct reports. The address is P.O. Box 6720, St. Olovs Pass, 0130 Oslo, Norway.

Predicting the future is always a chancy thing, but it does get a mite easier when

certain intentions are known. Vorgan (also known as the Voice of the Resistance of the Black Cockerel) has said its shortwave broadcasts will continue for about nine months after UNITA signs a peace agreement with the government of Angola. After that, the Unita radio station will become "depoliticised" and will broadcast on frequencies assigned to it by the government. We should keep in mind that the Angolan government signed a peace agreement with Unita a few years ago—even held elections, but Unita did not give up its struggle to obtain control of the government. Best to just wait and see what happens. Meantime, you can try tuning in the Vorgan broadcasts on 4960 and 9550 from listed 0445 sign on. Broadcasts are in Portuguese.

Radio Free Bougainville, thought for a time to be kaput, is still operating. It is said to be operating from secret locations in the mountains, using mostly 3870 (occasionally 3880) and running only around 75 watts. Your best chance to hear this one from North America is the wee small hours (and a Pacific Coast location, coupled with top notch propagation conditions!).

The Rwandan Patriotic Front's Radio Muhabura continues to operate on 6275, with a sign on around 0410. Now that the RPF is in control of the government this station can now be said to be an official voice. A group called Reporters Without Borders is planning to set up a station to broadcast to Rwanda, probably from next door Burundi. We think the odds are about even that Burundi may explode one of these days, as Rwanda did.

That covers things for this time. Remember, your informational input on clandestines—loggings, QSLs, schedules, addresses and other material—is always welcome!



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Cuba Independiente y Democrática

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A _____

QUIEN NOS SINTONIZO EL DIA _____

DE LAS _____ GMT. A LAS _____

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La Voz del CID is on shaky financial ground. If you haven't heard or verified CID yet, you'd be wise to do so while you can.

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BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

I've received a good batch of reports this month. If you were one of those who wrote in, I authorize you to give yourself a pat on the back. Let's get into it.

Radio Outhouse—7384.95 USB at 0333. Music, several IDs, listeners' letters, no address given. (Michael A. Bay, MO)

Voice of the Runaway Maharishi—7387.05 USB at 0430 with a long broadcast and a very strong signal. Announced P.O. Box 452, Wellsville, NY 14895. (Bay, MO) Noted at 0445 with music, good signal. (Kevin Jordan, PA); 0457, but QRM'ed at 0500. (Trummel, MO)

Radio Azteca—7385 USB at 0201 with several IDs between 0201-0204, some music, ID again at 0233. Fading. (Bay, MO)

WLIS—7385 USB, 0400 airing the interval signal of Radio Australia and maybe the Radio New Zealand bird call as well. ID and address info at 0407, gone by 0415. (Bay, MO)

Action Radio—I'm informed that the Boy's Town, NE address for this station—which I thought might be a ruse—is, in fact, quite legit. (It's P.O. Box 493, zip 68010.) Had I checked the '94 edition of the *Pirate Radio Directory* I would have known.

KCBI—7385 USB at 0030 with commentary, Pink Floyd. The host said he's a "new kid on the block and we'll be hearing more." Address as P.O. Box 2024, Fairbault, MN. (Dick Pearce, VT)

RCBN (Radio Bob's Communications Network)—7465 USB at 0125. Parodies on commercials, listener mail. Dick says most of the material was X-rated. Address given as Box 17534, Atlanta, GA.

Down East Radio—7415 USB at 2314 with host Oscar Duggan who said they were broadcasting from Flat City, Maine. Played an old album of "down east" humor. Address: P.O. Box 109, Blue Ridge Summit, PA 17214. (Pearce, VT)

Quantum Base (States?) Laboratories—7415 at 0020. Weak and tough to copy, made less easy by the heavy reverb used. Address given as Box 146, Bellingham, MA 02180. (Pearce, VT)

WYDX—7485 USB at 0156 ending a Neil Young number and a mention of "rockin' the beach for Al Weiner's birthday," and off. (Pearce, VT)

Spam Radio—7385 USB at 0240 announcing the need for a recall on prior Spam Radio QSLs, other Spam-related items. Fairbault address for reports. (Pearce, VT); 3400 USB at 0542 with Lumberjack Song, talk of the government taking away freedoms. Off at 0559. (Ray, MO)

Radio Star of the North (aka CRSN)—7385 caught just at sign off about 0130. "This program was brought to you by Broadcast Amateurs for Radio Freedom (BARF). (Pearce, VT); 0034 with rock, announcer with comments "at least I paid the



Dick Pearce hunts pirates from this nicely equipped shack, built around a Japan Radio Company NRD 535.

dues of free radio" and "World premier broadcast of the Radio Star of the North." The broadcast included the operator breaking out of the program and talking with other operators on the frequency.

Another day at 0242 with self-criticism of the first broadcast, Muppet theme and rock. (Mick Sanger, TX); 0030 with DJ Matt Moron, classic rock. Wellsville address. Also at 0239. (Trummel, MO)

Solid Rock Radio—7385 at 0210, repeating the ID several times—then said he was going to get some Orson Wells stuff. Played a Charlie Daniels number, and what sounded like an old commercial for Goodrich, then gone. Wellsville address. (Pearce, VT); heard at 2342 calling CW in manual Morse, then a long message mentioning Wellsville and "free radio." (Sanger, TX); another day at 0105, along with Nemesis and Captain Ganja chatting. 0337 with test broadcast. (Bay, MO); 0000 sign on, Dr. Love with ID, greetings. (Trummel, MO)

Hit Parade Radio—7385 at 0226, music and mention of "always connected on shortwave." Wellsville address. (Sanger, TX); 0203 with Beach Boys tribute. (Bay, MO); to 0234 close with Dale Doorman, Beach Boys and info about the group. "New show, new card." (Trummel, MO)

Voice of the Real World—7385 at 0303 with talk of control by the radio communications industry and the government allowing the public to hear only what they want us to hear. (Sanger, TX); 0310 with talks about free radio, etc. (George Roberts, PA) 0303 sign on, new age music and talk of world problems. "Think for yourself and make your own decisions." (Trummel, MO)

International Voice of Global Free Radio—3400 USB at 0403 with several IDs, poking fun at the FCC. Claimed it was their first broadcast. (Bay, MO)

Radio Bob—15050 USB at 2000 with IDs, Star Trek theme. Mentioned it was their third show. (Bay, MO)

WEED—7385 USB at 0428 with test. Music, Clinton sound bites. (Bay, MO) 0421 saying not to send reports, wouldn't QSL this test. (Trummel, MO)

Omega Computer Generated Radio—7385 at 0133 sign on to 0210 close. Computer music. Minnesota drop. (Kirk Trummel, MO) Tentative at 0005, also 0054 and 0147. Comments on album covers from a Christian point of view, 800 phone number. (Trummel, MO)

CSIC—7375.3 at 1915 to 2002, weak. Brief fade in at 1930. (Trummel, MO)

The Kid Radio—7385 USB at 0332 with IDs, calls for QSOs. Also a fake of the above at 0400: "Andy Yoder is not The Kid Radio." (Trummel, MO)

WVOL—7386 USB to 2315 close of a test. Also at 0122 with 20 watt test. (Trummel, MO)

WKIK—7385 at 0255, to 0533. RNI programs, "WKIK, Jacksonville" IDs, Florida address. (Trummel, MO)

Shortest Day Radio/Kiwi Radio—7445 USB at 0615 to 0805 with mellow rock, IDs. (New) addresses for both stations, phone number. (Trummel, MO)

WRFW—Radio Free Wisconsin, 7385 USB at 0235 sign on, Drek Bender and Ben Dover with Bob Marly. Skits and IDs. Blue Ridge address. (Trummel, MO)

The Bob Johanus (?) Pirate Show—7384.3 at 0403 with funny commercials, greetings to listeners in several states, "broadcasting on 600 kHz AM & FM." (Trummel, MO)

As Kirk Trummel remarked in a slightly different context: "Wow! Wow!"

Way to go, folks...let's keep it up! See you next month!

Listening To The Civil Air Patrol

USAF Auxiliary Offers Monitoring Excitement

BY JAY CAPP

The Civil Air Patrol (CAP) is a volunteer auxiliary of the USAF founded in 1941 and currently charged with several missions including: search and rescue; disaster relief; and mercy flights. You may have heard of the Civil Air Patrol searching for lost or missing aircraft, serving as couriers of quickly needed blood or transplant organs or even assisting with border patrol activities. CAP maintains a fleet of light aircraft in every state which are used in conjunction with its assigned missions.

In addition to its flight activities CAP also



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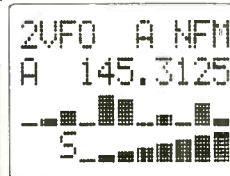
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Mode: USB, LSB, CW, AM, FMN, FMW

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 FMW 180kHz

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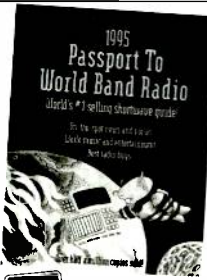
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RED FIRE () MOBILE
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AIRMOBILE
GREAT LAKES () AIR
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N. Carolina
S. Carolina
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LAND
MIDDLE EAST
DIAMOND
PLANT
AERO
KITTY HAWK
CRESCENT
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MOUNTAINEER

MOBILE
MIDDLE EAST () MOBILE
DIAMOND () MOBILE
PLANT () MOBILE
AERO () MOBILE
KITTY HAWK () MOBILE
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BLUE FLITE () MOBILE
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AIRMOBILE
MIDDLE EAST () AIR
DIAMOND () AIR
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KITTY HAWK () AIR
CRESCENT () AIR
BLUE FLITE () AIR
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Kansas
Minnesota
Missouri
Nebraska
N. Dakota
S. Dakota

LAND
NORTH CENTRAL
CORNSTATE
JAYHAWK
STAR FISH
BLUE BIRD
WIGWAM
BLACKFOOT
DACOTA

MOBILE
NORTH CENTRAL () MOBILE
CORNSTATE () MOBILE
JAYHAWK () MOBILE
STAR FISH () MOBILE
BLUE BIRD () MOBILE
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BLACKFOOT () MOBILE
DACOTA () MOBILE

AIRMOBILE
NORTH CENTRAL () AIR
CORNSTATE () AIR
JAYHAWK () AIR
STAR FISH () AIR
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WIGWAM () AIR
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ZIG ZAG
EMPIRE
KEYSTONE
RHODY
PICO

MOBILE
NORTHEAST () MOBILE
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PROFILE () MOBILE
ZIG ZAG () MOBILE
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KEYSTONE () MOBILE
RHODY () MOBILE
PICO () MOBILE

AIRMOBILE
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NUTMEG () AIR
PINETREE () AIR
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ZIG ZAG () AIR
EMPIRE () AIR
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FIR () AIR

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Utah
Wyoming

LAND
ROCKY MOUNTAIN
PIKES PEAK
MAGPIE
FATHER
UNCLE WILLIE
KING

MOBILE
ROCKY MOUNTAIN () MOBILE
PIKES PEAK () MOBILE
MAGPIE () MOBILE
FATHER () MOBILE
UNCLE WILLIE () MOBILE
KING () MOBILE

AIRMOBILE
ROCKY MOUNTAIN () AIR
PIKES PEAK () AIR
MAGPIE () AIR
FATHER () AIR
UNCLE WILLIE () AIR
KING () AIR

SOUTHEAST

Alabama
Florida
Georgia
Mississippi
Puerto Rico
Tennessee

LAND
SOUTHEAST
GOLDEN ROD
SPARROW
RED STAR
MOCKINGBIRD
PINEAPPLE
BLUE CHIP

MOBILE
SOUTHEAST () MOBILE
GOLDEN ROD () MOBILE
SPARROW () MOBILE
RED STAR () MOBILE
MOCKINGBIRD () MOBILE
PINEAPPLE () MOBILE
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AIRMOBILE
SOUTHEAST () AIR
GOLDEN ROD () AIR
SPARROW () AIR
RED STAR () AIR
MOCKINGBIRD () AIR
PINEAPPLE () AIR
BLUE CHIP () AIR

SOUTHWEST

Arizona
Arkansas
Louisiana
New Mexico
Oklahoma
Texas

LAND
SOUTHWEST
THUNDERBIRD
DOGWOOD
MAGNOLIA
PUEBLO
SOONER
EAGLE NEST

MOBILE
SOUTHWEST () MOBILE
THUNDERBIRD () MOBILE
DOGWOOD () MOBILE
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AIRMOBILE
SOUTHWEST () AIR
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NOTE: () insert assigned number.



The CAP emblem.

maintains an active nationwide radio network which is used to train its personnel for military or domestic emergencies. The national headquarters for CAP is at Maxwell AFB in Alabama. Command structure is broken down into eight regions and finally subdivided by state. In order to carry on the assigned missions CAP operates daily nets on both HF and VHF frequencies. CAP HF net traffic may be found operating on upper SSB each evening on the following frequencies in kHz: 4466: 4469; 4485; 4482; 4604: 4601; 4469: 4466; 4506; 4509; 4627: 4630; 4604: 4585; 4582; 18205 (Alaska only). Additional frequencies regularly used include: 2371; 2374; 4273; 4582; 7635; 7920; 11975; 14902; 20873. In addition to the HF net CAP operates regional VHF nets making good use of repeaters. VHF frequencies in MHz assigned to CAP include: 143.750; 143.900; 148.150; and 149.925. All CAP aircraft are equipped with both general civil aircraft radios and VHF FM gear operating on the frequencies listed. Few aircraft are capable of operating on HF.

CAP HF traffic will generally be concerned with administrative matters while VHF FM is where the action is handling search and rescue communication regarding downed aircraft or missing persons.

CAP aircraft will normally be found communicating with mobile units or handhelds. Reception of VHF FM traffic is generally pretty good because of the altitude of the aircraft and the use of repeaters. All CAP communication makes use of tactical call signs, with each state assigned a separate call sign. The call sign for each state begins with a name such as "Sea Shell" followed by a separate numerical designation for each individual member which is assigned on the state level.

CAP provides a valuable service to the US under the umbrella of the USAF. Tune in and follow the exciting activities yourself.

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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
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27.315	1.95	57
27.365	2.00	58
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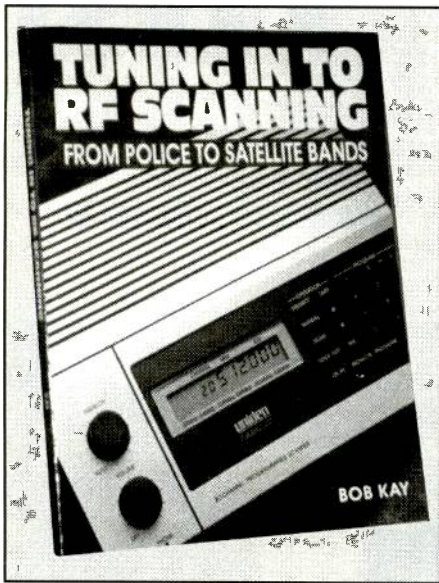
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Scanner Manual

A recent edition in the scanner users' library of books is *Tuning In to RF Scanning: From Police to Satellite Bands*, written by Bob Kay.

This is a 150-page profusely-illustrated book in a competent and informal non-tech style. The book has something to offer both for the complete neophyte and experienced hobbyist. This is true. Neophytes will glean an enormous amount of useful information from the pages of this book, and even experienced hobbyists will find the book of definite value, use, and interest.

Kay discusses scanner equipment and antenna systems, and how to set up a monitoring station. He explains how to use a scanner. He describes various types of VHF communications systems. Next, he delves into laws affecting scanner usage. Then, there is a "Popular Monitoring Targets" section, where the author enumerates many different types and categories of stations and services that hobbyists monitor on scanners. He provides some typical frequencies and bands as examples of each type.

A valuable and comprehensive section lists clubs, books, and magazines, of interest to scanner owners.

Tuning In to RF Scanning: From Police to Satellite Bands is a particularly good text for those getting started in the scanning hobby. That's because the book offers a great deal of basic information, and in a form that's easy to understand. Still, the book retains its ability to speak to the more seasoned scanner user in an intelligent manner that provides numerous worthwhile insights drawn from his many years in the hobby. We liked this book, and think you will, too.

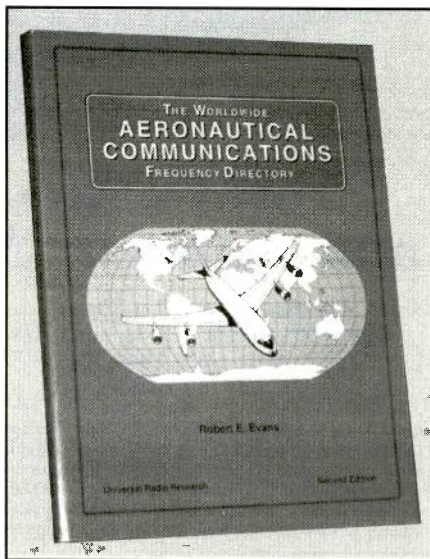
Tuning In to RF Scanning... is \$14.95, plus \$4 shipping and handling (Canada \$5),

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HF Aero Data

The 2nd Edition of Robert Evans' *Worldwide Aeronautical Communications Frequency Directory* has been issued. Here's a 260-page reference publication that directs its main focus to HF (that is, below 30 MHz) aero communications, as they relate to commercial and military operations around the world.

What with weather comms, airline company traffic, routing and reporting frequencies, military aero traffic, more than 2,300 frequencies are listed in Evans book. These



are frequencies that contain activity in voice, RTTY, and digital modes. Frequency lists are cross-referenced by services and location, with explanations of the different categories of stations.

Evans also provides many pages of general descriptive text regarding the hobby of aero DX'ing to familiarize the newcomer to the lingo, types of traffic, and other relevant factors. The HF voice transmissions can be easily tuned in on any shortwave receiver that can acquire SSB mode. There is also information on ACARS operations, a digital air/ground system. Hobbyist reception of ACARS requires specialized receiving terminal equipment interfaced with a VHF scanner.

Additional information in the book includes photos, maps, a glossary, and list of sources, plus several appendices of various aero-related codes and designators.

Here's a thorough and well-organized reference volume of HF international aero

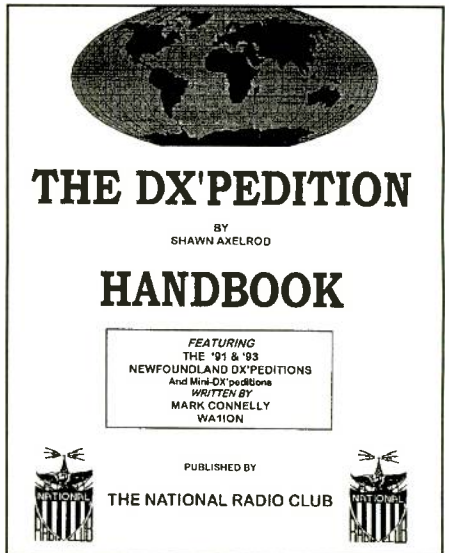
monitoring data. A lot of good information collected and assembled into one handy volume for easy hobby monitoring use. As such, it's worth having within arm's reach the next time you tune across any aero band on your communications receiver.

Worldwide Aeronautical Communications Frequency Directory, 2nd Edition, is \$19.95. It's available from many radio dealers, or directly from its publisher, Universal Radio, Inc., 6830 Americana Pkwy., Reynoldsburg, OH 43068. Phone 1-800-431-3939.

DX'pedition Handbook

The National Radio (NRC) has been specializing in longwave and mediumwave (broadcast station) hobby DX'ing for at least 60 years. They are experts in every aspect of this area of the hobby.

NRC has recently published their *DX'pedition Handbook*, which consists of advice, tips, and loggings from the club's premiere DX'peditioners, Shawn Axelrod and Mark Connelly, WA1ION. These guys have gone to the most outrageous places to set up their tents and portable receivers in or-



der to savor rare and unusual DX stations. Away from the clatter and interference of strong local station signals, they are able to drag in signals that make you want to join them on their next jaunt.

They discuss where to go, and show that a DX'pedition doesn't have to be as far away from your present location as you might think. Mini-DX'peditions are shortie trips, and close to home. You'll share in their extensive knowledge about planning, weather considerations, site selection, equipment, antennas, portable masts, power sources, static protection, best frequencies to search, and that sort of good inside stuff.

There are stories about two truly fascinating DX'peditions to Newfoundland, providing a considerable amount of insight. Many hundreds of stations and specific loggings are provided.

Though prepared for the long/medium-wave broadcast DX'er, this interesting 80-page book details many problems also facing SWL and ham DX'peditions.

The *DX'pedition Handbook* is \$12.95 (postpaid to USA/Canada) from The National Radio Club, Publications Center, P.O. Box 164, Mannsville, NY 13661-0164.

Putting Scanner Into Practice

We don't see very many books about the scanning hobby outside of North America, but a rather good one showed up here not long ago. It's called *Scanners 3: Putting Scanners Into Practice*, by Peter Rouse.

The British entry is 271 pages, and is filled with photos and frequencies relating to scanning in the U.K. There are scanner stats for some radios that are identical to those sold here, and other radios that look sort-of similar to ones we use. Then there are scanners that don't look like anything ever seen on this side of the puddle.

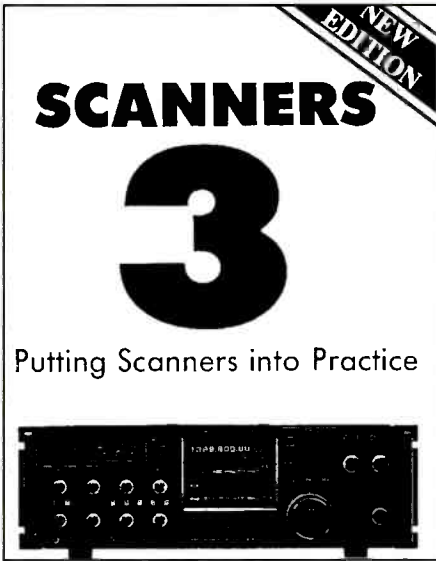
Frequency listings are extensive, and cover 25 through 2 GHz. These include numerous mobile phone services, ambulances, ports and harbors, aero, military, public safety, and band allocation plans.

There is also general information on scanner usage, as well as descriptions on

different types of mobile radio systems.

Quite a fine book, and an excellent look at how our fellow hobbyists are using and enjoying scanners in the U.K.

Scanners 3: Putting Scanners Into Practice comes from Argus Books, Argus House, Boundary Way, Hemel Hempsted HP2 7ST, England. Phone: (0442) 66551. FAX (0442) 66998. The price of this book (in Pounds Sterling) is 9.95. You'll have to find out the current rate of exchange if you want to order the book, and add additional funds for shipping and handling.



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RS300	1-15	30A	24A	7x6x9	18
PS120M	3-15	12A	9.2A	5x4x9	11
PS50TM	8-15	5.2A	4.2A	6x3x8	6

* ICS: 50% Duty Cycle

HIGH POWER DUPLEXERS

- DX10M - PL259's With cables on both bands
- DX10N - PL259/N With cables 440MHz/ Type N
- DX10D - PL259 Without cable on both bands

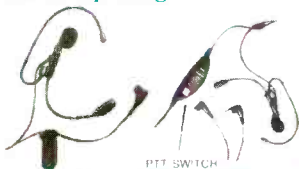
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DP830	1.8-150MHz 140-525MHz	0-1.5kW 0-150kW	UHF & N	< 1W
NS660A	1.8-150MHz	30/300/ 3kW	UHF	< 8W
CN101	1.8-150MHz	15/150/ 1.5kW	UHF	< 4W
CN103M/N	140-525MHz	20/200W	UHF or N	< 4W
CN460M	140-450MHz	15/150W	UHF	< 3W

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VSWR	below 0.12	below 1:1.3 at 1.3GHz
Insertion Loss	less than 0.2 dB	< 1.2 dB at 1-2 GHz
Isolation	60 dB 600Mhz	50dB 1 Ghz
Connector	SO239	N
Output Port	2	2

other models available



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CIRCLE 65 ON READER SERVICE CARD

27 MHz COMMUNICATIONS ACTIVITIES

Cobra Electronics gave us a chance to use one of their clever HH-40 handheld CB radios. There's a detachable battery pack on the set, and when you remove it, the business portion of the HH-40 is only about the size of the palm of your hand. Even with its battery pack, the whole deal is just a shade over 7-inches high, by 2-inches wide, by about 1.5-inches deep. That's small, but it kicks out a full 4-watts, and has an optional low-power 1-watt switch for battery-saving short-range work. It weighs 1 lb., including battery pack.

The HH-40 is a good looking radio, and ruggedly constructed. It's suited to all applications from hobbying to emergency teams, from campers to construction sites. It's an ideal motorist's emergency radio, too.

This radio may be powered from its internal rechargeable batteries, or from a vehicle's cigarette lighter plug-in (power cord is supplied), or from home (using the AC adapter/charger, supplied). A rubberized antenna fits into a BNC connector, which means you can use optionally use the HH-40 with any base or mobile antenna for coverage that extends beyond that provided by the stock one.

There's a big backlit LCD channel and signal strength display. Tuning is by means of up/down buttons. Other controls are for instant Channel 9 access, low power, squelch, light, PTT, and volume. There are jacks for an earphone or external speaker/PTT mic.

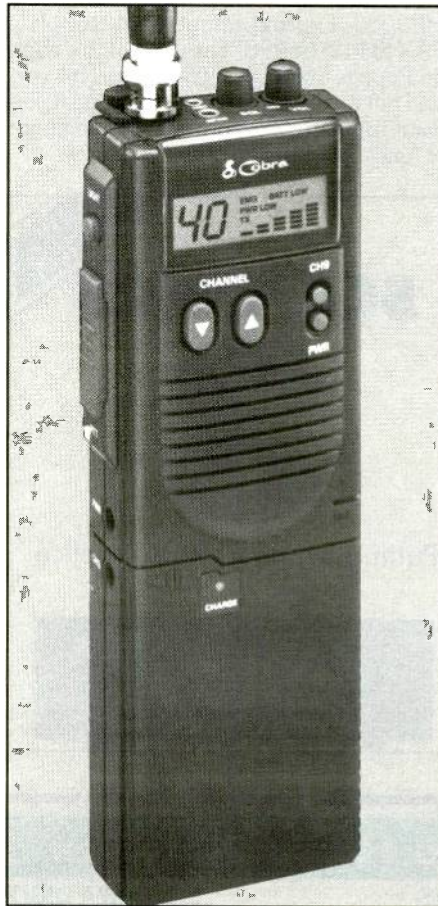
In addition to the supplied accessories already mentioned, there's a belt clip, plus a slide-on cover for the battery contacts. Available optional accessories include a weather resistant carrying case, a telescoping antenna, and remote speaker/PTT mic with a coil cord.

We like this set. It's a peppery little handful that kicks out a good signal. If you feed it into a base or mobile antenna, the HH-40 equals the range, quality, and performance of the average full-powered CB rig. People you contact don't believe it when you tell them you're using a handheld. It's a snap to operate, and very versatile. In every respect, a lot of radio, and done up in a particularly appealing package.

The HH-40 comes from Cobra Electronics, 6500 West Cortland Street, Chicago, IL 60635. You can order one a Cobra HH-40, or find out the name of your nearest dealer by calling 1-800-COBRA-22. Please mention you saw it in *Popular Communications*. You can get information by circling 11 on our Readers Service.

Extending Mobile Range

Mobile antennas work best when mounted over a metal surface area, such

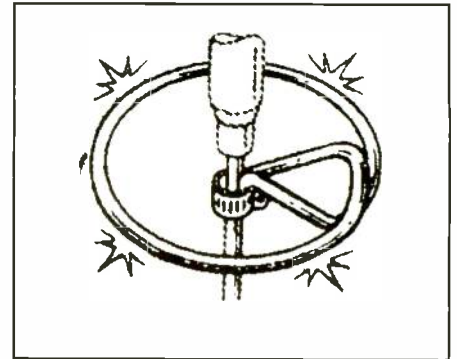


Cobra's exciting HH-40 handheld CB.

as the center of a roof or trunk lid. The metal surface area acts as the primary ground plane, establishing the radiation strength and signal pattern. Unfortunately, not all installations meet these requirements. Marine antennas don't. Vehicle antennas might end up mounted on Fiberglass, or on gutters, mirrors, or bumpers. Trucks, campers, RV's, cycles, vans, trailers, etc. all have special mounting considerations that result in antenna having to be located in less-than-ideal places other than over a metal surface, and not centered.

A common squawk from those who live with such antenna mounting situations is that they don't have the transmitting and receiving range they need or want. Incoming and outgoing signals just don't make the trip. Poor radiation angle and/or lopsided signal patterns cause dead spots and even fading.

What is needed is something to provide the missing primary ground plane. The answer is *Zing Ring*, an easy-to-install 360-degree primary ground plane for mobile antennas used on frequencies below 180 MHz. It's ideal for CB. That includes all



The Zing Ring adds a primary ground plane to mobile whips.

mobile center loaded, top loaded, or whips without a loading coil (except power). This is also suited for other whip antennas used on radios operating below 180 MHz, such as for cordless (not cellular) phones, business radios, ham, marine, scanners, etc.

Zing Ring has no moving parts, no batteries, and requires no power source. Yet, it's a (legal) passive amplifier that improves signals and radiation angle as much as 40 percent in all directions. It corrects lopsided signal coverage and reception in order to reduce dead spots.

The device is a nickel plated brass ring 5.5-inches in diameter. It comes with instructions, and requires only a screwdriver to install.

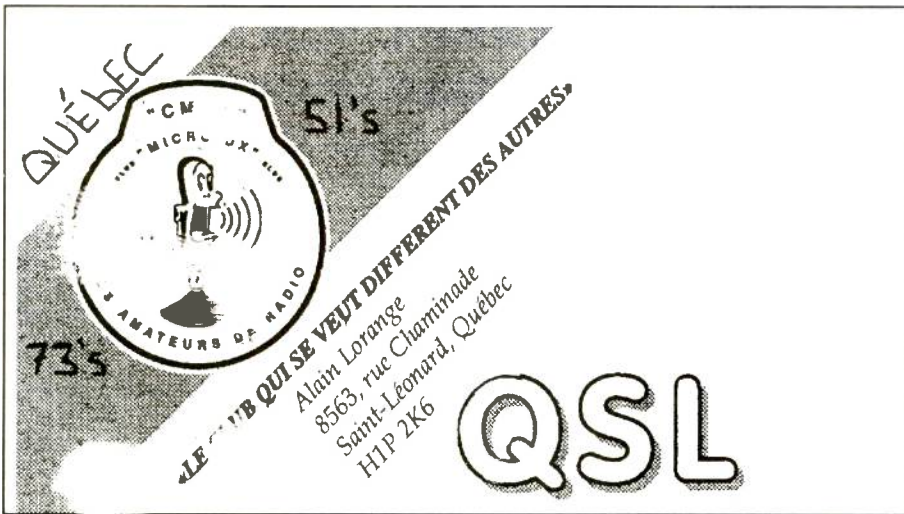
Zing Ring is \$13.95, plus \$4 shipping and handling (\$5 to Canada) from CRB Research, P.O. Box 56, Commack, NY 11725. NYS residents please add \$1.53 tax. VISA/MC orders accepted. Toll-free phone order number 1-800-656-0056. Canada/AK/HI orders: (516) 543-9169. For complete catalog call (516) 543-9169, or circle 11 on our Readers Service.

Gizmotchy?

The column always receives inquiries seeking information asking about obtaining a *Gizmotchy* antenna. For those who aren't familiar with the *Gizmotchy*, it is (or was) a base station beam having the general appearance of three aircraft propellers lined up on a boom. You could switch polarization from vertical to horizontal.

The *Gizmotchy* first showed up in the early days of CB radio, and it was around for years. It had a good reputation with operators wanting to lay out a big signal. The *Gizmotchy* was never produced by a major manufacturer. The original ones were made beginning about 1961 by Marina Communications, Los Angeles, Calif., and sold for \$56.

As time went on, it's entirely possible



An attractive QSL submitted by Alain, from beautiful Quebec, Canada.

that the *Gizmotchy* may have become simultaneously made independently by various individuals and small companies. I don't think it was often sold in stores. For a long time, it was a true underground product. Frequently, you had to buy one over the air from another CB'er, who delivered it in the trunk of his car. Also, they were sold at CB coffee breaks.

In the 1970's, The Antenna Specialists Co. brought out a beam that was similar to the *Gizmotchy*.

At least as late as the mid-1970's, the legendary *Gizmotchy* was being made by a company called Charles Electronics. They had dubbed it the *Charles Gizmotchy*, and were advertising it in CB publications. The company was in the midwest, although I don't remember exactly where. I haven't personally seen or heard anything about the *Gizmotchy* since then, but it may still be in production somewhere. If any reader can add information, please do.

Modern antennas have surpassed the *Gizmotchy*, as good as it was. The Joe Gunn Enterprises 3+3 STAR and 4+4 STAR beams are generally comparable to the old *Gizmotchy*, but are much better made, and do a superior job. Joe Gunn Enterprises is at Route 1, Box 32C, Hwy. 82, Ethelville, AL 35461. Phone (205) 658-2229. They'll be pleased to furnish more information on their quality antennas.

From the Mail Sack

Can any reader supply a copy of a schematic for a Midland 79-893? This is an older (40 channel) AM/SSB radio. It's needed by David Kerl, 23-9, County Road Y, Hatley, WI 54440.

Jeff Multer, of Charlotte, N.C., sent a copy of literature he received hawking a \$20 cheapie multi-band (CB/TV/FM/Police/Weather) tunable handheld receiver. A person's ears will surely pick up further than the radio will receive. What particularly amused Jeff is that the CB chan-

nels shown on the tuning dial are numbered from 1 through 80! Maybe the manufacturer has inside information about a major band expansion.

We had never before learned about a CB'er in Bangladesh, but a reader tells us about Ananto, who is a 22-year-old graduate student. In addition to CB radio hobbying and SWL'ing, he collects pennants, stickers, pens, patches, and stamps. He likes DX'ing and corresponding with other hobbyists. Ananto belongs to the Central Philippines International DX Group, and a number of others. Would enjoy receiving mail from our readers. His address is Ananto Kumar, Wapda Colony Amla, P.O. Amla-7032, Kushtia, Bangladesh.

A French CB'er wrote mentioning he is interested in finding out the (legal and illegal) channels used for (AM, packet, and SSB) calling and other purposes in the various nations of the world. This includes hobbyists using HF pirate frequencies. This operator is also seeking club addresses. His address for readers wishing to contact him, is Jacques Morand, Route D'Oudalle, F-76430 St. Aubin Routot, France.

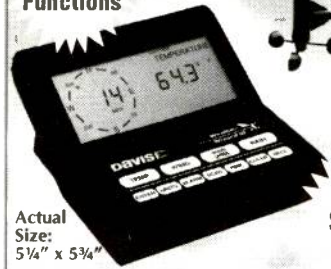
A California reader, who requests anonymity, asks if it is legal for a Channel 9 monitoring group to order Channels 8 and 10 cleared when they are handling a 10-33. He insists he's witnessed this, and he wonders how we'd deal with such a request.

No individual or group (except the Feds, maybe) has the legal right to clear any CB channel, even CB-9. There seems no apparent logic to request adjacent channels to be cleared. Our correspondent did not state whether this was standard procedure, or if it happened only once. Yet, if such requests came during an actual 10-33's, and were made only occasionally, I'd be inclined to accommodate as a courtesy. No point in doing battle with people trying to be of service to the community.

Here's a thought for Holiday cheer. Why not send us your CB QSL or a station photo, and we look for your inquiries and ideas.

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CIRCLE 58 ON READER SERVICE CARD

NEW PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



Icom Introduces IC-281H Two-Meter Mobile

Icom introduces the IC-281H two-meter mobile with receive capability on the 440 MHz band. Using this bonus receive band, enjoy full duplex crossband operation between the two-meter and 70 cm bands.

Automatically store your previous 10 transmit frequencies in the 10 "scratch pad" memories (five simplex and five duplex). This allows you to instantly recall recent operating information. A memory allocation function allows you to store up to 60 memory channels that can be divided between the main and bonus receive band. Transmitted frequencies are automatically entered into "scratch pad" memories for easy recall.

Automatic memory channel advance enables you to choose to have the memory channel indication automatically increment itself after a memory channel is programmed. This speeds up the programming process.

A TNC can be connected directly to the modulation circuit via the (DATA) jack. Data speeds up to 9,600 bps, and can be used with no modifications. In addition, a newly designed modulation circuit prevents over-modulation even during high data throughput. A one-piece die-cast aluminum frame with a large heat sink provides increased stability for high duty cycle operation, such as packet.

Full access to all of the IC-281H's functions are available from the supplied DTMF microphone. The IC-281H also has one-push action switches (no (FUNC) switch) to simplify and speed up function access, a SET mode to customize operation and built-in pager and code squelch functions. A time-out timer function prevents accidental continuous transmission when using the one-touch PTT function. Additional features include three pairs of programmable scan edges, auto dialing capability for autopatching and a large easy-to-read function display.

Optional features include a UT-66 voice synthesizer and UT-85 tone squelch unit providing pocket beep and tone squelch, as well as optional tone scan to assist you in accessing a repeater when the subaudible tone is unknown (UT-85 required).

The suggested retail price for the IC-281H is \$462. For further information, please contact your local Icom amateur radio dealer at Icom America, Inc., 2380-116th Avenue N.E., Bellevue, WA 98004, (206) 454-8155, or circle 101 on our Readers' Service.

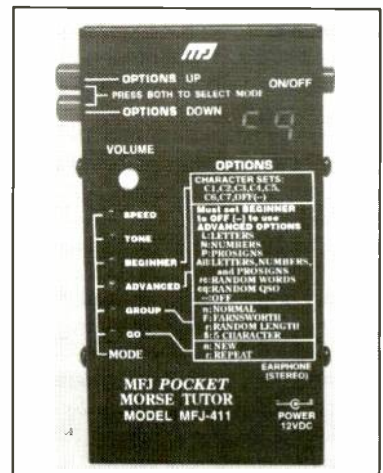
Personal Morse Code Tutor

Here comes an opportunity for you to perfect or to learn your Morse Code skills! MFJ Enterprises Inc.'s MFJ-411 Personal Morse Code Tutor will take you from zero code speed to expert speed, or from beginner to extra class, with this outstanding customized code practice.

A Random QSO Mode lets you practice plain English QSOs to get you ready for the FCC code exam; a Word Recognition Mode lets you practice copying entire words—just like the pros on 40 meters!

The MFJ-411 Personal Morse Code Tutor is a pocket-size, powerful learning tool that teaches you letters and numbers by association and relation. You will be copying code in no time!

With the personal Morse Code Tutor, you can customize your practice sessions, vary your speed from five to 60 words per minute, and even set the volume and side tone from 300 to 3300 Hz. It can be customized to whatever is right for you!



The Personal Morse Code Tutor will give you hundreds of commonly used words in amateur radio, so that you can start recognizing entire words instead of fooling around with individual letters.

With practice and the Personal Morse Code Tutor, you will learn to copy words in your head without writing them down, and carry on an entire CW conversation without the use of paper!

You're stepping into the future with style when you purchase the MFJ Personal Morse Code Tutor, and you can take it anywhere! The Tutor is only 3 x 1-1/8 x 5-1/2 inches; it will fit into your briefcase, travel bag, or even your pocket. It uses a 9-volt battery (not included) or 110 VAC with the optional MFJ-1312B.

You can use earphones for private practice or you can use its built-in speaker for group sessions.

The MFJ-411 Personal Morse Code Tutor comes with MFJ's full one year un-

conditional guarantee.

For more information or to order, contact any MFJ dealer or MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762, or call (601) 323-5869, FAX (601) 323-6551, or order toll free at 1-800-647-1800. More information available by circling 102 on our Readers' Service.

Magnetic Dipole Balun

Palomar Engineers announces its Magnetic Dipole Balun for SWL'ers who use dipole antennas. It replaces the center insulator and provides the proper balance-to-imbalance conversion for coaxial cable. Balun action prevents noise pickup on the cable shield, giving quieter reception.

The balun also connects both sides of the



antennas to the cable shield (at DC and power line frequencies). This eliminates charge build-up on the antenna. All static charges flow to ground, not through the radio. The balun is rustproof, weatherproof, and has an SO-239 connector for coaxial cable. Two heavy eyebolts are provided for the antenna wires and an eyebolt on top for use with inverted V antennas.

Model MDB-2 is \$39.95, plus \$6 ship-

ping and handling in U.S. and Canada.

For more information contact Palomar Engineers, P.O. Box 462222, Escondido, CA 92046. Telephone (619) 747-3343, or circle 103 on our Readers' Service.

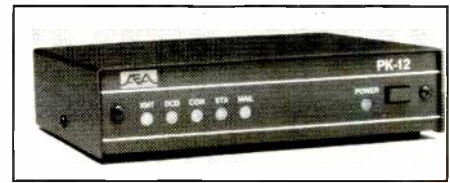
Data Controller

AEA offers a new addition to their high-quality line of data controllers—the PK-12 Packet Controller. The PK-12 is a low-cost, 1200 bps VHF/UHF packet controller designed for those just getting into packet radio, as well as serious "packetees" who want a small unit they can take with them when they're on the go. The PK-12 is a power-saver as well, requiring less than 80 mA@13.6 VDC.

The PK-12 comes with AEA's popular MailDrop feature. MailDrop allows users to automatically receive and reverse-forward messages and control third party traffic. If the standard 14K bytes of battery-backed Mailbox isn't enough, then it can be easily expanded to 100K bytes.

This unit was made for the new user. To make things easier for beginners, the command set can be limited to the most often used commands. Don't spend time studying a huge command list, just plug it in and get on the air!

If you're an experienced packeteer, the PK-12 offers our famous HOST mode, and many special commands not found in other data controllers. The PK-12 has KISS, PERSISTENCE, and SLOTTIME, along with a Gateway feature. Gateway firmware includ-



ed in the new PK-12 will support local acknowledgment (acks) of packets like a full-service node does, so instead of digipeating through a MYALIAS or MYCALL call sign to connect to a destination station, simply connect to the MYGATE call sign. Advanced users can turn EXPERT ON and customize the PK-12 for optimum performance in their applications.

The PK-12 is designed to be an excellent traveling companion! It weighs under 12 ounces and measures only 5.78 inches in width, 5.28 inches in diameter, and 1.35 inches in height. The small size and low power requirements make it ideal for amateur radio operators who want to take packet radio on vacation, back to college, or even go mobile with it.

Suggested retail price for the PK-12 is \$129. Suggested retail price for the 100K MailDrop UPGRADE is \$50.

The PK-12, as well as the rest of AEA's high quality product line, are available from your amateur radio dealer.

For more information contact Advanced Electronic Applications, Inc., P.O. Box C2160, Lynwood, WA 98036. Phone, (206) 774-5554, FAX, (206) 775-2340, or circle 104 on our Readers' Service.



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CIRCLE 131 ON READER SERVICE CARD

Harry Designs His Dream Receiver

I always get a little resentful when I walk into a sportings good store and see all the sports equipment endorsed by various athletes. There are basketballs bearing the signatures of Michael Jordan...baseballs with "Ken Griffey, Jr." scrawled across them...there must be a lot of conflict in the backfield of the Dallas Cowboys, since Troy Aikman and Emmitt Smith endorse footballs from different companies. And the shoes! Is there a professional athlete left that isn't hawking some brand of shoes? If there is, he's probably only 18 and playing Class A baseball somewhere.

As a self-acknowledged DXing legend, this hurts. Look through the ads in this issue of *POP COMM*. Do you see a receiver endorsed by Harry Helms? Gerry Dexter? Tom Kneitel? No, you don't. Instead, the receivers bear some dull nomenclature like "ZDX492." You think a kid would get excited over a basketball or football with something like that across it???

Those receiver manufacturers should take a clue from the sporting goods companies and let people like me endorse their products. But I wouldn't put my name on every receiver manufactured. No sir! I have some firm ideas about what my dream receiver would be like, and wouldn't endorse anything less. Any company thinking about marketing a super-deluxe receiver called the "Harry" had better pay close attention to this month's column. And even if they disagree with my conclusion that there are millions of people out there eager to DX on a "Harry," I still think I have some good ideas on receiver design.

Inside the Box

It's easy to get caught up in the external hoopla and gizmos about a receiver, but it's what's inside the receiver that largely determines how much DX you hear.

Take things like circuit isolation, shielding, and grounding. One big reason why vacuum tube receivers from the 1950s (like the Collins R390A and Hammarlund HQ180) are still used by many top DXers is their selectivity and how well they can handle strong signals. If you DX with one of these dinosaurs next to many contemporary receivers, the result can be shocking. On the new receiver, 49 meters may be filled with phantom signals from strong stations at night while the vacuum tube unit receives that band "clean." Using the same selectivity bandwidth, the vacuum tube receiver can "split off" another station from a stronger one a kHz or two away with readable audio, while the signal produced by the contemporary receiver could be filled

with QRM from the stronger station. What's going on?

The problem arises in the compact size and light weight of some contemporary receivers. Packing all those components together produces a smaller receiver, but it also gives a lot of pathways for signals to "leak" around filters and be coupled to adjacent circuits. Those monster-sized receivers of yesterday had components spread out and used lots of metallic shielding to isolate circuits, with the shields connected to true RF ground planes (usually the large chassis the receiver was built on) to drain away the random energy. The result was that the different circuit sections were isolated from each other and the filters were "RF tight," with no way for QRM to get around the filters. One of the hopeful developments of the last few years is how new top-of-the-line receivers have begun to incorporate these classic yet effective techniques; hopefully, they'll soon show up in most desktop receivers.

Another advantage claimed for older receivers is better audio quality for AM signals. It's true; some solid-state receivers do tend to have distorted, noisy audio in the AM mode. Part of the problem is that many newer receivers are designed primarily for SSB and RTTY reception and treat the AM mode almost as an afterthought. On some receivers, you get better AM audio by tuning such stations in the SSB mode! All it takes is an audio quality op amp IC. Happily, this is another area where more recent solid-state receivers are showing notable improvement.

I've never been a big fan of "broadbanded" receiver RF amplifiers. A lot of older tube receivers (and some early solid-state ones) incorporated tunable active preselectors. You had to tune the preselector to "peak" it for a given frequency range. This was a pain in the nether regions, but it did give such receivers a good degree of immunity from interference caused by strong stations outside the range the preselector was tuned to. Broadbanded receivers have a wide range RF amplifier that amplifies all signals in its tuning range equally well. That means you don't have to tweak a knob when you switch to a new band, but it also means that strong signals on bands like 49 and 31 meters can produce phantom signals and crud on adjacent frequencies. I can understand why receiver designers might be reluctant to add another knob that users must manipulate, but it would be possible to design a receiver RF stage that could automatically track the frequency the receiver is tuned to and tune itself to that frequency. That's a feature the "Harry" would definitely have!

Most receivers today do their noise limiting in their audio stages. However, the most effective (but not necessarily the easiest) place to perform noise limiting is in the receiver's intermediate frequency (IF) stages. Most receivers also place their notch filter functions in their audio stages, but again notch filtering in the IF stages is most effective.

Summing up, Harry's dream receiver would use lots of internal shielding, circuit isolation, and grounding. It would use an audio-grade op amp in the audio stage, and the RF amplifier would have either manual or automatic preselection. And those front panel noise limiter and notch filter controls would lead to the IF stages, not the audio stage.

Set Us Free!

I always wonder why some receiver manufacturers decide they need to protect us from ourselves. Examples of this attitude are:...you can't use a lot of receiver pre-amplifier circuits below 1600 kHz because that might produce overloading...pass-band tuning only operates in certain modes...selectivity bandwidths are "tied" to certain modes and can't be selected independently...and so it goes. As a result, several businesses are performing receiver modifications to undo these "features."

I have no problem with default settings, such as a bandwidth like 2.4 kHz being automatically selected when I switch my receiver to SSB. But I want to be able to then switch to a different bandwidth, like 4 or 1.8 kHz, if I so desire. If I'm using the preselector below 1600 kHz and the result is an overloaded receiver, I'll eventually figure out that I should turn the damn thing off; I don't need to be protected by having the preselector inoperable on those frequencies.

The "Harry" receiver would assume you're an intelligent person who knows what you're doing (after all, you're a *POP COMM* reader!) and would let you use any of the controls, in any mode, in any way.

Build in the Useful Stuff

A lot of people (like me) use antenna tuners to precisely match antennas to our receivers. Antenna tuners are so useful—and so widely used—that I'm surprised no receiver manufacturer hasn't decided to include a built-in antenna tuner with their models. A good antenna tuner isn't very expensive, and it would be a relatively simple matter to add one to desktop receivers.

Many people also use audio filters with their receivers, and they are extremely use-

Tap into secret Shortwave Signals

Turn mysterious signals into exciting text messages with this new **MFJ MultiReader™** even with weak signals buried in noise.



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

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

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

Eavesdrop on the World

Eavesdrop on the world's press agencies transmitting *unedited* late breaking news in English -- China News in Taiwan, Tanjung Press in Serbia, Iraqi News in Iraq -- all on RTTY.

Super Active Antenna

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

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

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

3x2x4 in. 12 VDC or 110 VAC with

\$129⁹⁵ MFJ-1024 MFJ-1312, \$12.95.

Indoor Active Antenna

MFJ-1020A
\$79⁹⁵

Rival

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

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

Compact Active Antenna

MFJ-1022
\$39⁹⁵

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

Also improves scanner radio reception on VHF high and low bands.

Detachable 20 in. telescoping antenna. 9 volt battery or 110 VAC with MFJ-1312B, \$12.95. 3 1/4 x 1 1/4 x 4 in.

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

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

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

Printer Monitors 24 Hours a Day

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

Printer cable, MFJ-5412, \$9.95.

MFJ MessageSaver™

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

High Performance Demodulator

MFJ's high performance *phaselock loop* demodulator consistently gives you solid copy --

MFJ Antenna Matcher

MFJ-959B
\$89⁹⁵



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

Preamp with gain control boosts weak stations 10 times. 20 dB attenuator prevents overload. Pushbuttons let you select 2 antennas and 2 receivers. Cover 1.6-30 MHz. 9x2x6 inches. Use 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

High-Gain Preselector

MFJ-1045B
\$69⁹⁵



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

Dual Tunable Audio Filter



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

Easy Up Antennas Book

How to build MFJ-38 and put up
\$16⁹⁵

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

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

Receive Color News Photos, Weather Maps, RTTY, ASCII, Morse Code

MFJ-1214PC
\$149⁹⁵



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

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

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

Super Hi-Q Loop™ Antenna

The **MFJ-1782**
Loop™ is a

professional quality remotely tuned 10-30 MHz high-Q antenna.

It's very quiet and has a very narrow bandwidth that reduces receiver overloading and out-of-band interference.

High-Q Passive Preselector

MFJ-956
\$39⁹⁵



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

Mobile Scanner Ant.

Cellular **MFJ-1824BB/BM**
\$19⁹⁵

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

Easy to use, tune and read

It's easy to use -- just push a button to select modes and features from a menu. It's easy to tune -- a precision tuning indicator makes tuning your receiver easy for best copy.

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

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

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

No Matter What Guarantee

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

Try it for 30 Days

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

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

Order today and try it -- you'll be glad you did.

MFJ 12/24 Hour LCD Clocks

MFJ-107B
\$9⁹⁵



MFJ-108B
\$19⁹⁵

MFJ-105B
\$19⁹⁵

MFJ-108B, dual clock displays 24 UTC and 12 hour local time *simultaneously*. **MFJ-107B**, single clock shows you 24 hour UTC time. *3 star rated by Passport to World Band Radio!*

MFJ-105B, accurate 24 hour UTC quartz wall clock with large 10 inch face.

MFJ Antenna Switches

MFJ-1704
\$59⁹⁵



MFJ-1702B
\$21⁹⁵

MFJ-1704 heavy duty antenna switch lets you select 4 antennas or ground them for static and lightning protection. Unused antennas automatically grounded. Replaceable lightning surge protection device. Good to 500 MHz. 60 dB isolation at 30 MHz. **MFJ-1702B** for 2 antennas.

World Band Radio Kit

MFJ-8100K
\$59⁹⁵ kit

MFJ-8100W
\$79⁹⁵ wired



Build this *regenerative* shortwave receiver *kit* and listen to shortwave signals from all over the world with just a 10 foot wire antenna.

Has RF stage, vernier reduction drive, smooth regeneration, five bands.

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POP'COMM's World Band Tuning Tips

December—1994

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2310	VL8A, Australia	1100		6105	R. Universidad de Costa Rica	0300	SS
2460	R. Alvorada, Brazil	0900	PP	6115	R. Union, Peru	0900	SS
3205	R. Ribeirao Preto, Brazil	0000	PP	6120	R. Globo, Brazil	0900	PP
3210	R. Mozambique	0300	PP	6125	Spanish National Radio	0230	
3220	Channel Africa, S. Africa	0300		6150	AWR, Costa Rica	0600	
3220	HCJB, Ecuador	0430		6155	R. Austria Int'l	0700	
3240	TWR, Swaziland	0300		6155	R. Sweden	0230	
3270	R. Namibia	0400		6165	R. Netherlands, Bonaire relay	0100	
3280	La Voz del Napo, Ecuador	1000	SS	6165	Swiss Radio Int'l	0530	
3290	R. Centro, Ecuador	1000	SS	6185	R. Educacion, Mexico	0600	SS
3300	R. Cultural, Guatemala	0300		6190	BBC, Lesotho relay	0300	
3300	CHU, Canada (time station)	0200		6203	R. Cusco, Peru	0100	SS
3356	R. Botswana	0400		6235	R. Quisqueya, Dominican Rep.	0200	SS
3366	GBC, Ghana	0600		6245	Vatican Radio	0640	
3366	R. Rebelde, Cuba	0200	SS	6280	King of Hope, Lebanon	0400	AA
3375	R. Nacional Sao Gabriel, Brazil	1000	PP	6305	La Voz del Cid, anti-Cuba	0600	SS
3380	R. Chortis, Guatemala	1130	SS	6724	R. Satellite, Peru	0300	SS
3985	Swiss R. Int'l	0600		7100	VOIRI, Iran	0028	s/on
3995	Deutsche Welle, Germany	0400	GG	7125	Italian R. Relay Service	1030	
4409	R. Eco, Bolivia	0100	SS	7150	Deutsche Welle, Germany	0400	
4472	R. Movima, Bolivia	0030	SS	7180	AWR via Slovakia	0830	s/on, GG
4508	R. Horizonte, Peru	0100	SS	7190	VOIRI, Iran	0030	
4725	V of Myanmar	1100	Burmese	7190	R. Africa, Eq. Guinea	2300	
4755	Rdf. Maranhao, Brazil	0200	PP	7200	Rep. of Sudan Radio	0300	AA
4760	ELWA, Liberia	0700		7215	TWR, Swaziland	0430	
4765	RTVC, Congo	0355	s/on, FF	7250	Vatican Radio	0600	
4770	R. Nigeria, Kaduna	0500		7255	V of Nigeria	0500	
4777	R. Gabon, Libreville	0500	FF	7265	Sudwestfunk, Germany	2200	GG
4780	Onda Musical, Dominican Rep.	0200	SS	7275	ELBC, Liberia	0655	s/on
4790	R. Atlantida, Peru	0200	SS	7325	BBC, England	0000	
4800	R. Lesotho	0400	vernacular	7345	R. Prague, Czech Rep.	0700	
4805	Rdf. do Amazonas, Brazil	0100	PP	7355	KNLS, Alaska	1300	
4820	La Voz Evangelica, Honduras	0300		7375	RFPI, Costa Rica	0400	
4830	R. Tachira, Venezuela	0200	SS	7385	TWR, Monaco	0700	
4835	R. Tezulutlan, Guatemala	1200	local	7475	RTT Tunisienne, Tunisia	0500	AA
4835	RTV Malienne, Mali	0600	FF	9195	R. Omdurman, Sudan	0255	sign on, AA
4855	R. Tropical, Brazil	0000	PP	9345	R. Pyongyang, N. Korea	1300	
4865	La Voz del Cinaruco, Colombia	0100	SS	9355	KHBI - Monitor Radio, Saipari	1400	
4870	ORTB, Benin	0500	FF	9420	Voice of Greece	0130	GG/EE
4886	R. Villa Rica, Peru	0950	s/on, SS	9435	Kol Israel	0500	
4890	Africa No. One, Gabon	0400	FF	9445	Voice of Turkey	2330	TT
4895	La Voz del Rio Arauca, Colombia	0200	SS	9475	R. Cairo, Egypt	0200	
4905	R. Anhanguera, Brazil	0000	PP	9480	TWR, Monaco	0730	
4915	R. Cora, Peru	1100	SS	9485	R. Prague, Czech Republic	2100	
4920	R. Quito, Ecuador	0300	SS	9505	R. Record, Brazil	2300	PP
4930	R. Internacional, Honduras	0300	SS	9510	Deutsche Welle, Germany	0540	
4960	R. Cima, Dominican Rep.	0100	SS (irreg)	9510	R. Tashkent, Uzbekistan	1200	
4970	R. Rumbos, Venezuela	0300	SS	9530	R. Singapore Int'l	1100	
4980	Ecos del Torbes, Venezuela	0300	SS	9535	R. Japan	1400	
4991	R. Ancash, Peru	0300	SS	9535	Swiss R. Int'l	1000	
5010	Escules Radiofonicas Pop., Ecuador	0200	SS	9540	R. Nacional Espana, Spain	0100	
5010	R. Populares, Ecuador	0200	SS	9560	R. Jordan	1600	
5025	R. Rebelde, Cuba	0300	SS	9570	R. Portugal	0230	
5034v	RTV Centrafricaine, Central Af. Rep.	0500	FF	9570	R. Romania Int'l	0230	
5035	R. Aparecida, Brazil	0100	PP	9575	Radio Medi Un, Morocco	0730	FF
5045	R. Clube do Para, Brazil	0100	PP	9580	R. Tirana, Albania	0330	
5055	TIFC, Costa Rica	0400		9580	Africa No. One, Gabon	2200	FF
5056	RFO, Fr. Guiana	0400	FF	9580	R. Yugoslavia	0000	
5060	R. Nac. Progreso, Ecuador	0300	SS	9590	R. Norway	1300	
5075	Caracol, Colombia	0300	SS	9600	HCJB, Ecuador	0730	
5268	R. Moundou, Chad	0500	FF	9610	AWR via Slovakia	0730	
5955	Caracol, Colombia	0900	SS	9625	R. Marti, USA	2300	SS
5955	R. Netherlands	0800		9645	Vatican Radio	0640	
5960	R. Japan, via Canada	0130		9645	TIFC, Costa Rica	0900	
5975	BBC via Antigua	0100		9650	R. Korea, S. Korea, via Canada	1130	
5995	R. Canada Int'l	2100		9675	R. Japan via Fr. Guiana	0830	
6010	R. Havana Cuba	0030		9675	R. Cancao Nova, Brazil	2330	PP
6015	R. Vlaanderen Int'l, Belgium	0630		9690	China Radio Int'l, via Spain	0300	
6015	R. Austria Int'l, via Canada	0530		9700	R. Bulgaria	2130	
6030	R. Globo, Brazil	0900	PP	9700	R. New Zealand Int'l	0800	
6030	R. Marti, USA	0600	SS	9715	R. Tashkent, Uzbek	1200	
6050	R. Nigeria	2230		9725	RAI, Italy	0050	
6060	RAI, Italy	0300	II	9735	R. Nacional, Paraguay	0100	SS
6090	R. Bandeirantes, Brazil	0300	PP	9745	HCJB, Ecuador	0730	
6095	Vatican Radio	0250		9746	R. Bahrain	2130	AA

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
9750	R. Korea, S. Korea	1200		13750	Reshet Bet, Israel	1415	Yiddish
9755	Radio Canada Int'l	0000		13760	R. Pyongyang, N. Korea	0000	s/on
9765	R. Moscow, Russia	0600		13770	Monitor Radio	2000	
9770	V of UAE, Abu Dhabi	2300		13830	Croatian Radio	1400	
9779	Rep. of Yemen Radio	2100	AA	15020	All India Radio	1400	
9780	China Radio Int'l, via Mali	0300		15030	RFPI, Costa Rica	2300	
9800	R. France Int'l, via Fr. Guiana	0530	SS/FF	15084	VOIRI, Iran	0100	Farsi
9810	KHBN, Palau	1500		15095	R. Damascus, Syria	2030	
9815	R. Portugal	1900		15105	R. Moscow, Russia	1500	
9820	Radio Havana Cuba	0200	USB	15140	R. Nacional, Chile	0100	SS
9830	Croatian Radio	0603		15155	HCJB, Ecuador	0130	
9840	R. Kuwait	2100	AA	15165	R. Havana Cuba	2145	
9850	R. Sweden	0230		15168	R. Tahiti	0300	FF/TT
9860	R. Netherlands	1700	DD	15175	FEBA, Seychelles	1100	AA
9870	Monitor Radio, USA	0600		15195	R. Ukraine	0030	
9880	R. Austria Int'l	0130		15200	R. Nacional Amazonas, Brazil	2300	PP
9885	Swiss R. Int'l	0100		15200	RFI, France via Fr. Guiana	2300	SS
9900	R. Cairo, Egypt	2230		15235	V of Great Homeland, Libya	2000	AA
9910	All India Radio	1530		15240	Channel Africa, S. Africa	1600	
9925	R. Vlaanderen Int'l, Belgium	2000	SS	15240	R. Sweden	1330	
9955	WRMI, Miami	0100		15265	Radiobras, Brazil	1800	
9960	Wings of Hope, Lebanon	2230		15270	HCJB, Ecuador	1930	
9977	R. Pyongyang, N. Korea	1100		15290	R. Dniester Int'l, Pridnestrovye	2030	
10060	V of Vietnam	0000	VV	15310	BBC via Oman	1500	
11550	RTV Tunisienne, Tunisia	1600	AA	15325	R. Japan via Fr. Guiana	0300	
11570	R. Pakistan	1600		15325	R. Canada Int'l	2100	
11600	R. Cairo, Egypt	0200		15345	RTV Marocaine, Morocco	1800	AA
11610	AWR, Solovakia	1700		15345	RAE, Argentina	0200	SS
11620	All India Radio	2000		15395	UAE Radio, Dubai	1330	AA
11645	R. Bulgaria	2130		15400	R. Finland Int'l	1330	
11660	Radio Australia	1500		15415	Libyan Jamahiriya Broadcasting	1430	AA
11680	China Radio Int'l via Fr. Guiana	0400		15420	R. Tashkent, Uzbekistan	1200	
11690	FEBC, Philippines	1200	VV	15430	Radio Japan	2300	
11700	R. France Int'l	1600		15445	Radiobras, Brazil	1200	
11710	RAE, Argentina	0200		15475	Africa Number One, Gabon	2100	FF
11710	V of Turkey	2230		15495	R. Kuwait	1200	AA
11715	China R. Int'l, via Mali	0300		15515	R. Portugal	1900	
11715	R. Korea, S. Korea, via Canada	1030		15530	R. Australia	2200	II
11740	R. Vlaanderen Int'l	2330		15550	R. Vlaanderen Int'l	1800	
11745	R. Tirana, Albania	0200		15565	R. Australia	1200	
11755	R. Finland Int'l	0130		15575	R. Korea, S. Korea	0030	
11765	RAI, Italy, via Ascension Is.	0130	II	15610	KTWR, Guam	1500	
11780	R. Nacional Amazonia, Brazil	2200	PP	15630	V of Greece	1430	GG/EE
11785	Rdf. Nacional, Colombia	1900	SS	15635	VOA via Morocco	1700	
11785	R. Guaiba, Brazil	2330	PP	15640	Kol Israel	1400	
11800	R. Australia	1300		15675	R. Pakistan	1430	Urdu
11805	R. Moscow, Russia	2230		15675	R. Copan Int'l, Honduras	2300	SS
11810	R. Romania Int'l	1400		15770	ISBS, Iceland	1230	Icelandic
11815	Spanish Ntl Radio, via Costa Rica	0100	SS	17490	HCJB, Ecuador	1000	
11825	R. Tirana, Albania	2200		17500	RTV Tunisienne, Tunisia	1330	AA
11827	R. Tahiti	0300	FF/TT	17510	KWHR, Hawaii	2300	
11830	R. Romania Int'l	0400		17525	V of Greece	1430	GG/EE
11845	R. Canada Int'l	2200		17590	R. Finland	1430	
11855	KSDA, Guam	1300		17595	R. Cairo	1300	
11870	R. Yugoslavia	0000		17620	R. France Int'l	1600	
11875	R. Canada Int'l	2200		17625	R. Bulgaria	1230	
11880	R. Japan via Fr. Guiana	0300		17630	Africa No. One, Gabon	1430	FF
11885	UAE Radio, Abu Dhabi	2300		17655	R. Netherlands via Bonaire	1830	
11900	R. Finland Int'l	1230		17670	Swiss Radio Int'l	1500	
11905	R. Universo, Brazil	2330	PP	17740	R. Finland Int'l	1430	
11915	R. Gaucha, Brazil	0000	PP	17745	R. Algiers, Algeria	1930	
11925	HCJB, Ecuador	0600		17745	R. Tashkent, Uzbekistan	1200	
11940	R. Romania Int'l	0400		17755	R. Nacional Espana, Spain	1900	SS
11945	R. Canada Int'l	2100		17775	R. Romania Int'l	1300	
11990	R. Kuwait	1800		17790	HCJB, Ecuador	2130	
11995	FEBC, Philippines	1400		17805	R. Romania Int'l	1730	
12000	R. Jordan	0500	AA	17810	R. Japan	2300	
12025	KTWR, Guam	1500		17820	R. Canada Int'l	1300	
12050	R. Cairo, Egypt	2100	AA	17845	Spanish National Radio	1500	SS
12085	R. Damascus, Syria	2030		17870	R. Sweden	1500	
12095	BBC, England	1300		17875	R. Canada Int'l	2030	
13590	R. Pakistan	1600		17880	R. Finland Int'l	1300	
13615	R. Bangladesh	1230		17890	Spanish National R., via Costa Rica	2130	SS
13620	R. Kuwait	2000		17900	R. Portugal	2000	PP
13625	R. France Int'l	1200		21455	R. Canada Int'l	1330	
13635	Swiss R. Int'l	1500		21455	HCJB, Ecuador	1330	
13650	R. Canada Int'l	2030		21515	R. Portugal	1500	PP
13660	R. Havana Cuba	0200	USB, EE	21520	R. Pakistan	1100	
13675	UAE Radio, Dubai	1630		21590	R. Netherlands, Bonaire	1800	
13690	Deutsche Welle, Germany	1900		21605	UAE Radio, Dubai	1430	AA
13715	R. Havana Cuba	2200	SS, USB	21605	R. Yugoslavia	1230	
13730	R. Austria Int'l	2100		21800	R. Ukraine Int'l	1400	RR
13750	AWR, Costa Rica	1200	s/on				

ful devices in many situations. These is another circuit that could be easily incorporated into a receiver. The audio filter stage should include high pass, low pass, and bandpass functions suitable for voice and CW modes. The "Harry" receiver would naturally include a tape recorder output jack, and the audio for it would be taken after the audio filter, not before.

One classic receiver that I really enjoy using is my Hammarlund HQ-150. This venerable (it was made in 1956) beast has both a crystal filter with phasing and a Q-multiplier built-in. Translating that into English, it means the HQ-150 has two independent methods to either narrow the selectivity of the receiver or two separate rejection notch functions. It's the latter that I've found especially useful. There are some situations where I need to reject an interfering signal above the desired signal and also reject an interfering signal above the one I want. In those situations, the only receiver that's up to the task is the HQ-150. None of the deluxe kilobuck receivers available today offer two independent notch functions. This is a feature that would be included in the "Harry."

Ever notice how many accessories (pre-amplifiers, active filters, etc.) have phono jack outputs? But how many receivers have phono jack antenna inputs? My dream receiver would include at least two sets of 50 Ω phono jack inputs, 50 Ω coaxial inputs, and high impedance spring-loaded or terminal strip inputs. This would allow using multiple types of antennas.

Some receivers have RS-232 ports for use with personal computers, and there are several software packages for receiver control purposes available. While highly useful, these packages are overkill for many situations. Suppose I just want to switch my receiver to four different frequencies at various times during the night...maybe change modes and bandwidths during the process...switch a tape recorder on and off each time...well, a PC isn't necessary for that. Look at a typical VCR: it lets you change channels at various times and record for a certain period. Thanks to microcontrollers (single chip computers), a lot of control functionality could be packed into a receiver at a reasonable cost. I wouldn't be too surprised if receivers with such capability started appearing soon.

Stuff for Portables

Most of my comments so far have been directed at desktop communications receivers. Obviously, there's only so much stuff you can cram in a portable of reasonable size or weight. However, there are some features which would be neat. I remember that a few of the early transistor portables in the early 1960s had their AM band loopstick antennas mounted externally on a pop-up swivel. This let users rotate the loopstick and null out interference without having to rotate the entire receiver. With most portable receivers today, the loopstick is inside the radio and it's awkward and inconvenient to get nulls by repo-

sitioning the entire radio. A similar sort of external loopstick for AM and longwave would be a great addition for portables.

Most higher-end desktop communications sets have dual VFOs, allowing you to tune two different frequencies in different modes. Adding this capability to a portable wouldn't be too great a challenge, and would be a big help when try to DX (as opposed to just listening) with a portable.

Finally, portables can get subject to a lot of abuse. A heavier but more rugged portable in a housing similar to that used for underwater cameras might have real appeal, especially for SWLs who want to take a radio along where it might get wet or bumped around a lot.

Somehow, I don't think that you're going to see a Harry Helms-endorsed receiver in the pages of POP'COMM anytime soon! But I'm willing to settle for receiver manufacturers starting to include some of the design points and features mentioned in this month's column. And if no one likes the idea of a "Harry" receiver, how about sets of trading cards featuring well-known DXers? On the front would be a picture of the DXer at his/her receiver, and on the back would be the number of countries and states QSL'ed along with other notable accomplishments...gee, wonder how much a Stanbury card would be worth???

What about a series of hand-painted porcelain reproductions of legendary QSLs? We could have The Voice of the Purple Pumpkin, Radio Nibi Nibi, and other favorites. Everybody wants a set of these.



Actual size
(2-9/16 X 5-8/32 X 1-3/8)

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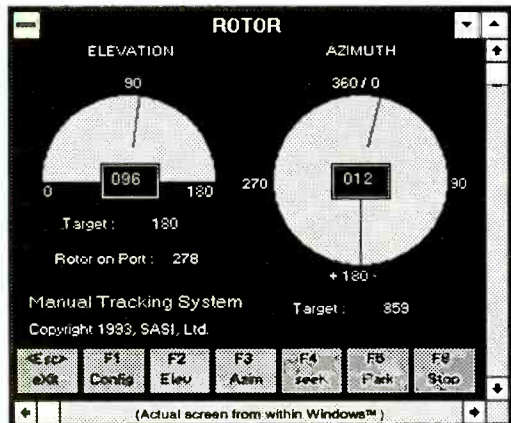
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COMMUNICATIONS CONFIDENTIAL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

We hit the jackpot this month! Simon Mason, in England, has obtained a QSL from "NUMBERS" station, we have a neat photo of NSA and Kevin Tubbs, VT, sent another of his spectrum analyzer charts.

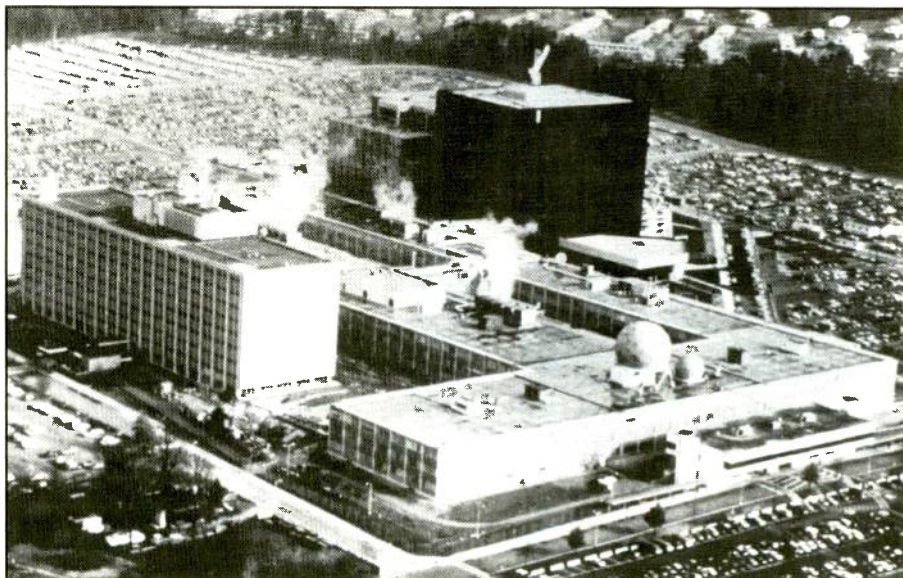
Here is some information from Richard Baker, OH. "In a recent QSL, the master of the USAV Petersburg (LT-2088, call sign ADXK) included some info on the ship. The Petersburg is a 100-foot Harbor/Coastal Tug built in the late 1950's. There are three 100-foot tugs assigned to Ft. Eustis, VA at the 73rd Floating Craft Co., 10th Terminal Bn., at Third Port. The other two are the LT-1972 and LT-1956.

Another PFC returned revealed the international call sign for the USS Gladiator (MEM-11) to be NGLA.

WNU is listing a new frequency which has been added for their SITOP service: WNU NOW USING ITU CH 627 FOR 6 MHZ ATOR SERVICE. PLEASE LISTEN FOR WNU ON 6327 AND TRANSMIT ON 6281. SIGNAL REPORTS WELCOME ND APPRECIATED.—FOR AUTOMATIC MARINE TELEX SERVICE USE KFS/WNU ITU CHNL PAIRS: 403, 603, 627, 803, 819, 1203, 1257, 1647, 1657, 2203, AND 2219."

Thanks Rich for sending these details. Stanley Scalsky, MD, forwards some comments regarding several RTTY loggings. "In the June 1994 issue, 4646 kHz was reported as unidentified with encryption at 0230, 170 Hz shift/81 baud. In the July issue, 6934 kHz was listed as u/i w/encryption, 425/40.5 at 1518.

"These are most likely to be a mode known as 81-81 as identified by the HOKA Code 3 decoder. This is described as a 'URS Military system,' mainly in 81 baud, pseudo-random, one or two characters, 12 bits, always encrypted." This is mainly a



The "Puzzle Palace." The National Security Agency (NSA), Fort Meade, MD. (Anonymous contributor)

two-channel system, but the 40.5 signal you sometimes find are one-channel variants. HOKA might have some kind of decoder but won't release it since the traffic is always encrypted. This information comes from the Code 3 manual and users in the GENIE Code 3 users group. I have found other such signals on 10148.1, 12184.2, and 13555.1 kHz."

Thanks for the explanation, Stanley.

Trevor Fletcher, Alberta, Canada, says he uses a Sangean ATS818 with a 50-foot longwire for his monitoring and the combination works great.

Contributor D.I., PA, writes, "This is the first time I have contributed. I have been actively RTTY decoding for approximately three years. The equipment used is an ICOM71A, Alpha Delta Sloper antenna,

and the decoder is a Universal M-1000 decoder card in an IBM clone.

"I am planning on upgrading my decoder as I am interested in decoding the more advanced/complex systems. I am considering the HOKA Code 3 which is now being sold here in the United States."

Several other readers asked about the HOKA Code 3 and HOKA Code 30 decoding systems. A few asked for addresses of U.S. dealers handling the Hoka. I only know of two such dealers. One is Stone Mountain Engineering Company, Box 1573, Stone Mountain, GA 30086. The other is Computer Aided Technologies, P.O. Box 18292, Shreveport, LA 71138. Further details can be obtained by writing either of the two above dealers.

In answer to another reader, I do not

DEAR FRIEND !

RADIO STATION OLX THANKS YOU FOR YOUR REPORT ABOUT RECEPTION OF ITS TRANSMISSION ON THE *26 may 1994* AT *13:00* GMT ON FREQUENCY (IES) *8142* kHz

OUR ADDRESS IS :

Dear Simon !

TKS REPORT AND PHOTO

OK 4 J!

MINISTERSTVO VNITRA ČR
P. B. ŽILSK
170 34 PRAHA 7

OUR RADIO STATION OLX IS TRANSMITTING ON FREQUENCIES

o - FREQUENCIES USED DURING SUMMER TIME
x - FREQUENCIES USED DURING WINTER TIME
PARTICULARS ARE IN KHZ.

3239	3280	3333	4601	4757	5301
	<i>o + x</i>		<i>x</i>		<i>o + x</i>
6280	6758	6865	6958	7577	8142
<i>x</i>	<i>o + x</i>				<i>o + x</i>
9353	10125	10307	11002	11416	11585
			<i>o + x</i>		
14977	15897	16046	18303	20865	22910
<i>o</i>					

Here is a unique QSL. This one is from a "Numbers" station, obtained by Simon Mason, England.

know of a U.S. outlet for the Wavecom decoder. I have been told that the Wavecom has more modes than the Universal M8000 but does not have as many as the HOKA Code 3 decoder. I am aware also that Universal, in the past, has periodically had an updated chip available which would replace the chip in the unit thus enabling the decoding of some additional modes. I fully suspect Universal will continue that practice and we may see an updated chip in the near future which will permit handling new types.

In response to the comments from Bunky, IL, concerning the RTTY transmissions to VKX, I believe the QSF (digit) indicators related to schedule arrangement. The normal international definition of QSF is "I have effected rescue and am proceeding to ___ base (with ___ persons injured requiring ambulance)." The way the Russian MFA network uses this Q signal points toward it being an indication of schedules to be held on certain indicated dates. For example, you can expect to see this Q signal used prior to a holiday period such as May day, etc. While I have some ideas of the possible meanings of QSF4, QSF2, and QSF3, I am not absolutely positive I have arrived at the correct determination of schedules for all of those signals. Because QSF4 most often applies to the date of the holiday, that may suggest it is for no schedules to be held on that particular date. The others would then probably be for somewhat less than the normal schedules.

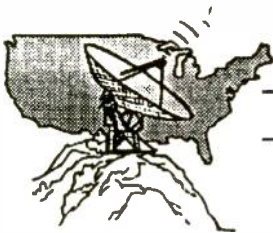
Before moving into the loggings I would like to explain something for those who call the POP'COMM office expecting to speak with me or other column editors. We are not co-located there. I am on the move a lot and when I am going to be away for more than a couple of days, I do make arrangements with the Post Office for my mail to be forwarded. I do not have an arrangement for phone calls to be forward-

ed. Thus, it is better for readers to send a letter to me at the POP'COMM address and I will receive it quite promptly. Thanks.

I wish you all the very best of holiday seasons.

UTE Intercepts. All Times in UTC.

- 336.5: Beacon NIK, Nicky (Brussels), Belgium at 1409. (AB)
- 338: Beacon GI, Amiens/Gilsy, France at 1408. (AB)



MV SEAWARD

VERIFICATION OF RECEPTION

**TO: EDWARD RAUSCH III
17 VANDERBERG PLACE
CEDAR GROVE, NJ 07009 USA**

(Ch. 814)

DATE: 5/27/92 FREQ: 8234.0 kHz MODE: USB

XMTR.: STR 910 ANTNA: 15 mtr. Whip

POWER: 450 watt WATTS LOCATION: Northern Coast of

REMARKS: Jamaica and
1st Cr. Cayman

K. Rausch

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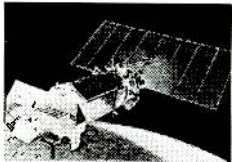
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- 341.5: Beacon BUN, Bruno (Brussels), Belgium at 1418. (AB)
- 344: Beacon JA, Jacksonville (Int'l—Dinns), FL at 1153. (DS)
- 350.5: Beacon ROT, Rotterdam, Holland at 1600. (AB)
- 352.5: Beacon DD, Oostende, Belgium at 1615. (AB)
- 360.5: Beacon MAK, Mackel (Brussels), Belgium at 1642. (AB)
- 365: Beacon LJ, Köln/Bonn, Denmark at 0532; Beacon BC, Brasschaat, Belgium at 0532. (AB)
- 369: Beacon PS, Rotterdam, Holland at 1559. (AB)
- 375: Beacon OO, Oostende, Belgium at 1630. (AB)
- 382: Beacon PM, Peronne/St. Quentin, France at 0550. (AB)
- 386: Beacon STD, Stad, Holland at 1559. (AB)
- 388.5: Beacon CH, Schiphol Airport, Holland at 1557. (AB)
- 393: Beacon DEN, Dender (Brussels Nat. Airport), Belgium at 1555. (AB)
- 395: Beacon OA, Schipol Airport, Holland at 1555. (AB)
- 396: Beacon ZBB, South Bimini (Airport), Bahamas at 1156. (DS)
- 397: Beacon EHN, Eindhoven Airport, Holland at 1555. (AB)
- 397.2: Beacon DHE, Helgoland light, Denmark at 1405. (AB)
- 399.5: Beacon ONO, Oostende, Belgium at 1406. (AB)
- 403.5: Beacon MRV, Merville/Colonne, France at 1610. (AB)
- 404.5: Beacon RR, Rotterdam Airport, Holland at 1608. (AB)
- 406.5: Beacon BOT, Bottrop, Denmark at 1843. (AB)
- 416: WCC, Chatham Radio at 0651 in CW w/tfc list. (RB)
- 417: Beacon MK, Calais Marck, France at 1540 (AB)

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DWM-5311 / 376 / 93

Warszawa, 1993.11.06

Mr Hugh M. HAWKINS

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USA

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Thanks for your report

Yours faithfully

Hugh Hawkins, MS, had to wait just about two and a half years for this QSL from a Warsaw utility station.

421: Beacon BUR, Burnham, England at 0526. (AB)

429: Beacon CLN, Clacton-on-Sea, England at 1841. (AB)

431: Beacon ONT, Klein Brogel, Belgium at 1618. (AB)

516: Beacon YMA, Petawawa Field, Ontario, Canada at 0646. (RB)

518: GNI, Niton, England w/NAVTEX (Nav wrngs & rig moves) in FEC at 1618; ESA, Tallinn, Estonia

w/NAVTEX in FEC at 1630; OST, Oostende, Belgium in FEC w/NAVTX at 0653. (AB)

525: DAN, Norddeich, Denmark in CW at 1530 w/tfc list. (AB)

1866: MV, Humber Viking w/Hebrides Rdo in USB at 2312. (AB)

2812: VC8137, Canadian flagged tug Irving Miami clg Yarmouth CG Radio at 0423, both QSY 2582/2106 for R/T t/c. At 0606, USCG Moriches Group, NMY42, w/pan-pan announcement of man reported overboard, gives location & requests vessels in vicinity assist if poss. USB mode. (RB) GTRA, MV Seaboard Illustrious w/Stonehaven radio in USB at 2042. Freq change to Channel A (2751 kHz); LNF3, MV Aasvaer w/Stonehaven Radio in USB at 2048. Freq change to Channel Y (2606 kHz); Boulogne, France Radio w/navig. wrngs in USB at 2103. PBK, Netherlands Coast Guard w/gale wrngs and OXB, Blaavand, Denmark Radio w/gale wrngs also hrd USB at 2103; VCP Canadian CG St. Lawrence in USB at 0050 w/wx to be announced on 2598 kHz. (AB)

3275: U/i German Military?? Stns 2HME & F455 in GG at 1545 in USB.(AB)

3303: UN "DENY FLIGHT" stn "MW" a/E. D. F. BR, OW, EW, & ME passing SITREPS in USB at 1940. (AB)

4011: US Navy 3E1B MARS net at 0016. (BL)

4204: U.i stn in ARQ w/DE HAR at 0236 w/tfc in unk lang to 0243. (RB) My refs show HAR to be Budapest Naval, Hungary.(Ed.)

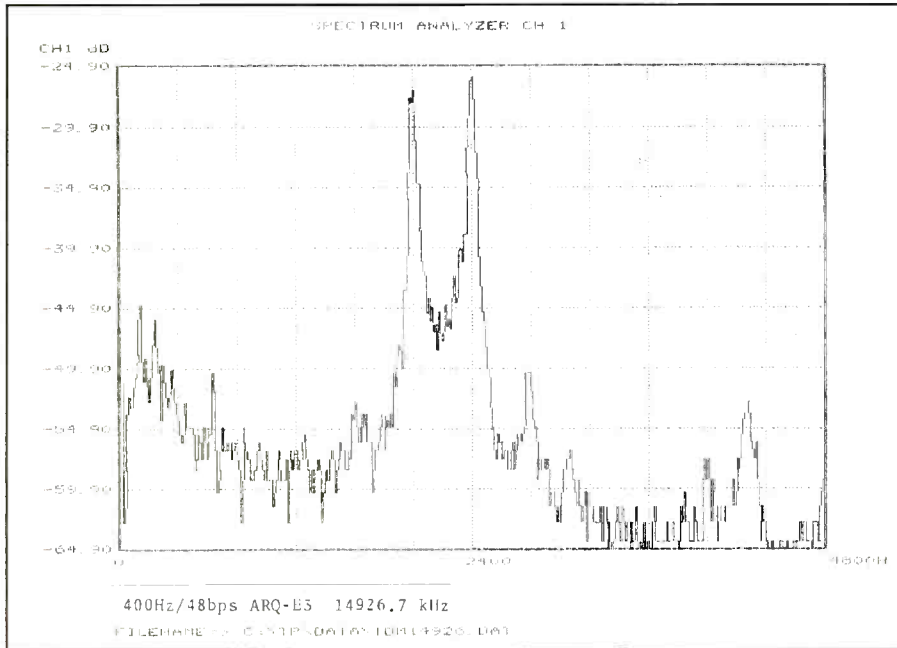
4285: VCS, Halifax, NS, Canada in CW at 0452 w/VVV & CQ mkr. (BL)

4333: U/i stn xmtng in poss Slavic lang in USB at 2038. They xmt a tape w/msg consisting of some

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)

CIRCLE 98 ON READER SERVICE CARD



Here is the chart of an ARQ-E3 signal which was prepared by Kevin Tubbs, VT.

sort of ID & several figs. I hrd them only at night and during early evening 2100-0130 UTC. (AB)

4602: Irish Military, Dublin in ARQ 100 Bd at 2058. Uses call sign "R" & is wrking CVVD. At 2158 using XSI-C as call and sends coded msg in ARQ. (AB)

4631: Poss German Navy activity. Hrd J980 w/ZC41 re freq change to Ch. N11 (6731 kHz) for Crypto test tape. At 1957 1741 w/ZC41 for rdo ck. at 2002 DHJ59. German Navy Wilhelmshaven w/GLR3

for rdo ck & 75 Bd RTTY crypto test tape. Another day hrd OQF1 w/J980 for rdo ck at 1705. All voice comms were USB. (AB)

4665: YL rptng VLB2 at 2145. also on 6745 kHz. At same time CI02 was on 7605/10125 kHz. These are slightly rearranged freqs for these Mossad stns. (SM)

4735: Mike wkg Foxtrot Tango at 0453 requesting freq Delta Delta on Charlie 32. (BL)

4742: Navy 5LS w/Architect in USB at 2009 for

rdo ck. RAFAIR 7C79 and RAFAIR S7N also cld Architect for rdo ck at 2044 & 2037 respectively. Also USB mode. (AB)

5177: Every Friday at 2100 CW stn sending NNN foll by new YL/EE w/American accent. On this occasion "Group 35" and into 5F grps. (SM)

5206: SLHFH "V" at 2215 w/2.6 sec gap between V's. Prev noted w/4.0 sec gap. (SM)

5211: KMB27. FSS, Livermore. CA wkg WGY912. FEMA. Special Facility, Berryville. VA at 0729 in USB for National Comms Test involving many federal/military stns cking in over 24 hr period. (RB)

5339: Mossad rarity at 1958—YL rptng Oscar Echo Mike—Charlie. Also on 6912 kHz. (SM)

5340: Music box playing Swedish Rhapsody fm 2300-2305 foll by YL/GG w/5F grps. (SM)

5416: YL/SS at 0700 Monday w/Atencion 51070 then 51070 154 and into 5F grps. (TM)

5643: SP-7. Sydney Radio at 0610 in USB wkg a/c 163 w/posit & selcal ck. (RB)

5680: Edinburgh Rescue w/SRG 137. proceed to grid ref 33853057. One of party of five fallen w/head injury. USB at 1654. (AB)

5821: CW stn sending NNN fm 2000-2005 foll by YL/EE w/Group 20 and into 5F grps. Ended w/Ended. This is new YL that has totally replaced the previous YL/GG. (SM)

6262: Starting at 0639. packet xmsns from U.S. Naval Academy & training boats. or YP's. Several logged incl YP-685 & YP-690. (RB)

6302: UPLM. TH Kymck at 0303. in 50/170 w/RV's to USU. Maripol Radio. no joy. At 0308. on 6303 kHz w/same. (RB)

6337: HWN. Paris-Houilles Naval. France in CW at 0440 w/VVV mkr. (BL)

6516: NORW. USCGC Jefferson Island (WPB-1345) at 1628 relaying updated position on ves to CG 2114 who relays info to NMY42. Group Moriches. Believe this was F/V smuggling Chinese mentioned in press reports. NMF. Comm Sta Boston wkg COD 14. who ID'ed on 5696 kl fz as the 2114 a/c, re distressed S/V Debra Ann. USB mode. (RB)

6731: Danish Air Force V50 (a/c) to DHCJ59.

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This heavy-duty, fully adjustable custom desk-top radio stand is perfect for home 'base station' use of all handheld scanners and Ham band HT's! Rubber padded handheld mounting plate will not mar your expensive radio's finish.

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FARADAY - ZHF44

Faraday Station, Antarctica (65° 15'S, 64° 16'W) is very pleased to confirm your report of our transmission.

Date: 8 March 1993
Frequency: 9106 USB
Transmitter: Skanti TRP 8454

Time UTC: 0101
Power: 750 W
Antenna: 45 m V-beam

Remarks:

We were having a routine schedule with Rothera station.

S. J. W.



QSL card received by Steve McDonald, Canada, from a British station in Antarctica.

Navy Wilhelmshaven.. "This is V50. You are also ZBZ5. I call you back in 30 mins after take off." At 2055 "This is V50. Departed EKVL (Vaerlose DNK) at 2045. Hrd at 2020. Dutch Air Force B6U w/German Navy Wilhelmshaven at 2055. "Relay to D7Z. Out EHVb (Valkenburg, Holland) 2034. KA 2046. At 2147 "Operations normal. Est Atrepoint 2210Z." All in USB. (AB)

6815.5: Foxtrot Charlie and Papa at 0401 re monitoring a "cracker." Foxtrot asking Lima to ask November to QSY to 7417 (Channel DL) at 0413. Foxtrot cld Sierra at 0415 via Lima for "Whiskey" (Coordinates). Sierra gave position, heading & speed. It would put Sierra about 20 miles West of Haiti moving WNW towards Cuba. These are UN ships on patrol during Haitian blockade. (BL)

6820: YL/SS in AM w/812 x3 00000 (rptd) at 0430. Down four min 45 secs later. (BL)

6840: Ten tones & into YL/SS w/4grps. Text end at 0241. Carrier down one min 25 secs later. (BL); YL/SS at 0230 w/0582 7656 0638 5270. Next day w/2834 5112 3889 3894 6938. (TM)

7241: ANARC SWL Net in LSB at 1412. (DS)

7535: SESEF Norfolk w:rdk w/foll for equipment tests: NIID. USS Recovery (ARS-43) at 1701. NDWQ, USS Detroit (AOE-4) at 1744. USS Scirico (PC-6) at 1803. USS Boise (SSN-764). Primary mode for above was USB. (RB)

7550: OM/RR w/275 from 2300-2305. Then 803 x2 41 x2 and into 5F grps. (SM)

7635: CAP43 (NCS) w/CAP Regional net at 1500. (BL)

7763: At last! The 0130 "Counting Station" paired freq has been found after much searching. On this occasion YL/EE was rptng 3975 7447 here and also on 9918 kHz. (SM)

7888: At 0900 on Sundays. YL/SS w/5F grps ending w/three "Finale's." (TM)

8074: OM/EE at 2010 rptng 947 foll by 836 x2 251 x2 and into 5F grps. This was a repeat of 1910 transmission on 10185 kHz. (SM)

8207: 3FMF3. S.S. Enchanted Sea at 0231 in USB clg wkg WOM. Pennsuco. FL for R/T t/c. (RB)

8367: SVPR. M/V Golden Chase at 0217 wkg Athens Rdo in CW w/QSY to 8358 kHz where they pass AMVER t/c. (RB)

8378.5: UFKY, PB Sevryba at 2247 in 50/170 w/RY's to UIW, u/i. & into Telegrams. (RB)

8389.5: P3KL3. M/V Reefer Bay at 0222 w/telex re arrival Mayaguez. PR. At 0314. NMn. CAM-SLANT Chesapeake into FEC RY's to NRCB. USCGC Eagle & sends UNCLAS t/c. Stn had been phasing w/Cw ID for about two hours. (RB)

8438: VCS. Halifax CG Radio. NS. Canada w/V mkr at 0823. (DS)

8492.7: U/i stn in 100/170 coded t/c broken by RY's. Seems to use id VMGTCNJ. (RB)

9040: YL rptng Hotel Kilo fm 2330-2335 after

which YL/GG sent 5F grps for 393. (SM)

9286: TNL. Brazzaville meteo at 0000 in ARQ-E3. 600/48. (HM)

9376.3: RFHJ. Papeeti. Tahiti. Controle De Voie at 1428 in QRQ-E3. 400/100. (HM)

9450: YL rptng Sierra Bravo fm 2330-2335 w/electronic tones. Then 5F GG msg for 962. (SM)

9996: RWM. Time signal stn, Moscow. Russia & VVV CQ DE RWM in CW. Hrd 1440. (AB)

10000: 1D. u/i Belgian Military stn. Sort of MARS type stn for Belgian Mil Forces. prob those in Bosnia. W/51T & 3L in Dutch & French lang. USB at 1309. BPM, TSS Xian. China. Time signals & ID in CW & Voice at 1430. (AB)

10142: 31. u/i Diplo stn. Msgs to "Ambassador" in Arabic in ARQ. 100 at 1622. (AB)

10162: OM/EE at 1910 w/947 47 947 000. Off at 1915. (SM)

10280: RFLI6CS. Cayenne. Fr. Guiana at 0045 in ARQ-E3 400/96 w/svc msg in FF. (HM)

10493: MFA Bucharest, Romania in FEC. 164. at 1616. (AB)

10675: At 1940. YL/GG said "Achtung" then rptd 631. 631. 631, 000 until 1946 then said "Ende." (SM)

11039: DDH9. Hamburg Meteo. Germany at 1526. Baudot 50 Bd, w/RY's. (AB)

11139: DFZG. Belgrade at 1451. Baudot 75 Bd w/nx in EE. (AB)

11220: SPAR 65 w/uniden stn in USB at 1337. (AB)

11234: Italian Air Force Aviano w/unid a/c in USB at 16211 in Italian lang. (AB)

11395: OM/EE at 2000 rptng 395. Then at 2005 743. 743. 15. 15. and into 5F grps. Ended w/00000. (SM)

11421: Polish Press Agency. Warsaw w/nx in Polish. ARQ. 100 Bd at 1923. (AB)

11545: YL/EE rptng Mike Delta fm 1330-1335. Then 296. 42 Groups. 241. 35 Groups and 37 Groups. Attention—then into 5F grps. (SM)

11638: DDK8. Hamburg. Germany at 2345. 425/50 w/RY's. (HM)

12219: OM/RR between 2010-2015 w/283. 283. 283. 000. Rptd 2020-2025 on 11416 kHz. (SM)

12242: 2WNV. Yacht Cassotis at 0044 wkg CommSta New Orleans re medico. Person on board w/chest pains. At 0111. 4XII. Israeli container vessel Zim Keelung wkg NMG. w/pan-pan report of floating container apparently fm container ship. Both in USB. (RB)

12491: C6CF. Cunard Countess (Cunard Cruise Lines) at 0139 w/ARQ telex to cruise ship Song of Norway. (RB)

12582.5: FFT61. St. Lys Rdo at 0001 w/FEC "les navigateurs" and t/c list. (RB)

13002: KPH. San Francisco, CA at 1423 in CW w/QSX mkr. (DS)

13390: NORAD msg fm Oslo at 1335 in SWED-S. 425/100. (HM)

13401.5: Cairo, Egypt at 2330 in SITOR-A, 170/100. MFA text in AA. (HM)

13563: 3MA22. Taipei, Taiwan, 850/50, hrd 1250 w/nx in EE. (HM)

13976: Bern, Switzerland at 1300 in SITOR-A, 170/100. nx in GG. (HM)

14441.5: These Navy MARS stns clg AMSSS: NNNØCYB. USS Clark (FFG-11) at 1828. NNNØCZY. USS Scott (DDG-995) at 1859. NNNØCXN. USS Portland (LSD-37) at 1910. NNNØCUS. USS Inchon (LPF-12) at 2224. NNNØCEJ. USS Philippine Sea (CG-58) at 2226. NNNØCBE. CBE USS Leyte Gulf (CG-55) at 2244. NNNØCVG. USS Dwight D. Eisenhower (CVN-69) at 2315. NAVMARCORMARS calling. in USB. (RB)

14460: Radio Moscow feeder in USB at 1514. (AB)

14477: NNNØJTO & NNNONXL w/pp at 222. (BL)

14605: VKX. U/id Russian? stn. Baudot 500/75 at 1500 w/VKX 46464646 etc QRU. (AB) This appears to be Russian Diplo. Xmtng stn believed located in Eastern Europe. Location of recipient VKX. not known. (Ed.)

14699: YIX70. Bagdad. Iraq at 1320. 425/50. nx in AA. (HM)

14777: OLX. MinInterior Prague at 1505 in CW w/coded msg. (AB)

14818.5: NNNØCEM & NNNØEIZ for pp at 2226. (BL)

16116.2: 6VK317. Dakar Senegal, PANA nx in FF. 1550. 300/50. (HM)

16120: HBD90. Berne. Switzerland in SITOR-A at 1430 w/MFA nx in GG. (HM)

16386.6: Islamabad. Pakistan in SITOR-A at 1610, 170/100. msg fm Brussels to Islamabad (Diplo). (HM)

18055.8: CLP. MFA. Havana, Cuba w/RTTY msg. 50/850, to various Cuban Embassies. Msg in EE. Foll by msg in SS to some other Cuban Embassies. (DI)

18212.7: DK1. listed as stn in Havana. Cuba. Hrd

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2.3740 " " "	4.6270 " " "	122.9000 " AM AIR TNG
4.4660 " " "	4.6300 " " "	123.1000 " AM AIR SAR
4.4675 " " "	7.6350 " " "	143.7500 " FM RP/IN *2
4.5075 " " "	7.9200 " " "	143.9000 " FM RP/IN *1
4.5820 " " "	14.902 " " "	148.1250 " FM RP/OT *2
4.5850 " " "	20.873 " " "	148.1375 " FM LOC/OPS
		148.1500 " FM RP/OT *1
		149.5375 " FM AIR/OPS
		149.8950 " FM PACKET

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This information was received from an unidentified individual. The postmark was not clear but it was a location in Massachusetts.

at 1505 w/5L grps in RR, 425/75. (HM)

18268: U/i stn in SITOR-A at 1340 w/nx in FF and nx in GG. Off at 1352. (HM)

18648.4: SOT2658. Warsaw, Poland in SITOR-B at 1505 w/nx in Polish. (HM)

18760: RFGW, Paris, France at 1850 in FEC-A, 400/192, 5L grps to L9C. (HM)

18864: At 1200 alternative "Lincolnshire Poacher" stn w/as yet unknown tune in between YL/EE rptng 50197. Also on 19884/20474 kHz A: same time original Lincolnshire on 14487/15682/16084 kHz. (SM)

19712: URD, St. Petersburg, Russia at 1405 w/text in RR. Third level Cyrillic, 170/50. (HM)

19841.5: U/i stn at 1420, 500/75, 5L grps. (HM) This poss either Russian MFA t/c or Cuban MFA t/c. Both use the 500 Hz shift at 50 & 75 Bds. (Ed.)

28290: SK5TEN. HF propagation beacon, Straegnaes, Sweden at 1902 in CW. (AB)

Contributors this month included the following: Simon Mason, England; Ari Boender, Netherlands; Harold Manthey, NY; Richard Baker, OH; Tom Mazanec, OH; D.I., PA, Don Schimmel, SC; and Brad Low, TX.

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- ◆ Powerful 1.6 watt output audio amp.
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INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

Weather Satellites: More About Them

While quality antennas and pre-amps are necessary for producing weather maps from polar orbiting spacecraft, a dish antenna and converter are essential for any signals you hope to receive from Geo-stationary weather satellites (one exception to this rule will be discussed later).

We previously looked at satellites, receivers, feed lines, pre-amps and low-band antennas. Antennas are designed to receive signals in the 137 MHz band, however since Geo-stationary weather satellites transmit on 1.691 GHz you need to press a TVRO dish antenna into service. These standard six- to ten-foot dish antennas are fine for wxsat use. Even as small as two to four feet can be pressed into service. Your only real obstacle will be the addition of a feed horn for 1.691 GHz and a block-down converter. A new feed horn is needed because the TVRO dish is capable of receiving 4 GHz TV signals. The additional feed horn can be located next to the TV feed, in fact it can be soldered to it (see photo).

You can purchase wxsat feed horns from suppliers such as Vanguard Electronics Labs for as little as \$195. Or, if you are an adventurer or tinkerer, build a coffee can feed horn. That's right—a two pound (908 gram) coffee can is just the right size for the job. After the top and the contents are removed, mount an SO-239 female coax connector to the side of the can three inches up from the bottom (see Figure 1). Measure to the center of the 239 connector. Before you can attach it to the can, you will need to solder in the vertical element. It consists of a 1-1/4-inch (3.6 cm) piece of four millimeter brass tubing 5/32 inches in diameter. Once soldered in place, the SO-

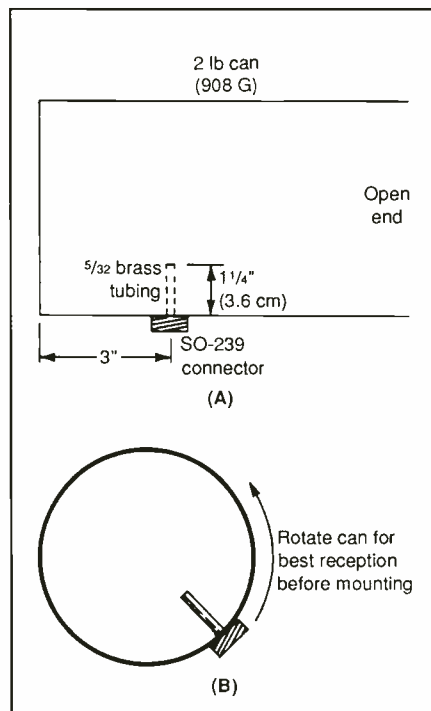


Figure 1. Coffee can feed horn.

239 is mounted on the coffee can. A block-down converter containing a built-in amplifier can be attached to or near the coffee can feed horn. This will convert the 1.691 GHz signal to 137 MHz and amplify it before it is fed into the coax line. The coax should be Belden 9913. Other low loss coax will work on short runs. Remember, the open end of the coffee can is pointed toward the center of the dish when mount-

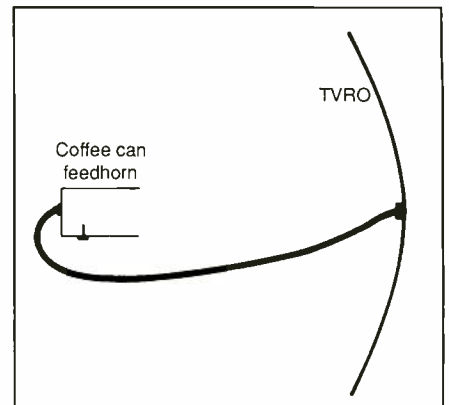


Figure 2. Wxsat feed horn can be mounted beside TVRO feed horn.

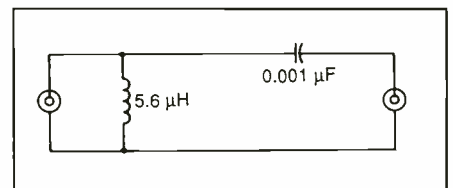
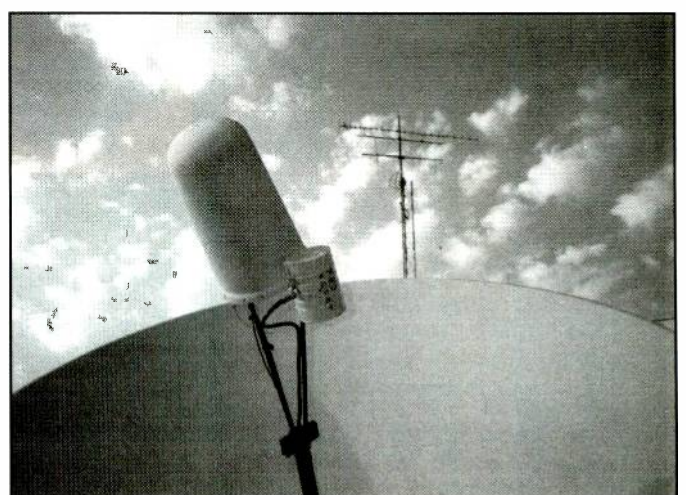
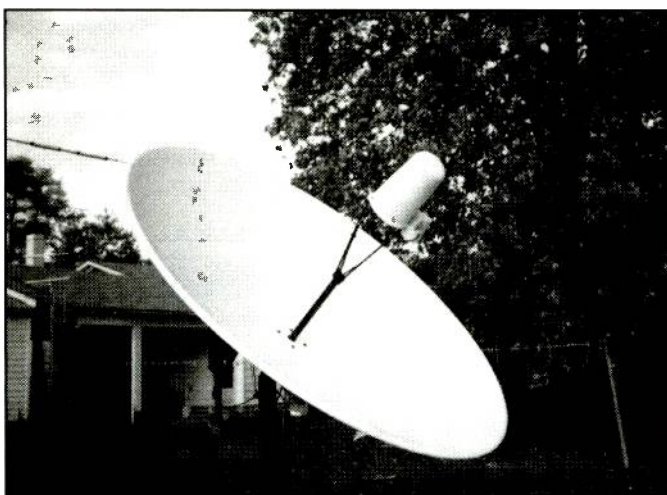


Figure 3. Down-converter/amp can be mounted on feed horn or support mast.

ing (see Figure 2). Adjust the feed horn by twisting it clockwise and counter-clockwise to determine the best signals.

What if you don't have a TVRO dish and have no intention of buying one? There is a good second option for tuning wfax from the Geo-stationary satellites. Vanguard Electronics Labs carries a 44-element loop Yagi antenna. This high gain antenna is light weight and is only four and a



Two different angles of a coffee can feed horn mounted on a TVRO dish.

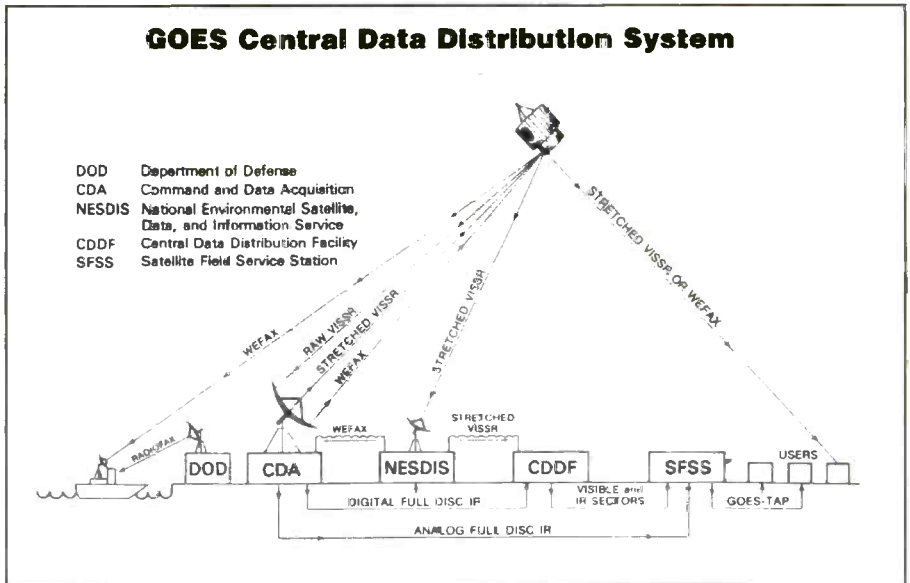
half feet long. It can be mounted like a television antenna and it provides 21 dB gain. As with the dish antenna and feed horn, a down-converter is needed. This can save you big bucks over a dish and feed horn configuration, not to mention the ease of simple installation. Don't forget to use good quality coax no matter which antenna system you choose.

As with the polar orbiting system, place a through-tap or a power coupling filter in the coax line just before it reaches your receiver/scanner. Your scanner will be tuned to 137.500 MHz, a standard frequency for the conversion of the 1.691 GHz signal.

Your pre-amp may well instruct you to apply 12 volts for the coax line to power the amp. Be sure to apply the 12 volts between the amp and power coupling filter, and not between the filter and receiver—that would destroy the receiver's front-end and more!

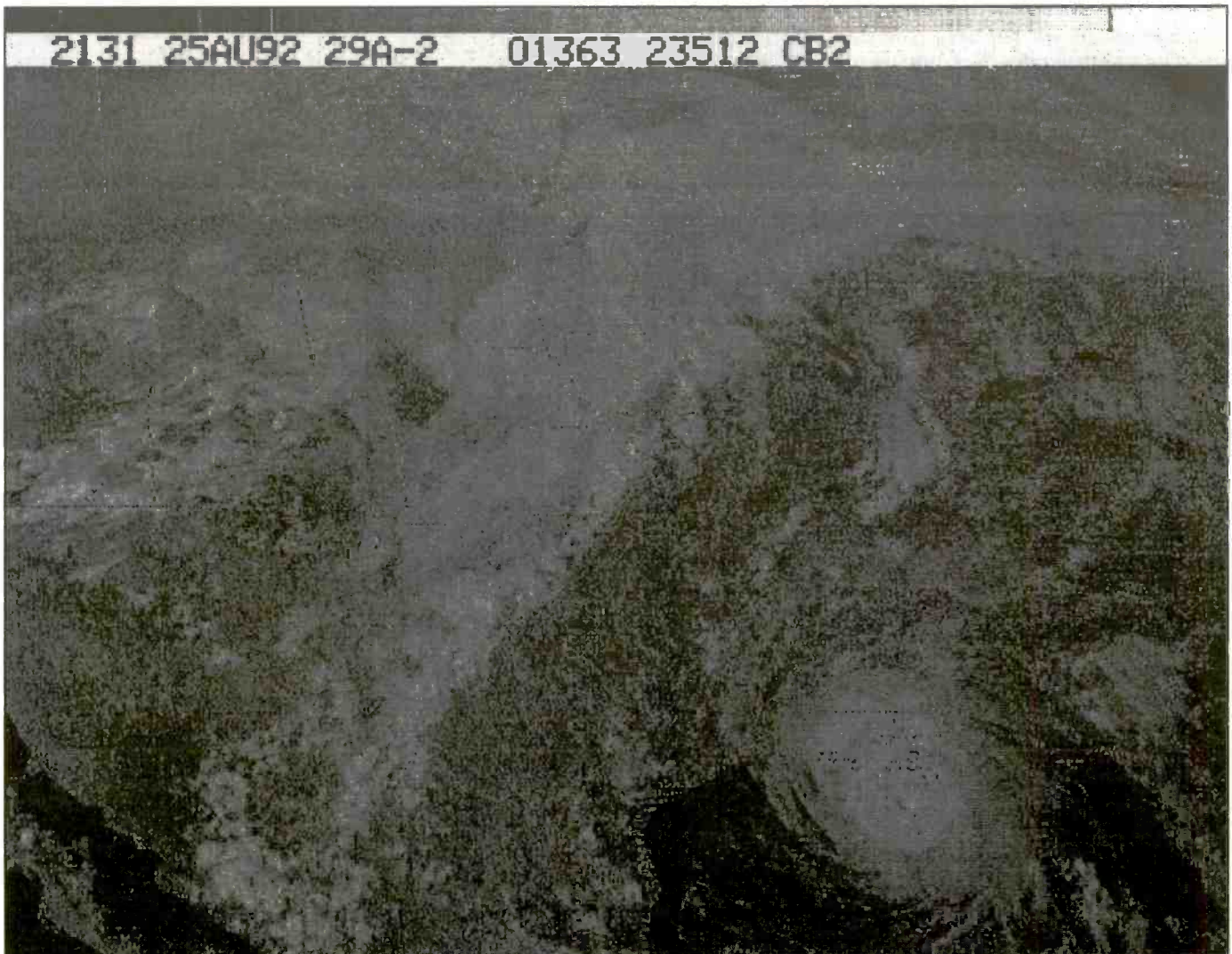
An Exception to the Rule

Consider one other area of experimentation. If you have a TVRO system Space-



net 3, transponder 17 has carried weather maps of U.S. and Russian polar and Geostationary satellites, sent in FSM (Fre-

quency Division Multiplexing). To receive FSM, a signal must be pulled off the receiver at the base band output. Feed this sig-



Once all components are assembled and functioning, weatherFAX reception can be attained. This weatherFAX sample is of Hurricane Andrew, in August 1992.

nal into a shortwave (HF) receiver with a piece of coax, making sure there is no voltage on the base band output (DC that is).

If voltage is present, a power coupling filter is needed to protect the receiver. Tune between 1.5 and 1.8 MHz, and you should find three signals and three separate weather maps here. The audio signal from your receiver is then sent to a M-8000 FAX decoder from Universal Electronics. Your receiver is set on FM and your M-8000 is set on AM mode. (Your HF shortwave receiver must have an FM mode.)

If you want to set up a weather station or want to pull radio and data signals off your TVRO system, read Thomas P. Harrington's book, *Satellite Radio*. Of the several books dealing with TV satellites and how to pick those exotic signals off the transponders, none is as easy to use and understand as this one. Follow its step-by-step instructions on hooking up your equipment for FDM, SCPC, wefax and more, with plenty of diagrams and photos.

Our study of weather stations began with the receiver at your desk, and have worked our way outside to the possible antenna systems and hardware needed to produce quality pictures. Next time we will again start at your receiver/scanner and work through the modem, computer, software, and displays. See ya' next month.

Weather Satellite Vendors

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CIRCLE 96 ON READER SERVICE CARD

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

Technology scams involving cellphones are keeping Canadian authorities busy. Not long ago, they busted four men in Edmonton, Alberta, alleged to have swindled phone companies out of more than \$400,000 in overseas call revenues. Further investigation, it is thought, will reveal that the same quartet have operated from other cities and billed phone companies out of \$1-million, or more.

The operation involved reselling cellphone service at a discount. Their cellphone services were mostly provided to persons who wanted to place calls to Turkey or Lebanon. Police said that the operators of the service had their office facilities handling the incoming cellular calls set up with call forwarding and other special business features.

When the company's offices were raided, one of the men was carrying more than \$2,000 in counterfeit American money.

This news was passed along by Trevor Fletcher, an avid POP'COMM correspondent from Edmonton, Alberta, Canada.

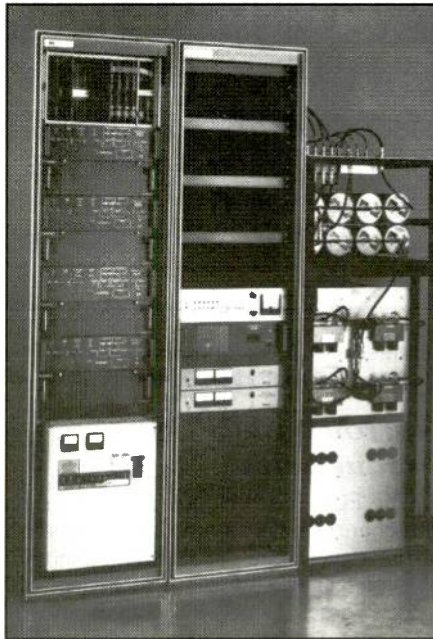
Jeanine Pirro, District Attorney of New York's Westchester County, announced the arrest of four individuals who were taken in along with six computers and other devices. This equipment was designed to copy the numbers of legitimate cellphones and clone them into duplicate units for use by unauthorized persons.

The street price of a cloned cellphone is around \$150. Such a unit might offer service for about one billing cycle. During that period, many hundreds of dollars in long distance calls might be placed to points throughout the world. The suspicion is that many drug dealers find this a convenient and anonymous means of international communication. When the legitimate owner of the number receives the bill and complaints, a new phone number is issued and the cloned phone goes dead.

The Westchester County arrests came as the result of joint efforts between the Yonkers Police Dept., the Special Investigations Unit of the New York State Police, and representatives of CellularOne. It was the largest cellphone numbers cloning bust in the New York metro area.

Scanner owners continue to be of genuine service to the community as they listen to the unscrambled analog cellular and cordless phone calls easily picked up on VHF/UHF receivers. Eavesdropping on cellular calls continues to be illegal. In some areas, so is listening in on cordless phone conversations. Who exactly do such "privacy" laws protect?

In Lynnwood, Wash., a couple was monitoring the police on their scanner when they heard reports about one man being fatally shot and another attacked with



Terminal unit of Telemobile's mobile phone system, as installed in two Ukraine cities.

a baseball bat. Later that evening, the couple was monitoring the cellular band. That's when they happened upon, and recorded, a conversation in which one party was talking about the shooting. He admitted being responsible for the act, described details of the crime, told how he got away, and where he disposed of the weapon.

When police arrested a 15-year-old for the killing the following morning, the couple immediately recognized that his first name was the same as the person they had monitored on the cellphone. The police alleged that the killing had resulted from a drug deal that went sour. They claim that the assailants stole the victim's wallet, handgun, beeper, and his cellphone.

The couple turned their revealing tape over to the police. Police were cautious in offering any opinions. They were aware of the problems imposed upon the possible uses of such material as evidence, in view of laws forbidding tuning in on cellular calls.

That story was related to us by John Willott, KI7JG, of Everett, Wash.

An anonymous Massachusetts reader tells us about a 45-year-old man from Southboro whose cordless phone calls got him in trouble. He was monitored having had lascivious and indecent proposals and conversations with a 13-year-old Texas girl. It started after a police officer reported accidentally picking up one such call on his scanner. After the first call was discovered, police listened for additional calls and heard seven more.

Police found that the man faced charges



This handful of technology is Motorola's tiny new Micro Elite digital cellphone.

of molesting three girls in Texas as long ago as 1990.

When the recent series of cordless phone calls included an invitation for the 13-year-old to come to Massachusetts, police waited for her to arrive with her mother. When mother and daughter showed up, he was charged with the federal statute that forbids interstate transportation of a minor for sexual purposes.

Police use of cellphone calls was given national publicity last June during California freeway chase involving O.J. Simpson. Simpson's friend, Al Cowlings, who was driving the vehicle, spoke to police from the vehicle while it was in transit. Police didn't need a court order to use that information inasmuch as the call was placed to them. Still, they do have other options.

Court orders for a wiretap are difficult to get, and take time. Like any radio transmitter, cellular phones send out signals. Even when a cellphone isn't in actual use, when it's turned on, it occasionally sends out a short signal just to advise the nearest cell site that it is in the area. Of course, during conversations, the signals it sends are continuous.

Using direction finding techniques on these signals, several receivers can get a triangulation fix on the exact location of any intercepted cellphone. They are not moni-

There are five 50 kHz channels paired with other 50 kHz channels:

Market #N-1	Block #1	940.00-940.05; and 901.00-901.05 MHz
Market #N-2	Block #2	940.05-940.10; and 901.05-901.10 MHz
Market #N-3	Block #3	940.10-940.15; and 901.10-901.15 MHz
Market #N-4	Block #4	940.15-940.20; and 901.15-901.20 MHz
Market #N-5	Block #5	940.20-940.25; and 901.20-901.25 MHz

There are three 50 kHz channels, each paired with another 12.5 kHz channel:

Market #N-6	Block #6	930.40-930.45; and 901.7500-901.7625 MHz;
Market #N-7	Block #7	930.45-930.50; and 901.7625-901.7750 MHz;
Market #N-8	Block #8	930.50-930.55; and 901.7750-901.7875 MHz.

There are three 50 kHz unpaired channels:

Market #N-9	Block #9	940.75-940.80 MHz;
Market #N-10	Block #10	940.80-940.85 MHz;
Market #N-11	Block #11	940.85-940.90 MHz.



The remote mobile phone used in the Telemobile system being used in Odessa and Mariupol, Ukraine.

toring the conversation, only securing a DF the signal. For this, they only require a subpoena, which is considerably easier to obtain than a court order. This is how police located the car owned by the murdered father of basketball star Michael Jordan.

Florida Highway Patrol's New Cellphone Access

The quickest way for motorists on Florida's highways to use their cellphones to make direct contact with the Florida Highway Patrol is with the recently instituted Star-FHP system. That means motorists in all areas of Florida can dial "Star-347" to reach the FHP to report accidents, impaired drivers, stranded or disabled motorists, or suspicious incidents. These calls are free, compliments of the state's ten participating cellular carriers.

Based on recent news stories, we'd say it would be a good idea for tourists to keep this number handy when driving on highways in the Sunshine State. Either program the number into the cellphone's autodial, or else write it in marking pen on a file card taped to the vehicle's sun visor.

This new program does not replace 911, which is still the state's primary emergency number. Star-FHP is intended to help take the pressure off Florida's 911

centers, and provide special attention to the needs of motorists. A fine idea!

Narrowband PCS Frequencies

The FCC has designated the channels and channel pairs to be allocated in each of the eleven different Personal Communications Service (PCS) markets. (See box)

Businesses owned by women and/or minorities are being given special preference with regard to the selection of PCS licenses to be issued to applicants in Markets #N-8 and #N-11.

Tiny Phone

Motorola introduced the Micro Digital Elite cellular phone. At 6.6 oz., the manufacturer claims it is the most lightweight, most advanced digital pocket phone currently available. The set features a display with menu icons that help users easily screen the phone's features. This is intended for use only on TDMA digital cellular systems, and not for analog systems.

There are two rows of alpha characters and dedicated signal and battery charge meters. Also, it is compatible with future TDMA services such as Caller ID, Voice Privacy, Voice Mail Message Waiting Indicator, Authentication, and Distinctive Ring.

The audio ringer can be shut off and the unit will vibrate to announce incoming calls.

For more information on this new digital handheld, call Motorola's Cellular Information Center at 1-800-331-6456.

Ukraine Car Phone Systems

When Odessa and Mariupol, cities in Ukraine, wanted mobile phone service, Telemobile Inc., was contacted requesting proposals for different systems to meet their needs. The American company felt cellular would be too expensive for the low number of anticipated users during the next two years. Considering the size of the service, and the terrain conditions, the company proposed the use of its Telemobile MRRT System in each city.

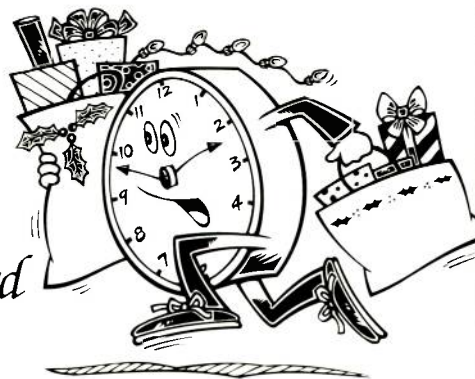
This is a multi-channel loop-extension system used for mobile telephone service. It can operate between 66 and 520 MHz. Similar systems were installed in both cities, with one city in the 300 MHz band, and the other in the 400 MHz band. These allow the use of communications with vehicles as well as small handhelds. Optionally, standard telephones at fixed sites could also integrate into the system, although these are not presently planned in the two cities.

Depending upon the choice of equipment and the terrain, a single terminal location generally offers coverage to mobile stations located within a 12 to 20 mile range.

Telemobile, Inc. makes mobile and fixed rural radio telephone systems used all over the world, including some systems interconnected through satellites. The company is located at 19840 Hamilton Ave., Torrance, CA 90502. Phone: (310) 538-5100.

This column seeks reader input in the way of news stories relating to cellphones, cordless phones, and pagers. We are also interested in new product information, as well as information from service suppliers.

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UNIDEN BEARCAT BC-760XLT

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Grundig YB-400
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\$199 with FREE AC ADAPTER

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! Frequency: 144-353 kHz, 520-1710 kHz, 1.711-30 MHz, 87.5-108 MHz; Output Power: 600 mW (via built-in loudspeaker); Input Power: 6 "AA" batteries; Size: 180 x 120 x 37mm; Weight: approx. 1.3 lbs.



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Sony ICF-SW77
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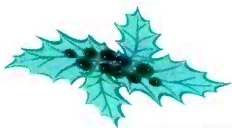
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Ramsey SCN-1 800-950 MHz Scammer Converter Kit **\$4995**



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Season's greetings, everyone. Well, the electric trains are up and running, decorations are everywhere, and the aromas from the kitchen are oh so seductive. It must be that time of year. Boy, do I love Christmas!

Just before closing last time, I promised you a visit with one of this area's busiest traffic handlers. Tom Lykins (WD4RWU) resides in Louisa, Kentucky—the county seat of Lawrence County. (Lawrence is in our Northeastern corner, adjacent to West Virginia, just a few miles from Ohio). He regularly participates in, and often conducts, the Good-Morning-Kentucky Phone net (beginning at 8:30 a.m. Eastern on 3.960MHz), and the Kentucky Traffic Net (7:00 p.m. Eastern, same frequency).

For Tom, the radio bug bit early and hard. Growing up in Springfield, Ohio in the 1950's, his local hero was Robert Yontz, owner of WBLV. "At one time I wanted to own my own radio station," he recalled. In his zeal, he memorized the AM and FM dials, both in Springfield and nearby Columbus, where he attended the Ohio School for the Blind.

The Columbus years provided the first exposure to ham radio. With some help from the Columbus Amateur Radio Association, the school established club station WA8BAR. Then in 1965, Starling Hutt (W8Qem) joined the faculty as an industrial arts teacher. When the students discovered their instructor was a licensed amateur, they wanted to know all about the hobby. According to Lykins, "Hutt asked if we wanted to study Industrial Arts or Ham radio. Everyone opted for Ham radio; we all received Novice licenses in 1966. My first call was WN8TWH." The first rig was a Hammarlund HQ110 receiver, and a DX-20 transmitter, but getting on the air proved to be easier said than done. "I blew up the DX-20, because I could not hear the dip when I tried to load it." As if this were not enough, "the signal overloaded the front end of the HQ110." Thus further pursuit of amateur radio was deferred for more than ten years.

After college in 1972, Lykins fulfilled his ambition to work in communications, when he accepted a job as a public safety dispatcher in Louisa. Meanwhile, he remained active as a hobbyist on the Citizens' Band. Then in 1978 an amateur friend, Fred Jones (WA4SWF), requested his help in getting a new 2-meter repeater on the air. This request spurred him to earn his Technician-Class

ticket, and his present call sign. The upgrade to general and the world of HF came in 1982.

Tom's introduction to the civilian National Traffic System ("at first I thought Mars was the only system for handling traffic," he recalled) came on the section level, but his interests soon broadened to include both area and regional nets. He believes digital communication will profoundly alter NTS, along with amateur radio in general. Presently, though, person-to-person interaction and fellowship suit him just fine.

Of course, amateur radio is just one of many interests and activities. Tom is both a Louisa City Councilman, and the town's Water Commissioner, as well as the secretary of the Lawrence County Septemberfest Committee. He is also the Audio Archivist of the Fred Vinson Memorial Foundation, which chronicles the life and times of one of Lawrence County's most distinguished native sons—the "Father" of the Social Security system, and the 13th Chief Justice of the US Supreme Court. Last but not least, he is an Assistant Regional Manager of the Kentucky Assistive Technology Users' Group (ATUG), and a family man. Speaking of his wife, Barbette brings it all into focus: "We both enjoy helping people." Good going, Tom. Incidentally, both the nets mentioned above welcome out-of-state check-ins, with or without traffic. The philosophy is the more the merrier, so "Y'all come!"

Barbara Mattson of Spartanburg, South Carolina enjoyed the June column on ham radio for the handicapped. Accordingly, she'd like to pass along news of a special-interest net for the area. The "Seeing TidBits" net was the brainchild of Ted Phillips (KR4SM), who wanted a place to disseminate information "regarding amateur radio equipment that would be easy for blind people to use," along with "other news of interest to the blind."

The net went into operation in March, 1992, meeting every Thursday evening at 10:00 p.m. on the WD8OXE Trion Peaks machine (145.150). According to Barbara, the repeater covers an approximate 70-mile radius, encompassing Northwestern South Carolina, Southeastern North Carolina, and Northeastern Georgia. The discussions tend to be free-wheeling, and open to all comers, blind or not. Anyone desiring further information, including verbatim transcripts of net sessions, should contact

Barbara at 519 E. Main St., Spartanburg, SC 29302. Thanks, Barbara; your contribution is greatly appreciated. Keep reading and writing in.

For those who enjoy QSL'ing special event stations, here's one in the spirit of the season. How about a QSL certificate from Bethlehem? Would you believe Bethlehem, Indiana? For the past 20 years, the Clark County ARC has sponsored such an event every Yuletide. As of this writing, this year's plans have not been finalized, but, if recent years are any indication, the station will run during the first or second weekend in December—either the 2nd through the 4th, or the 9th through the 11th. Operators will be active on both CW and phone, in the 80-, 40-, 20-, and 15-meter bands. The club call is W9WWI. Those who wish to confirm their contacts should send a SASE to the Clark County Amateur Radio Club, PO Box 532, Jeffersonville, IN 47130. SWL'ers can also get in on the fun by simply sending a valid reception report, along with a SASE. Thanks to Herb Rowe (W4WQD) and John McRory (NM9A) for furnishing the preceding information.

Before closing, I'd like to offer a few personal reflections. This installment is a special one for me, both because it is the last issue before Christmas (I've already told you how I feel about Christmas), and because it marks the end of the first year of HandiChat. For years, I surmised that writing for a magazine such as this must be a great job, and, by George, it is. After all, we nationally-renowned columnists make tons of money, attend all the best parties, and are absolutely irresistible to the opposite sex... (Okay, now you've had a good laugh on me; don't say I never gave you anything!) Seriously, though, those of us who get paid for doing what we enjoy are truly blessed.

Accordingly, I'd like to thank some people. Thanks to Tom Kneitel for suggesting the column, and hiring a guy out of left field to write it. Special recognition should also go to Deena Marie Amato, as an Ex Officio field liaison. Her effervescent good nature is a real tonic. Last, but not least, thanks to all of you who support this column. I've had the pleasure of hearing from several of you over the past year, and am looking forward to contact with many more in the coming months. While we're on the subject, as long as you are getting out those last-minute greeting cards, why not drop me a line? Send it to HandiChat, in care of Popular Communications, 76 N. Broadway, Hicksville, NY 11801-2953. Until next time, may He whose birth we are currently celebrating bestow his richest blessings upon you and your families, throughout 1995 and beyond. See you next year. ■

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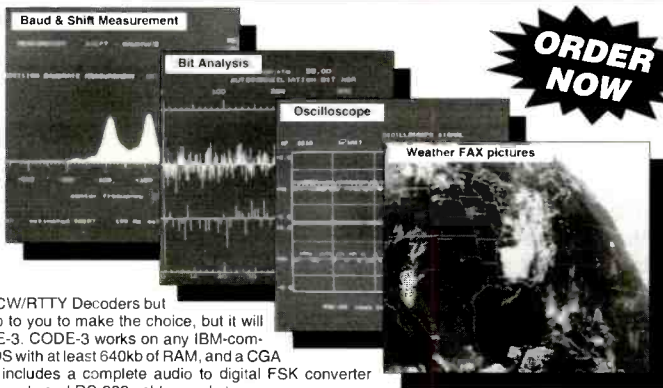
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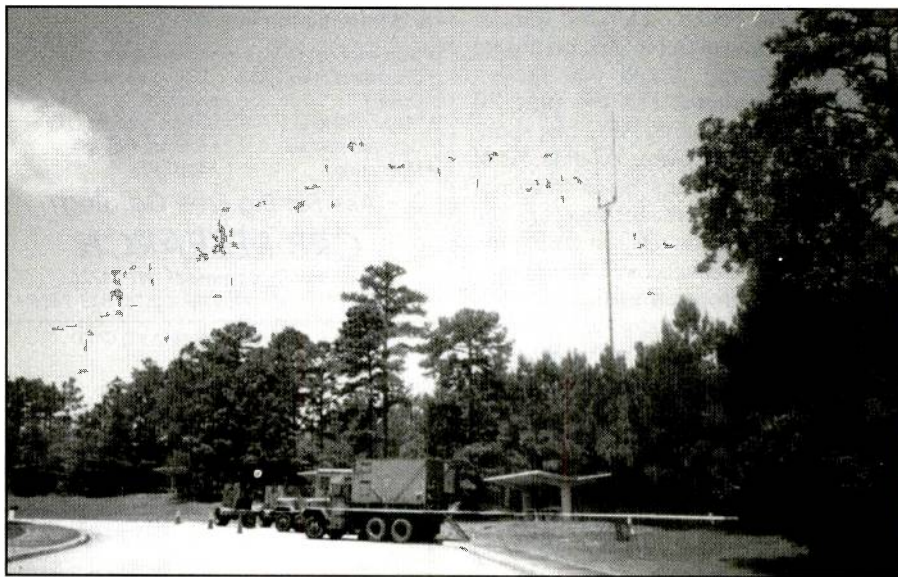
Winter is here, and in many parts of the United States and Canada our monitoring habits turn to things such as snowplows and ski areas. If you do any driving at all during wintry weather, it pays to listen to state, county, and municipal snowplow frequencies. These frequencies are typically used by streets and highway departments the rest of the year.

We've received letters from several readers via the Internet for this month. The first contains some tips from Warren Whitby, KE4ITL, who says he enjoys reading Scanning VHF/UHF. Warren says he uses his 2-meter ham walkie-talkie with a CTCSS encoder-decoder to discover the tones that local police and fire departments use. He programs in the frequency and then selects tone encode-decode. His Icom handheld radio has a set menu where he can select the parameters. He enters the set menu and scrolls up until he finds the tone squelch option. He then watches the radio's S-meter and when he sees that a station is transmitting, he turns through the tones with the VFO knob until he finds the correct tone. It takes a little effort, but it beats spending the money for a tone decoder, Warren says. Sounds like it is a neat way to find out what tone the locals are using so you can screen out unwanted other stations. Of course, some Uniden Bearcat scanners offer the tone squelch option, too.

Warren also offers this tip: Sony makes a line of small speakers—both amplified and non-amplified—for their Walkman radios. He bought a set of SRS-7 speakers from his local Wal-Mart for \$11 and a stereo-to-mono adapter at Radio Shack for \$3, and tried them on an Icom R1 handheld receiver. He said it not only works great, it easily fills the room with audio from handheld and base scanners. He is going to try the amplified speakers soon.

Warren also poses a question. He said he suffers from VHF pager interference on his base scanner. He uses a 6 db gain amplified antenna indoors because he lives in an apartment complex. "Are there any kind of notch filters I can buy or make to eliminate the pager interference? I have thought about additional attenuation, but I'll lose most of what I listen to if I use any more attenuation." Unfortunately, most notch filters made for commercial applications will cost you a pretty good sum of money. You might try Grove Enterprises (800-438-8155), which manufactures a device that could help you.

However, you first must identify the frequency or frequencies causing your interference problems. If you find out that most of the pager intermod is coming from a nearby transmitter on 158.700, then that is the frequency you want to notch out.



Yankee P. Edwards, KB5PXF, of Slidell, Louisiana, said he took this photo last summer at a rest area along Interstate 10 east of the Apalachicola River in Florida. The military vehicles were staffed by members of the 11th Air Traffic Control Platoon, a National Guard unit based in Jacksonville, Florida, in support of military aircraft surveying and monitoring rising flood waters in the aftermath of torrential rains from Hurricane Alberto. The station, which used the portable tower seen in the photo, was operating only on VHF and UHF when the photo was taken, but earlier in the week had established an HF link back to Jacksonville.

Grove makes a device that will allow all your scanner band signals to pass through and it also will allow you to notch out a frequency that is causing you interference. The device sells in the \$45 range.

If you are having trouble finding the frequency that is causing the problems, first attenuate and even remove the antenna. If the transmitter is close by, you will pick it up whether you have the scanner plugged in or not. You also can try to hear it with a collapsed whip on the radio, too. Program into a priority channel the frequency you think is causing your trouble and activate the priority feature. If you receive the interference on any of the channels and the scanner automatically locks onto your priority channel every time, you know you will have found the offending frequency. But don't be surprised if you stumble across more than one offending frequency. More than one paging transmitter can be located at a nearby site.

Another message received via the Internet came from someone who identified himself only as NCS. He said he lives about 30 miles outside of Detroit and enjoys listening to marine traffic on the Great Lakes. However, he has a problem in that some of the signals in the 156-158 MHz VHF marine band are weak and gets a lot of interference from pagers and other transmitters. NCS has a Realistic Pro-43 scanner and a general purpose antenna on his roof.

He's looking for advice on how he can get better reception. He adds that he's new to scanning and the Internet.

Well, there are a couple of steps you can take. First, make sure you check out the above answer to Warren Whitby regarding eliminating interference from your scanner. You need to find the offending frequencies and then notch them out with an interference filter.

NCS probably could stand to better his antenna system, too. If most of your listening is VHF marine traffic on the Great Lakes, then you should put up an antenna designed just for VHF high band. While commercial antennas can prove costly, many have learned that amateur radio antennas work just fine, are of the same quality as commercial antennas, and are a lot cheaper. For VHF high band monitoring, you can use antennas designed for the 2-meter ham band (144-148 MHz) quite well. If you want to get a better signal from the Great Lakes, you also might consider using a VHF yagi antenna, which is directional. You'd point it at the spot on the Great Lakes where you want to hear the bulk of marine traffic and the direction capabilities of the antenna will focus more on one area and add gain to your signal, too.

Make sure you go for an antenna with a good amount of gain. While disccone antennas are good because they cover such a wide range of frequencies and bands, they

offer no gain. Gain is a factor that amplifies the signal your antenna sends to your radio. The higher the gain number (measured in dB), the more the antenna will amplify the signals heard. You also should use a good coaxial cable between your antenna and the scanner. If you need more than 25 feet of cable, don't use lossy CB-type coax (RG58U). You would be better off using something low loss like Belden 9913 (or equivalent). The cable costs more, but the result will be more signal getting from your antenna to your scanner. A good antenna and good cable can make even an inexpensive receiver pick up amazing signals. Give it a try!

A Narrowband Land Mobile Band Comment

Another Internet message was received from Wayne Roberts, who commented on the 216-222 MHz band. Wayne wrote to inform our readers about upcoming commercial sideband activity on 220-222 MHz. This is the new narrowband land mobile band carved from the 220-225 MHz ham band. Wayne says that 100 repeater pairs will use this band with 5 kHz channel spacing. The mode will be ACSB, or amplitude compandered sideband. For those interested in the technical nature of this new band, Wayne says the changes in audio level will be compressed before transmitting, then expanded back out at the receiver. A 3.1 kHz pilot tone will be transmitted to provide an auto frequency lock, so no clarifier will be needed. Operation will be similar to FM trunked systems that already operate primarily in the 800 and 900 MHz bands.

Wayne suggests that perhaps POP-COMM could be the first in informing scanner listeners on how to receive transmissions in this new band...like hooking shortwave receivers to the last IF stage. Some of these systems already are on the air in some areas. Has anyone successfully monitored these new ACSB systems on 220-222 MHz? If so, we'd like to pass along your listening tips. As a reminder of how narrow these channels are, Wayne says: "Imagine a repeater every 5 kHz, and four repeaters in your FM passband..."

One last Internet message came from Jerad Hoff of Plymouth, Minn. Jerad passes along a great list of Twin Cities frequencies. He monitors with a Realistic Pro-43 scanner. Here are some of his Minnesota frequencies: 155.610, Hennepin County sheriff south dispatch; 155.805, Hennepin County sheriff car to car; 155.820, Hennepin County sheriff emergency/information; 154.100, Hennepin County sheriff north dispatch; 154.755, Hennepin County sheriff water patrol; 45.660, Hennepin County sheriff intersystem (dispatch to dispatch); 460.400, Hennepin County sheriff UHF 2 info; 460.200, Hennepin County sheriff UHF civil-warrant; 453.575,

Hennepin County East (Government Center, etc.); 453.475, Hennepin County West (park rangers, etc.); 155.055, Hennepin County Civil Defense; 453.100, Plymouth police; 45.160, Plymouth police car to car; 155.685, Crystal police; 155.430, Golden Valley-New Hope police; 154.725, Golden Valley-New Hope police; 155.820, New Hope police; 153.860, Robbinsdale police; 154.385, Hennepin County fire 1; 154.355, Hennepin County fire 2; 154.070, Bloomington fire; 154.430, Crystal-Brooklyn Center fire; 154.040, Hopkins fire; 153.770, Robbinsdale fire; 154.250, Golden Valley-New Hope fire; 154.205 and 154.295, Minneapolis-St. Paul Airport fire; 858.2125 and 856.2125, Minnetonka fire; 155.025, Metrodome first aid-auxiliary; 460.075 and 155.895, University of Minnesota security; 453.425, Hennepin County Jail security; 453.800, Hennepin County Juvenile Center security; 154.665, state capitol security; 453.150 and 453.850, Channel 11 KARE-TV; 450.250 and 450.450, Chan-

nel 9 KMSP-TV; 166.250, Channel 5 KSTP-TV; 170.150 and 450.650, Channel 4 WCCO-TV; 173.325, Minneapolis Star & Tribune; 173.375, St. Paul Pioneer and Press; 158.760, Minnesota Mosquito Control; 453.500, state capitol maintenance; 453.900, Hennepin County highway maintenance; 450.3875, Metro Traffic Control-WCCO; and 464.4125, Mystic Lake Casino.

One additional frequency Jerad passes along will be of interest to those in New York City—153.290, "The Late Show with David Letterman" IFB (interruptible feedback—cuing). This frequency comes alive at 5:30 p.m., when the show is taped. Thanks for the great list of frequencies.

What are you hearing on your scanner? We'd love to share your frequency lists with others. What listening tips can you offer? Do you have photos of your listening posts or dispatch centers you'd like to send? Write to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 North Broadway, Hicksville, N.Y. 11801-2909, or computer users can send e-mail via the Internet to scan911@aol.com. ■

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FCC ACTIONS AFFECTING COMMUNICATIONS

New Allocation Procedures for Unrouted Ship-to-Overseas Inmarsat Traffic

The FCC adopted new procedures concerning the allocation of unrouted ship-to-overseas telex traffic transmitted over coast earth stations accessing INMARSAT. Specifically, under the new rules, COMSAT, and other United States coast earth station operators that provide services through INMARSAT space segment, will not be required to utilize any particular allocation method for distributing unrouted ship-to-overseas telex traffic.

Ship-to-overseas telex traffic is sent via the INMARSAT space segment from a ship to a COMSAT or other coast earth station in the United States, then carried over the facilities of a U.S. carrier to a foreign destination. Some of this telex traffic is not routed by the shipboard originator to a particular terminating carrier. The present allocation method is a rotational scheme that guarantees carriers an equal share in the distribution of such unrouted traffic.

The Commission declined to mandate any allocation method which would compel COMSAT and other U.S. coast earth station operators to allocate unrouted ship-to-overseas telex traffic coast to terminating carriers. Instead, the Commission granted discretion to the coast of earth station operators to enter into flexible routing arrangements to best serve the interests of their customers in obtaining technically satisfactory service at the least cost. The Commission also encouraged any entity, including a terminating carrier, to build and operate its own coast earth station to provide INMARSAT service.

Regulatory Framework for CMRS Completed

The Commission completed the initial implementation of its Congressional mandate to establish a consistent, symmetrical regulatory scheme to govern similar commercial mobile radio services. The regulatory framework facilitates the future evolution of mobile services and marks an important step in the Commission's efforts to enhance competition among mobile service providers, promote the continuing development of new and innovative service offerings, and ensure that ergonomic forces, rather than regulation, shape the mobile services marketplace.

Last year, in the Omnibus Budget Reconciliation Act of 1993 (Budget Act), Congress created a new regulatory classification called "commercial mobile radio services" (CMRS) to ensure that similar mobile services are accorded similar regulatory

treatment. In the Second Report and Order in this proceeding, the Commission reclassified certain services that traditionally have been licensed and regulated under the private radio provisions of the Commission's rules as CMRS. These include: Specialized Mobile Radio Service, Private Paging Service, Business Radio Service, and 220-222 MHz Land Mobile Services. The Budget Act directed the Commission to revise its rules to ensure that reclassified services are "subjected to technical requirements that apply to licensees that are providers of substantially similar common carrier services."

In the Third Report and Order now adopted, the Commission analyzes the nature of the competition among CMRS services to determine the reclassified private services and existing common carrier services that should be considered "substantially similar" for purposes of devising comparable technical and operational rules. According to the Commission, virtually all CMRS services are actually or potentially competitive with each other to some degree, and that the range of services deemed substantially similar for the purposes of establishing comparable requirements should therefore be defined broadly.

The Order also addressed the issue of imposing a cap on the amount of CMRS spectrum that licensees may aggregate in a given geographic area in order to prevent potentially anti competitive aggregation of CMRS spectrum. The Commission concluded that it is unnecessary to establish the broad spectrum cap applicable to all CMRS services that was proposed in the May, 1994 Further Notice of Proposed Rulemaking, in order to preserve competitive opportunities in the CMRS marketplace. Instead, the Commission concluded that this goal may be achieved by capping at 45 MHz the total amount of PCS, cellular and SMR (Specialized Mobile Radio) spectrum in which a single entity may have an attributable interest. The Commission adopted an attribution rule for SMR spectrum that takes into account the unique licensing parameters of that service; the Commission stated, for example, that in the 800 MHz SMR service, it will attribute a maximum of 10 MHz of SMR spectrum to an entity when determining compliance with this cap. The Commission stated that competition in the CMRS as a whole.

The Commission additionally reviewed the technical and operational provisions in Parts 90 and 22 of its rules to determine changes required to promote regulatory symmetry and foster a competitive CMRS marketplace. The Order concluded that substantially similar services must be subject to comparable technical and operational rules unless there is a reasonable basis for retaining differences in existing rules,

either because they do not appear to distort competition in the CMRS market due to the cost of conforming to the rules outweighing the benefit that might be gained.

In particular, the Commission concluded that the channel assignment rules for 900 MHz SMR should be amended to provide for licensing of wide-area systems based upon Major Trading Areas (MTAs). The Order provided for licensing of all 200 channels in blocks of 10 channels and stated that eligibility for MTA-based licenses would be open to existing licensees and new entrants. The Order also concluded that for these channel blocks, competitive bidding procedures would be used to resolve mutually exclusive applications. The Commission found that licensing of the 900 MHz band on a wide-area basis would enhance the ability of SMR providers to compete with cellular and PCS. The Order also held that incumbent SMR licensees generally should be permitted to continue operating under their current authorizations and that MTA-based licensees would be required to protect incumbents or negotiate mergers, buyouts, swaps or similar arrangements on a voluntary basis.

The Commission also concluded that licensing of 800 MHz SMR systems in a wide-area basis is appropriate. The Commission stated that it would shortly issue a Further Notice of Proposed Rule Making in its 800 MHz docket (PR Docket 93-144) to ensure that the interests of existing licensees and potential entrants are fully considered.

Specifically, the Commission stated that it would seek further comment on: 1) designating 200 contiguous SMR channels for MTA licensing based on 50-channel blocks; 2) licensing the renaming 80 SMR channels under existing rules; and 3) allowing incumbents to continue operating on existing channels. The Commission concluded that competitive bidding procedures should be used for selecting among mutually exclusive initial applications in the 800 MHz band. The Commission further decided that in light of the changes to be implemented in 800 MHz licensing, acceptance of new 800 MHz SMR applications (including SMR applications for General Category channels) will be suspended, effective immediately, until new licensing rules are adopted.

The Commission concluded that service area definitions and channel assignment rules applicable to licensing of 220 MHz and private paging services should not be changed at this time, but stated that such issues would be separately addressed in the future proceedings.

The Commission declined to make fundamental alterations to its existing rules regulating co-channel interference, adjacent channel interference, or antenna

height and transmitter power, because differences among existing rules governing substantially similar services have minimal competitive impact and making them uniform at this time would likely be disruptive and costly. The Commission also adopted a uniform 12-month construction requirement for CMRS licensees, except in the case of the wide-area services where multi-year construction will be permitted subject to coverage requirements.

The Order additionally eliminated all user eligibility restrictions for CMRS providers: eliminated most restrictions on permissible uses for CMRS providers; revised CMRS station identification requirements; and applied the Equal Employment Opportunity obligations currently applicable to Part 22 licensees to all CMRS licensees.

Finally, the Commission concluded that CMRS license applicants should be subject to uniform rules and procedures under the common carrier licensing provisions of Title III of the Communications Act of 1934, as amended. Accordingly, the Commission adopted conforming amendments to its rules to achieve this result. The Commission held that these rules will apply to applicants that provide or propose to provide service that meets the CMRS definition. Specifically, the Commission adopted a single uniform application form for all CMRS and PMRS (Private Mobile Radio Service) applicants in all terrestrial services;

adopted a 30-day filing window and competitive bidding for selection among mutually exclusive initial applications; and extended that Part 22 public notice and petition to deny procedures to CMRS providers.

Ordered to Forfeit \$5,600 for Selling Computers Without FCC Authorizations

The Commission ordered Profit Enterprises, Inc., to forfeit \$5,600 for violating the Communications Act by selling three personal computers without FCC authorization. Profit was granted reconsideration of the Commission's initial order which found it liable for a monetary forfeiture in the amount of \$10,000.

Seeking reconsideration, Profit argued that there was no basis for upwardly adjusting the base amount of the forfeiture; that the forfeiture should be reduced on the basis of its history of compliance and good faith. Profit also repeated its earlier argument that this financial situation justified cancellation of the forfeiture.

The Commission reduced the forfeiture based on Profit's history of prior compliance and because it agreed that no basis existed for the initial upward adjustment. The Commission, however, declined to make any other reductions because Profit

had failed to establish any other bases requiring further reductions of the forfeiture amount. In determining the amount of forfeiture, the Commission's policy regarding forfeiture adjustments, 1993 Policy Statement, Standards for Assessing Forfeiture, was taken into consideration.

FCC Releases Report Regarding Reallocation of Spectrum from Federal Government

The FCC released a report to the Secretary of the U.S. Department of Commerce regarding the Department's Preliminary Spectrum of Reallocation Report (Preliminary Report).

On August 10, 1993, Congress adopted the Omnibus Budget Reconciliation Act of 1993, which directed the Secretary of Commerce to identify at least 200 MegaHertz of spectrum currently allocated on a primary basis for Federal Government use, which is most likely to have the greatest potential for productive uses and public benefit if allocated for non-Federal use. On February 10, 1994, the Secretary of Commerce released a Preliminary Report produced by the National Telecommunications and Information Administration (NTIA) identifying 200 MegaHertz of spectrum for reallocation from Federal Government to

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private sector use. The public was then afforded the opportunity to comment on the Preliminary Report. The Reconciliation Act requires that 90 days from the end of the public comment period, the Commission submit to the Secretary of Commerce an analysis if the public comments, along with any comments or recommendations it deems appropriate. The report released today satisfies this requirement. The Department of Commerce must now consider the public comments and the Commission's report and submit to the President and Congress by February 10, 1995, a final report identifying and recommending spectrum for reallocation.

In its report, the Commission concludes that the Department of Commerce has complied with the reallocation criteria imposed by Congress. However, the Commission also believes that relatively minor changes to the reallocation plan presented

in the Preliminary Report could provide even greater benefits to the public. The Commission notes that parties filing comments praised NTIA for its efforts, but stated that the proposals make in the Preliminary Report could be significantly enhanced by some modifications to better satisfy the public's requirements.

In addition to providing an analysis of the comments, the Commission's report provides a discussion of a supplemental spectrum reallocation plan that it believes will enhance the viability of the reallocated spectrum for commercial and local governmental use. In particular, the Commission recommends that in preparing its final report NTIA should seek to provide larger blocks of spectrum required to accommodate high volumes of communications and the wide bandwidths necessary to accommodate developing technologies and transmit communications such as voice and

video. It also notes that the private sector would benefit from blocks of spectrum that could be readily paired and used to accommodate emerging technologies such as mobile satellite service.

FCC Releases Reference Book on Rates, Price Indexes and Household Expenditures for Telephone Service

The FCC released a comprehensive report on telephone service rate levels, price indexes, and household expenditures.

The report contains historical data, background material, and descriptions of methodology. *The Reference Book: Rates, Price Indexes, and Household Expenditures for Telephone Service* was prepared by James L. Lande of the Common Carrier Bureau's Industry Analysis Division. It is intended to assist in the analysis and interpretation of telephone price trends.

The Consumer Price Index for telephone service rose 1.8% during 1993. This index includes local service charges (which increased 1.0%), state toll charges (which increased 6.5%). The nation's overall rate of inflation was 2.7% for 1993. Thus, in real terms, the cost of residential telephone service fell about 1% during 1993, an about 16% since divestiture. The actual decline, however, was somewhat greater because the CPI toll indexes do not fully recognize the lower rates offered by toll discount plans.

The national average monthly charge for residential local service with unlimited calling, including subscriber charge lines and taxes, averaged \$18.82 in October 1993, about \$.12 per month higher than the prior year. Small businesses paid an average of \$42.57 per month for single line service in October 1993, about \$.28 per month higher than the prior year.

The report contains Consumer Expenditure Survey data for 1980 through 1992, the last year for which data is available. The average household spent \$325 for telephone service in 1980 and \$623 in 1992. This was about 2% of household expenditures in each year. The average household spends between \$28 and \$30 a month for long distance services. Toll calling grew by about 10% per year in the late 1980s, following the dramatic fall of interstate rates. Toll calling has been growing at about 5% per year since then.

The report contains information on subsidized telephone service rates, rates in rural areas, and rate trends since 1930.

The report and its underlying data are available for reference in the Industry Analysis Division's Public Reference Room, Common Carrier Bureau, 1250 23rd Street, N.W., Plaza Level. Report data can be obtained via the FCC-State Link computer bulletin board at (202) 632-1361. Copies of the report may be purchased by

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FCC Reconsiders Pioneers' Preference Decision

The Commission announced that it has amended its pioneers' preference rules to require that recipients of these courtesies in proceedings where tentative decisions had been made at the time Congress enacted auction legislation must pay for their licenses. This decision applies to three proceedings—2 GHz personal communications services (broadband PCS), local multipoint distribution service (LMDS) and low earth orbit satellite services in the 1.6/2.4 GHz band (so-called Big LEOs).

The Commission also announced that the preference winners in the broadband PCS proceeding will have their choice of paying either 90% of the winning bid for a 30 MHz license in the same market or 90% of the adjusted value of the license calculated based on the average per population price for the 30 MHz licenses in the top 10 markets established at auction. Payment amounts for LMDS and Big LEOs would be set in the context of those proceedings.

In October 1992, the Commission tentatively granted pioneers' preferences to American Personal Communications (APC), Cox Enterprises Inc., and Omnipoint Communications, Inc., for broadband PCS. In December 1993, the Commission granted final pioneers' preferences to these entities. The Commission determined that, if otherwise qualified, APC would be licensed to use Channel Block A in the Major Trading Area (MTA) that includes Washington, D.C. and Baltimore, Maryland (Washington-Baltimore MTA); Cox would be licensed to use Channel Block A in the MTA that includes San Diego, CA (Los Angeles-San Diego MTA); and Omnipoint would be licensed to use Channel Block A in the MTA that includes Northern New Jersey (New York MTA, including Northern New Jersey).

In December 1992, the Commission had also awarded a tentative preference to Suite 12 Group in the LMDS service. In August 1992, the Commission tentatively denied all requests for preference in the Big LEO service.

In December 1993, the Commission determined that preference recipients in all three of these proceedings would not have to pay for their licenses. Subsequent to the decision awarding final pioneers' preferences to APC, Cox and Omnipoint and requiring no payment for the pioneers' licenses, a number of applicants whose broadband pioneers' preference requests had been denied petitioned for judicial review raising a number of challenges to the awards. On July 8, 1994, the Commission's General Counsel, on instruction by the Commission, filed a motion in the U.S. Court of Appeals for the District of Colum-

bia Circuit asking the court to remand the broadband PCS cases to the Commission for further consideration. The court granted the Commission's motion on July 26, 1994. This order responds to the remand.

Request to Waive Section 80.203 of the Commission's Rules

Lorad Corporation of Miami, Florida (Lorad), maker of VHF marine transceivers has requested that the Private Bureau waive section 80.203(C) of the Commission's Rules, 47 C.F.R. § 80.203(c), requiring that all VHF ship station transmitters either manufactured in or imported into the United States, on or after August 1, 1994, must be equipped with an automatic timing device deactivating the transmitter to the receive mode after an uninterrupted transmission period of five minutes, plus or minus 10%. Due to hardships in meeting the deadline of August 1, 1994, Lorad requested a waiver of the FCC Rules.

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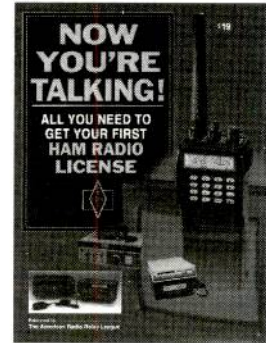
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LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

A station has died, and a piece of American radio broadcasting is now a part of history. The Far East Broadcasting Company has closed down shortwave station KGEI in California, citing economics as the main reason. KGEI, The Voice of Friendship, was one of the oldest American shortwave stations—back to the days even before World War II. It was originally owned by the General Electric Company (hence the call letters). The Far East Broadcasting Company acquired KGEI in 1960 and used it as a vehicle to reach Latin America with the FEBC ministry. FEBC is demphasizing its Latin America effort, concentrating their efforts on the Orient instead. We're sorry to lose you, KGEI.

The Belgian government station Radio Vlaanderen International has purchased a couple of shortwave transmitters which used to belong to RTBF, the Belgian French language shortwave station, which is no longer active on shortwave. The 250 and 100 kilowatt units bring the number of transmitters at RVI's Wavre installation to four. But, because of budget restrictions they can only afford to operate three at any one time. The fourth may be put into use now and then for special event coverage.

DX'ers who like to seek out the shortwave stations of Papua New Guinea should note that the broadcasting situation in this country is something of an up and down state. Apparently many of the local/regional shortwave stations are not in the best of repair. We've seen a number of reports of this or that station going silent for a period of time, then returning. Radio Western and Radio Northern are two stations which have recently been closed down—though they could be back by now. One recent note described the office complex at Radio Gulf (3245) as a "health hazard!"

The BBC has plans for yet another relay site, this one in Thailand—at Nakhon Province in the central part of the country. The complex, will cost around \$47 million and will include four-250 kW transmitters. Intended as a backup for the Hong Kong relay (remember, the Chinese take over there in '97) the facility is scheduled to go on the air sometime in 1996.

More USA Shortwave Notes

The new antenna at WSHB should be in operation by now, which means the Monitor Radio service to Africa will now come from South Carolina. Once the new owners officially take control of Monitor Radio's WCSN, they'll change the call letters to WVHA.

KCBI, Dallas, Texas has changed call letters. It's now KAIJ.

Deutsche Welle, having lost its relay sta-



Radio Japan is one of a handful of stations known and appreciated for their variety of full color photo QSLs. (Courtesy J.W. Roberts, Brevard, NC)



So is Radio Korea, Seoul. (Courtesy of J.W. Roberts)

tion in Rwanda for the foreseeable future, is using Channel Africa's facility at Meyerton, South Africa—using it for about 30 broadcast hours per day.

Radio in Russia continues to offer an ever-changing list of stations and programs pretending to be stations. One is Radio For Those at Sea, (Radio Dlya Tekh Kto v More), which originates in a studio in Simferopol and is broadcast on 13680 via a St. Petersburg transmitter. The schedule is

Monday (UTC) 0200-0300, 0600-0700 and 1600-1700. Several other frequencies are announced as being in parallel—9450, 9605, 11850, 11900, 11930, 17735-USB, 15110, 15130, 15455, 15510 and 17745, but some of these channels actually carry the Radio Rossi broadcast instead.

Czech Republic—watch for some new sounds from this country. Approval has been granted for a new station on shortwave—Radio Metropolis—which will oper-



Courtesy of J.W. Roberts, NC

ate in the 31, 41 and 49 meter bands broadcasting to Europe and North and South America using Radio Prague's 40 kilowatt transmitters at Poděbrady. No schedule is available yet.

Radio Australia has moved its studios and administrative offices to a new complex at "Southbank," just outside the Melbourne business district. The new facilities are shared with Radio Australia's domestic service. All this means a new address (well, sort of): Radio Australia, Transmission Management Unit, GPO Box 428G, Melbourne, Victoria 3001, Australia.

Congratulations to Richard D'Angelo who was recently appointed Executive Director of NASWA—the North American Shortwave Association. Former Executive Director Sec Bob Brown will focus his efforts on producing the club's fine monthly bulletin, *Frendx*. NASA can be reached at 45 Wildflower Road, Levittown, PA 19057.

Here is the usual appeal for you to send in your log reports and anything else you care to contribute. The only rules we have are that you double space (at least) between items and that your last name and state abbreviation be included after each. We also seek and welcome photographs of your shack (with or without your smiling self), spare QSL cards you don't need returned, station schedules, literature and photographs. Thanks to J.W. Roberts of Brevard, North Carolina for sending several illustrations used this month.

It's a mystery. Perhaps everyone was glued to the TV, there was some kind of gigantic propagational burp, or the USPS is losing more mail than the news reports admit. Or maybe you didn't send a report. Whatever it was, our log list is a very slim affair this month.

Here are this month's logs. All times are UTC, which is five hours behind EST, i.e. 0000 UTC equals 7 p.m. EST. The language broadcast is assumed to be English (EE) unless indicated otherwise (SS=Spanish, FF=French, AA=Arabic, etc.)

ALASKA—KNLS. 9615 at 0800 sign on with IS. ID. pop music. (Lamb, NY)

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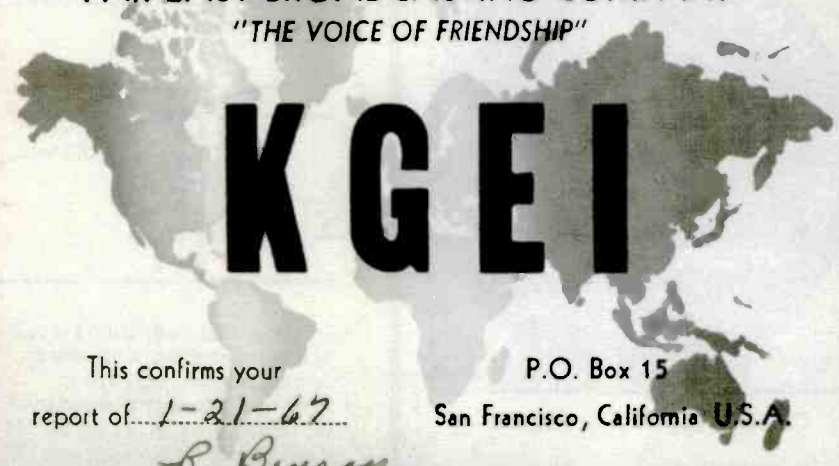
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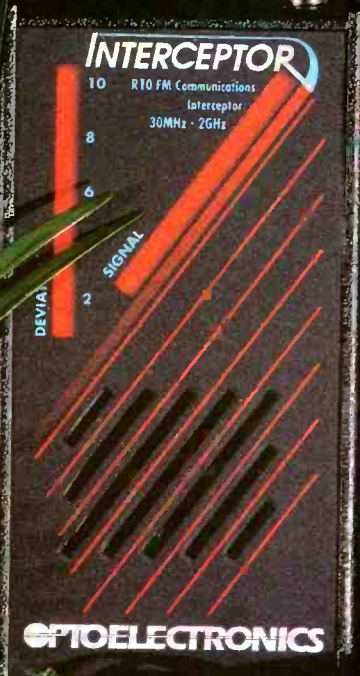
Two QSLs from KGEI—The Voice of Friendship—now off the air. ↓

- ALBANIA**—Radio Tirana, 9850//11840 at 0138 with news, music, ID, IS. Same frequencies in use at 0229 with half hour in EE. (Lamb, NY)
- ANGOLA**—Radio Nacional, presumed, 4950 at 0453 in PP with African music, vibes IS, presumed ID, news. Tnx Paszkiewicz for the tip. (Lamb, NY)
- ANTIGUA**—BBC relay, 5975 at 2300. (Jeffery, NY)
- ARGENTINA**—Radio Nacional, 6060 at 0602 in SS with news, ID. (Flemmer, WA)
- ASCENSION ISLAND**—VOA relay, 15255 at 1630—1700 with "Nightline Africa." (Urbelis, NY)
- AUSTRALIA**—VL8A, Alice Springs, 2310 at 1028 with ABC/CAAMA domestic service. Parallel 2325—VL8T, Tennant Creek. (Flemmer, WA)
 VL8T, Katherine, 2485 at 1049 with ABC/Radio Rum Jungle domestic service. (Flemmer, WA)
 Radio Australia, 9710 at 1007 with "Reggae Beat" program, hosted in Pidgin. (Foss, AK) 17860 at 2317 with sports; 0515 with "OZ Sound." (Jeffery, NY; Lamb, NY)
- AUSTRIA**—Radio Austria Int'l, 15450 at 1030 with "Report From Austria." (Urbelis, NY)
- BELGIUM**—Radio Vlaanderen Int'l, 15545 at 1310 with "Brussels Calling." (Jeffery, NY)
- BRAZIL**—Radio Brazil Central, 4985 at 0013 in PP with Brazilian pops, jingle, IDs, talks. (Lamb, NY) 0740 with Brazilian pops, ID. (Flemmer, WA)
 Swiss Radio Int'l relay, 5890 variable at 0123, into SS 0130, FF 0200, SS 0230. (Lamb, NY)
- BULGARIA**—Radio Bulgaria, 9700 at 1945 with "Radio Bulgaria Calling." (Jeffery, NY)
- CANADA**—Radio Japan via Sackville, 9725 at 0513 with JJ lesson, "Media Roundup," "Viewpoint," "Tokyo Pop-in." QRM from Vatican Radio. (Lamb, NY) 11705 at 1400 with news. (Jeffery, NY)
 Radio Canada Int'l, 11845 at 0211 with markets and sports reports. (Wilden, IN)
 BBC via Sackville, 9515 at 1300 with "Newshour." (Jeffery, NY)
- CKZN, St. John's, Newfoundland, 6160 at 0832 with CBC News, local weather, sports. (Lamb, NY)
- COLOMBIA**—Ecos del Atrato, 5019 at 0323 with in SS with Latin pops, ID, frequency, mention of Caracol network. (Lamb, NY)
- COSTA RICA**—RFPI, 7385 (ex-7375)//15030 at 2302 with ID, frequency, DX program. (Lamb, NY) 15030 at 0258. (Wilden, IN)
 Adventist World Radio, 9725 at 1107 with religious programming. (Jeffery, NY)
 TIFC, 9645 at 1135 with religious programs in SS. Not heard on this frequency in years! Parallel 6175. (Urbelis, NY)
- CROATIA**—Croatian Radio, 9830//13830 at 2105 with EE news, ID, into Croatian with local pops and ID. (Lamb, NY)
- CUBA**—Radio Havana, 9820 at 0307 with news and music. Also 17760 at 2100 with ID, "Mailbag." (Jeffery, NY)



- CYPRUS**—BBC relay, 7235 at 0248 with "Composer of the Month," IS, ID, news. (Lamb, NY) 15390 at 2115 with "BBC Caribbean Report." (Jeffery, NY)
- DOMINICAN REPUBLIC**—Radio Barahona, 4930 at 0217 in SS with Latin pops, "Esta es Radio Barahona." Heavy QRM. (Lamb, NY)
- EGYPT**—Radio Cairo, 11600 at 0200. Very muddy signal. (Wilden, IN)
- FRANCE**—Radio France Int'l, 9495 at 2000 in FF. (Jeffery, NY) 17695 at 1404 with news, ID, sports remote. (Lamb, NY)
- FRENCH GUIANA**—new, Swiss Radio Int'l relay, 13605//5888 (the latter from Brazil) at 0144 in SS. Into FF at 0200, SS at 0230. Also on new 11620 at 0340 in GG; in EE at 0400-0500 and into Italian at 0500, off at 0530. (Lamb, NY)
- GABON**—Radio Japan relay, 11925 at 2125 with "Media Roundup," ID, "Viewpoint." (Lamb, NY)
- GERMANY**—Deutsche Welle, 7170//9615 at 2005. "Through German Eyes," "Hits in Germany." (Lamb, NY) 9580 at 0205 with news. (Wilden, IN)

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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

GHANA—GBC, 3366 at 2341 with Dolly Parton, ID, time check, news. (Lamb, NY)
GREECE—RS Makedonias, 9935//11595 at 1938 in GG with folk music, ID, mention of Thessaloniki. (Lamb, NY)
GUAM—Adventist World Radio, 15225 at 0832 in CC. (Foss, AK)
GUATEMALA—Radio Cultural, 3300 at 0920 with music, SS. (Foss, AK)
HAWAII—KWHR, 9830 at 0605 to 0720 with religious shows, money pitches. (Urbelis, NY) 0957. (Flemmer, WA) 17780 at 0422 with religious programs. (Flemmer, WA)

WWVH time station, 10000 at 0256. (Wilden, IN)
HONDURAS—Radio Copan Int'l, 15675 at 2115 with program "The Final Crisis." ID, frequency, address, classical music. (Lamb, NY)
HUNGARY—Radio Budapest, 9835 at 0229 with IS, ID, news, press review, "Interface" and DX show. (Jeffery, NY)
INDIA—All India Radio, new 9650, //11620 at 1915 with Hindi music, IDs, economic talks. (Urbelis, NY)
IRAN—VOIRI, new 7100 at 0033 in EE with Koran, news, Farsi music, ID. //9022, 0745 at 1935 with news, Koran, revolutionary talks. (Urbelis, NY)
ISRAEL—Kol Israel, 9435//11605 at 0400 with news, sports, business news, weather. Into FF at 0415. (Lamb, NY)
ITALY—RAI "Notturino Italiano" domestic program, 6060//11800 at 2354 in II with pops, news in II, EE, FF, GG. Possibly a punch-up error since 11800 had the usual international service the following night. (Lamb, NY)
JAPAN—Radio Japan, 6190 at 1030 with domestic service in JJ, 9750//11955 at 1430 with "Media Roundup." (Flemmer, WA) 15190 at 0951. (Foss, AK)
KUWAIT—Radio Kuwait, 11990 at 1959 with music, "The Tradition of Youth in Islam." (Jeffery, NY) 15495 at 1035 in AA. (Urbelis, NY)
LESOTHO—BBC relay, 11940 with "Newsdesk" at 0700. (Urbelis, NY)
LIBYA—Libyan Jamahiriya Broadcasting, 15235 in AA at 1030. (Urbelis, NY)
LITHUANIA—Radio Vilnius, new 9530 (ex-11770) at 2300 with ID, anthem, four minutes of EE news, the remainder of the program in Lithuanian. Full half hour is in EE only on Saturdays and Sundays at this time. (Lamb, NY)
MADAGASCAR—Radio Netherlands relay, 13700, //9895 and 9860 (Flevo) at 1917 in FF with pops, ID, frequencies, news. (Lamb, NY)
MEXICO—Radio Educacion, 6185 at 0755 with ID, address in SS/EE. (Flemmer, WA)
MOROCCO—Radio Medi Un, 9575 at 2026 in AA with mideast music. Soon switched to FF, with pops

and ID for "Radio Mediterranee Internationale." (Lamb, NY)
NEW ZEALAND—Radio New Zealand Int'l, 15115 at 0216 with music and news. (Jeffery, NY) 0325 with bluegrass and c/w. (Wilden, IN) 0500 to 0655 with "Checkpoint," "On The March," "Maori Mana" and news. (Urbelis, NY)
NORTHERN MARIANAS—KFBS, 9670 at 1425 with news, ID in JJ. (Flemmer, WA) 11650 in RR at 0857. (Foss, AK)
 KHBI, 9425 with 1059 sign on, IS, ID, frequencies, news from Monitor Radio. (Urbelis, NY)
NORTH KOREA—Radio Pyongyang, 9977 at 1121. (Foss, AK) 13785 at 1401 with IS, "Song of General Kim Il Sung," news. (Lamb, NY)
PAPUA NEW GUINEA—Radio Sandaun, 3205 at 0925 with gospel songs. (Foss, AK)
 Radio Enga, 2410 at 0934 with reggae-type stuff. (Foss, AK)
 NBC, 9675 at 1115 with local info, many IDs, various music. (another schedule switch? editor)
PARAGUAY—Radio Nacional, 9735 at 0013 in SS with Paraguayan music, talk, ID, sports scores. (Lamb, NY)
PERU—Radio Cora, 4914.5 at 0935 with ID, "Roll Out the Barrel," all SS. (Foss, AK)
 Radio Madre de Dios, presumed, 4950 at 2335 in SS with Latin pops, talks, several possible IDs, news. (Lamb, NY)
PHILIPPINES—VOA relay, 6110 at 1420 with big band music and, special English. (Flemmer, WA) 15160//15425 at 1432 with Willis Conover playing Miles Davis. Editorial, then off at 1500. (Lamb, NY)
 FEBC, 9475 at 1415 with talk, news in CC. (Flemmer, WA)
PORTUGAL—Radio Liberty via Maxoquiara site, 6050 at 0105 in RR with news, ID, classical music. (Lamb, NY)
RUSSIA—Radio Moscow, 9620 at 0232. Heavy QRM. (Wilden, IN)
 Golos Rossii, 11665 at 1350 in RR with talks, jazz from Grover Washington, IS, ID and off at 1400. (Lamb, NY)

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The Cyprus Broadcasting Corp. broadcasts weekends over the BBC's Cyprus relay facility.



It may have a modern-looking building but Radio Cairo's shortwave signal has had poor modulation as long as most can remember. (Courtesy J.W. Roberts)

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One of Radio Australia's recent QSLs shows the new antenna towers at the Shepparton transmitter site.

Radio Netherlands relay, 7260 via Petropavlovsk and 9810 via Irkutsk from 1100 to 1125 close. (Urbelis, NY)

China Radio Int'l relay, 9880 at 2107 with world news. "News About China," ID. "Press Clippings." (Lamb, NY)

SAUDI ARABIA—BSKSA, 9885//11740 at 0535 in AA. Holy Koran.

15060 at 1030 in AA. (Urbelis, NY)

SINGAPORE—Radio Singapore Int'l, 9530 at 1100-1145—news, IDs, music, stock markets. (Urbelis, NY) 1205 with pops, news, ID, address. (Flemmer, WA)

SLOVAKIA—Radio Slovakia Int'l, 5930 at 0116 with feature on traffic laws. "1-5-8" there is the equivalent of dialing "9-1-1" here. (Lamb, NY) (Have always thought 1-1-1 made the most sense as an emergency number since it takes the least time to dial. Editor)

SPAIN—Spanish Foreign Radio, 9540 at 0000 with IS. fanfare, time pips, news. (Wilden, IN)

SRI LANKA—Deutsche Welle relay, 9510 at 1756 sign on with IS, site ID, into Persian (Farsi). (Urbelis, NY)

SWAZILAND—Trans World Radio, 7125 at 0543 in Chewa (Saturday/Sunday only) with African music, talk. IS. (Lamb, NY)

SWEDEN—Radio Sweden, 15390 at 0842 in Swedish. (Foss, AK)

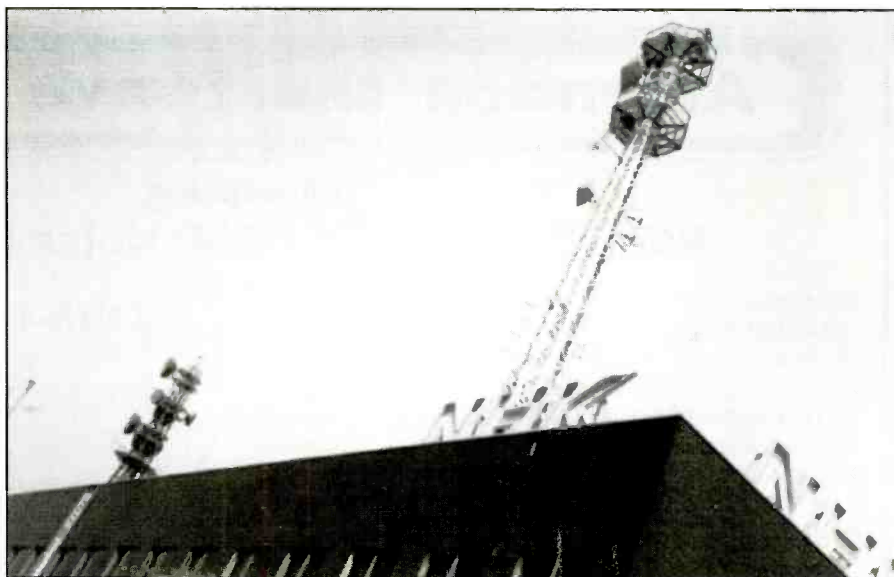
SYRIA—Radio Damascus, 15095 at 2022 with press review and music. (Jeffery, NY) 0605 in AA with music and talk. (Urbelis, NY)

TAHITI—Radio Tahiti, 11827//15169 at 0500 in FF with island and other music. IDs, announcements, news. (Urbelis, NY)

TAIWAN—Broadcasting Corporation of China, 15125 at 0947 with domestic broadcast in CC. (Foss, AK)

UKRAINE—Radio Ukraine Int'l, 11950 at 2100 with IS, ID, news, press review, "Ukraine Today." "Closeup." (Jeffery, NY)

UNITED ARAB EMIRATES—UAE Radio, Dubai, 13675 at 0332 with news. (Jeffery, NY)



Marty Foss (Alaska) took this pic of the NHK building and towers in Morioka, Japan.

UNITED STATES—Radio Marti to Cuba, 9525 in SS at 0200. (Wilden, IN)

Voice of America SSB feeder, 19379 at 1730. (Jeffery, NY)

VATICAN—Vatican Radio, 7305 at 0253 with religious programs. (Jeffery, NY) 9725 at 0515 to Africa. Into PP at 0531 and FF at 0600. EE again at 0630. (Lamb, NY)

VIETNAM—Voice of Vietnam, 15009 at 0900 in VV. (Flemmer, WA)

A hearty thank you to the those who did the good work this month: Marie Lamb, Brewerton, NY; Errol Urbelis, Kings Park, NY; Marty Foss, Wasilla, AK; Susan J. Wilder, Columbus, IN; Del Flemmer, Tacoma, WA; and Dave Jeffery, Niagara Falls, NY. Thanks to each of you.

Until next month—good listening! ■

HOW I GOT STARTED



Winner James R. Hugunin sits at the controls of his Kenwood R-5000, while his computer runs Geoclock world-time software. The ear in the background, a replica of the ear found on the sculpture David, is seen on some of James' "The Ear of America" SWL QSL cards.

Popular Communications invites readers to submit, in approximately 150 words (more or less), how they got started in the 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 Pop' Comm.

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

Our December Winner

This month James R. Hugunin, from Chicago, Illinois, sends us this amusing account with intentions it would be a winner:

"A hobby over 30 years in the making? In 1956, Dad buys me a crystal radio kit for my ninth birthday. Clandestinely, I 'DX' local AM fare from under my bedcovers until the overused crystal wears out.

"While seeking to keep my eyes on the dials and off teenage wiles in 1961, Dad drives us over to haggle with a soon-to-be-divorced, must-liquidate-everything, ham operator. Dodging a motorcycle helmet his quarrelsome soon-to-be-ex pitches out the back door, we awkwardly exit with a Ham-

marlund Super-Pro between us!

"Seven years and 16 QSL cards later, the 'Voice of Andes' is replaced by the voice of a drill sergeant as I went into the service. However, in 1993, a hobby many years dormant comes back to life, following my own divorce, during which I recall the former incident more than 30 years earlier.

"Setting accounts straight, I haggle for a noisy motorcycle, buy a helmet, and fall in love with a nifty Kenwood R-5000. Neither my neighbors' nor my life have been the same ever since."



Here is one example of James' personal QSL cards which he sends to hams. The man with the cute ear says, "I use the 'Ear of America' slogan as a take-off on the 'Voice of America,' this way we are all represented!"

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BROADCAST DX'ING

BY TIM KRIDEL

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

Welcome: Roger Sterckx has asked me to take over his slot as editor of "Broadcast DX'ing," although he will continue to handle the monthly lists of facility and call letter changes, and construction permits. As the new column editor, I thought I'd take a few lines to introduce myself. I've been a DXer in many bands and modes for well over a dozen years, having made my start with AM, which remains my true love hobbywise. Some of you may remember me from the pages of *DX Monitor*, where I was editor of "Eastern DX Roundup" some years ago. Then as now, I look forward to hearing from all of you.

The Changing Face of Radio: In its "1993 Broadcast and Cable Employment Report," the FCC addressed the trends over the past five years in the industries' labor forces. For 1993, there were a total of 146,629 employees in the broadcasting industry (excluding cable), continuing a steady decline in the overall number of people employed. A year earlier, there were 148,579 employees, while the figure for 1989 was 175,599. Of the nine categories set by the FCC, "laborers" and "craftsmen" fared the best, with relatively minor decreases, while "officials and managers," "professionals," and "office/clerical" underwent marked reductions.

However, there is at least one aspect of the broadcasting industry that has remained virtually unchanged—the percentage of female and minority employees. In 1993, 60.4% of them were male and 39.6% female. (The national workforce for that same year was 45.6% female.) Industry figures for 1992 were 60.5% and 39.5%, respectively. The total number of minorities, both male and female, constituted only 18.2% of the broadcasting workforce in 1993, while comprising 22.6% of the national labor pool. Speaking at the 1994 National Urban League Conference, FCC Chairman Reed E. Hunt said that the figures "reflect insufficient movement toward our goal of ensuring that the broadcasting and cable workplaces look more like the American workforce as a whole."

Nevertheless, in spite of these statistics there are success stories to be found. In the Kansas City, Missouri, radio market, for example, the number two station is KPRS-FM. Owned by Carter Broadcast Group, Inc., the station has gone from number thirteen to number two since Michael Carter was named chief executive and corporate president of the family-owned firm in 1987. Carter, a 34-year-old black male, was the recipient of the coveted 1994 "Entrepreneur of the Year" award for the Kansas and Western Missouri area, and was the subject of a recent cover story in the *Kansas City Small Business Monthly*. Much of KPRS—and Carter's—success



KEX bumper sticker: "KEX serves Portland, OR with news and information in stereo." (Courtesy Pat Roberson, KG7HT)

can be attributed to an emphasis on a strong relationship with the African-American community it serves. That the station has become the voice of a community has to do with much more than the appeal of its urban contemporary format. Indeed, from 1972 to shortly before Carter took the helm, the station was jockless, and while this arrangement resulted in savings with regard to wages, there was a negative impact on both ratings and sales. Carter's

tenure marked a return to human beings and a continual participation in or sponsorship of events that directly impact and benefit the station's African-American listenership. By giving back to the community, it appears that KPRS has successfully married responsibility and ratings. The upshot of this approach is that loyalty breeds loyalty, which of course translates into success as a business venture, as well.

Bad Antennas Make Bad Neighbors:



WZZY QSL: "PICON of Winchester, Inc. is both verifying reports and announcing their recent acquisition of WZZY-FM in Winchester, Indiana, with this spiffy QSL folder." (Courtesy PICON)

Changed FM Call Letters

New	Was	
KBOQ	KBOQ-FM	Carmel, CA
KCSI	KOAK-FM	Red Oak, IA
KIOT	KOYT	Los Lunas, NM
KKEX	KACH-FM	Preston, ID
KKHI-FM	KSUR-FM	Greenfield, CA
KKJT	KHWX	Joshua Tree, CA
KOWZ	KJST	Blooming Prairie, MN
KOYT	KIOT	Espanola, NM
KYJT	KYXI	Yuma, AZ
KZRO	KRKD	Dunsimur, CA
WBUZ	WMHE	Delta, OH
WCYI	WXGL-FM	Lewiston, ME
WCYY	WSTG	Biddeford, ME
WEKL	WXFG	Augusta, GA
WHDG	WZTT	Rhineland, WI
WHKW	WWSN-FM	Corydon, IN
WJCE-FM	WBVR	Russellville, KY
WLTA	WNZE	Plymouth, IN
WQBJ	WSHQ	Cobleskill, NY
WQEZ	WBQW	Kennebunkport, ME
WRCX	WWBZ	Chicago, IL
WRVE	WGY-FM	Schenectady, NY
WSQE	WAOI	Corning, NY
WSRV	WYHH	Smyrna, DE
WTHD	WYPI	LaGrange, IN
WVIV	WLUE	Pearl, MS
WXBX	WCRR-FM	Rural Retreat, VA
WXUR	WYUT-FM	Herkimer, NY
WZLS	WSKY-FM	Biltmore Forest, NC

Changed AM Call Letters

KBCO	KBLD	Boulder, CO
KKSC	KWSL	Sioux City, IA
KOQI	KBOQ	Soquel, CA
KTIK	KANR	Nampa, ID
WBVR	WRUS	Russellville, KY
WENE	WMRV	Endicott, NY
WLNT	WHRS	Winchester, NY
WNRS	WYUT	Herkimer, NY
WRTG	WHEV	Garner, NC
WZNA	WCXQ	Moca, PR

New FM Call Letters Issued

KNOG	Nogales, AZ
KSOM	Audubon, IA
WOKZ	Fairfield, IL
WPVJ	Ponte Vedra Beach, FL
WYNI-FM	Repton, AL

Pending FM Call Letters

New	Seeks	
KJAZ	KZSF	Alameda, CA
KSLK	KGSDT-FM	Auberry, CA
KVYT	KNFO	Basalt, CO
KXDZ	KMXS	Anchorage, AK
WEGV	WGBM	Mischicot, WI
WIIZ	WASK-FM	Battle Ground, IN

Half a continent away, however, relations between one broadcaster and its immediate community are much less cordial. In the Bronx, Fordham University and the New York Botanical Garden are squaring off over the University's construction of a new antenna structure for their public radio station, WFUV-FM. At issue is a conflict between the fourth estate and real estate. The \$1.5-million, 480-foot tower was nearly halfway to completion when the New York City Buildings Department sided with the Garden and ordered that further construction be halted. Two months earlier, the Department had approved construction under the assumption that the permit was for the construction of an antenna. Upon review, however, it was deemed that a tower would be in violation of zoning regulations. Ironically, the purpose of building the structure in the first place was to comply with FCC regulations. In its present location atop a University building, the antenna—specifically, the radio waves emanated—is deemed as a possible health hazard, much the same as the ill effects on cattle that frequently graze near high-tension power lines. The University, which chose the new location directly across from the Enid A. Haupt Conservatory for reasons including engineering, cost, and zoning, now maintains that it is the only possible site. The structure and location are particularly nettlesome to Fordham's neighbor not only

because the University never consulted them, but also since it is in the midst of a \$24 million restoration that, in the words of Garden officials, draws on the Garden's "magnificent backdrop of unimpeded skyline." This *New York Times* article comes via Jim Cospers, N6MKJ, of Huntington Beach, California.

If at First You Don't Succeed: Back in

March, Heritage Media Corp. purchased St. Louis station KRJY-FM, revamping it as KIHT, with a format change to '70s music. The Winter '94 Arbitron book had them as a dismal 1.5 with 25- to 54-year-olds under their old format. Now they are a quite respectable 5.3. Heritage Media's other St. Louis holdings include WRTH-AM and WIL-FM.



WROX bumper sticker: "Modern rocker WROX's morning personality, Perry Stone, does double-duty as an afternoon talk show host on sister station WNIS." (Courtesy Ed Bunch, Portsmouth, VA)

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