

POPULAR COMMUNICATIONS

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- **Two New Scanners Now Available**
- **China Opens English & Pop Music Station**
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World Radio TV Handbook 1992



"Unsurpassed DX Performance"

Passport to World Band Radio 1992

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Designed for DXers by DXers! The NRD-535D (shown above with optional NVA-319 speaker) strikes the perfect balance between form and function with its professional-grade design and critically acclaimed ergonomics. The NRD-535D is the recipient of the prestigious World Radio TV Handbook Industry Award for "Best Communications Receiver."

JRC *Japan Radio Co., Ltd.*

Japan Radio Company, Ltd., New York Branch Office - 430 Park Avenue (2nd Floor), New York, NY 10022, USA Tel: (212) 355-1180 / Fax: (212) 319-5227

Japan Radio Company, Ltd. - Akasaka Twin Tower (Main), 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, JAPAN Tel: (03) 3584-8836 / Fax: (03) 3584-8878

- Phase-lock ECSS system for selectable-sideband AM reception.
- Maximum IF bandwidth flexibility! The Variable Bandwidth Control (BWC) adjusts the wide and intermediate IF filter bandwidths from 5.5 to 2.0 kHz and 2.0 to 0.5 kHz—continuously.
- Stock fixed-width IF filters include a 5.5 kHz (wide), a 2.0 kHz (intermediate), and a 1.0 kHz (narrow). Optional JRC filters include 2.4 kHz, 300 Hz, and 500 Hz crystal type.
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- Fully modular design, featuring plug-in circuit boards and high-quality surface-mount components. No other manufacturer can offer such professional-quality design and construction at so affordable a price.

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HF-225 • HF

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KENWOOD R-5000 • HF

100kHz-30MHz; 100 mems; All mode; Opt. VHF. **\$899.95**

DRAKE R-8 • HF

100kHz-30MHz; 100 memories; All mode; Opt. VHF. **\$869.95**

JRC NRD-535D • HF

Band width control; 100kHz-30MHz; 200 memories; ECCSS. **\$1699**
NRD-535
Less BWC, 1kHz filter, ECCSS **\$1249**



WJ HF-1000 • Ultimate HF

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YAESU FRG-100 • HF

50kHz-30MHz; 50 mems; All mode; Opt. FM; No keyboard; EEB offers filter upgrades & high performance pkg. **\$569.95**

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.5-1300MHz (no gaps); 1000 mems. in 10 banks; AM, FM, FMW; Incl. NiCads charger and more! **\$419.95**



AR-3000A • Compact Scanner

.1-2036MHz; 400 mems. in 4 banks; RS232; All mode; 12VDC AC adapt. incl. **\$1029**



BEARCAT Scanners

BC-200XLT •

29-54, 118-174, 406-512, 806-956MHz*; 200 mems; 10 banks; NiCads & adapt. incl. **\$229.95**

BC-760XLT • Mobile

Same range* as BC200; 100 mems; 5 banks; 13.8VDC adapt. incl. **\$299.95**

BC-800XLT • Desktop

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BC-890XLT • NEW Base/Mobile

29-956MHz*; 200 mems; Turbo, WX, VFO tuning. **\$259.95**



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25-1300MHz*; 400 mems; Turbo; WX; VFO tuning. **\$349.95**



REALISTIC Scanners

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25-520, 760-1300MHz*; 400 mems; 10 banks; Hyper-scan 26ch/sec. **\$359.95**



PRO-43 • Portable

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PRO-46 • Portable

30-54, 108-174, 406-512, 806-1126MHz; 100 mems; 10 banks; WX. **\$189.95**

PRO-2026 \$209.95; PRO-2030 \$189.98;

PRO-2032 \$239.95

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ICF-SW77 • Top Of The Line!

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SANGEAN

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520-1710AM; 88-108 FM, 2.3-7.3/5.26.1 SW; 10 mems, case, ear plug; 2W. 5.3"H x 1.5"D; 5.5 oz. **\$173.95**

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Satellite-700 • SPECIAL DEAL

Top of the line with super audio. .15-30MHz; AM, FM, SW; AM synchro. detect.; SSB. Usually \$499.95. **SPECIAL PRICE \$449.95**



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1.6-30MHz; AM, FM, SW; 40 mems; SSB; Keyboard. **\$219.95**



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POPULAR COMMUNICATIONS

MARCH 1994

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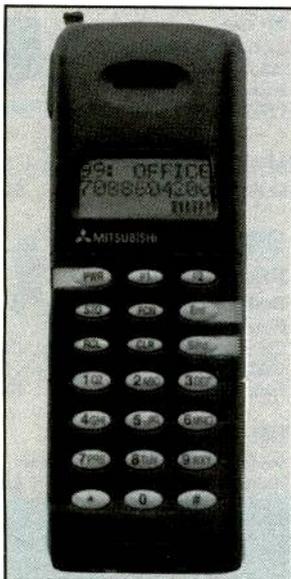
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This month's cover: Cellular sites, such as this one in Finchville, NY, assist in all levels of personal communications services. Photo by Larry Mulvehill, WB2ZPI.

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THE MONITORING MAGAZINE

MONITOR MORE WITH ADVANCED EQUIPMENT FROM UNIVERSAL!

COMMUNICATIONS RECEIVERS

● Japan Radio NRD-535D



The deluxe "D" version with BWC, ECSS and three filters included. \$1699.00 (+\$18)
NRD-535 standard version ... \$1199.00 (+\$16)

● Watkins-Johnson HF-1000

Military-grade with DSP technology, 58 bandwidths. Call for details. **Under \$4000 call.**

● Drake R-8

A state-of-the-art receiver for the 90's. Five bandwidths, Syncro, etc \$959.95 (+\$11)

● Kenwood R-5000

A powerful receiver for the serious DXer. An exceptional value. \$979.95 (+\$12)

● Lowe HF-150 **NEW! Made in England.**

Finally ... a true portable communications receiver. Write for brochure. \$599.95 (+\$7)

PORTABLE RECEIVERS

● Panasonic RFB-45



Keypad, 18 memories, scan and search functions, S.S.B., fine tuning knob, clock-timer, S-METER, etc. \$169.95 (+\$5)

● Sony ICF-SW77

Sony's finest! 94 alpha memories, dual clocks, sync. detection. \$489.95 (+\$6)

● Sangean ATS-818CS

Finally, a quality digital receiver with cassette, 45 mems., SSB. \$249.95 (+\$7)

● Grundig Satellit 700

Hi-tech with beautiful fidelity and style. Synchronous tuning. \$479.95 (+\$6)

Note: Radios listed above are all LW-MW-SW-FM digital. Contact us for other models.

COMMUNICATIONS BOOKS

● Passport To Worldband Radio

By L. Magne. Graphic presentation of all SWBC stations. Equipment reviews too. \$16.95

● Shortwave Receivers Past & Present

By F. Osterman. Your guide to 200 receivers with new-used value, specs, features. \$8.95

● **Aeronautical Communications Handbook**
By R. Evans. A mammoth book on all aspects of shortwave aero listening. 266 pages. ... \$19.95

● **Complete SWL's Handbook - 4th Edition**
By Bennett, Helms, Hardy, Yoder. Over 350 pages on all aspects of SWL'ing. \$19.95

● **Guide To Utility Stations**
By J. Klingenfuss. The definitive guide to utility stations- CW, SSB, FAX and RTTY. \$36.95

● **Easy-Up Antennas for Listeners & Hams**
By E. Noll. Low cost, easy to erect antennas for LW, MW, FM, SW, SCAN and HAM. \$16.95

● **World Radio TV Handbook**
All SWBC stations by country with schedules, addresses, power, etc. Reviews too. ... \$19.95

● **Discover DXing!**
By J. Zondlo. An excellent introduction to DXing the AM, FM and TV bands. \$4.95

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MULTI-MODE CONVERTERS

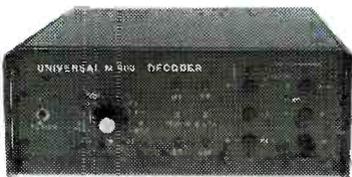
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- ◆ Ship Telexes
- ◆ Press Reports
- ◆ Press Photos
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- ◆ Weather Maps
- ◆ Unclass. Military Tfc.
- ◆ Diplomatic Traffic
- ◆ Ham Messages
- ◆ Weather Reports
- ◆ Research Traffic
- ◆ Packet Messages
- ◆ Radio Bulletins

If you are only listening to your shortwave radio you are missing half the fun. With the addition of a Universal decoder and monitor you can see the world. The shortwave spectrum is filled with interesting text messages

and photos that you can intercept and display. If this sounds interesting to you, request our two free pamphlets: *Listening to Radioteletype* and *Receiving FAX on Your Shortwave Radio*. Shown above is the Universal M-900 (\$499.95) which decodes: Morse code, Baudot RTTY, Sitor A/B, FEC-A and FAX. Contact us today for information on the full line of Universal decoders.

● Universal M-900



● Universal M-8000

The M-8000 offers tremendous intercept power to let you listen to the exciting world of radioteletype and FAX on shortwave, VHF and satellite! It includes capabilities not available in other decoders. The VGA color output permits the presentation of more information than ever before. A double status line indicates all current demodu-
lator and decoder settings. The lower left corner displays five bar-graph type tuning bars. A horizontal window at the bottom of the screen shows a continuously updated, spectral display. A square window in the lower right corner features a simulated X-Y tuning scope. The M-8000 decodes all the "standard modes" plus ARQ-M2/4 (TDM), FEC-A, FEC-S, ARQ-E, ARQ-E3, ARQ-S, SWED-ARQ and Piccolo used by diplomatic, military and aeronautical concerns worldwide. The M-8000 itself is automated, utilizing a microprocessor to control shift tune and selection. Manual tuning is facilitated by on-screen bargraph tuning indicators for level, mark and space plus a simulated tuning scope. Instructive LEDs for: Mark, Space, Buffer, CW Lock, Squelch, Idle, Sync., Sel-Cal, Data, Tuning Error and Data Error. Other refinements include: ATC, UOS, built-in diagnostics, bit inversion (Baudot), speed readout, external scope output plus serial and parallel printer ports. Can be 19 inch rack mounted with optional mounting kit. 9 Lbs. (15 Lbs. ship). 115/230 VAC, 50/60 Hz. Requires a VGA analog color monitor. \$1299.00 (+\$10)



DATA AND TONE READER

● Universal M-400



Forget the limitations you have come to expect from most "readers". The self-contained Universal M-400 is a sophisticated decoder and tone reader offering exceptional capabilities. The SWL can decode: Baudot, SITOR A&B, FEC-A, ASCII and SWED-ARQ. Weather FAX can also be decoded to the printer port. The VHF-UHF listener will be able to copy the ACARS VHF aviation teletype mode plus GOLAY and POCSAG digital pager modes. Off-the-air decoding of DTMF, CTCSS and DCS is also supported. Big two-line 24 character LCD. The M-400 can even be programmed to pass only the audio you want to hear based on CTCSS, DCS or DTMF codes of your choosing. The M-400 runs from 12 VDC or with supplied AC adapter. The American-made Universal M-400 is the affordable accessory for every shortwave or scanner enthusiast. Specification sheet available. **Only \$399.95 (+\$6).**

★ HUGE FREE CATALOG ★

Universal offers a new communications catalog covering shortwave, amateur and scanner equipment. There are also antennas, books, parts and accessories. This informative **100 page** reference covers everything for the radio enthusiast. With prices, photos and full descriptions.

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W R T H
BEST RECEIVER 1992

As changing world events bring us all closer, it's exciting to get the news direct from a foreign station. So tune in and listen – even when you're 12 time zones away. The drama of survival efforts. Crisis monitoring when conventional communications break down. The uncertainty of economic trends. And colorful cultural activities.

Don't wait for someone else to tell you what's happening. The FRG-100 Worldwide Desktop Communications Receiver puts you in the action now! The FRG-100 is a winner, too. It won the prestigious WRTH award for "Best Communications Receiver" in December 1992. No surprise with exclusive features like adjustable SSB carrier offset and selectable tuning steps in 10, 100 and 1000 Hz.

But you're the real winner! Priced lower than receivers with fewer features costing much more, the FRG-100 delivers extraordinary, affordable performance. For news and entertainment from far away places – a little closer than before – listen to the FRG-100 at your Yaesu dealer today.

YAESU

Performance without compromise.SM

FRG-100 Worldwide Desktop Communications Receiver

- Covers all short-wave bands including 50 kHz-30 MHz
- 50 Memory Channels
- Twin 12/24 Hour Clocks
- Programmable On/Off Timers
- Selectable Tuning Steps (10, 100, 1000 Hz)
- Built-in Selectable Filters (2.4, 4, 6 kHz (250 or 500 Hz options))
- Dual Antenna Connections (Coax and Long Wire)
- Bright LCD Display
- Operates on AC or DC
- Compact Desktop Size
- Memory or Group Scanning
- 16 Preprogrammed Broadcast Bands



Yaesu helps bring the world a little closer.

BEAMING IN

BY TOM KNEITEL, K2AES

AN EDITORIAL

Save That Dollar; Stop That Learning

Our nation's \$4.4-trillion national debt and \$270-billion annual deficit is certainly being felt throughout the land. In the effort to tighten Uncle Sam's belt, many federally funded projects have been blown away like so much dust in the wind, even after considerable money has already been spent getting them started.

Military bases and projects were being eyed dispassionately with the hope of shutting down as many as possible.

While it looks like the proposed space station will keep at least some of its funding, many other high-tech and scientific projects haven't fared even that well.

The Star Wars Initiative (SDI) was a sophisticated high-tech satellite-based particle beam weapons system much touted by the Reagan Administration. Don't look for a lot more funding to go into that project for now, especially as long as the steam is out of the Soviet war machine. I think SDI has pretty much now been discredited as little more than a bluff and a hoax to scare the Soviets. I'm sure the Soviets were terrified about SDI. Like they never noticed that most of our Space Shuttle launches don't get off the ground without weather delays, and are prone to repeated equipment and computer malfunctions.

The Super Collider in Texas was well on its way to being completed. When on-line, it was going to provide answers regarding the creation of the universe. The scientists

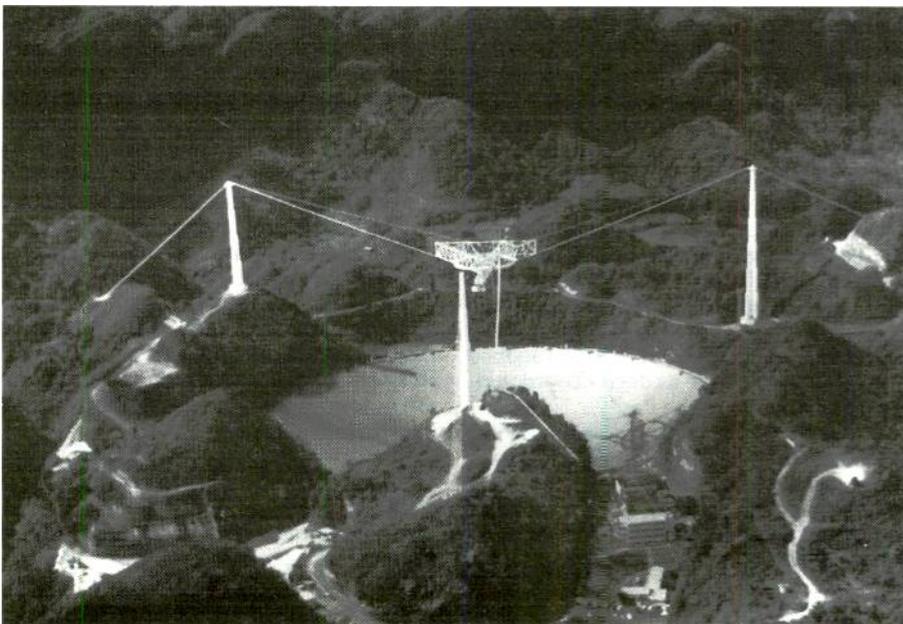
and others who converged there to build and operate the Super Collider created a healthy boom town out of what had previously been a sleepy little community. However, instead of colliding with subatomic particles, the Super Collider itself got collided with by the nation's megadebt. In view of the national debt, and efforts to reduce it, the project was deemed to be more costly than it was worth.

For the communications enthusiast, the project known as SETI (Search for Extra Terrestrial Intelligence) has always been provocative. Kicked off a year and a half ago, SETI put two radio telescopes into use in the expectation of discovering signals transmitted by distant civilizations.

The National Astronomy and Ionosphere Center's Arecibo Observatory, in Puerto Rico, is the primary SETI receiving site. Arecibo's radio telescope is large and imposing. The second, and smaller, SETI site is the Very Large Array (VLA), in New Mexico.

One phase of SETI, known as the "Target Search," called for the examination of 800 solar type stars within 80 light years of Earth. The frequency scanning range is 1 GHz to 3 GHz, with 1 Hz resolution. Then, there is a phase of SETI called "Sky Survey," that searches the entire sky on fre-

(Continued on page 81)



The huge radio telescope at Arecibo, Puerto Rico.

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MAILBAG

LETTERS TO THE EDITOR

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

The FCC's Internal Court System

Bravo for your October editorial, "You Be The Judge." About time someone raised their voice in outrage over the heavy-handed internal "justice" system evolved at the FCC. I have been involved in radio for many years and endured my share of malicious interference from persons whose sole interest in radio seems to be to make life miserable for other amateurs. I feel an initial urge to rejoice when I hear that the FCC has finally acted against one of these jerks, but I quickly become uneasy when I think of the FCC's tactics in dealing with him, as you aptly described in October.

I feel as threatened by a public agency, supported by taxes, and charged with serving the public's interest, as I do by those scofflaws who have tried to keep the amateur bands in a state of anarchy since the 1960's.

The FCC problem goes beyond enforcement you discussed. It includes the rule-making process, too. Rule changes, no matter how unfair, ill-conceived, or poorly thought-out, are routinely adopted by Commissioners. They rubber-stamp approve proposals introduced by career FCC civil servants. The nominal protections assured by the Administrative Procedures Act are largely illusory. The agency is required to accept public comments before adopting rule changes, but is free to ignore them, regardless of their merit. The public may petition for reconsideration of rulemaking decisions, but the same anonymous individuals who put through the original rule changes are the ones who decide upon the merits of such petitions. Will bureaucrats rule against themselves? The federal courts offer little recourse because judges usually "defer to the expertise" of a federal agency and refuse to overrule its decisions, regardless of the merits of the case.

While these things should be enough to provoke a public outcry, the FCC is a relatively obscure agency in the eyes of a nation bombarded daily with so many far-reaching domestic and international problems. The number of people knowingly under FCC jurisdiction is so small that we are a whisper in the wilderness compared to all of the other special interest lobbies screaming for attention. With all of the media

attention given to health care, the economy, the environment, crime, drugs, and the international situation, how much attention is the unfair treatment of radio hobbyists going to attract?

Most people are completely unaware that merely by installing a CB transceiver in their home (no license required) gives a federal agency the "right" to enter their home without a search warrant. They can bring along personnel from other federal agencies. The FCC has been known to issue fines for refusing to allow its agents to enter private property to inspect a station. The FCC relies upon the obscurity of its actions and the seeming unimportance of many of the issues involved to bypass the Constitution with impunity.

Donald Chester, K4KYV,
Woodlawn, Tenn.

The Bureau of Land Management (BLM) is set up exactly the same as the FCC. Its internal justice system is the IBLA, Interior Board of Land Adjudication. The outcome on any decision really depends upon which "judge" you get. It's government rule by litigation, intimidation, and obfuscation.

Garwood Allen, Geologist,
Vale, Oregon

The Future of Shortwave

Harry Helms' gloomy outlook (November issue) on shortwave's future may be accurate, though still sad. In our society, we consider it an individual's right to gather information from all sources. We assume that this right cannot be taken away. You can turn on local or national radio and get a news report. True, that news is edited as to what is reported, and slanted as to how it is presented. Any SWL can attest to that.

Harry writes the future, from a technical standpoint, you will have more dependable information sources via satellites. Problem is that no matter how small the dish is, it will still be able to be seen from the outside of a house. It must be directed at the satellite.

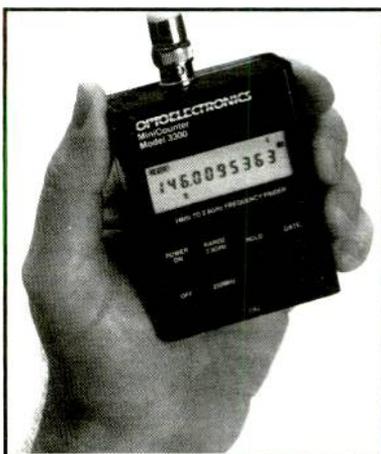
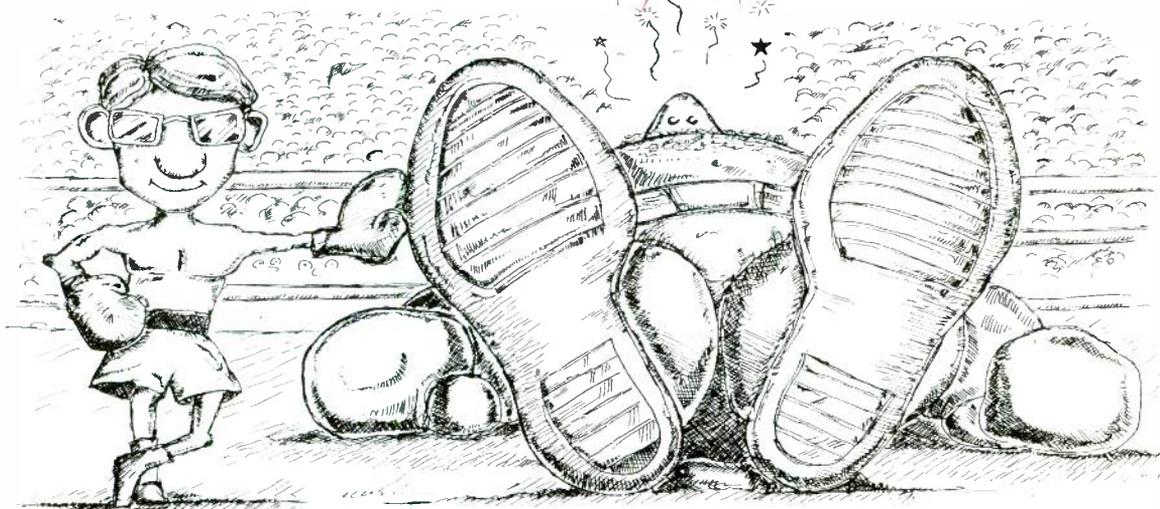
In many other nations, there is either a tax on the antenna, the TV receiver, and/or the radio. The government has the ability to monitor what information its citizens may access. Look how non-Communist Russia is controlling its press. Governments are notorious for their attempts to censor information sources.

The strength of shortwave radio is neither in its sound fidelity, nor in the dependability of its signals. It is the ability to provide an information source that can bypass the censorship abilities of those governments that would seek to control what its citizens know.

Edward Robinovitz, DDS,
Pennsauken, New Jersey

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PCS: Will It End Cellular Telephones?

Inside Facts on The New PCS Services That The News Media Never Told You

BY HARRY CAUL, KIL9XL

OK, so every TV news broadcast and every newspaper announced that the FCC has authorized new personal communications services (PCS). We know that PCS will be richer in features than existing cellular service. We learned that PCS phones operate around 2 GHz, which is a different band than cellulars. They will be small, cheap to purchase and use, and will operate everywhere after PCS systems begin going on-line next year.

The average person was satisfied with this smattering of information. A communications hobbyist would be more likely to ask, "Where's the beef?" There must be more. Indeed, there is!

What PCS Will Offer

The FCC foresees PCS giving the public a variety of new mobile technologies, and equipment that will work at home, at work, or in the street. Equipment proposed will consist of wireless handsets, portable FAX machines, and other graphic devices. Although several experimental prototype transceivers have been built for PCS testing, designs have not been approved for commercial manufacture.

Frequencies

A total of 160 MHz at 1850 to 1970 MHz; 2130 to 2150 MHz; and 2180 to 2200 MHz are allocated for PCS. This is four times the spectrum originally allocated to cellulars.

These bands were established with 40 MHz between 1890 and 1930 MHz allocated to unlicensed PCS devices. Voice-like (isochronous) devices would use the 1890 to 1900 MHz, and 1920 to 1930 MHz portion of the band. Data-like (asynchronous) devices will operate between 1900 and 1920 MHz.

Licensed devices will operate within different channel blocks that relate to Major Trading Areas (MTA's) and Basic Trading Areas (BTA's), as defined by the Rand McNally Atlas. There are 51 MTA and 492 BTA-based service areas in the plan recognized by the FCC.

Within MTA's, the following channel blocks are established:



This type of cellular portable is popular today, but may end up competing with PCS sets that are much smaller and cheaper.

Block A: 1850 to 1865 MHz; 1930 to 1945 MHz

Block B: 1865 to 1880 MHz; 1945 to 1960 MHz

Within BTA's there are five blocks:

Block C: 1880 to 1890 MHz; 1960 to 1970 MHz

Block D: 2130 to 2135 MHz; 2180 to 2185 MHz

Block E: 2135 to 2140 MHz; 2185 to 2190 MHz

Block F: 2140 to 2145 MHz; 2190 to 2195 MHz

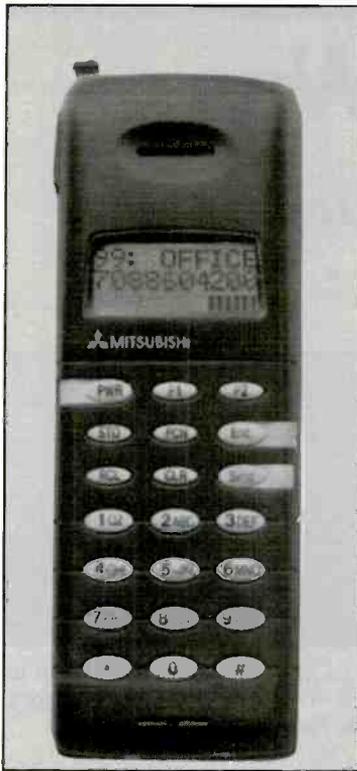
Block G: 2145 to 2150 MHz; 2195 to 2200 MHz

Eligibility for Blocks C and D is proposed to be by means of competitive bidding, with preferences for small businesses, rural telephone companies, and businesses owned by minorities and women.

Licenses will be valid for a ten year term, and may be renewed. They will be allowed to aggregate up to 40 MHz in any one service area, and may operate in more than one service area without restriction.

Tech Standards

PCS standards authorize licensed base stations to operate at powers up to 100 watts (e.i.r.p.), with an antenna height up to 300 meters HAAT. Using reduced pow-



This Mitsubishi cellular is about the same general size, shape, and layout of an experimental prototype PCS handset we saw used during a test.

er, the antenna height may be increased to as high as 2,000 meters HAAT.

Licensed mobile units will be allowed to use 2 watts. The standards provide interference using a 47 dBu contour at the licensee's service boundaries. PCS coordination distances with fixed microwave operations will vary from 62 to 195 miles, depending upon the power and antenna height of the PCS base stations.

Licensees will be required to offer service to at least one-third of the population in each market area within five years of being licensed, two-thirds within seven years, and 90% within ten years.

The FCC hopes that the PCS industry will develop standards for interoperability between different systems, roaming, and full access to 9-1-1 services.

Insofar as unlicensed operation is concerned, a group known as UTAM (Unlicensed PCS Ad Hoc Committee for 2 MHz Microwave Transition and Management) has been formed. The FCC has designated UTAM to coordinate the use of unlicensed PCS devices, and establish proposed equipment technical standards in conjunction with manufacturers.

No More Free Ride For Cellular

Cellular service suppliers obviously see PCS as potentially dangerous competition looming on the horizon. Cellular compa-

nies will be allowed some limited participation in certain PCS markets, but it's obvious that the FCC is hoping to make room for new companies to come into the growing mobile phone market.

Cellular markets are allowed to be served by only two companies. Major city markets could have their two cellular services and, in addition, as many as seven competing PCS service suppliers. Most likely, it would come down to less than seven PCS companies. To cellphone companies, this represents competition for business from car-

phone subscribers by others providing a newer technology that offers more services at less cost.

For all that PCS promises to be, we also predict major changes in the cellular world. Cellular will have to make dramatic changes in its services and costs. Otherwise, cellular will end up one more outdated and discarded carphone technology like 35 MHz carphones, or the 152 MHz IMTS phones that followed, and even the 454 MHz carphones that came along a few years before cellphones showed up. The public is fickle.



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The Wilson 1000 higher gain performance is a result of new design developments that bring you the most powerful CB base loaded antenna available.

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

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FREQUENCY (MHZ)	RELATIVE GAIN (dB)	RELATIVE POWER GAIN (%)
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27.015	1.30	35
27.065	1.45	40
27.115	1.60	45
27.165	1.50	41
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27.265	1.75	50
27.315	1.95	57
27.365	2.00	58
27.405	2.00	58

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Wireless, As It Was

A Stroll Back Into Our Heritage

BY ALICE BRANNIGAN

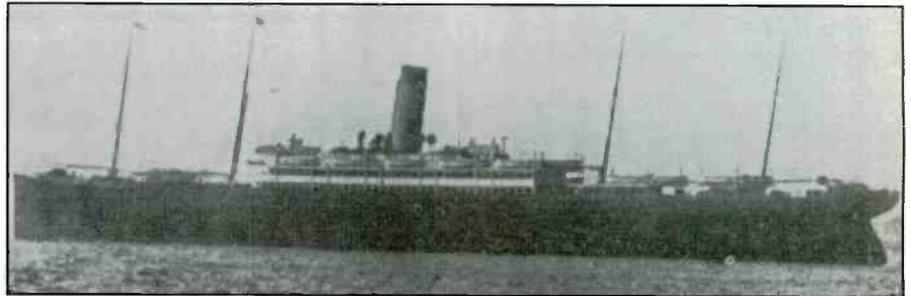
The first recorded use of wireless in rendering aid to a ship was on March 3, 1899, when the Steamer *R.F. Matthews* ran into the East Goodwin Lightship, England. A call went out over the wireless to the South Foreland Lighthouse, and lifeboats were sent to the relief of the lightship. It was a minor incident, not one that brought any significant attention to the lifesaving potentials of wireless at sea.

Years passed, and then the first of several terrible shipwrecks of that era took place. The incident was briefly mentioned here last month as the first time wireless was used in connection with a shipwreck in U.S. coastal waters. With the saving of 1,650 lives, this was the single event that first impressed the public with the fact that wireless was more than an experimenter's or tinkerer's toy. It dramatically showed the importance of wireless in saving lives. Reader Alexander Durant, of Albany, New York, passed along some facts on this incident, which we put together with material from the archives here.

With 30 feet of her bow cut away, the Italian Steamship *Florida*, of the Lloyd Italiani Line, came slowly into the port of New York on January 25, 1909. Three days earlier, near the Nantucket Lightship, off the Mass. coast, she had collided with the White Star Liner *Republic*.

Built in 1903, the popular *Republic* regularly sailed the Genoa to New York route, carrying as many as 2,000 passengers. This vessel was 585 ft. in length, with a beam of 68 ft., weighing 15,378 gross tons.

The collision occurred in dense fog just



The S/S Republic, in 1909, became the focus of first major sea disaster in which wireless was directly credited with saving lives. This was three years before the sinking of the RMS Titanic.

before 6 a.m. on a cold winter morning. Both vessels were off course. The impact damaged both ships, and the *Republic* had water pouring in through a large gash in her port side.

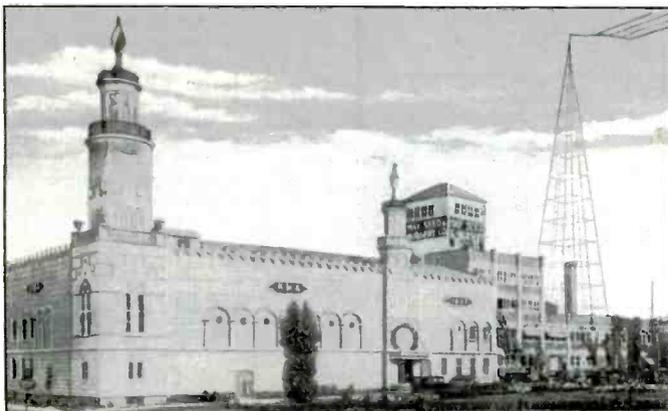
While passengers huddled on the deck of the *Republic*, John W. (Jack) Binns, the ship's Marconi radio operator, was furiously transmitting the CQD distress signal. The Steamer *Florida* heard the call, but couldn't find the *Republic* in the fog. Blasts of the *Republic's* horn helped guide the *Florida* out of a fog bank and to the ship's aid. Many passengers were transferred to the *Florida*.

Binns' wireless calls also summoned another White Star Liner, the *Baltic*, which he directed to the site to take aboard additional survivors of the *Republic*.

The Revenue Cutter *Gresham* picked up Binns' distress calls and attempted to take the stricken *Republic* in tow. Unable to make it all the way to a safe port with



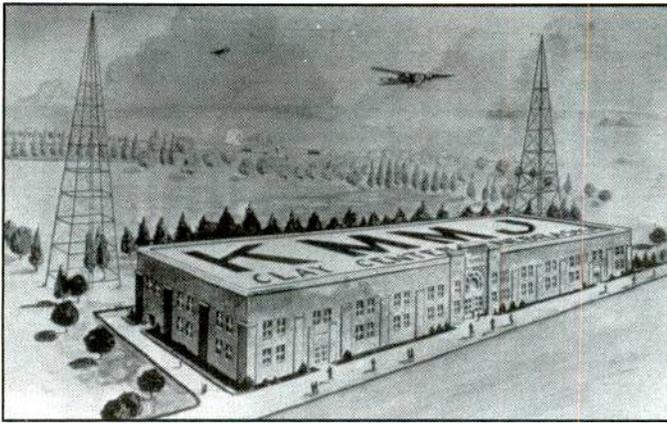
Jack Binns, wireless operator of the S/S Republic, remained at his station for many hours sending distress traffic until the ship's storage batteries went dead. He was hailed in the press as a national hero.



Earl May's Seed & Nursery Co. operated KMA from a Moorish castle in Shenandoah, Iowa.



Henry Field's Seed Co. ran station KFNF from an annex to the company offices in Shenandoah, Iowa.



First home of KMMJ, Clay Center, Nebr., was in the factory where they made Old Trusty brand incubators and brooders.



This 1930 view shows KMMJ after moving into its own facilities in Clay Center, Nebr.

the damaged ship, the following morning the *Republic* ultimately sank at about 40-25.5 N and 69-40.0 W. Despite the severity of the initial collision, only six lives had been lost. All other hands were saved.

Binns had relentlessly tapped out more than 200 messages during the event, communicating with ships and also the Marconi coastal station in Siasconset, Mass. He doggedly remained on duty at his wireless key all day and night, ending operations only when the ship's storage batteries finally gave out. The dynamos had gone dead as soon as the engine room had flooded.

As newspaper accounts of the incident told the story, wireless suddenly began to be viewed with seriousness by the public. It was heralded around the world as the modern miracle that saved lives. Jack Binns became a national hero, a legend, and a popular figure in the annals of early amateur wireless. Everyone knew both who Jack Binns was, and the story of his heroism. The esteem was similar to that which later generations reserved for the first astronauts. Binns remained such a popular figure that as late as the 1920's, he was writing the prefaces for a series of ham radio adventure books called, "The Radio Boys."

Now, in 1994, few people other than radio or maritime historians know about Jack Binns' wireless and the *Republic* disaster. Neither do people these days understand how important this was for the growth and popularity of wireless technology. Alexander Durant felt this deserved a more fleshed-out exposition in our pages. He was right. It was time for the story to be retold.

Rural Radio

Metropolitan areas were the pulse of early broadcasting, but surely the great rural areas were its heart. Farmers and ranchers, living in the heartlands of the nation, have always cherished their own locally owned broadcast stations. So many of the early stations were operated by seed companies and other firms engaged in agricultural businesses. The May Seed and Nur-

sery Company's station, KMA, and the Henry Field Seed Company's KFNF, both in Shenandoah, Iowa, were two of the most elaborate and famous stations in this category. These were powerful stations run by large companies. They had wide area signal coverage.

Most stations were less elaborate, being more along the lines of hometown operations. For instance, 1928 Nebraska listings include stations such as KGBZ, of York, operated by George Miller's Federal Livestock Remedy Co.; KGCH, of Wayne, operated by the Farmers and Merchants Cooperative Co.; and KGDW, of Humboldt, operated by Frank Rist's Plainview Hog and Seed Farm.

KMMJ, originally in Clay Center, Nebraska, and operated by the M. M. Johnson Company, is a wonderful example of an early agricultural station. The M. M. Johnson Co. had a factory that produced *Old Trusty* brand incubators and brooders. Therefore, KMMJ called itself, *Old Trusty*.

Johnson opened his broadcasting station in November of 1925. It was located right in his factory, running 500 watts on 1310 kHz, fed into an antenna strung between two 100 ft. towers. The Chief Engineer was a local ham who worked at the factory, Jim Gwynn, 9BDK.

Early KMMJ programming was quaint, and completely local in origin. It was described in the station's 1926 literature as "Home talent," "Factory and office program," "Organ recital," "Old Trusty Orchestra," "Saronville Victory Orchestra," and, "Snoddy's Orchestra." These entertainments were broadcast daily (except Wednesday and Sunday) at 1:30 in the afternoon, and repeated (live, of course) in the evening.

Soon after commencing operations, KMMJ switched over to 1050 kHz, then again to 740 kHz. By 1930, the station had moved into other digs and the power was upped to 1 kW, fed into two 150 ft. towers. New owners moved KMMJ to Grand Island, Nebr., in March of 1939.

KMMJ shifted over to 750 kHz in the early 1940's. The station remains on 750

kHz, but now it operates with 10 kW days, 1 kW at night.

High Hopes

After NBC was formed in 1926, and CBS came along in 1929, it seemed apparent to many broadcasters that national network radio was the way to fame and fortune. NBC was so successful that it even had two separate radio chains operating, the NBC Red Network, and NBC Blue Network. This was years before NBC Red and Blue split into two competing networks, NBC Radio, and ABC Radio.

In the 1930's, there were many who had dreams of forming a third national radio network to compete with CBS and NBC. Few enough of these people had the contacts or resources to line up the stations or sign up the big name talent required to put their plans into action, much less offer any real competition to the existing networks. Another problem was that NBC and CBS already owned, controlled, or had signed up so many of the better stations.

In 1934, the Mutual Broadcasting System (MBS) was formed with the hope of becoming a contender. Its founders were Chicago's WGN, Cincinnati's WLW, Detroit's WXYZ, and New York's WOR. With the exception of WXYZ, all were high-powered, clear channel stations. From this core, MBS began to build a national network of affiliates. "The Lone Ranger" was an MBS program.

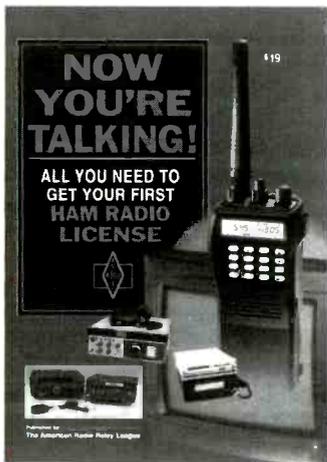
The creation of MBS served to encourage many others to keep trying. New York City's WMCA was a station that figured in several different 1930's attempts and false starts to form a third national network. Typical was in October of 1935, when the broadcasting world heard about a new national chain. It was called the American Broadcasting System (ABS), and WMCA was its flagship station.

Stations in major cities had signed on. But an examination today of ABS' plans indicated that it had a long way to go before it could have considered itself to be national. ABS core stations existed only along the eastern seaboard from Boston to Wash-

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 BY THE COLUMBIA MICROPHONE
 FOR MILLIONS OF RADIO LISTENERS

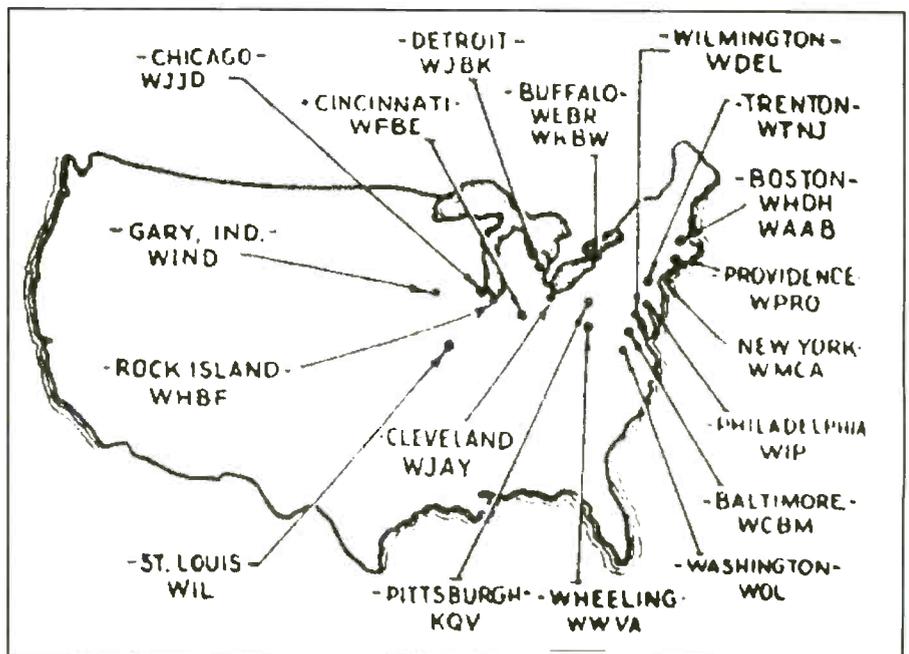
CBS came along in 1929, three years after the successful founding of NBC. It inspired other broadcasters to try to get into the national radio network business. History shows this was easier said than done.

ington, and inland from New York City to Gary, Ind. There were none in other areas of the U.S. WMCA, the flagship station, in New York City, was only a 500 watt. There were 100 watt stations, too, like the one in Detroit. One announced station, Cincinnati's WFBE, didn't even exist. Was WFBE a new station planned to go on the air at some future date?

ABS had no big name talent to furnish the programming that would have been required to attract enough affiliated stations to make a national network happen. Major artists were already under contract to NBC, CBS, or MBS.

As a result, ABS never became more than a short-lived regional network. However, it was neither the first nor the last failed attempt at cashing in on the seemingly great idea of forming another national radio network. Merely one more try for the brass ring on the wild 1930's broadcasting merry-go-round.

Thank you for being with us this time around. Your old time radio QSL's (originals or photocopies) are appreciated, also old radio picture postcards and photos, stories, station lists, questions, comments, and corrections to information here. Everything is useful and helpful. ■



The announced original outlets of 1935's newest national radio network, the American Broadcasting System (ABS). The Detroit station ran 100 watts, but the one in Cincinnati didn't even exist. Soon enough, neither did ABS, itself.

“The R8 is a highly sophisticated receiver. We'd call it professional grade, or about as close to it as receivers get these days.”

*Staff review
Popular Communications*

“The R8 is like a breath of fresh air, with its ground-up engineering and up-to-date digital control from the front panel. I am very pleased to see a quality HF receiver of American manufacture that should successfully compete on the world market.”

*Bill Clarke
73 Amateur Radio Today*



“Overall, the Drake R8 is simply the best radio we have ever tested for quality listening to programs...”

There's nothing else quite like it.”

*Lawrence Magne
Monitoring Times*

“The best of the best for high-quality listening to news, music and entertainment from afar.

Superb for reception of faint, tough signals, too.”

*Editor's Choice
Passport to World Band Radio
Tabletop Receivers for 1992*

The ears have it!

When we introduced the American-made R8 Worldband Communications Receiver, we knew it would be judged by some very discerning ears, experts accustomed to the finest in short-wave listening equipment from around the world. After listening to the world on the Drake R8 loud and clear, they have delivered a decisive verdict.

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CIRCLE 142 ON READER SERVICE CARD

China Pops Out!

New PRC Service Offers English & Pop Music

BY GERRY L. DEXTER

Can you really hear “Achy Breaky Heart” on a mainland China radio station? Well, perhaps things haven’t gotten that bad, but there’s one radio station in China that is focusing on Western pop music—and classical selections too—and doing it in English, not Chinese!

Guangdong Radio English Channel (GREC) operates from the city of Guangzhou, about 100 miles north of Hong Kong, in Guangdong Province. It is part of the Guangdong PBS (People’s Broadcasting Station) which also operates a “literary” service on 999 kHz, two music channels (on 99.3 and 98.7 MHz FM) and two educational channels—on 1584 kHz medium wave and 103.3 MHz FM. The English channel operates on 603 kHz medium wave.

The proximity to Hong Kong had

broadcasters and government communication officials there in a thither when they first learned of the plan for an English channel. Apparently the Guangdong government was nervous too—there were armed guards on hand as the station got ready to go on the air for the first time. The governments of Hong Kong and China have tried to adhere to international radio agreements covering interference. There’s also been an unwritten agreement between the two governments not to intentionally target each other’s territory. Hong Kong has at least eight broadcasters operating on 16 AM and FM channels and many of them were concerned about the competition they might have to contend with. As it turned out, though, the 603 AM signal wasn’t strong enough to be picked up at a listenable level in Hong Kong.

Some spokesmen for GREC insisted that the station was not set up to broadcast to Hong Kong or Macau but others indicated that the two territories would eventually be targeted as part of the effort to tie these economies more closely together. Initially, at least, the station focused its attention on the area of the Pearl River Delta.

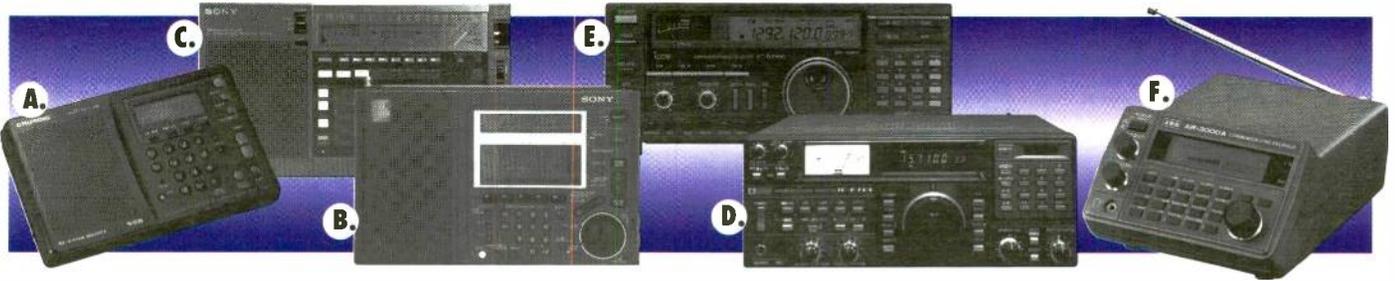
The fact of GREC’s existence is a direct reflection of the “wide open” nature of things in Guangdong Province, where China’s move towards more of a capitalist system and a consumer society is probably at its strongest. The station exists to serve the increasing number of tourists, expatriates and western business interests active in the province. One million people spent vacation time in Guangdong Province in

(Continued on page 81)



Deejays at GREC are bringing Western pop music and English language programs to interior China.

Our Prices Are Right on the Money.



A. Grundig YB-400 \$239

Shortwave Receiver

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 1.5 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!

C. Sony ICF-2010 \$347

World Band Receiver

- AM (LW, MW, SW)/FM/Air band reception
- Dual PLL quartz frequency synthesis tuning
- Direct Access tuning
- 32 station memory presets
- Synchronous detection circuitry
- Switchable IF bandwidth
- Memory/automatic scan tuning
- Built-in quartz clock and Sleep Timer
- Programmable timer

E. Icom IC-R7100A \$1359

VHF/UHF

Communications Receiver

This is our best communications receiver for the 25 to 2000 MHz spectrum. It features continuous coverage in this spectrum with all-mode (SSB, AM, FM, and WFM) capability and receiver specs that no "scanner" can touch. This is truly the receiver for professional monitoring. 900 memory channels store frequency, mode and tuning steps and can be scanned in 7 different ways including the Icom-exclusive window scan which allows you to scan 2 frequency ranges at once! Other features include selectable tuning steps, noise blanker, computer control option, easy-to-read S-meter, 2 squelch modes, a TV broadcast reception option and much, much more! Step up to the best with an Icom IC-R7100A!

Call, Write or Fax For Our FREE Catalog!

B. Sony ICF-SW77 \$469

World Band Receiver

- AM(LW/MW/SW)/FM stereo worldwide band coverage
- PLL (phase locked loop) quartz frequency synthesis tuning
- 10-key Direct Access™ tuning
- Manual/Automatic scan tuning
- 162 station memory preset tuning
 - Factory-programmed country and frequency presets
 - SSB mode

D. Icom IC-R-71A \$1059

Communications Receiver

This receiver covers the entire spectrum from 100 kHz to 30 MHz and is as professional in performance as they come. The latest Icom receiver performance features such as passband tuning and that excellent Icom clean receiver feel. That receiver performance is what separates this radio from its competitors. 86 dB dynamic range and 60 dB image rejection are just examples of its excellent performance in this area. Features are too numerous to list but include 32 memories, 2 VFOs, optional computer interface and 3 selectable filters.

F. AOR AR3000A \$1099

HF/VHF/UHF

Communications Receiver

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

Bearcat BC 2500 XLT \$375

400 Channel Portable Scanner 800 MHz! 25 MHz to 1.3 GHz (Cellular Blocked, modifiable), 400 channels. Loaded with features including, weather search, turbo scan & an illuminated LCD display.



AEA-FAX II \$99

Multi-Mode

Receiving System

Receiving WEFAX images and wire photos, morse code, RTTY and NAVTEX transmissions couldn't be easier. Simply plug in the supplied interface to your PC compatible computer's serial port, connect the other end to any HF receiver's headphone or speaker output and go!



JIM PSU 101 \$59.95

Scanner Desk

Charger/Power Supply

Combination desk charger/regulated power supply unit securely holds your scanner in a handy position. Works with the AOR 1000XLT most Bearcat and Realistic scanners.



AOR AR1000XLT \$419

1000 Channel

Continuous Coverage Receiver

Continuous coverage of .5 to 1300 MHz (no gaps). Features include: lock-out search and scan, cigarette lighter plug cord, belt clip, case flex antenna and earplug. Covers AM and W/N FM. VFO knob or keypad. 6.7" x 1.4" x 2.6", 10 w.



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CIRCLE 160 ON READER SERVICE CARD

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SCANNER WORLD EXCLUSIVE UNIDEN BEARCAT BC205XLT
\$239.99 (\$8.00 shipping)

Digital programmable 200 channel hand held scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-956 MHz. Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna carry case are all included. Size is 2-1/16" W x 1-3/8" D x 7-1/2" high.
 (*Excludes Cellular)
 #CC-008 Heavy Duty Leather Carry Case \$27.99

RELM RH-256NB HIGH BAND TWO-WAY RADIO
SPECIAL PACKAGE DEAL \$339.99
 (Plus \$9.00 Shipping Each)

16 channel digital readout two-way radio. Covers high band frequency range of 148-162 MHz without returning. Perfect two-way radio for ambulance, police, fire, tow trucks, taxis, commercial companies who use this band. Features include CTCSS tones built-in, priority, 25 watts output, channel scanning, back-lighted keyboard, message light, time out timer, scan delay, external speaker jack. Size is 2 1/4" H x 6 1/4" W x 10 1/4" D.

SPECIAL PACKAGE DEAL includes RH-256NB, mobile microphone, 1/4 wave body mount antenna, mobile mounting bracket and mobile power cord, all for the low price of \$339.99.

SPECIAL!! LOWEST PRICE EVER FOR A PROGRAMMABLE SCANNER

Cobra SR-901

AVAILABLE ONLY FROM SCANNER WORLD

ONLY! \$74.99 Each
 (Plus \$6.00 Shipping Each)
\$69.99 (2 or more)

Features include: 10 programmable channels, one touch memory programming, external speaker jack, 29-54 MHz, 136-174 MHz, 400-512 MHz, squelch, lockout, full frequency digital readout, AC or DC operation, retains memory up to 3 days without power, scan button. Includes AC adapter, telescopic antenna, and complete operating instructions. Size: 7 1/4" W x 2" H x 7 1/4" D. One year factory warranty.
 Optional mobile cigarette lighter cord #901MPC...\$4.99

UNIDEN MR 8100A

SPECIAL SALE PRICE ONLY \$289.99
 (\$10.00 Shipping Each)

100 channel digital programmable mobile scanner, turbo scan up to 100 channels per second, lockout, priority, built-in automatic 2 second delay, dimmer control, back-lighted keyboard, track tuning, direct programming of frequencies from front keyboard plus you can also program MR8100 from your IBM compatible PC computer with software and cables included with scanner from Scanner World. Frequency coverage: 29-54 MHz, 118-174 MHz, 406-174 MHz, 406-512 MHz, 806-956 MHz. Dimensions: 7.8" W x 5.8" H x 1.9" D. Earphone jack, BNC antenna jack, DC power cord, mobile mounting bracket, internal memory backup, bank scanning, 10 banks of 10 channels in any combination.

RADIO SCANNERS

BEARCAT BC55XLT	99.99	(7.00)
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BEARCAT BC100XLT	159.99	(7.00)
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\$99.99 (\$7.00 Shipping)

Our best selling mobile scanner. 16 channel AC-DC programmable digital. AC-DC cords, telescopic antenna, mobile mounting bracket, weather search priority, 29-54 MHz, 136-174 MHz, 406-512 MHz, external speaker and antenna jacks.

UNIDEN BEARCAT BC 800XLT DIGITAL BASE SCANNER

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Receive police, fire, ambulance, cordless phones, marine, trains, weather, ham, stock cars, public service plus much more. Frequency coverage 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-912 MHz (continuous). 40 channels, AC/DC operation, digital programmable, memory backup requires 2 AA batteries (not included), telescopic antenna included, AC power cord included, external speaker jack, external antenna jack. Dimensions: 9 1/4" D x 4 1/4" H x 12 1/2" W. Channel lockout, direct channel access, scan delay, priority, digital display, auto weather button, automatic search, track tuning.

MODEL: FB-911 FIRE BOX PHONE

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13 memory phone, 3 direct access emergency memories, auto redial, ringer on/off, top light flashes when telephone is ringing, tone/pulse switchable, desk/wall mount, front door closes for authentic fire box appearance. FCC approved. Size 16" H x 8 1/2" W x 7" D.

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BCAD 580	16.99	MA518	14.99
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BC002	59.99	GRE8002	79.99
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UA502A	12.99	GRE9001	89.99
BP205/200	34.99	GRE 3001	62.99
BP70	16.99	FBE	5.99
VC001	12.99	FBSW	5.99

BEARCAT BC-100XLT 100 Channel Digital Programmable Hand-Held Scanner

\$159.99 (\$7.00 Shipping)

Our best price ever on a full featured complete package hand-held scanner. Manufactured by Uniden. Features include 11 bands of weather, aircraft, public service, trains, marine, plus more (29-54 MHz, 118-174 MHz, 406-512 MHz). 10 channel banks, 10 priority channels, lighted LCD display, earphone jack, channel lockout, AC/DC operation, scans 15 channels per second, track tuning. Special package deal includes the following accessories: AC adapter/charger, rechargeable Ni-Cad battery pack, flexible rubber antenna, carry case.

UNIDEN BEARCAT BC-760 XLT

\$249.99 (\$7.00 Shipping)

Digital Programmable 100 Channel Scanner

BC760 XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz, 806-954 MHz (excludes cellular). Features compact size of 6-5/16" W x 1-5/8" H x 7-3/8", scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC/DC power cords, telescopic antenna, mounting bracket supplied, one year factory warranty, search, direct channel access, track tuning, service search including preprogrammed frequencies by pushing a single button for police, fire emergency, aircraft, weather, and marine services puts exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only \$34.99 plus a CTCSS tone board is available for only \$59.99 to make this the number one scanner available in the USA.
 Optional cigarette lighter plug #760MPC \$4.99

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Frequency coverage 25-1200 MHz — only 22 inches tall. — No holes to drill — includes contact glue pads for easy installation. Complete with 17 foot cable, Motorola connector, and mounting hardware. Swivels to vertical position — performance unaffected by moisture on the window. Made in USA.

SPECIAL \$39.99 (\$4.00 Shipping Each)

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Uniden®/Bearcat BC-142XL 10 Channel Base/Mobile Programmable Scanner

\$83.99 (\$6.00 Shipping)

Programmable, digital, AC or DC operation, weather button, priority, lockout button, squelch, memory backup, 2 digit LED display, track tuning, 2 second built-in delay. Frequency coverage 29-54 MHz, 136-174 MHz, 406-512 MHz. Sizes 9"x6 1/2"x2 1/4". Includes AC adapter and telescopic antenna.
 Optional Cigarette Lighter Cord #142MPC \$4.99

Bearcat BC-148XLT

\$104.99 (\$7.00 Shipping)

16 channel with Automatic Weather Alert (similar to BC-147XL).

GLASS MOUNT ANTENNAS FOR TRANSCEIVERS

Includes mounting kit and cable. Low band, High band and UHF band include PL259 connectors. 800 cellular band antenna includes TNC connector.

GM-27 27 MHz Low Band for CB	\$39.99	(\$4.00)
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GM-450 450-470 MHz UHF Band	\$39.99	(\$4.00)
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We Review:

Two New Scanners

Big City Guy & His Country Cousin: Both Are Winners!

The Realistic PRO-2030 is an 80 channel desktop scanner covering the following bands: 29 to 54 MHz; 137 to 174 MHz; 380 to 512 MHz; 806 to 956 MHz; plus the 108 to 137 MHz aero band. The cellular bands are locked excluded from the coverage.

Features include a memory backup that holds the programming intact for up to three days without power, scan/search at 12 or 50 c.p.s. (selectable), instant NOAA weather band access, priority channel, 10 monitor memories for saving frequencies found during a frequency search.

The memories are set up in eight banks of 10-channels each. This allows the user to program related groupings of stations (police, fire, federal, aero, etc.) into their own distinctive bank(s), and then selectively monitor the various services as desired.

The PRO-2030 IF frequencies are 10.8 MHz and 450 kHz. Sensitivity ratings (20 dB Signal-to-Noise Ratio at 3 kHz deviation) are 0.5 below 54 MHz; 0.7 uV in the 137 to 174 MHz band; 1.0 uV in the 380 to 512 MHz band; and 0.8 uV in the 800 MHz band. AM sensitivity (20 dB S/N Ratio at 60% modulation) in the VHF aero band is 2.0 uV.

The catalog price of the Realistic PRO-2030 is \$199.99.

Realistic has also announced its PRO-2032 base/mobile scanner. Here's a unit with a 200 channel memory covering: 30 to 54 MHz; 137 to 174 MHz; 380 to 512 MHz; 806 to 960 MHz; and the 108 to 136 MHz aero band.

The PRO-2032 scans at 8 or 25 c.p.s. (selectable), and can search at 8 or 50 c.p.s. (selectable). The programming will be retained even if power is lost, there is a priority channel, and there are 10 monitor memory channels.

The IF frequencies are 10.7 MHz and 455 kHz. Selectivity is 6 dB at +/- 10 kHz; -50 dB at +/- 20 kHz. Sensitivity (20 dB (S+N)/N with 60% modulation at 1 kHz) is 1 uV on most bands, but 2 uV on 800 MHz and in the VHF aero band.

PRO-2032 can operate from 117 VAC or 12 VDC. The 12 VDC power cord is



Realistic's PRO-2030 offers 80 memory channels.

an optional accessory. The catalog price is \$299.99.

Both of these scanners have backlit LCD displays, two-second delay, are easy to operate, look good, are well constructed, and they do a fine job. The PRO-2032, with its 200 channel memory, should appeal to the user in the metro area where

there are lots of busy channels. On the other hand, the lower cost PRO-2030, will suit the bill fine for suburban listeners who may not require more than 80 frequencies to keep them involved in what's going on.

Reviewed by POP'COMM Staff.



The OPTOelectronics DC440

PL & DTMF Tone Decoder & Display

OPTOelectronics never fails to come up with products that grab your attention. Their DC440 maintains the tradition. Here's a reasonably priced accessory for your scanner or communications receiver that instantly and simultaneously reads out Continuous Tone-Controlled Squelch System (CTCSS) tones (popularly called PL tones), and Dual-Tone Multi-Frequency (DTMF) signals, which are the tones generated by pressing the buttons on Touch-tone telephones, and similar tone pads. It also decodes Digitally-Coded Squelch (DCS) codes.

When attached to your receiving equipment, the DC440 lets you know all sorts of interesting things about what you are monitoring.

The decoded data comes up on a backlit LCD screen. The screen displays the PL tone currently being monitored (or that most recently monitored). An asterisk (*) after the tone displayed confirms that the one shown is currently being received. The digits remain on the screen until replaced by a new tone.

If the station you are monitoring is, for instance, a cordless phone placing a call by using a Touch-tone phone, the DC440 will display the number being dialed. Up to ten DTMF digits can be displayed at one time on the screen. This allows for a standard seven digit phone number plus a three-digit area code. The DC440's internal buffer stores an additional 116 digits. As new digits are received, they are displayed to the right of the previous ones, and the older characters shift off to the left, one at a time. You can scroll back through to review all of the stored digits.

Naturally, the DC440 will display any digits other than phone numbers that might also be sent using the buttons of a Touch-tone phone.

In the event the DC440 is to be used only for decoding DTMF signals, the connection to the receiver or scanner could probably be made with a just simple plug placed into the external speaker jack. A disadvantage is that this arrangement is affected by the receiver's volume control. This arrangement may be unsuited to detecting PL and DCS tones. Because many receivers limit the bandwidth of the audio delivered to the speaker or earphone jack, an internal connection will be required in order to pick up the subaudible PL and DCS tones. The internal connection would also pick up the DTMF signals.

The usual internal pickoff points are either the hot side of the volume control, or



The OPTOelectronics DC440 in action.

the output of the discriminator. With an internal hook-up, constant levels are assured regardless of the setting of the volume control of the scanner or receiver. This is not a complicated hookup, using the schematic of the receiver or scanner. For those who don't wish to dig around in the innards of their equipment, a qualified technician should be able to do it in short order.

Simple to operate, the only controls on the DC440 are three push-buttons. One turns it on and off, another changes its mode from CTCSS/DTMF, to DCS/DTMF, and to RECALL DTMF. The third button scrolls through the DTMF memory, and also controls the LCD backlight.

In addition to its uses with standard scanners and communications receivers, the DC440 can also be used with the OPTOelectronics R10 FM Communications Test Receiver. Furthermore, the DC440 is equipped with a TTL asynchronous serial interface that allows it to be connected to a personal computer for the purpose of remote control and auto-

matic data logging. For this purpose, a Model CX12 RS-232C Interface Converter and special software (both available as optional accessories) are required.

The DC440 is powered by 7 to 15 VDC, via a power supply or a battery (optionally, a rechargeable battery pack may be used).

In every respect, the DC440 is a versatile and intriguing piece of equipment. While it has a wide range of uses for communications techs, it provides for innumerable innovative applications in the high-tech world of professional surveillance and counter-surveillance. To the serious communications monitor, it is a most effective tool for helping to extract every possible morsel information and intelligence from and about a given signal, and its originator. It does this job quite well.

The MSRP of the basic DC440 is \$259, plus 5% shipping and handling. It comes from OPTOelectronics, 5821 N.E. 14th Avenue, Fort Lauderdale, FL 33334. Their order line number is: 1-800-327-5912.

Reviewed by POP'COMM Staff.

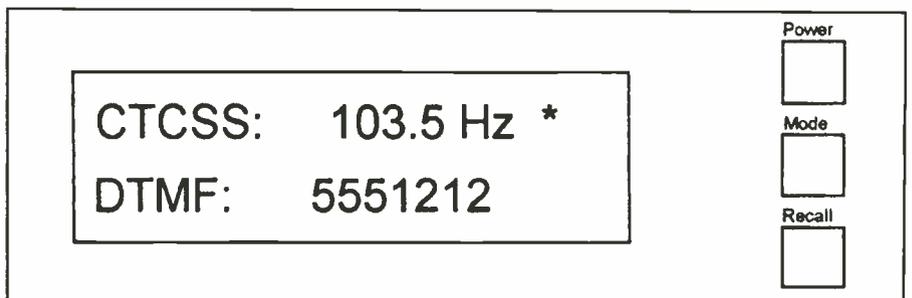


Illustration showing the front of the DC440 and its three push-button controls. It is shown here displaying PL and DTMF tones.



Nation's Largest Shortwave Dealer

GRUNDIG

DIGITAL WORLD RECEIVER

THE ULTIMATE IN DIGITAL TECHNOLOGY

Overall: Best of the Compacts

"In all, the Grundig Yacht Boy 400 is the best compact shortwave portable we have tested."

- Lawrence Magne

Editor-in-Chief, Passport to World Band Radio

Shortwave, AM and FM

- PLL synthesized tuning for rock-solid frequency stability.
- Continuous shortwave from 1.6-30 megahertz, covering all existing shortwave bands plus FM-stereo, AM and Longwave.
- No tuning gaps in its shortwave receiver means that all frequencies can be monitored.
- Single sideband (SSB) circuitry allows for reception of shortwave long distance two-way communication such as amateur radio and military and commercial air-to-ground and ship-to-shore.

Memory Presets

- 40 randomly programmable memory presets allow for quick access to favorite stations. The memory "FREE" feature automatically shows which memories are unoccupied and ready to program.

Multi-function Liquid Crystal Display

- The LCD shows simultaneous display of time, frequency, band, automatic turn-on and sleep timer.

Clock, Alarm and Timer

- Liquid crystal display (LCD) shows time and clock/timer modes.
- Dual alarm modes: beeper & radio.
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Beyond WWV: High-Tech Time Checks

There's a lot more to the government's time and frequency services than WWV. Read this and find out.

BY KARL T. THURBER, JR., W8FX

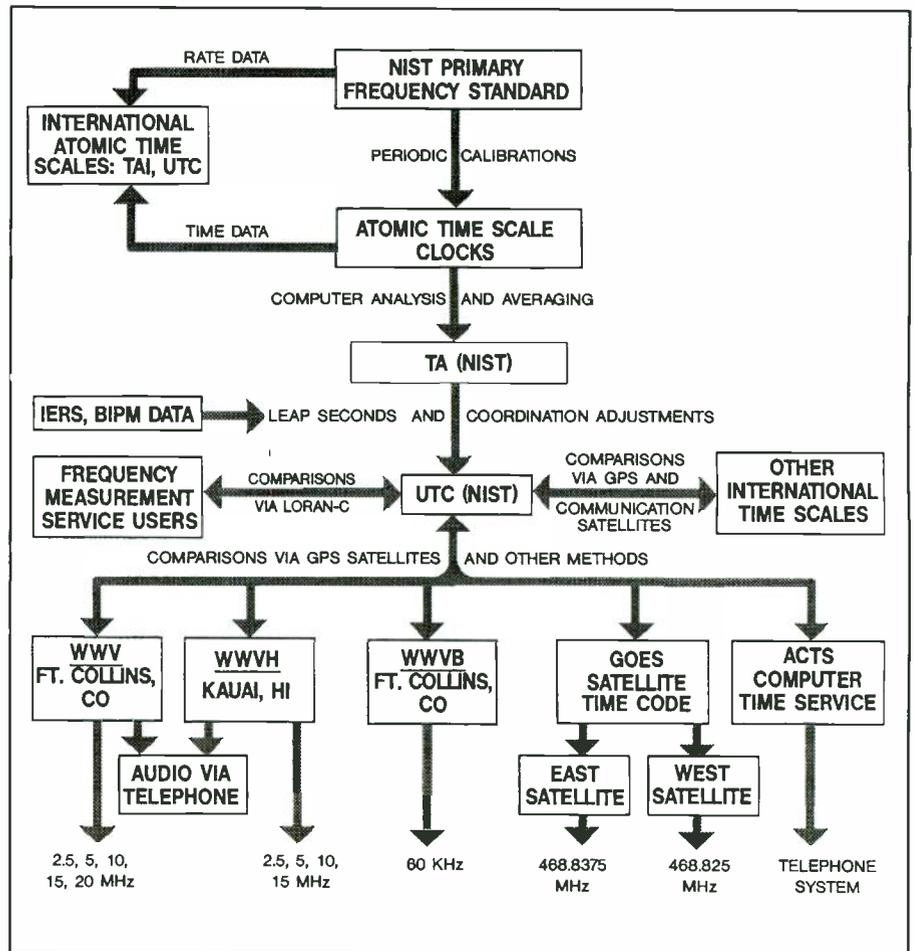
The National Institute of Standards and Technology (NIST)—the old National Bureau of Standards (NBS)—is part of the U.S. Department of Commerce's Technology Administration. NIST provides the precise time and frequency information for most users in the U.S., and has since NBS put WWV on the air in 1923. Since then, they have made their services more convenient, accurate, and easy to use for a growing number of users.

Today major users include radio and television stations and networks, electric power companies, airlines and railroads, oil exploration and drilling companies, the music industry, law enforcement, government agencies, and calibration laboratories. Even Mickey Mouse is a user: Walt Disney World in Orlando, Florida, uses station WWVB on 60 KHZ to set the time for its primary computer systems and to accurately time the various shows and animation sequences in the sprawling theme park.

Keeping Time and Frequency Under Control

NIST maintains time and frequency generation and measurement equipment at its Boulder, CO labs. The labs contain the primary NIST frequency standard, the cesium atomic time scale clocks, and related equipment (Figure One). The Primary NIST frequency standard provides a frequency and time interval reference based on the international definition of the second. The labs also contain commercial cesium standards, hydrogen maser frequency standards, and other equipment that is kept in controlled environments and serves as the "working" standards.

Atomic clocks are based on the phenomenon that atoms and molecules have well-defined, natural vibrations. Cesium-133, a metallic element similar in appearance to mercury, vibrates at a very predictable rate. As it happens, after 9,192,631,770 of these vibrations, one second elapses. The cesium-based atomic clocks are more than 100,000 times more uniform than time based on the spinning earth since they're based on the cesium atom's natural frequency. Sophisticated time comparison equipment and computer hardware



HOW NIST CONTROLS THE TIME AND FREQUENCY SERVICES

This illustration shows how NIST ties together and controls the various time clocks and frequency standards it has to ensure accuracy and conformance to international standards. The sketch also depicts how all the information is disseminated by radio, satellite, and telephone. (Source: NIST Special Publication 432)

and software lets NIST generate a computer-analyzed composite atomic time scale known as TA (NIST) that's better than any of the individual standards.

The Boulder equipment has provisions for inserting "leap seconds" (needed because of small variations in the earth's rotation) and other adjustments into the time scale to generate UTC (NIST). This is an internationally coordinated time scale kept within one microsecond of UTC, or Coor-

minated Universal Time, generated at the International Bureau of Weights and Measures (BIPM) in Paris, France, which averages data from atomic clocks in many nations. The UTC time scale is, loosely, what previously was called Greenwich Mean Time (GMT), or Z ("Zulu"). It's UTC that's disseminated by WWV, WWVH, and WWVB; the GOES satellites; the Frequency Measurement Service; and other NIST services.

Radio Broadcast Services

NIST operates two HF radio stations, WWV and WWVH, in Ft. Collins, CO and Kauai, Hawaii, respectively. Both continuously broadcast time and frequency signals on 2.5, 5, 10, and 15 MHz, and WWV also broadcasts on 20 MHz. You should be able to hear at least one frequency at your location at any given time, depending on the time of day and year, radio conditions, and receiving equipment used. Generally, frequencies above 10 MHz work best in the daytime, while the lower frequencies are favored at night.

WWV and WWVH offer time announcements, standard frequencies and time intervals, time (voice and digital code), astronomical time corrections, geophysical (solar-terrestrial environment) alerts, radio propagation information, marine storm warnings, and OMEGA Navigation System and Global Positioning System (GPS) status reports. WWVB, near the WWV site, broadcasts on 60 KHZ with 13 KW to cover the continental U. S. The station doesn't use voice announcements but provides digital-based standard time information; time intervals; Daylight Savings Time, leap second, and leap year notices; and astronomical time corrections.

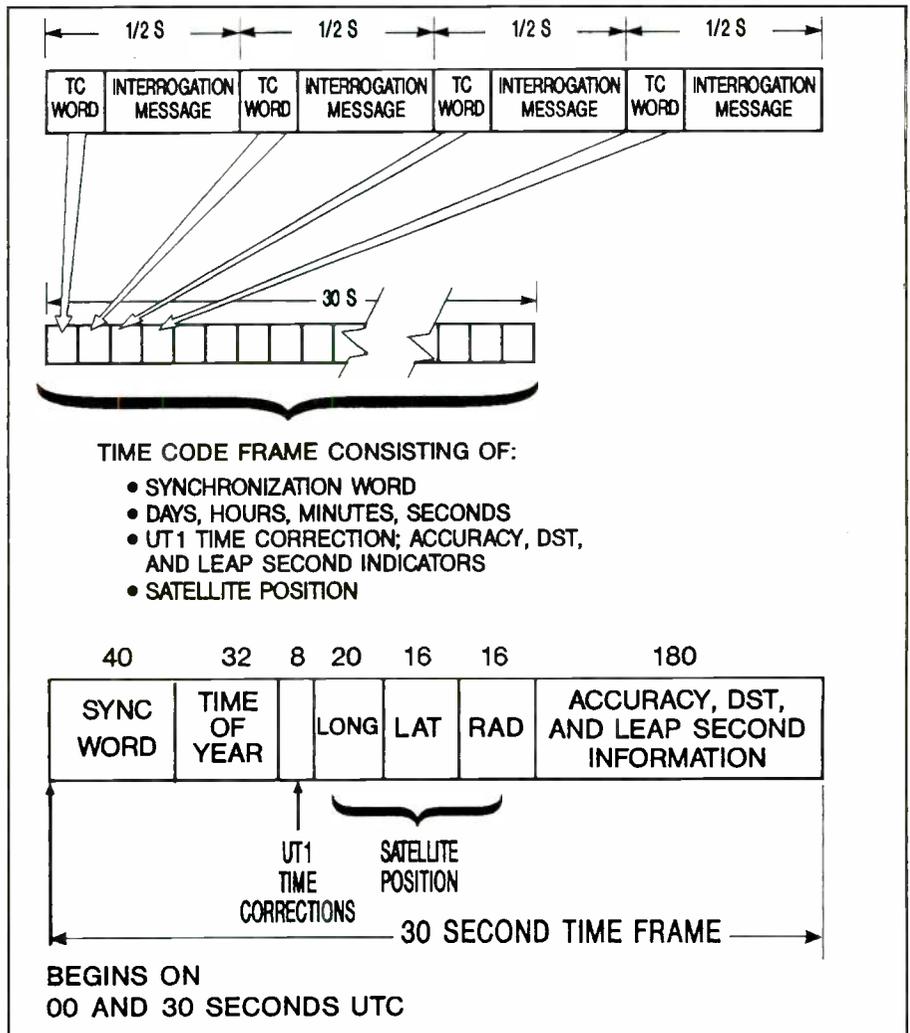
Coordination with the international UTC time scale keeps the broadcast signals in agreement with signals from other time and frequency stations worldwide. The transmitted frequencies are accurate to about 1 part in 100 billion for frequency and 0.01 milliseconds for timing. However, received accuracy for WWV and WWVH is considerably less due to propagation effects. WWVB's transmitted time and frequency accuracy is comparable to that of WWV and WWVH, but since propagation effects at this low frequency are minimal, the received WWVB accuracy is excellent.

No radio? You can hear the WWV and WWVH audio by telephone, with a time accuracy of 30 ms or better. To hear the broadcasts, dial (303) 499-7111 for WWV or (808) 335-4363 for WWVH.

GOES Satellite Time Code Service

Since 1974, NIST has broadcast a time code from the GOES (Geostationary Operational Environmental Satellites) operated by the National Oceanic and Atmospheric Administration (NOAA). The satellites are in geostationary orbit 22,300 miles above the Earth's Equator. Because they are geostationary, the time code path delay remains relatively constant at all times. NIST uses two GOES satellites, GOES/East and GOES/WEST, to cover the Western Hemisphere and portions of the Atlantic and Pacific.

The GOES time code includes the current year; day, hour, and minute; astronomical corrections; satellite position in-



GOES SATELLITE TIME-CODE FORMAT

Shown here is the GOES satellite "interrogation channel" format and the time-code format. The GOES time code is interlaced with interrogation messages used for other purposes. A time-code frame consists of 60 time-code words. It takes 60 interrogation messages, or 30 seconds, to complete a time-code frame. The completed frame contains a synchronization word, the current year and time, accuracy indicators, Daylight Saving Time (DST) and leap second indicators, system status, astronomical corrections, and satellite position. (Source: NIST Special Publication 432)

formation; accuracy indicators; Daylight Saving Time and leap second notices; and system status information. The time code isn't generated directly from Boulder but instead comes from three atomic clocks that NIST maintains at NOAA's Wallops Island, VA facility. The Wallops Island clocks are compared to Boulder to ensure accuracy and can be controlled remotely from there.

GOES time-code receivers are commercially available. Some of them provide timing signals accurate to 100 microseconds, although most are accurate to about 1 or 2 milliseconds.

NIST Frequency Measurement Service

Offered since 1984, the Frequency Measurement Service (FMS) lets users (for a

small fee) make accurate frequency calibrations on-site. This procedure is less expensive than users sending their oscillators to NIST or to a commercial lab for calibration.

Users subscribe to FMS by paying a one-time subscription fee and a small monthly fee. NIST loans each subscriber a computer controlled "measurement system" centered on a special LORAN-C LF receiver. Users can connect up to four precision oscillators to the system, which under computer software control measures their output constantly and feeds the information back to NIST by telephone and modem. NIST compares the measurements with its own standards to certify the user's calibrations as being accurate and directly "traceable" to NIST's standards. However, unlike the radio broadcast and GOES services, Loran-C doesn't have a time code and is not usually used to obtain time.

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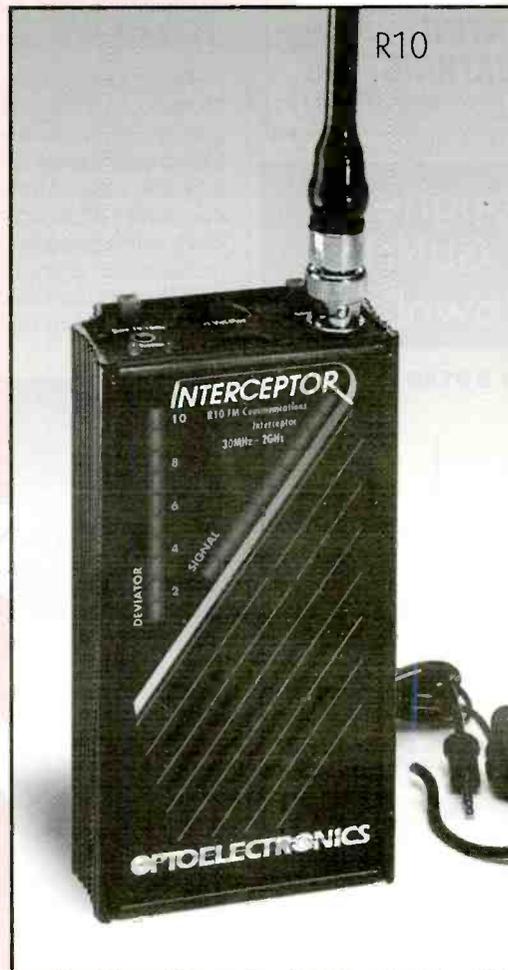
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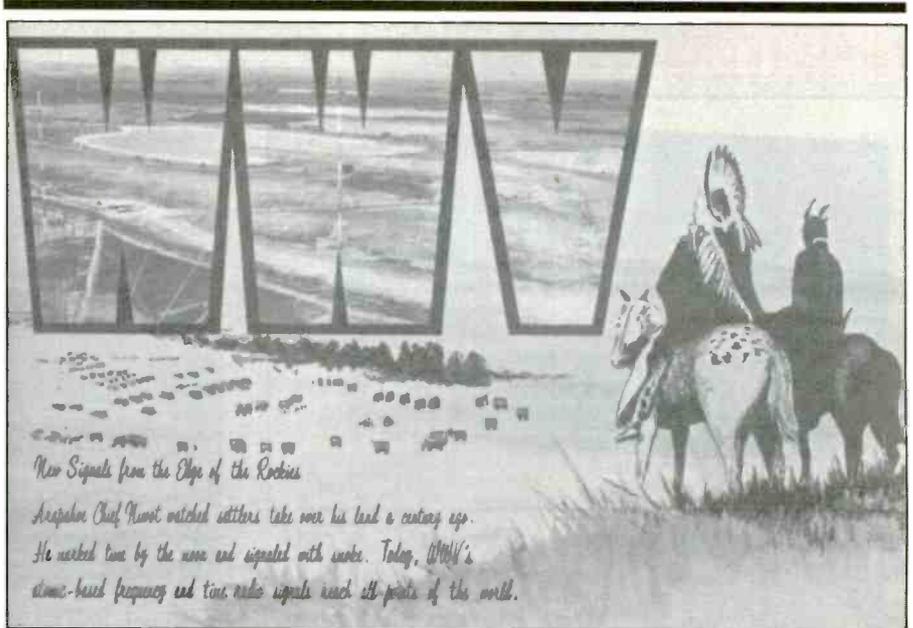


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atomic-based frequency and time radio signals reach all points of the world.

STATION WWV QSL CARD

At the heart of NIST time and frequency services is station WWV, on the air since 1923 from Beltsville and Greenbelt, MD, and since 1966 from Ft. Collins, CO. WWV broadcasts on 2.5, 5, 10, 15, and 20 MHz with 10 KW except on 2.5 MHz where power is 2.5 KW. All antennas all are simple half-wave dipoles.

Automated Computer Time Service (ACTS)

Does your computer's clock lose time? Most do. In 1988, NIST started the Automated Computer Time Service (ACTS). Using commercial dial-up telephone lines to deliver a digital time code, it lets personal computers (PCs) access the NIST cesium clock with accuracies approaching 1 to 10 milliseconds. Since the time code used by ACTS users the standard ASCII character set, it works with nearly all computer sys-

tems and 300 or 1200 baud modems. And, with the right software, ACTS measures telephone-circuit delay and compensates for it. Besides the UTC hours, minutes and seconds, the time code includes the date, Modified Julian Date (MJD), Daylight Saving Time and leap second advance notices, astronomical time corrections, and other information.

NIST sells software for about \$35 known as "RM8101 - ACTS Software," to let users access the ACTS protocol. The software documentation includes complete



NIST LABORATORIES IN BOULDER, CO

Here's the front of NIST's laboratory buildings in the Rocky Mountains near Boulder, CO. Public guided tours are available that let the visitor see the NIST cesium atomic clocks and frequency standards that provide the basis for the time and frequency services NIST offers. The first atomic clock was built in 1949 and used the ammonia molecule as the source of vibrations. (Photo courtesy NIST)

information on the service and shows a simple circuit diagram you can use to obtain an on-time pulse for external counters or test equipment.

Even better, the October 27, 1992 *PC Magazine* published the free, Windows-based WTIME.EXE IBM PC utility program. It uses your modem to automatically synchronize the clock in your PC with ACTS, thus keeping the PC's clock up-to-date and its date/time file stamps on the mark. (The PC Magazine utilities are available on the ZiffNet portion of the CompuServe online computer service as well as on many computer bulletin boards.)

Give ACTS a try. You can reach it at (303) 494-4774. The service is free, except for the telephone toll call.

Other NIST Services

These are the main NIST time and frequency services, but there are more for very specialized users. First, there's the Global Time Service, somewhat similar to the FMS, that uses the military's Global Positioning System (GPS) satellites to furnish users with accurate time and frequency information. Users pay an annual service fee and furnish their own receiver and clock. NIST also offers a calibration service for high-performance clocks and oscillators, sponsors a periodic time and frequency seminar for precise timekeeping professionals and technicians, and participates in a variety of cooperative arrangements for joint research and development between NIST and industry.

If you're a serious user of NIST services, you can obtain a free subscription to the NIST Time and Frequency Bulletin. Published monthly, it contains current technical data on WWV, WWVH, WWVB, GOES, Loran-C, GPS, and the NIST time scales. If you're an average SWL or radio amateur, the bulletin will be dull reading; but if you're really "into" serious, high-tech time-ticking, the Bulletin probably is for you.

Summary

We toured the National Institute of Standards and Technology (NIST) time and frequency services. Besides the WWV, WWVH, and WWVB time tickers, we described how time and frequency are controlled, and we explained the new and exciting services such as the GOES Satellite Time Code Service, the NIST Frequency Measurement Service, and other high-tech services. We also explained the Automated Computer Time Service (ACTS) that, coupled with some inexpensive software, you can use to automatically keep your PC's clock time to the split second.

Next time you tune your radio to WWV for a time hack, keep in mind that there's more to NIST's time and frequency services than the simple time tick that most of us hear—a lot more.

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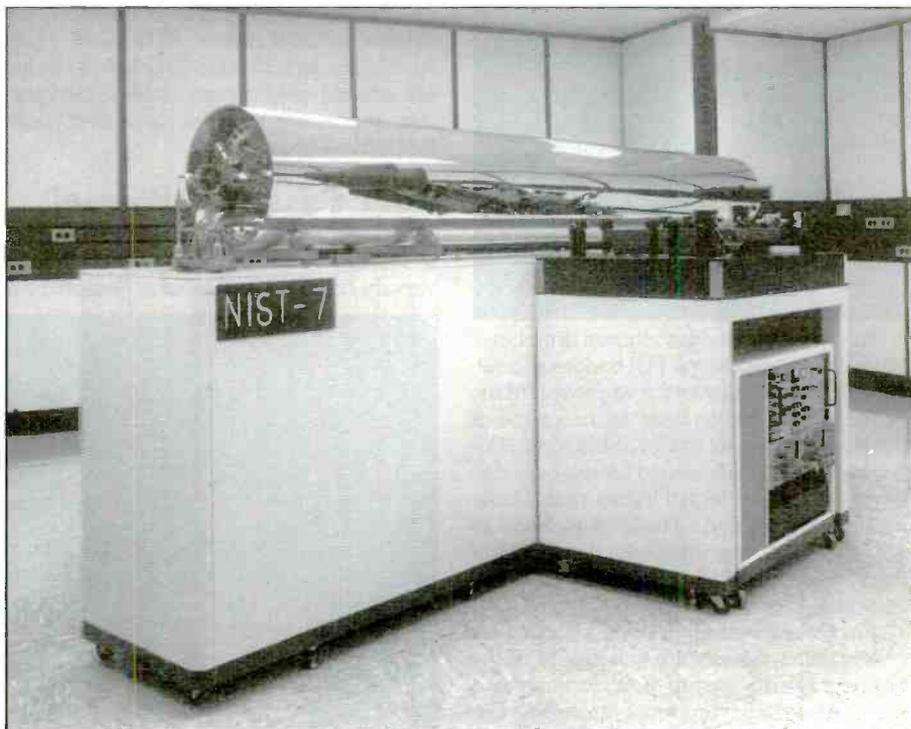
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NIST-7 CESIUM ATOMIC CLOCK

NIST-7, unveiled on April 22, 1993, is the seventh generation of atomic clocks at NIST. It keeps time to an accuracy of better than one second in one million years—ten times as accurate as its predecessor clock, NBS-6. The new timepiece uses lasers rather than magnetic fields to manipulate the beam of cesium-133 atoms, whose vibrations are counted to determine a second of time. (Photo courtesy NIST)

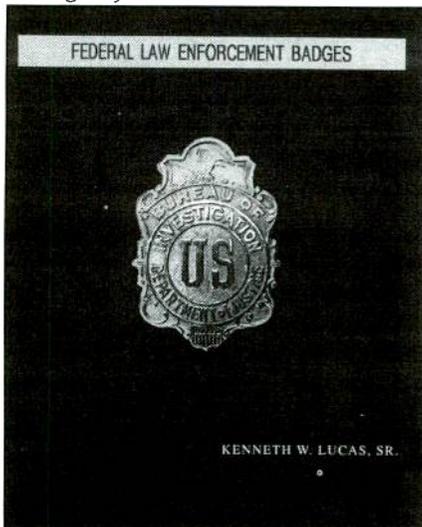
BOOKS YOU'LL LIKE

BY R.L. SLATTERY

Federal Badges

Ken Lucas' book, *Federal Law Enforcement Badges*, focuses on badges of US federal law enforcement agencies from 1850 to the present.

This gigantic 392 page book weighs about 2-1/2 lbs and has over 600 federal badges pictured (30 in full color). These are displayed along with fascinating background and historical information about the various agencies. Some of the agencies covered include: FBI, Secret Service, DEA, Customs, Immigration, Border Patrol, Marshal Service, Dept. of State, IRS, ATF, Postal Inspection Service, White House Police, US Capitol Police, Dept. of Defense Police, Dept. of Transportation Police, Dept. of Energy Police, Dept. of Agriculture, Dept. of Commerce, National Parks, Indian Police, Fish and Wildlife, Dept. of Labor, District of Columbia Metro Police, among others. Every major cabinet level agency is included in the book.



Among the badges shown in Lucas' book are 16 prototype FBI badges submitted to Herbert Hoover for approval. Many of these have never been seen outside of the Bureau. District of Columbia Metro Police badges specially issued for use only during specific Presidential Inauguration ceremonies are shown. These date back to 1937, and are imprinted with the names of the President and Vice President being inaugurated.

Photos are beautifully done, showing excellent detail. Several are enlarged to fill the entire page to ensure you don't miss a thing. Also shown are some interesting historic identification documents, like the U.S. Deputy Marshal's Oath of Office, and the ID cards once issued to an IRS agent.

Lucas' excellent volume is *the* definitive work on federal badges. The book goes so far as to explain the curious circumstances facing those who collect federal law en-

forcement memorabilia. This is an attractively done large-format softcover book, with a striking color photo of an early gold FBI badge its front. For those who monitor, are fans of, interested in, or involved in federal or any law enforcement agency activities, Lucas' book will be a unique and prime reference. We believe it will also be a source of considerable enjoyment.

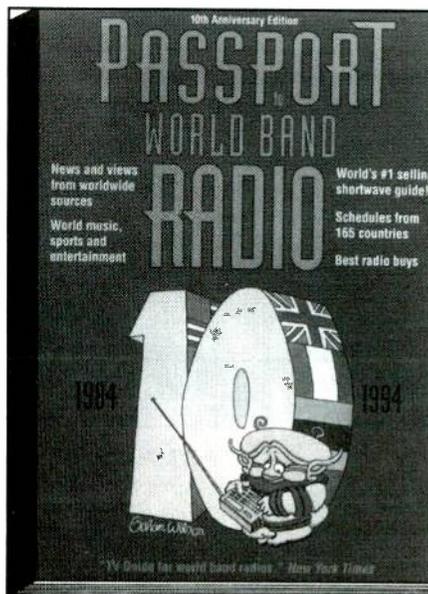
Ken Lucas is a retired law enforcement officer who has been a badge collector for many years. He specializes in early turn-of-the-century and federal badges.

Federal Law Enforcement Badges was privately published in a limited print run by Ken Lucas. There were only 1,000 softcover copies made up, plus a few in hardcover. Each copy is individually numbered, and personally hand-autographed by the author. There will be no additional copies printed of this edition. At this time, it is uncertain whether another (different) edition might be brought out in the future.

By special arrangement with the author, softcover copies of *Federal Law Enforcement Badges*, by Ken Lucas, are being offered by CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. These are \$35.00, plus \$4 shipping and handling (\$5 Canada). Residents of NY State please add \$3.32 tax. VISA/MC welcome. Toll-free orders (48 States) 1-800-656-0056. Canadian, AK, HI orders: (516) 543-9169. All FAX orders: (516) 543-7486. (Readers are advised that because of the limited print run, copies are available on a first come, first served basis.)

Your Passport, Please!

The 1994 *Passport to World Band Radio* is out. This is the 432-page 10th anniversary edition. We think the *Passport* has



earned its rightful place on the reference shelf of every DX'er who follows international shortwave broadcasting.

This edition has the latest skeds, frequencies, and language information used by international broadcasters in 165 nations. There are listings shown according to time of day, and listings shown sorted by nation, and there are station addresses along with phone numbers and information on the things they sell to listeners.

We like *Passport's* exclusive channel-by-channel blue-pages grid section. Here, you can look up any shortwave broadcast frequency and instantly determine which station is using it at any hour of the day or night, how much power the station is using, if the use is seasonal, and which language is being broadcast at that hour.

Passport also has numerous feature articles about the DX'ing hobby, and how best to enjoy its potentials. There is a considerable amount of interesting and valuable information presented relating to all of the current receiving equipment. This includes portables and desktop communications receivers, and encompasses low cost sets to those in the realm of the super deluxe. These sets are individually discussed, tested, rated, and the advantages and disadvantages of each are pointed out.

Passport to World Band Radio, 1994 carries a cover price of \$17.95. It is offered by virtually all of our advertisers selling books and/or communications receivers. We recommend it very highly.

Here's A Source!

Wireless Communication in the United States, by Thorn L. Mayes, W6AX, is 242 pages of pure delight for anyone interested in the early development of American radio operating companies. There are more than 170 illustrations to go along with a well-researched and highly-detailed text, which is written in a very readable style.

The book is actually a compilation of research papers written by the late Mr. Mayes over several decades. These papers cover wheeling and dealing, lawsuits, personal feuds, mismanagement, fantastic stock promotions, cutthroat competition, and several out-and-out frauds. Under the circumstances, it was a miracle that the companies still managed to yield any technical breakthroughs.

However, we read about the development of arcs and sparks, coherers, barretters, tikkers, Alexanderson alternators, and the glory days of high powered wireless at it began reaching out across the nations and oceans. We learn about the stations, and where they were, and who were the real heroes behind American wireless.

Companies covered include United

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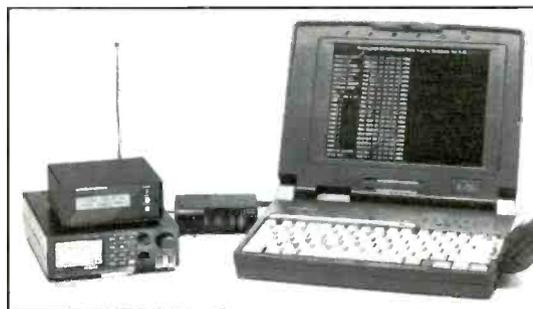
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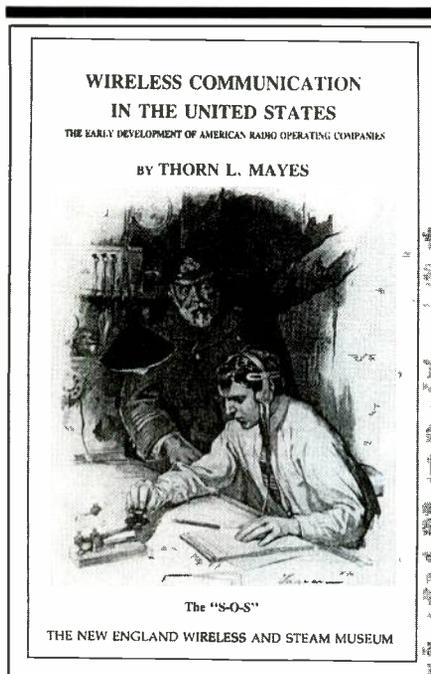
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Wireless, the deForest group, Atlantic (Telefunken), the Gehring operations, HOM-AG-Tuckerton, Marconi of America, Globe Wireless, and even the Federal Telegraph companies.

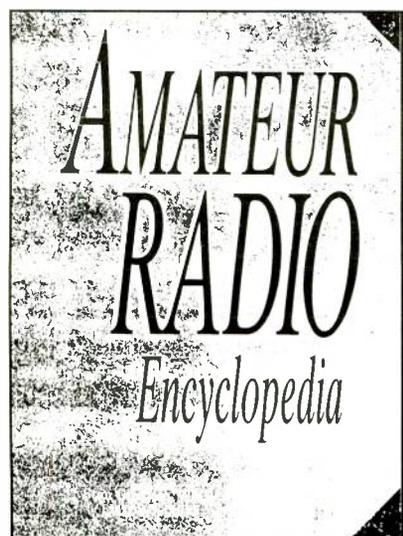
There are copies of correspondence from these companies, photos of their stations and equipment, information on their goals and key personnel. There are charts showing how some of the companies were organized in highly complex ways.

A fine book every way, and most authoritative. Fascinating reading, good looking. Well done all around.

Wireless Communication in The United States, by Thom L. Mayes, is \$29.95, plus \$3 shipping and handling, from The New England Wireless and Steam Museum, Inc., 697 Tillinghast Road, East Greenwich, RI 02818.

You Could Look It Up!

From "absorption" to "Zurich sunspot number," there are 600 pages of detailed



definitions useful to ham operators, CB'ers, and SWL's in the *Amateur Radio Encyclopedia*, by Stan Gibilisco, W1GV.

This book is illustrated, and arranged alphabetically, covering a scope of some 100 topics that will be informative to all levels of involvement in hobby communications.

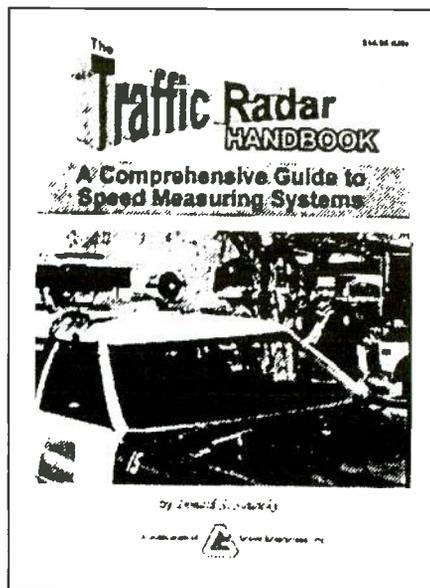
Readers will find detailed listings on such subjects as: SWL'ing, packet radio, antennas and wave propagation, amplifiers, oscillators, keying systems, modulation, repeaters, power supplies, test equipment, satellites, RTTY, ATV, and MARS.

The illustrations consist of photos, diagrams, charts, and schematics.

Amateur Radio Encyclopedia, by Stan Gibilisco, is \$29.95 in softcover from TAB Books, Blue Ridge Summit, PA 17294-0850. It is TAB book number 4213, and is available from TAB dealers.

Radar Topics

The Traffic Radar Handbook, by Donald Sawicki, explains the inner workings of every type of law enforcement speed measuring system in operation, showing when, how, and why each type is selected for use. You'll also learn the flaws inherent in the various systems; how errors and misreadings have been scientifically proven. In the book's 100 pages, you'll learn how to fight a ticket in court, know about laser devices, the biological effects of radar beams, and if supposed jammers and other counter-



measures really work. There are many charts, tables, and diagrams. We thought this was a rather good book. Author definitely knows what he talking about; explains himself quite well. It's \$14.95 from Grove Enterprises, P.O. Box 98, Brass-town, NC 28902. Phone: (704) 837-9200.

Phones and FAX

The National Directory of Addresses and Telephone Numbers, 1994 Edition, is an all-in-one national telephone, FAX,

and toll-free "800" directory. It lists 125,000 of the most commonly called US businesses, hotels, radio and TV media, newspapers and magazines, manufacturers, transportation companies, associations, institutions, and many other types of organizations, plus government (local, county, state, federal) offices. There are 1,482 pages in this massive hardcover volume. A white pages section is arranged alphabetically by name. Classified listings are on yellow pages. A very useful book. Contains a wealth of information. This book is \$85.00, including s/h. Residents of CT, FL, MI, and NY add sales tax. VISA/MC/AMEX are OK. Get it from Omnigraphics, Inc., Penobscot Building, Detroit, MI 48226. Toll-free phone: 1-800-234-1340.

In Addition...

Scanning Wisconsin is an attractive and informative newsletter published for scanner owners in that state. It contains lots of frequencies and data. Now in its third year of publication, the publisher is hoping to organize Wisconsin scanner buffs into a statewide organization. A sample copy of *Scanning Wisconsin* is \$2. The Editor is Ken Bitter. For more information, contact Scanning Wisconsin, Dept. P, S.67 W.17912 Pearl Dr., Muskego, WI 53150-9608. You can phone Ken at (414) 679-9442. Let him know you read about it here.

From time to time this column receives letters asking how to submit books for review, and wanting to know what it takes to get a book reviewed. Although we have mentioned these things in the past, it has been a while. Time to again mention that no permission or invitation is required. We don't normally request or solicit books. Our usual practice is to deal only with those publications that have been voluntarily submitted to us. No special invitation, arrangement, or permission is required for a book to be sent here for consideration.

Here is helpful information. This is a popular section of our magazine. Readers look to us to recommend additions to their libraries. Generally, more books are received than there is available space to review. That means every book submitted can't be guaranteed a spot. Selected for review are those books we believe will most interest readers. Preference is given to useful books with original, unique, or unusual, ideas, or a different approach.

Automatically disqualified from consideration are spin-offs, rip-offs and "inspired by" efforts that, in our opinion, seek to hitch their wagons to the stars of other publishers. Also ignored are books accompanied by demands that they *must* be reviewed. Nor are books considered when they are submitted along with instructions, conditions, suggestions, or stipulations as to how they should be reviewed.

PIRATES DEN

BY EDWARD TEACH

FOCUS ON FREE RADIO BROADCASTING

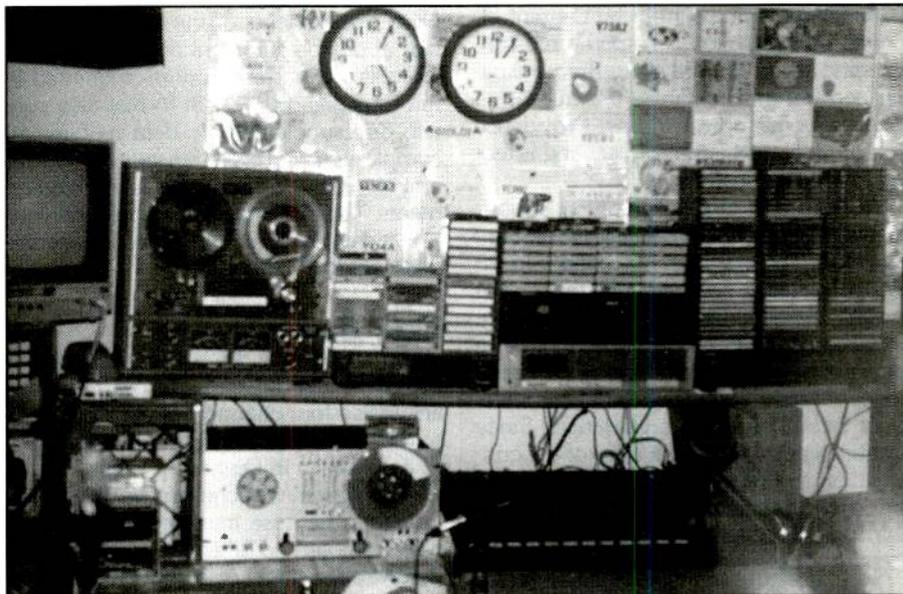
Whaddya know! A pirate broadcaster has actually sent me some information to pass along! Solid Rock Radio's operators Dr. Love and James Be Bop Brown sent the station photo and QSL card you see pictured this month. They say the transmitter is a Hallicrafters HT40g putting 40 watts into a cone shape double inverted "V." The most often used frequency is 4765, usually on Saturdays and Mondays (they don't specify a time frame). Fridays and other days they're most likely to be operating between 0330 and 0500. They claim to broadcast from Canada, but the note implies that's not the case. The program includes solid rock, gospel, old type country, hits from the 60s and 70s, religious sermons and comedy, among others. All correct reports are confirmed within two weeks of being received. Include three units of first class postage or a \$1 bill. Send to P.O. Box 452, Wellsville, NY 14895.

In fact, I've heard from not one, but two pirates this month! WLIS sent an info sheet, QSL card and a copy of a letter sent to a listener who apparently wondered how to hear the station. The letter is an excellent nutshell guide to logging pirates (and by the way, guys, I'm well aware of but cannot do anything about the problem you mentioned. It's just something we have to live with).

The WLIS brochure explains the focus on interval signals as a way of bringing something different (i.e. other than rock, I guess) to the pirate airwaves. The occasional song or two you may hear in a broadcast is there mostly to provide additional logging material. Announcers are usually Jack Boggan or the verifications signer, Charles Plotz. As for verifications, WLIS has a large variety of them, many of which seem to feature former Radio Canada star Ian McFarland. The station says it has issued about 340 QSLs since it started on March 4, 1990.

Mike Leclerc in Connecticut forwards a nice crop of loggings. He's had two receptions of the aforementioned WLIS. The first on 4765 at 0013 which included an ID for WNGK-AM. Mike had them on 7470 at 0220, including IDs from WPON, WKAR and a Rush Limbaugh promo on WXYT and later with a Radio Azteca relay.

George Roberts in Pennsylvania had Altered States Radio on 7415 at 2355 with lots of heavy rock and an occasional ID. Leclerc had them at 2337, signing on with the theme from the Outer Limits TV show. They gave their address as P.O. Box



The studio of Solid Rock Radio.

293, Merlin, ON N0P 1W0, Canada.

Mike found Radio Airplane on 7464.9 USB at 0307-0350 with Captain Eddy and music by Led Zeppelin, Rolling Stones and others, plus comedy. This was their first anniversary broadcast, says Mike, who also notes that the transmitter drifted in frequency a bit. They use the Wellsville address.

Bill Matthieu in Massachusetts had the Voice of Laryngitis on 7415 at 2320 with a poor signal and a program of mostly talk, maybe comedy. Leclerc had them on 7416 at 2304-2333 with a parody on the "World of Radio" program and a humorous language recognition course plus other comedy bits. No mail drop was announced.

Mike logged Radio Blandex on 7410 at 2244 to 2329 with comedy and satires on various DX shows, club columns, etc. They announce P.O. Box 109, Blue Ridge Summit, PA 17214.

George Roberts had WEED on 7465 USB at 0300 with rock and an uncopied address announcement. Leclerc found them from 0224 to 0306 with rock selections, IDs and some kind of bit on martial law.

Leclerc had WJLR on 7465 USB at 0246-0330 featuring Captain Crook and pop/rock. Mike says they began broadcasting in double sideband mode about halfway through the broadcast. They announced the Blue Ridge Summit address.

Mike also picked up Radio Gumby International on 7465 at 2336 to 2346, featuring Master Gumby with a rebroadcast of various Gumby cartoon episodes. When they went off they said it was to let the trans-



And Solid Rock Radio's cleverly worded QSL card.

mitter cool off before it began to overheat! They announced the Merlin address.

And Leclerc reports reception of Radio Pirania International on 13950LSB from 2007 to 2041 with Spanish music, listener reports, IDs and comments about Russian pirates. The announcer used both English and Spanish and gave the Blue Ridge Summit address. Mike indicates this station is a Europirate but I'm unclear as to whether this broadcast was direct or a relay via some station in North America.

That covers things for this time. Please keep those reports coming my way. There are occasions when the column is—what's the radio term?—"pre-empted"—but don't let that stop you from checking in with your logs as regularly as you can. And thanks to Leclerc, Matthieu and Roberts for their reports this month, as well as the information received from Solid Rock Radio and WLIS.

See you next month!

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

A news clipping sent in by Laurent H. Coutu, of Pawtucket, R.I. spun a most interesting story. According to the newspaper account in *The Times* (Pawtucket), it seems a police officer in East Providence was on duty, in his patrol car, and listening to a police scanner.

At 4:45 a.m. the police officer reported overhearing a cellular telephone conversation. The newspaper account reported, "police radios sometimes do that." That implies the scanner was malfunctioning, even though it was programmed to receive local police frequencies. Since East Providence utilizes the VHF high band, the statement needed further explanation. Since Laurent was hearing both sides of the conversation, he must have been picking up the cell site frequency, not the mobile channel. We will have to take the newspaper account at face value.

Anyway, when the call popped through, the caller was bragging to someone how he had found the cellphone by the side of the road. He was cautioned by the other party not to say much because the police could be monitoring. He said he didn't think so because he was driving in back of a police car, and announced his location.

The officer who was overhearing all of this became suspicious and decided to drive over to the location given. He arrived there in time to observe someone so engrossed in talking on a cellphone that the driver/speaker ran a stop sign.

When the vehicle was stopped, was a bag of items was found on the floor. The items allegedly had been stolen from four cars parked in an adjacent community. The 22-year old driver was arrested for being in possession of stolen property, and issued summonses for his traffic violations. It later turned out that the cellphone was part of the items stolen.

Cellphone monitoring paid off and caught a crook. But how did all this manage to come through on a VHF high band scanner? And why can "police radios sometimes do that?" Maybe that's why my scanner tuned to the local McDonald's drive-up window channel keeps picking up cellphones. Sorry, Mr. ECPA, some scanners do that. A small price to pay for fighting crime, we'd say.

Digital/Analog Cellphone Acceptance

The FCC and the Canadian DOC have agreed to accept, as part of their equipment authorization requirements for dual mode (digital/analog) cellphones, measurement reports made in either the US or Canadian format.

There are some differences between the

filing requirements of the FCC and DOC that apply to equipment design. The FCC will require that any reports submitted in the Canadian (RSS-128) format also contain any supplementary data required to comply with with FCC transmitter spurious emissions and frequency stability requirements. The FCC may also request additional test data showing that the receiver complies with FCC Part 15.

Call Boxes

An emergency call box system consisting of 13 full duplex UHF call box units linked to a four-channel base terminal console is being operated by the Security Dept. of a university in Ontario, Canada,

This system was chosen over a wireline approach because many of the locations were remote and difficult to reach with a hardwired system. Also, the wireless system may be more easily expanded at a future date than a hardwire system would be. Temporary units may be placed for use during special events or to provide additional security at any time.

This system was designed and manufactured by Telemobile Inc., 19840 Hamilton Avenue, Torrance, CA 90502. Phone: (310) 497-9920.

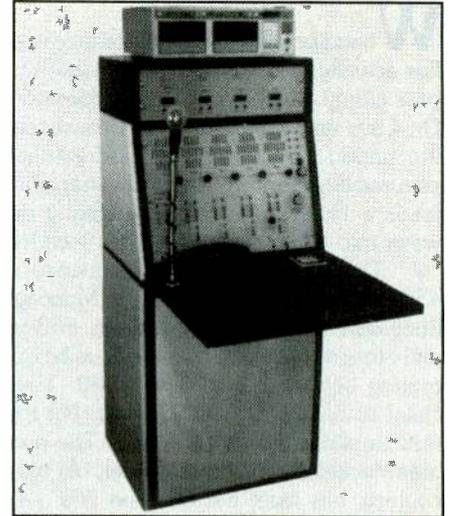
Crime Stopper Tip

People who break into parked cars to steal things scope out target vehicles by first looking for cars that don't have cigarette lighters plugged in. That alerts them that the owner has a portable cellphone, radar detector, or other piece of high-tech electronics in use, and probably stored somewhere in the car. Best bet is to replace the lighter in the socket when you leave the car parked. Could save you a busted window and some electronics hardware! A police friend passed along this good tip.

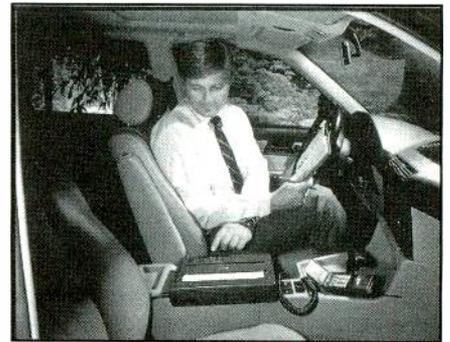
FAX Designed For Cellphones

Ricoh has developed a portable FAX machine that ensures high quality transmission and reproduction via cellular networks. This is a smaller device than Ricoh's popular portable PF-1 FAX, and it weighs less. It is known as the PF-2, and carries an MSRP of \$1,295.

Smaller than a letter-sized sheet of paper, the PF-2 weighs just over 4 lbs. It is made to withstand harsh stresses such as high and low temps, vibration, humidity, and direct sunlight. It operates from NiCd batteries, or from a car's cigarette lighter (which will also charge the battery). An optional AC supply is available. Another option is an extended duty battery that pro-



The Telemobile call box terminal console unit operates in the UHF band.



Ricoh's PF-2 is a portable FAX intended to be used with cellular phones.

vides for transmission of up to 30 pages.

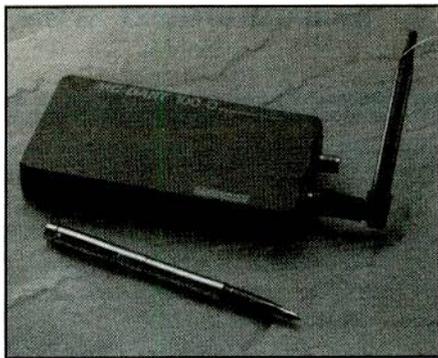
The PF-2 can transmit a letter-sized document in about 15-seconds. If a portion of the data is damaged, it is automatically resent. It can send out 16-level half-tone images and highly detailed graphics.

The PF-2 comes from Ricoh Corp., 5 Dedrick Place., West Caldwell, NJ 07006. Phone: (201) 882-2000.

CDPD Modem For Wireless Data

Cincinnati Microwave, Inc., announced a modem for the Cellular Digital Packet Data (CDPD) network, known as the MC-DART 100. This low-cost wireless data modem is designed for both fixed and mobile wireless data applications, including vehicle dispatching, transportation, utilities, and telemetry.

Sharing the cellular band with existing voice channels, CDPD is a network trans-



This MC-DART 100 is a CDPD modem for fixed and mobile wireless data applications.

mits data at a rate of 19,200 bps, and is expected to support a multitude of wireless applications including messaging, telemetry, and automated transactions.

The MC-DART 100 weighs only 12 oz. and features ruggedized construction. It operates at 19,200 bps, with up to 3 watts output. The unit uses a standard RS-232 serial interface (300-19,200 bps auto-baud). TCP/IP is built in to provide network comms for non-TCP/IP RS-232 devices. This unit uses an AT-compatible command set suitable for use on the CDPD network, and operates in the half-duplex mode.

Mobile operation requires 11 to 16 VDC, but it can also be operated with a 120 VAC adapter when at a fixed location.

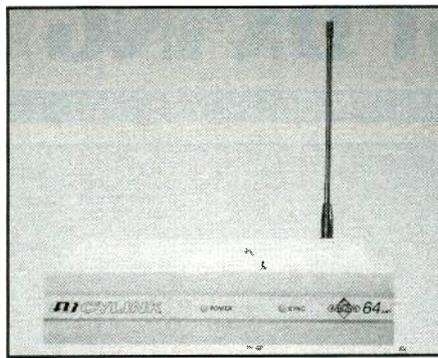
The MSRP of this device is \$495. It's from Cincinnati Microwave, Inc., One Microwave Plaza, Cincinnati, OH 45249. Phone: (513) 489-5400.

Another Approach

A wireless modem operating on a frequency in the license-free 902 to 928 MHz band is called the AirLink 64MP. It makes it possible to create nets consisting of point-to-multipoint links over urban suburban, and rural areas. This can quickly and painlessly either replace or extend multidrop wireline modems or licensed multiple addressed radio systems.

To get on-line with one of these, you just install the antennas, plug your host connection into the back of an AirLink modem at one site, then plug your terminal equipment into other multipoint units at the remote locations. You set a few switches and you're ready to go. After the network is set up, the network may be quickly modified, if needed, as it grows, or to accommodate changes in equipment locations or topography. And, there are no licenses to deal with, or air time fees to pay.

The AirLink offers synchronous and asynchronous operation at data rates up to 64 Kbps. Both half- and full-duplex interface protocols are supported. Its 72 code-frequency channel combinations allow links from multiple or unrelated AirLink networks close by.



The AirLink 64MP is a wireless digital modem operating in the license-free 902 MHz band.

Networks of AirLink 64MP's offer direct coverage of up to 10 miles using standard antennas, although longer hauls are possible with specialized custom antennas. The device interfaces with RS-232D connections, and are just slightly larger than a standard modem in size. They weigh 8.5 lbs. The MSRP in the US is \$2,900.

This comes from Cylink, 310 North Mary Avenue, Sunnyvale Ave., CA 94086. Phone: (408) 735-5800.

Cellphones Can Save Lives

In the USA, because of alcohol-related auto accidents, someone is killed every 23 minutes and 345,000 are injured every year. Your cellphone can be an important tool in the fight against drunk driving. If you suspect that someone is driving drunk, dial 9-1-1. It's a good way to help save lives and make our roads safe.

You can also call 9-1-1 to report other road emergencies. In 1993, American cellphone users made nearly a half-million calls each month to report highway and neighborhood emergencies. These included hazardous road conditions, accidents, and crimes in progress.

When you dial 9-1-1 on a cellphone to report an accident or suspected drunk driver, your call will be routed to the appropriate emergency response agency. Tell the 9-1-1 operator that you are calling from a cellular, and the name of the community from which you are calling. Be prepared to provide information on the nature of the problem. Depending upon the reason you are calling, you will be asked if there are personal injuries or a fire, information about vehicle(s) you are reporting, including specific location and direction of travel, make/model/color, license numbers. You will be expected to give your name and cellular number to the dispatcher.

We encourage and appreciate reader questions, comments, and news clippings related to cellulars, pagers, PCS, and other personal comms technologies. Information on new products, applications, and services in these fields is also invited. ■

RADIO BOOKS



PASSPORT TO WORLD BAND RADIO 1994 EDITION

Completely revised and updated. Stations, frequencies times are all at your fingertips. © 1993.

IBS-RDI94 \$17.95

SCANNER RADIO GUIDE

This book helps you get the most from your equipment. Includes info on scanning the President! © 1993.

HT-SRG \$14.95

MASTER FREQUENCY FILE

The largest database of frequencies from 25-25000 MHz. © 1993.

T-4131 \$29.95

1994 M STREET DIRECTORY

Complete guide to AM & FM stations. Includes formats, power, frequencies and much more. © 1993.

MST94 \$32.95

1994 WORLD RADIO TV HANDBOOK - Fully Revised

One of our most popular books for the SWL. Fully revised with all the latest call signs, frequencies and station information.

WRTV93 ... Softbound \$19.95

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Radios are tested and performance reports given. Also gives you a price versus performance evaluation. © 1994 over 500 pages.

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BROADCAST DX'ING

BY ROGER STERCKX, KVT1JH

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

AgriVoice: Station KRVN/880, of Lexington, Nebraska, runs a full 50 kW. Don't let all that power get you thinking that they put on airs there, for KRVN is down-to-earth, literally. Known as the *Rural Voice of Nebraska*, KRVN is owned by farmers and ranchers, and was put on the air more than 40 years ago to proudly serve Nebraska's agricultural community. KRVN's powerful signal blankets reaches out and brings radio to communities that have no local stations. It is also heard during the day in areas of Oklahoma, Missouri, Colorado, South Dakota, and Wyoming. At night, the signal is directional towards the west.

When a storm roared through the plains last summer and damaged KRVN's towers, there was a two-week period when KRVN was able to operate only during the day. Many KRVN listeners like to stay tuned in from the pre-dawn hours right through until after dark, so this was a most distressing period.

KRVN broadcasts market news and information, along with commodity reports. There is also a substantial mix of country music encompassing contemporary and traditional artists. The 4,200 farmers and ranchers who own the Nebraska Rural Radio Assn., which is KRVN's licensee, also own KNEB/960, which runs 1 kW from Scottsbluff.

We appreciate this item submitted by Sidney E. Miller, with the USAF, Texas.

Long Ranger Rides Again: The KNHN/1340 long-range via satellite experiment is now in progress. We mentioned it here previously when it was first proposed. KNHN, a 1 kW station in Kansas City, Kans., wanted to extend its listening area out from 25 miles. It proposed to the FCC the use of a satellite to beam its signal down to receivers located at synchronized 1340 kHz transmitters located at Amoret and Pittsburg (station KPHN), Kansas. This would extend the KNHN signal out to 200 miles.

This experiment is expected to last until late in September of 1995. At that time, the feasibility of the idea will be determined, and whether it will be allowed to continued.

Thanks to John M. Blair, Olathe, Kansas, for bringing us up to date on this.

On The Block: WLPM/1450, of Suffolk, Virginia, went into a foreclosure sale recently. In 1991, WLPM was purchased for \$300,000, and it had been operating as a gospel station directed at a black audience. The station has been on the air for more than 50 years, and has gone through several owners and formats during that period. In recent years, WLPM ("World's Largest Peanut Market") felt the crunch of a tight economy, finding that advertisers



Attractive billboard of KPCR/1530 and 94.1, "Cowpasture Radio," in Bowling Green, Mo. (Photo by Charles Byrd, KE0AH, Louisiana, Mo.)

did not rank gospel stations as high as those that reached out to the entire community.

This information from G. Stewart Tyler, Sr., WA4JWO, of Suffolk, Virginia.

New Station: Students at Herkimer County Community College, in Herkimer, New York, just got their FM station up and running. That's WVHC/91.5, running 500 watts. The station was started with the aid of a \$33,000 grant obtained via the Vocational and Technical Education Act. Some 30 students run the station, which has an operating budget of a bit less than \$10,000.

Programs are a freeform collection of all kinds of music, combined with news and talk shows. The school considers WVHC to be one of its instructional labs, and has guaranteed a staff spot to anyone who happens to be majoring in radio and television and desires to put in time at the station.

We appreciate this item from Gary K. Hamlin, N2OHO, Registered Monitor KNY2AAW, Utica, New York.

Both Sides Now: The FCC selected Motorola's C-Quam system as the US AM stereo transmitting standard. There had always been uncertainty among broadcasters as to which of the five available AM stereo systems was the one to go with. Although the FCC had authorized AM stereo in 1982, it never selected any particular system as the industry standard. The agency had apparently hoped that one of the five competing systems would rise to the top of the heap and no agency fed standard would be needed. Except, two systems

seemed to remain popular, and this was holding back the growth of AM stereo.

The FCC took a survey, and they claim that broadcasters, manufacturers, consumers, and organizations agreed with the agency that Motorola's system should be given the stamp of approval over the so-called Kahn System.

Stations that bet on the wrong horses and have been transmitting AM stereo by alternative (i.e. non-Motorola C-Quam) systems can continue until October 25th, this year. Stations using Kahn stereo exciters to implement the Kahn "POWER-side" of operation may continue to do so indefinitely, provided that the program material fed to both channels of the exciter is identical in content.

Off the record, our personal choice would have been for the Kahn system! Was better designed.

Silence Was Olden: Station WYNO, an AM'er in Nelsonville, Ohio, filed for a license renewal. The FCC claimed that the station has been dark since June 30, 1990, but had received permission for that status only until July 31, 1991. In September, the FCC claims it wrote to the licensee to ask why the station did not return to the air, and no reply was ever received. Additional inquiry letters were sent in April of 1992 and January of 1993, but no response came.

At this point the FCC does not appear to be rushing to renew the license of WYNO. It has asked the licensee to show up and explain the circumstances of the extended and unexplained silent period, the various

Pending FM Call Letter Changes

Now	Seeks	
KRBL	KTMN	Los Alamos, NM
WBFG	WXEF	Effingham, IL
WBKI	WGMI	Bremen, GA
WVFE	WYNF	Coral Cove, FL
WYBM	WEUP-FM	Minor Hill, TN

Changed FM Call Letters

New	Was	
KBXR	KYUA	Ashland, MO
KDLE	KOAS	Andover, KS
KHIP	KAEA	Felton, CA
KIGL	KJJG	Spencer, IA
KLMJ	KWGG	Hampton, IA
KLOH-FM	KAED	Slayton, MN
KMIA	KJAS	Jasper, TX
KMPQ-FM	KMIA	Rosenberg, TX
KNJJ-FM	KKCT	Sleepy Eye, MN
KOQO-FM	KQPW	Fresno, CA
KRSC-FM	KNGX	Claremore, OK
KTXY	KKFA	Jefferson City, MO
KUNA	KBZT-FM	La Quinta, CA
WASE-FM	WASE	Ft. Knox, KY
WBZK-FM	WDZK	Chester, SC
WSJX	WWSN	Louisville, KY
WEMG-FM	WTAS	Crete, IL
WEZO	WYNQ	Avon, NY
WGST-FM	WCHK-FM	Canton, GA
WKCM-FM	WLME	Hawesville, KY
WKRL-FM	WEZG	North Syracuse, NY
WLME	WKCM-FM	Channerton, IN
WMJR	WAYI-FM	Hudson Falls, NY
WOGT	WJRX	East Ridge, TN
WQBR	WDKK	Avis, PA
WROX-FM	WMYA	Cape Charles, VA
WRXS	WLGE	Ocean City, MD
WRZY	WTSN-FM	Somersworth, NH
WSRT	WGLL	Mercersburg, PA
WTKL	WMXZ	New Orleans, LA
WVXG	WOHO	Mt. Gilead, OH
WWBR	WWIV	Trussville, AL
WWSN-FM	WAEJ	Corydon, IN
WZLR	WDJK	Xenia, OH
WZZW	WAEZ-FM	Milton, WV

Pending AM Call Letter Changes

Now	Seeks	
KSSY	KKRV	Wenatchee, WA
WRHX	WASE	Ft. Knox, KY
WWGM	WMRO	Nashville, TN

Changed AM Call Letters

New	Was	
KBZF	KUNA	Indio, CA
KENZ	KVAR	San Antonio, TX
KJCE	KFGI	Rollingwood, TX
KKSJ	KEEN	An Jose, CA
KNRO	KHTE	Redding, CA
KSD-AM	KUSA	Saint Louis, MO
KTWK	KSSS	Colo.Springs, CO
KZXT	KKFH	Beaumont, TX
WDJX	WWSN	Louisville, KY
WEIO	WISM	Eau Claire, WI
WKRL	WNSS	No. Syracuse, NY
WWSM	WAHT	Annville, PA

Vhf-Uhf DIGEST

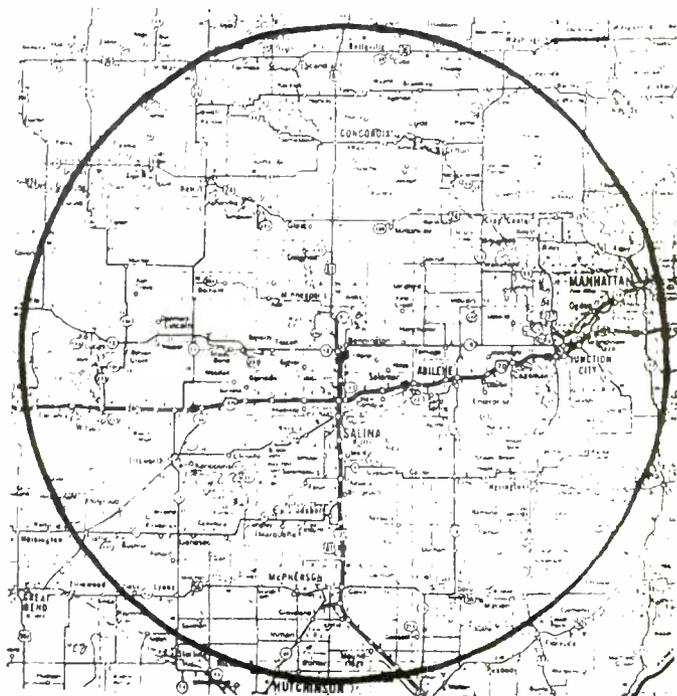
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America's Best Country

KILS

92.7 FM

COVERAGE MAP



KILS-FM
Salina, Ks

"VHF-UHF Digest" is an excellent membership publication for TV and FM DX enthusiasts. More information in this month's column.

New FM Call Letters Issued

KAEK	Eatonville, WA
KAEM	Austin, TX
KAKJ	Marianna, AR
KKCT	Bismark, ND
KOOP	Hornsby, TX
WAOH	Beech Mountain, NC
WAOI	Corning, NY
WAOJ	Vero Beach, FL
WAOM	Morehead, KY
WFLM	White City, FL
WLSQ-FM	Dyer, TN
WWAZ	Queensbury, NY

rule violations involved, and whether renewing the WYNO license would serve the public interest, need, and necessity.

Decisions, Decisions: WDTL is an AM'er in Cleveland, Miss. This station has been dark since June 4, 1990, with permission to remain silent until April 29, 1993. WDTL had been told that any additional extensions of silent time would need to be accompanied by detailed information regarding the steps being made to return the station to operation, and when that would happen.

WDTL wrote back in April of 1993 stat-

Applied for Permits to Construct New FM's

AK	Glenallen	90.5 MHz	3 kW
AL	Carrollton	89.3 MHz	
AL	Columbia	92.1 MHz	
AR	Bentonville	95.7 MHz	6 kW
AR	Homnoke	101.7 MHz	6 kW
CA	Garberville	103.7 MHz	8 kW
FL	DeFuniak Springs	91.3 MHz	300 watts
FL	Yankeetown	96.3 MHz	6 kW
GA	Sasser	107.7 MHz	
IA	Alta	97.5 MHz	
ID	Gooding	100.9 MHz	100 kW
IL	Colfax	92.9 MHz	6 kW
IL	Fairbury	107.7 MHz	6 kW
IL	St. Joseph	89.3 MHz	3 kW
LA	Thibodaux	90.5 MHz	200 watts
MN	Starbuck	97.3 MHz	50 kW
MO	Branson	89.7 MHz	250 kW
ND	Walhalla	106.7 MHz	33 kW
NE	Blair	97.3 MHz	25 kW
OK	Stillwater	98.1 MHz	6 kW
OR	Ashland	88.3 MHz	230 watts
OR	Brandon	96.5 MHz	7.5 kW
OR	Cannon Beach	96.5 MHz	7.5 kW
OR	Seaside	98.9 MHz	6 kW
OR	Sheffield	89.9 MHz	1 kW
SD	Lowry	100.7 MHz	100 kW
TX	Point Comfort	94.1 MHz	25 kW
WI	Three Lakes	93.7 MHz	50 kW
WV	Huntington	101. MHz	2.3 kW (WMGG Booster)
WY	Cheyenne	104.9 MHz	6 kW

Permits Issued to Construct New FM Stations

AK	Anchorage	90.3 MHz	100 kW
CA	Arnold	95.9 MHz	500 watts
CA	Fresno	99.3 MHz	3 kW
CA	Hanford	94.5 MHz	3 kW
CA	Walnut Creek	106.1 MHz	350 watts (KMEL Booster)
CO	Vail	90.1 MHz	1.5 kW
FL	Cedar Creek	89.5 MHz	3 kW
IL	Teutopolis	102.3	6 kW
IN	Seeleyville	95.9 MHz	6 kW
MT	Ft. Belknap Agency	88.1 MHz	90 kW
NC	Hickory	90.3 MHz	200 watts
ND	Bismark	97.5 MHz	100 kW
NJ	Manahawken	90.7 MHz	950 watts
NM	Hobbs	96.5 MHz	3 kW
NY	Bridgehampton	102.5 MHz	4.5 kW
SC	Belton	88.5 MHz	50 kW
SC	Branchville	105.1 MHz	6 kW
SD	Little Eagle	89.5 MHz	90 kW
TX	Coahoma	94.3 MHz	3 kW
TX	Lake Jackson	91.1 MHz	5 kW
VA	Monterey	91.9 MHz	200 watts
WA	Eatonville	104.9 MHz	6 kW
WA	Roy	89.7 MHz	1 kW

Cancelled

KOSE-FM	Wilson, AR	103.7 MHz	6 kW
KSDY-FM	Sidney, MT	95.1 MHz	
WYBJ	Greenville, MS	104.7 MHz	50 kW

ing that it had personnel and transmitter problems. Basically, WDTL claimed it needs a new transmitter but doesn't want to purchase one until it determines if it will be allotted a frequency in the new expanded band above 1605 kHz. The April WDTL letter did not provide any schedule for

returning to the air, nor did WDTL ever file a petition for a frequency assignment in the extended band. The deadline for petitions was June 30, 1993.

The FCC is now beginning to wonder what's up at WDTL, and if there is any ability or intent to put the station back in oper-

ation. A hearing was ordered to find out, to determine if there were rule violations, and if WDTL's present license is qualified to remain a licensee.

FM/TV DX Season On The Way: Here's a reminder that the FM and TV DX season is on the way. The Worldwide TV-FM DX Association publishes a fine membership magazine called *VHF-UHF Digest* devoted to FM and TV broadcast DX'ing. The yearly dues are \$20 (Canada \$22, in US funds; overseas \$32 in US funds). This group has been around a long time and their publication is very newsworthy, if this is your area of interest. Contact: Worldwide TV-FM DX Association, O.O. Box 514, Buffalo, NY 14205-0514. Tell them POP-COMM sent you!

Flying High: The World Radio Network is a new English language showcase of programming from the world's leading radio stations, most of which will be live and in FM audio quality. This consists of news, features, and information, direct from the nation where the service is produced and broadcast. The service can be heard by anyone with a small ASTRA receiving system in their home. It's on Channel 22 (the TV channel used by MTV Europe). Teletext page 222 is used for program skeds and background information on the stations featured.

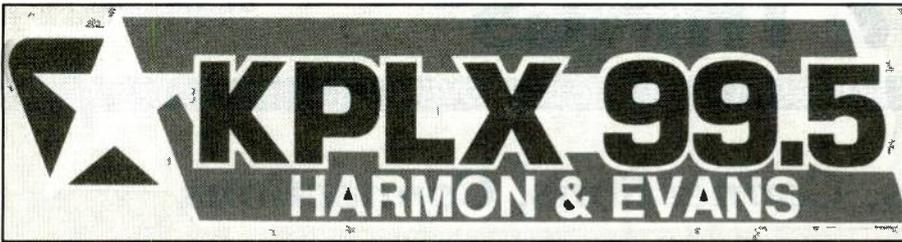
WRN broadcasts are on the ASTRA 1B satellite at 19 degrees East, Channel 11 (11.538 GHz, V&H polarization), audio subcarrier 7.74 MHz.

Their UK phone number in London is +44 (0)71-3044343, or via FAX on +44 (0)71-3044347.

Ghost-to-Ghost Signal?: An application to renew the license of station KARW (ex-KLGV), Longview, Texas, triggered an FCC hearing that had the FCC mentioning possible fines of "up to \$250,000" to Pine Tree Media, Inc., the KARW licensee, for willful and repeated violations of the Communications Act of 1934 and the FCC's Rules. Naturally, that would only happen in the event that KARW was unable to prove it didn't break any rules or violate the Communications Act.

The FCC claims that when KARW's renewal application was filed, it was done so on behalf of a person who had been dead for three months. Furthermore, the FCC said there wasn't any any evidence that the person who signed the application had the legal right to do so. In addition, the agency claims that it has failed in repeated attempts to learn about the current control status of the station, such as who is running it and how such control was obtained. No application to transfer control from Pine Tree Media to anyone else had ever been received by the FCC.

Looks like the FCC has a bone to pick with Pine Tree's late owner. They say these things will have to come out at a hearing, including whether Pine Tree had misrepresented facts in its renewal application, and



Wish we could show you the great KPLX/99.5 bumper sticker in its bright red, white, and blue. KPLX hails from Fort Worth, Tex. (Sent in by Cam LiDestri, Las Vegas, Nevada.)

Applied for Permit to Construct New AM Station

WI Altoona 1560 kHz 2.5/1 kW

Applied to Change AM Facilities

KLHT	Honolulu, HI	1040 kHz	Seeks 7.5 kW power.
WBUL	Ft. Knox, KY	1470 kHz	Seeks night operation.
WJLS	Beckley, WV	560 kHz	Seeks 4.5 kW/470 watts power.
WNVR	Vernon Hills, IL	1030 kHz	Seeks 4 kW daytime.
WTEM	Bethesda, MD	570 kHz	Seeks 4.7/3 kW.

Changed AM Facilities

KORC	Waldport, OR	850 kHz	Changed to 820 kHz, 1 kW/15 watts.
WWJZ	Mt. Holly, NJ	640 kHz	Reduced nights to 950 watts.
WWRC	Washington, DC	980 kHz	Increased to 50 kW.

Applied to Change to FM Facilities

KILO	Colorado Springs, CO	93.9 MHz	Seeks to move to 94.3 MHz
KKOL	Hampton, AR	107.1 MHz	Seeks to move to 106.5 MHz, 17.5 kW.
KVRH-FM	Salida, CO	92.1 MHz	Seeks move to 92.3 MHz, 13.5 kW.
WCQM	Park Falls, WI	98.3 MHz	Seeks move to 98.7 MHz.
WGFR	Glens Falls, NY	92.1 MHz	Seeks move to 104.7 MHz
WSTB	Streetsboro, OH	91.5 MHz	Seeks move to 88.9 MHz, 1 kW.
WQXE	Elizabethtown, KY	98.5 MHz	Seeks move to 98.3 MHz, 13.29 kW.
WZFI-FM	Centreville, MS	104.9 MHz	Seeks return to air from silent.

Changed Facilities

KBJJ	Marshall, MN	107.1 MHz	Changed to 107.5 MHz, 25 kW.
KENA-FM	Mena, AR	101.7 MHz	Changed to 102.1 MHz, 25.1 kW.
KQEX	Rohnerville, CA	100.3 MHz	Moved to Fortuna, CA.
WMXS	Clinton, NC	107.1 MHz	Changed to 107.3 MHz, 13 kW.
WPSU-FM	State College, PA	91.1 MHz	Changed to 91.5 MHz, 1.7 kW.

if there was an unauthorized transfer of station control. They want to know why Pine Tree never responded to their inquiries, if KARW's tower is painted and lit properly, if the transmitter power is correct, if EBS equipment is in use, if there are station logs, and many other questions.

The FCC didn't specify how it expects to obtain the facts from Pine Tree Media, since the FCC claims owner is no longer on the earth plane. Maybe a ouija board. It could also be difficult trying to convince him to pay any fines that might eventually be assessed.

A Fine Mess: A number of AM and FM broadcasters recently received NAL's in varying amounts for assorted reasons relating to violating rules, primarily concerning technical standards and operations. These stations, and the amounts are: KBAI, Morro Bay, Calif. (\$6,800); KWNK, Simi Valley, Calif. (\$9,200); WRJN, Racine, Wisc.

(\$950); KINE, Kingsville, Tex. (\$13,600); KBEN, Carrizo Springs, Tex. (\$5,450); KHER, Crystal City, Tex. (\$2,250); KVLTV, Victoria, Tex. (\$250); KIXS, Victoria, Tex. (\$125); KQTX, Corpus Christi, Tex. (\$5,000); KDOS, Laredo, Tex. (\$8,300); KRME, Hondo, Tex. (\$6,200); KBFM, Edinburg, Tex. (\$4,500); KKHQ, Odem, Tex. (\$20,000); KVOZ, Laredo, Tex. (\$8,700); KLAR, Laredo, Tex. (\$8,500); KPFT, Houston, Tex. (\$500); KOGT, Orange, Tex. (\$8,000); KQHN, Nederland, Tex. (\$2,400); KALO, Port Arthur, Tex. (\$1,000); and KLVI, Beaumont, Tex. (\$8,000).

Time to change the cart, take some meter readings, and sweep up in the control room. All in a day's work. Hope you tune in next month. Please keep sending us AM/FM bumper stickers, station photos, news clippings, format changes, questions, and comments. ■

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CIRCLE 77 ON READER SERVICE CARD

Connections, Connections, Connections

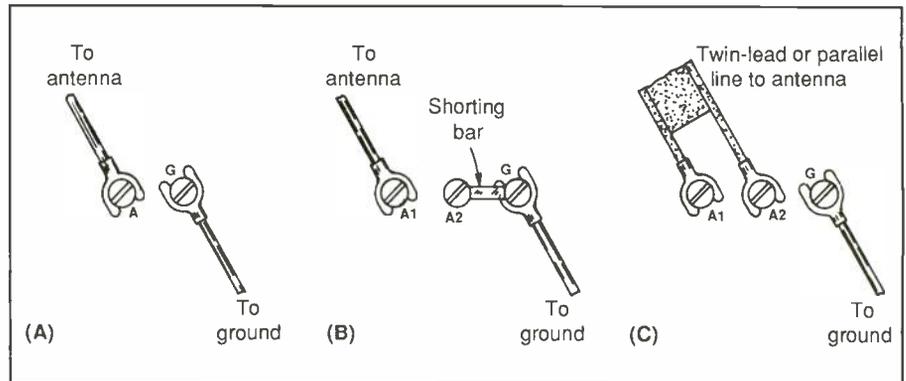
The best antenna on the planet won't do you a whole lot of good until it is connected to the receiver. Seems like a common sense sort of thing to say, but how does one do that trick? In this column we will take a look at the standard connection schemes forming antennas to radio receivers.

Types of Connections

If you go to a radio receiver dealer and turn the models on display around to look at the back panels, you will see three or four different forms of antenna connector: screw terminal, binding post, thumb screw and coaxial connector are the three most common types. Figure 1 shows two different forms of screw terminals. The single-ended form is shown in Fig. 1A. It has only two screws (one for antenna and one for ground). This type of connection can be used with random length wire antennas that use a single insulated download from the 25 to 100 foot wire antenna outside.

The alternate form of screw terminals, shown in Fig. 1B, has three terminals: A1 and A2 are balanced antenna terminals, and G is the ground. The single-ended connection of Fig. 1B is similar in use to the single-ended version of Fig. 1A. But, in order to make the antenna input circuit of the receiver single-ended, a shorting bar is connected from A2 to G. Some receivers come with a metal link for this connection, while in other cases you will have to supply a piece of #22 hook-up wire for the connection.

The balanced connection for the three-screw terminals is shown in Fig. 1C. The antenna transmission line is either 300 ohm twin-lead or parallel open line. The



Antenna screw-terminal connections: A) single-ended two-screw; B) single-ended three-screw; and C) three-screw balanced.

two conductors of the transmission line are connected to A1 and A2, while a ground wire is connected to G.

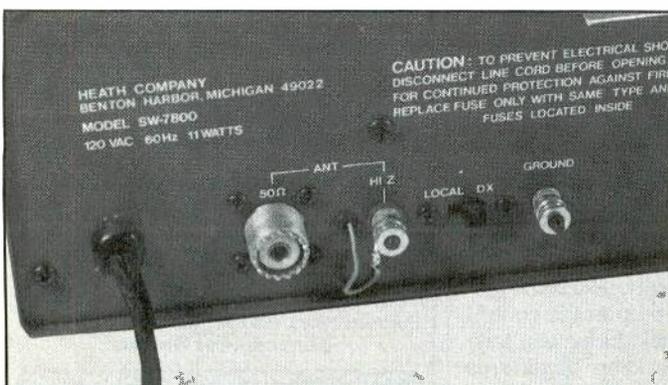
If you want to use a coaxial cable transmission line to either form of screw terminals, strip back a couple inches of insulator and shield. Connect the center conductor to "A" in Fig. 1A, or "A1" in Fig. 1B. The shield of the coaxial cable in either case is connected to "G" along with the ground wire.

Figure 2 shows the rear panel to a shortwave receiver. There are two forms of antenna connection. The 50 ohm antenna input is a standard SO-239 coaxial connector, which mates with the standard PL-259 "UHF" coaxial connector. The other a high impedance ("Hi-Z") terminal, is of the thumb screw type. A wire from inside the receiver connects the terminal to the antenna input circuitry (although in many receivers the wire is internal). The ground connection is also a thumb screw type.

A variation on this theme is the binding post form (not shown). These terminals can accept either a single stripped wire or a banana plug. While only a few banana plug receivers are available, it is nonetheless still a viable method for connecting single-wire downloads from random length wire antennas. Figure 3 shows the use of a standard banana plug to connect a single download to the coaxial connector on the receiver. The standard banana plug conveniently mates with the center conductor on the SO-239 connector on the receiver. The impedance doesn't match well, but on a random length antenna impedance matching is a joke anyway.

Figure 4 shows how a regular coaxial connector is mated to the receiver. The 50 ohm antenna connector is an SO-239 "UHF" connector, and its mate is the PL-259 connector shown in Fig. 4.

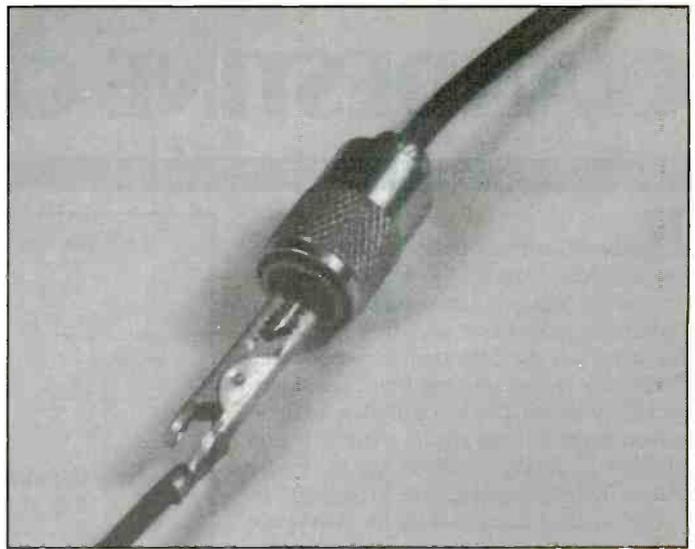
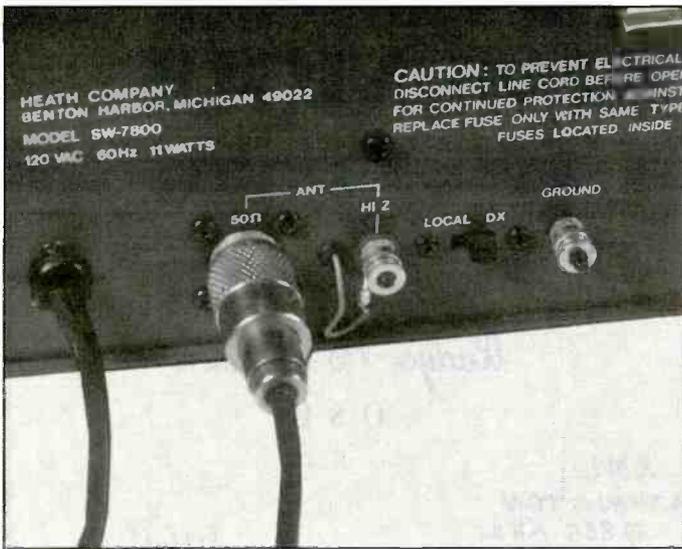
Figure 5 shows a jury-rigged lash-up (called a "kluge connection") for temporary



Coaxial (50 ohm) and single-lead (HI-Z) antenna connectors on rear of shortwave receiver.



Connecting a banana plug to SO-239 coaxial connector.



Standard PL-259 coaxial connector mated with SO-239.

A temporary measure....at best.

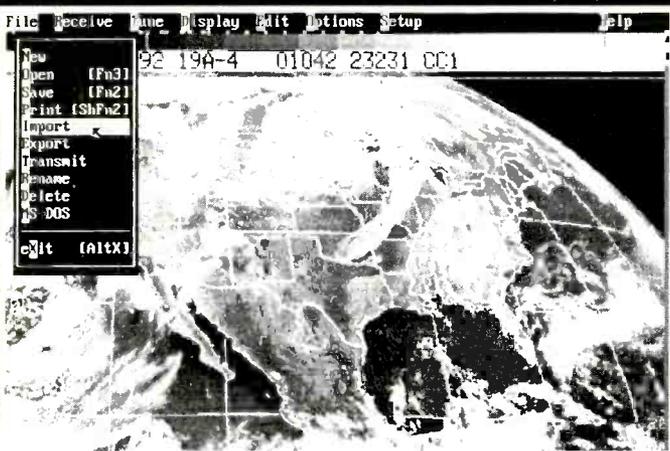
(left me re-emphasize that word: temporary) connections for test purposes, temporary listening, or emergency use. It treats a dipole or vertical, coaxial cable fed, antenna as if it were a random length wire. I used this type of connection on the workbench where I developed a series of VLF receivers and antennas for solar event and WWVB (60 KHz) monitoring. Before my

VLF loop was completed, I used my multi-band trap ham radio vertical for an antenna (the reason is that the feedline was convenient to the workbench). But that antenna has a matching unit and traps that are resonant, so performed poorly when used coaxially. But when used as a random length wire, sticking 27 feet straight up in the air, the signal levels from WWVB were

decent. Don't do it for long, or as a permanent measure.

In general, coaxial cable transmission lines are superior to other forms, at least for most applications. The coax type cable is shielded against noise, and helps preserve the antenna pattern. While the single-wire downlead will work for many cases, the coaxial line usually performs better. ■

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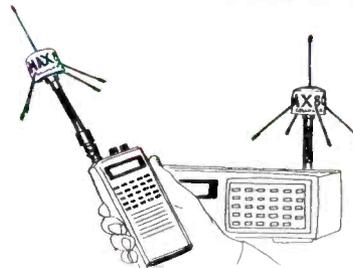
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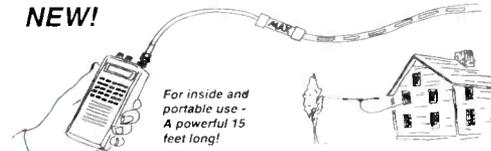
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CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

Radio Miami International, which brokers time on some of the US commercial shortwave stations for several semi-clandestine broadcasters, says that Radio 16 Desanm has discontinued its broadcasts. Radio 16 Desanm was the Creole language program produced by the Haitian government in exile, from a studio in the Haitian Embassy in Washington. Radio Miami International says the broadcast has been "a major success story for shortwave radio" since 16 Desanm was the only way the exiled Aristide government could maintain a direct contact with the people of Haiti. We have to wonder whether the close-down didn't happen too soon, since Aristide did not return to power in Haiti on the scheduled date and, as of this writing, has still not been able to do so.

As far as we know, the two other Haitian-related programs on shortwave continue to broadcast, both of them over Radio For Peace International. Focus on Haiti airs on Fridays at 1830 and Saturdays at 2100 while Radio Neg Mawon broadcasts segments at 2000 and 2030 on Saturdays. RFPI uses 7375, 15030 and 21465USB during those hours.

The Castro watch seems to be intensifying as experts and exiles anticipate the beginning of the end of his reign at almost any time now. Meantime, the line-up of anti-Castro programming brokered by Radio Miami International continues to see many changes.

Here's a look at the current list: Cuba 21 airs Mondays at 0000 on 7355 over WRNO. La Voz de Fundacion takes a big chunk of the WHRI schedule, airing Tuesdays through Saturdays at 0000 to 0500 on 9495 and also from 1000 to 1300 Mondays through Fridays on 9850.

Other broadcasts are Movimiento Nueva Generacion Cubana via WRNO, 7355 Mondays at 0030 to 0100; La Voz de la Democracia Cristiana at 0100-0200 Mondays on WRNO-7355; La Voz de la Unidad Cubana Tuesdays through Saturdays at 0200-0300 on 7355; long-running La Voz de Alpha 66 airs Mondays through Fridays at 0800-0900 on 7355 and Monday to Friday 2300 to 0000 on WHRI-9495.

Also look for La Voz Ex-pressos Politicos Cubanos Sundays at 2330-0000 on WRNO-7355. This one sounds as though it might be connected to the station which operated briefly on the 7 MHz band a couple of years ago until it was tracked down and "busted" by the FCC.

The other Cuban clandestines operate their own transmitters from locations in Central America and have been a part of the Cuban radio war for some years now.

Radio 16 Desanm

Q S L

Broadcast: *RMI*
 City: *WASHINGTON*
 Frequency: *17835 KHz*
 Power: *100kw*
 Time, Date: *2100 UTC, 06/06/1992*

RIGD
K.

CREOLE
RADIO 16 DESANM



JOUK MAYI NI

We are glad to confirm your signal report as well as the indications given which correspond effectively with our broadcasting

Radio 16 Desanm, the voice of the Haitian government-in-exile is said to have ceased broadcasting.

Radio Caiman is on 9965 between 1200 and 1530, 1700 to 1800 and 2300 to 0200. At one time it did not have a segmented schedule. Maybe they will add operating hours as things heat up. La Voz del CID currently uses 6305 from 0420 to 1200, 7340 from 1200 to 0415, 9942 at 1200 to 0415, 11645 from 1100 to 2300 and 11942v at 0420 to 1200.

WWCR is carrying a program called "Voice of Victory" in Persian (Farsi) at 1630 Sundays on 15685. Any Farsi speakers out there who can tune in and then tell us what this is all about?

Angolan clandestine Voice of the Resistance of the Black Cockerel may have changed its 31 meter band frequency to 9710 (from 9700). Some monitors have noted it on this new spot at around 0600. The 25 meter band frequency of 11830 appears to have shifted up to 11837, noted in Africa around 1200.

Korean clandestine Echo of Hope has altered its schedule. Broadcasts are now aired at 2000-2100 on 3985; 2300-0100 on 6348; 0300-0700 also on 6348; 0800-1200 on 3985 and 1400 to 1700, also on 3985. Years back this station used 6348 during the 0800-1200 segment and,

as a result, was often heard in North America.

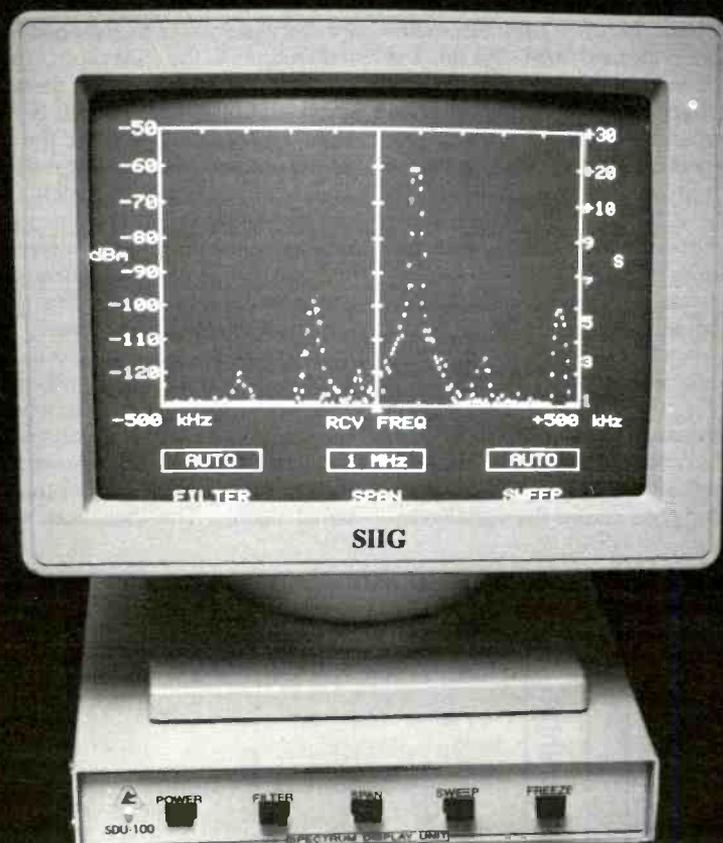
Frequency 3985, with its attendant interference amateur stations, is much tougher to snare. In any event, this station has never confirmed a report, possibly because no one has ever uncovered an address. The station is an operation of the South Korean government, aimed at North Korea.

The Rwandan clandestine Radio Muhubura continues to be active on 6400, running to a weekday sign-off time of 2005 and 2100 on weekends. You won't hear them on that schedule, at least not in North America. A few lucky clandestine hunters have found them at the other end of the schedule, when they sign on around 0330 (to close around 0505). Signals tend to be very weak, however, and it takes very favorable conditions coupled with some hard digging.

That covers things for this time. We do appreciate it when you can send us any logs of clandestine broadcasts you hear, as well as background information on stations or the groups which run them. QSL news is also welcome, as are copies of clandestine station QSLs or other literature. Thanks for your participation.

Until next month, good hunting! ■

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CIRCLE 65 ON READER SERVICE CARD

The Future Is Spread Spectrum

You may have heard of a modulation technique called spread spectrum. Spread spectrum modulation takes the goal of conventional (AM, SSB, etc.) methods of modulation—packing as much of the transmitter's energy as possible into a narrow frequency bandwidth—and turns it on its head. Just like its name implies, spread spectrum modulation takes the transmitter's energy and spreads it out over as wide a frequency range as possible. This sounds inefficient, but spread spectrum has some surprising advantages over conventional modes. For one thing, spread spectrum is surprisingly resistant to interference. Two signals can be "spread" over the same frequency range with little or no interference to each other. For another, it's possible to demodulate spread spectrum signals that are below the noise level!

Spread spectrum will explode in the coming decade, particularly on the VHF and UHF bands. If you plan to be an active monitor ten years from now, you need to understand what's going on with spread spectrum modulation.

It's Equal Over A Wide Bandwidth

Figure 1 shows a spectral display for a signal employing conventional modulation. There is a center frequency at which the signal strength (also known as amplitude) is at maximum. The signal strength rapidly falls off to zero within a few kHz or less on both sides of the center frequency. As you can see, the difference between the maximum and minimum signal amplitudes is very great and the total bandwidth is usually only a few kHz for voice signals and as little as 100 Hz for some CW signals. Fre-

quency modulation (FM) signals have a spectral display like that in Figure 1, by the way. The frequency of an FM signal is varied above and below the center frequency in response to the modulating signal applied to it, but the signal itself is not spread out across a wide bandwidth. Instead, a signal like that in Figure 1 is swung back and forth across a wide bandwidth as it is frequency modulated. When no modulation is applied, the FM signal will return to the center frequency.

Now take a look at Figure 2. The maximum amplitude of the spectral display is much less than that in Figure 1, but the signal is spread at a relatively constant level above and below the center frequency. It's almost as if we took the spectral display of Figure 1 and squashed it flat!

How is a signal spread like that in Figure 2? Signals are modulated by a "spreading code" which causes the signal bandwidth to be spread out according to certain parameters. Perhaps the most common method is frequency hopping. In this system, the center frequency of the signal is rapidly switched between several discrete channels in what seems to be a random fashion. The time the signal spends on any channel is very short, typically only a few milliseconds or less. The result of this random, rapid switching between channels is that the spectral display of the signal resembles Figure 2. Frequency hopping is especially popular with voice modes. Another popular method is direct sequence, in which the phase of a signal is varied by the spreading code. Varying the phase of a signal will cause its frequency to be rapidly switched, producing a spectral display like Figure 2. Another method is time hopping, in which the spreading code causes the signal's car-

rier to be "pulsed" on and off over a wide frequency range. Pulsed FM systems use pulses of a fixed length, and frequency modulate such pulses at their beginning, causing their bandwidth to spread. Finally, another form of spread spectrum involves rapidly sweeping the signal over a wide frequency range. This last method is mainly used only for radar and navigation systems.

It's not unusual for spread spectrum signals to use a combination of spreading techniques, such as frequency hopping and time hopping in combination. This method is widely used and is known as time division multiple access (TDMA).

Demodulation? No, Despreading!

A big part of spread spectrum's high immunity to interference is because of the spreading code used to spread the signal. A spread spectrum receiver tries to match (or correlate) the spreading code of signals it intercepts to the spreading code it is programmed to recognize. If there is not a good match (or correlation) between the spreading code received and the code used by the receiver, the receiver will ignore the signal. If there is a good match, the receiver will "despread" the received signal and process it like an ordinary signal.

Most spread spectrum transmissions are preceded by a brief preamble. Preambles are short digital signals, usually measured in milliseconds, that alert the receiver that a spread spectrum signal is about to follow. This lets the receiver synchronize its spreading code with the transmitter.

Spread spectrum signals might seem like they would be much weaker than conventional signals. The maximum strength of

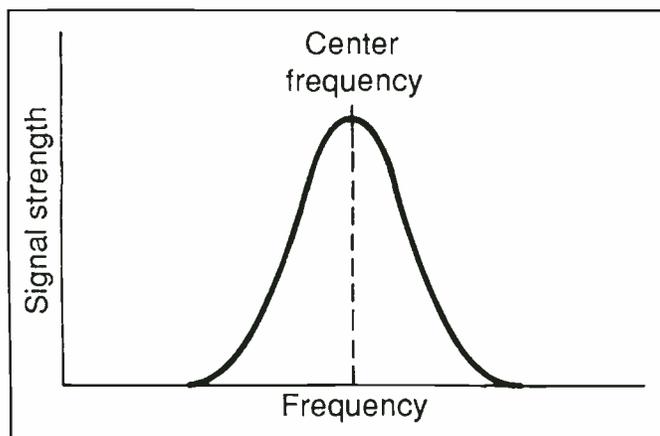


Figure 1.

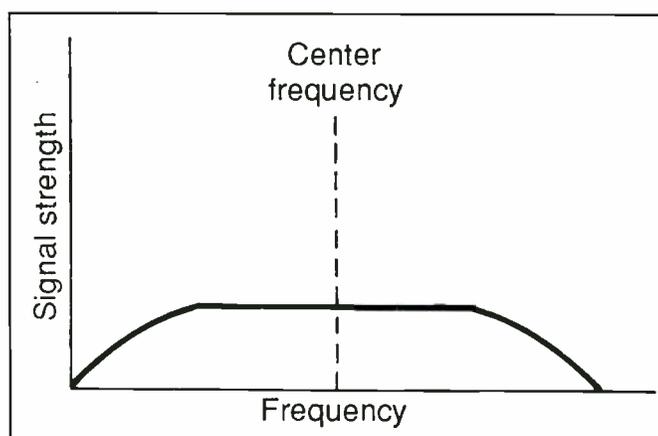


Figure 2.

Tap into secret Shortwave Signals

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



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, Tanjug 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 MFJ-1024 MFJ-1312, \$12.95.

Indoor Active Antenna MFJ-1020A \$79.95

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 Tune, Band, Gain, On/Off/Bypass Controls. Detachable telescoping whip. 5x2x6 in. Use 9 volt battery, 9-18 VDC or 110 VAC with MFJ-1312, \$12.95.

Compact Active Antenna MFJ-1022 \$39.95

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

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 1/8x1 1/4x4 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 your Epson compatible printer.

Printer cable, MFJ-5412, \$9.95.

MFJ MessageSaver™

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

High Performance Modem

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

with weak signals buried in noise.

Easy to use, tune and read

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

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

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

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

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

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.

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

MFJ-1214PC \$149.95

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 Super Hi-Q MFJ-1782 Loop™ is a \$219.95 professional quality remotely tuned 10-30 MHz high-Q antenna.

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

High-Q Passive Preselector

MFJ-956 \$39.95

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

Mobile Scanner Ant.

Cellular MFJ-1824BB/BM \$19.95 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.

MFJ Antenna Matcher

MFJ-959B \$89.95

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

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

High-Gain Preselector

MFJ-1045B \$69.95

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

Dual Tunable Audio Filter

MFJ-752C \$99.95

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

Easy Up Antennas Book

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

MFJ-107B \$9.95

MFJ-108B \$19.95 MFJ-105B \$19.95

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 \$59.95 MFJ-1702B \$21.95

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 \$59.95 kit MFJ-8100W \$59.95 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

March—1994

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
2325	VL8T, Australia	1100	Pidgin	6010	R. Havana Cuba	0400	
3200	R. 9 de Abril, Bolivia	0100	SS	6015	R. Austria Int'l, via Canada	0530	
3220	HCJB, Ecuador	0400	SS	6025	R. Nigeria, Enugu	2230	
3221	R. Kara, Togo	0530	FF	6050	HCJB, Ecuador	0700	pp
3250	R. Luz y Vida, Honduras	0200		6060	R. Nacional, Argentina	1000	SS
3255	BBC Lesotho Relay	0300		6070	CRFB/CFRX, Canada	0000	
3270	Namibia Bc Corp.	2345		6075	Deutsche Welle, Germany	0030	
3290	Namibia Bc Corp.	0300		6080	R. Australia	0830	
3300	R. Cultural, Guatemala	0200		6100	Deutsche Welle, Germany	0400	GG
3316	SLBS, Sierra Leone	0600		6117	La Voz del Llano, Colombia	0900	
3320	Radio 2000, S. Africa	0100		6120	R. Japan	1130	via Canada
3326	R. Nigeria	0500		6135	Swiss Radio Int'l	0230	
3340	R. Altura, Peru	1030	SS	6150	Caracol Neiva, Colombia	0200	SS
3365	R. Rebelde, Cuba	0300	SS	6165	R. Netherlands via Bonaire	0400	
3366	GBC, Ghana	0600		6180	R. Nac. Amazonia, Brazil	2300	PP
3375	R. Nacional, Brazil	0930	PP	6185	R. Educacion, Mexico	1000	
3375	R. Western Highlands, P/New Guinea	1200	Pidgin	6205	R. Quisqueya, Dom. Rep.	0100	SS
3395	Trans World R., Swaziland	0425	s/on	6220	R. Bulgaria	0430	s/on
3925	R. Tanpa, Japan	0900	JJ	6245	Vatican Radio	0640	
3985	Swiss R. Int'l	0445	FF	6305	La Voz del CID (anti-Castro)	0700	S
4472	R. Santa Ana, Bolivia	0100	SS	6724	R. Satellite, Peru	0100	SS
4485	Krasnoyarsk, Russia	0100	RR	6900	Turkish Meterological Radio	0600	TT
4681	Paititi Radiodifusion, Bolivia	0130	SS	7120	R. Oman	2130	S/off, AA
4753	RRI, Ujang Pandang, Indonesia	1100	II	7125	RTV Guinea	0700	FF
4754	Educadora Rural, Brazil	0230	PP	7150	R. Vilnius, Lithuania	0000	
4760	ELWA, Liberia	0555	s/on	7185	ORTS, Senegal	0100	s/off, vern.
4765	RTVC, Congo	0355	s/on, FF	7200	R. Omdurman, Sudan	0257	S/on, AA
4770	R. Nigeria, Kaduna	0500		7215	R. Norway	0500	NN
4775	R. Amarela, Brazil	0900	PP	7230	AWR, Italy	0930	
4779	R. Centinela del Sur, Ecuador	0230	SS	7240	R. Australia	1100	
4790	R. Atlantida, Peru	0200	SS	7240	R. Ukraine Int'l	0100	
4800	R. Lesotho	0400		7245	R. Nacional, Angola	0545	PP
4805	Rdf. Amazonas, Brazil	1000	PP	7250	Vatican Radio	0600//6245	
4815	R. Burkina, Burkina Faso	0530	FF	7255	V of Nigeria	0500	
4820	La Voz Evangelica, Honduras	0400		7265	Sudwestfunk, Germany	2200	GG
4830	R. Tachira, Venezuela	0200	SS	7275	ELBC, Liberia	0705	s/on
4832	R. Reloj, Costa Rica	0200	SS	7285	RT Malienne, Mali	0700	FF
4835	R. Tezulutan, Guatemala	0100	SS	7295	RTV Malaysia	1030	
4845	Caracol Bucaramanga, Colombia	0100	SS	7335	R. Moscow	0300	
4865	La Voz del Cinaruco, Colombia	0100	SS	7340	La Voz del CID, anti-Castro	0300	SS
4870	ORTB, Benin	0500	FF	7345	R. Prague, Czech Rep.	0300	
4875	R. Roraima, Brazil	1000	PP	7375	Radio For Peace Int'l, Costa Rica	0900	
4885	R. Clube do Para, Brazil	0100	PP	7475	RTT Tunisienne, Tunisia	0500	AA
4890	NBC, Papua New Guinea	1100	EE/pidgin	7670	R. Bulgaria	0330	Bulgarian
4890	RFI Relay, Gabon	0355	s/on, FF	9022	VOIRI, Iran	0030	EE
4895	LV del Rio Aruca, Colombia	0130	SS	9165	R. Omdurman, Sudan	0255	sign on, AA
4905	R. Anhanguera, Brazil	0000	PP	9400	R. Centras, Lithuania	1450	s/on (LSB)
4920	ABC Brisbane, Australia	1200		9420	Voice of Greece	0130	GG/EE
4930	R. Barahona Int'l, Dom. Rep.	1000	SS	9445	Voice of Turkey	2330	TT
4940	R. Ukraine	0100	Ukrainian	9465	WMLK, Pennsylvania	0400	
4960	R. Cima Cien, Dominican Rep.	0030	SS	9475	R. Cairo, Egypt	0200	
4965	R. Santa Fe, Colombia	0500	SS	9480	TWR, Monaco	0730	
4970	R. Rumbos, Venezuela	0300	SS	9495	Radio France Int'l	2030	FF
4980	Ecos del Torbes, Venezuela	0300	SS	9505	R. Record, Brazil	2300	PP
4985	R. Brazil Central	0100	PP	9510	R. Havana Cuba	0600	
4996	R. Andina, Peru	1030	SS	9525	R. Marti, USA	2300	SS
5010	R. Cameroon, Garoua	0500		9535	Swiss Radio Int'l	0700	
5015	R. Brazil Tropical, Brazil	0700	PP	9540	R. Nacional Espana, Spain	0100	
5020	Solomon Is. Bc. Corp.	0730		9550	R. Moscow	2200	
5020	LV du Sahel, Niger	0500	FF	9560	R. Jordan	1500	
5025	R. Rebelde, Cuba	0100	SS	9570	R. Portugal	0230	
5040	R. Nahuala, Guatemala	0100	SS	9570	R. Romania Int'l	0230	
5045	R. Cultura do Para	0800	PP	9575	Radio Medi Un, Morocco	0730	FF
5047	RTV Togolaise	0524	s/on, FF	9575	RAI, Italy	0100	
5055	TIFC, Costa Rica	0300		9580	R. Tirana, Albania	0230	
5060	R. Nac. Progreso, Ecuador	0400	s/off, SS	9580	R. Yugoslavia	0030	
5075	Caracol Bogota, Colombia	0200	SS	9590	R. Netherlands via Bonaire	0400	
5810	WWCR, Tennessee	0300		9610	Rdf Rwandaise, Rwanda	0258	s/on, FF
5882	Vatican Radio	0030	Italian	9615	VOIRI, Iran	1630	Farsi
5920	R. Zagreb, Croatia	0100		9615	KNLS, Alaska	0800	
5930	R. Slovakia Int'l	0100		9640	Ecos del Torbes, Venezuela	1100	SS
5960	R. Japan, via Canada	0100		9645	R. Bandeirantes, Brazil	0000	PP
5975	BBC via Antigua	0100		9650	Swiss Radio Int'l	0000	
5995	R. Canada Int'l	2200		9655	R. Austria Int'l	0130	
				9675	V of Indonesia	1200	

Freq.	Station/Country	UTC	Notes	Freq.	Station/Country	UTC	Notes
9675	R. Norway Int'l	0000	EE Sun	13660	R. Havana Cuba	0200	USB, EE
9690	China Radio Int'l, via Spain	0300		13675	UAE Radio, Dubai	1630	
9695	R. Sweden	0200		13685	Swiss R. Int'l	0700	
9700	R. New Zealand	1030		13710	R. Vedo, Russia	1430	RR
9705	R. Portugal	0230		13730	R. Austria Int'l	1130	
9725	AWR, Costa Rica	1100		13750	AWR Latin America, Costa Rica	1200	s/on
9735	R. Nac. Paraguay	0100	SS	13755	R. Australia	1200	
9740	BBC via Singapore	1400		13785	R. Pyongyang, N. Korea	1500	
9745	HCJB, Ecuador	0730		13830	Croatian Radio	2100	
9750	R. Korea, So. Korea	1200		15030	Radio For Peace Int'l, Costa Rica	2000	
9755	R. Monte Carlo via Canada	0300	s/on	15090	Vatican Radio	2245	s/on
9770	R. Australia	1500		15095	R. Damascus, Syria	2100	
9770	UAE Radio, Abu Dhabi	2000	AA	15100	FEBC, Philippines	1400	EE, others
9785	KTWR, Guam	1330	CC	15110	REE, Spain, via Costa Rica	1900	
9800	R. France Int'l, via Fr. Guiana	0330	FF	15120	All India Radio	1330	
9810	FEBA, Seychelles	1630	Amharic	15140	R. Veritas Asia, Philippines	1500	
9815	Radio Havana Cuba	0200	USB	15140	R. Nacional, Chile	0100	SS
9825	R. Kiribati	0555	s/on	15175	FEBA, Seychelles	1100	AA
9830	KHBN, Palau	1400		15185	R. Finland Int'l	2300	
9840	R. Kuwait	2100	AA	15195	R. Ukraine	0030	
9860	R. Ukraine Int'l	0500	Ukrainian	15210	China Radio Int'l	1200	
9870	BSKSA, Saudi Arabia	2030	AA	15220	R. Moldova Int'l	2030	SS
9880	R. Austria Int'l	0130		15240	R. Sweden	1230	
9885	Swiss Radio Int'l	0200		15240	R. Finland Int'l	1530	
9930	R. Vlanderen Int'l, Belgium	0030		15260	VOIRI, Iran	0030	
9955	R. Miami Int'l	due on		15265	Radiobras, Brazil	1200	
9977	R. Pyongyang, N. Korea	1100		15295	R. Tashkent, Uzbekistan	1200	
10030	R. Cairo, Egypt	2130	AA	15305	UAE Radio, Abu Dhabi	2340	
11100	CPBS, China	1530	CC	15310	BBC via Cyprus	1500	
11402	INBS, Iceland	2300	Icelandic	15325	FEBA, Seychelles	0400	AA
11550	RTV Tunisienne, Tunisia	1600	AA	15330	R. Bulgaria	0000	
11570	R. Pakistan	1600		15345	RAE, Argentina	0200	SS
11600	R. Cairo, Egypt	0200		15345	RTV Marocaine, Morocco	1700	AA
11620	All India Radio	2000		15375	Spanish Ntl Radio	1900	
11625	Vatican Radio	0630		15410	VOA, Morocco relay	2200	lose
11645	Voice of Greece	1600	Greek	15415	Libyan Jamahiriya Broadcasting	1500	AA
11655	Trans World Radio via Russia	1230	s/on, VV	15425	ABC, Perth, Australia	0400	
11680	China Radio Int'l, via Fr. Guiana	0400		15435	R. Jamahiriya, Libya	2000	AA
11705	R. Sweden	2330		15445	Radiobras, Brazil	1245	E
11705	R. Transamerica, Brazil	1000	PP	15470	R. Tashkent, Uzbekistan	1200	
11705	R. Moscow	1300		15475	Africa Number One, Gabon	2100	FF
11710	UAE Radio, Abu Dhabi	2330	AA	15505	Swiss Radio Int'l	1500	
11720	R. Bulgaria	0400		15515	R. Portugal	1900	
11725	R. Korea, S. Korea	1000	SS	15550	R. Pakistan	1600	
11730	BSKSA, Saudi Arabia	2230	AA	15575	R. Korea, S. Korea	0030	
11735	HCJB, Ecuador	0600	RR	15635	V of Greece	1230	
11745	Channel Africa, S. Africa	0200		15640	Kol Israel	1400	
11750	R. Vilnius, Lithuania	2300		15650	Voice of Greece	1830	
11755	R. Finland Int'l	0130		15675	R. Copan Int'l, Honduras	2300	SS
11760	R. Japan	0800		15710	CPBS, China	1400	CC
11795	UAE Radio, Dubai	1600		17490	HCJB, Ecuador	1000	
11795	Deutsche Welle via Rwanda	0200	GG	17515	R. Vlanderen Int'l, Belgium	1600	
11800	RAI, Italy	0100		17525	V of Greece	1830	
11810	Iraqi Radio	2300	EE	17575	Kol Israel	1700	
11810	Deutsche Welle via Brazil	2330	SS	17575	R. France Int'l	1230	EE
11820	R. Sweden	0100		17595	R. Cairo, Egypt	1200	
11825	R. Tirana, Albania	2200		17630	Africa No. One, Gabon	1430	FF
11827	R. Tahiti	0300	F/TT	17655	R. Netherlands via Bonaire	1730	s/on
11835	HCJB, Ecuador	0700		17670	Swiss Radio Int'l	1500	
11840	R. Japan	1100	JJ	17690	R. Ukraine Int'l	0100	
11850	China Radio Int'l	1300		17705	R. Pakistan	0227	s/on
11865	R. Norway Int'l	0300		17705	R. Havana Cuba	2130	SS
11870	AWR, Costa Rica	1400		17730	Swiss R. Int'l, via Brazil	0000	
11880	R. Galaxy, Russia	2100		17740	R. Yugoslavia	1200	
11885	UAE Radio, Abu Dhabi	2330		17745	R. Algiers, Algeria	1930	
11890	R. Oman	2100	AA	17750	Voice of Free China, Taiwan	2200	via WYFR
11905	VOA Thailand relay	1130	s/on	17760	R. Havana Cuba	2130	
11910	R. Sweden	2230		17790	HCJB, Ecuador	2130	
11925	V of Mediterranean, Malta	1400		17795	R. Australia	2240	
11940	R. Jordan	0400	AA	17815	R. Tashkent, Uzbekistan	1200	
11970	KNLS via Russia	1200	s/on, CC, wknds	17845	R. Exterior de Espana, Spain	1500	SS
				17870	R. Sweden	1500	
11980	KSDA, Guam	1400	CC	17875	R. Canada Int'l	2030	
11985	UAE Radio, Dubai	2100	AA	17880	R. Finland Int'l	1300	
11990	R. Kuwait	1500	AA	17890	Spanish National R. via C. Rica	2130	SS
12015	R. Ulan Bator, Mongolia	1200		17900	R. Portugal	2000	PP
12040	R. Vilnius, Lithuania	2300		17940	R. Iraq Int'l	2330	
12050	R. Cairo, Egypt	0300	AA	21455	R. Canada Int'l	1345	
12080	VOA Botswana	0500		21500	BSKSA, Saudi Arabia	1600	AA
12085	R. Damascus, Syria	2030		21510	R. Liberty, (RFE/RL) Portugal	1330	
13605	R. Australia, Darwin	1130		21515	R. Portugal	1500	PP
13605	Capitol Radio via UAE Abu Dhabi	2230		21550	R. Finland Int'l	1430	
13615	R. Bangladesh	1230		21605	R. Yugoslavia	1230	
13620	R. Kuwait	2000		21625	Radio Sweden	1330	
13635	R. Vlanderen Int'l	2330		21645	R. France Int'l, via Fr. Guiana	1400	
13635	Swiss Radio Int'l	2130		21660	BBC, Ascension Island	1330	
13650	R. Pyongyang, N. Korea	2300		21675	R. Kuwait	1500	AA
				21720	V of Free China, Taiwan	2200	via WYFR

the signal shown in Figure 1 is certainly greater than the maximum strength of the spread spectrum signal in Figure 2. But the important thing is how much total power is contained in the bandwidth of a signal. While the maximum amplitude of the signal in Figure 2 is less than that shown in Figure 1, there's a lot of total signal energy spread over a wider bandwidth. In fact, the total signal energy shown in the spectral display in Figure 2 is greater than in the spectral display shown in Figure 1. The strength of a spread spectrum signal is low at any given point in its bandwidth, but the combined strength is actually quite large.

Interference Rejection

Two or more spread spectrum signals can share the same frequency space much more readily than two or more FM, AM, or SSB signals. As we saw in the previous section, a spread spectrum receiver will ignore signals not matching its programmed spreading code. Even if two or more spread spectrum signals are sharing the same frequency space, the odds of the spreading codes for the two signals being identical at the same precise instant are extremely low. If the spreading codes do happen to coincide and two stations try to use the same frequency space simultaneously, the result is a noise "burst" for that instant when the spreading codes overlap. Thus, the major

clue that a spread spectrum station is sharing its frequency bandwidth with another spread spectrum station is an increase in the background noise of the signal.

One big user of spread spectrum technologies has been the U.S. military forces. Since spread spectrum receivers will ignore signals not spread by the correct code, spread spectrum communications systems are highly resistant to jamming and other techniques to disrupt communications. (Signals spread over a wide bandwidth, especially using some form of frequency or time hopping method, are also very difficult to locate using direction finding techniques.)

Spread spectrum signals can be received even if the signals are below the noise "floor" at the receiver! Have you ever been able to tell that a signal was "there" in your receiver, but couldn't copy it because the atmospheric and background noise was too high? That's not a problem with spread spectrum techniques; a spread spectrum receiver only needs to know a signal is "there" to demodulate or process it.

If spreading codes are carefully chosen, it's possible to pack numerous spread spectrum signals into the same frequency range. Let's suppose that a frequency hopping technique will be used by different stations sharing the same frequency bandwidth. The spreading codes used by the stations can be coordinated so that no two or more

stations will "hop" to the same exact frequency at the precisely the same moment. If this is done, none of the different stations will be aware there are other users of the bandwidth and can share it without interference to each other. It's possible to do the same with other spreading techniques such as sweeping and time hopping.

So does spread spectrum cause interference to conventional modulation techniques such as SSB and AM? Very often, a spread spectrum signal will be "invisible" to AM, FM, or SSB receivers! Conventional AM, FM, and SSB receivers have comparatively narrow receiving bandpasses compared to those of spread spectrum receivers (this is especially so for AM and SSB). The total amount of signal energy from a spread spectrum signal that will fall within the bandpass of a SSB, FM, or AM receiver will usually be too small to notice. Unless you're really close to the spread spectrum transmitter, you won't even know in most cases that a spread spectrum signal is present. If you're close, you may hear a wide-band "hiss" or similar noise. On frequencies below 30 MHz, signals are not spread as much as they are on the VHF and UHF bands and it's possible to better detect spread spectrum signals. However, even if the signals are heard they cannot be demodulated without a receiver that can supply the matching spreading code.



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CIRCLE 6 ON READER SERVICE CARD

Applications and Impact on Monitoring

Make no mistake about it. Spread spectrum is going to make it much harder to casually monitor many signals.

The U.S. military is already a big user of spread spectrum technology on frequencies below 30 MHz. The most common is a form of frequency hopping over a 20 kHz bandwidth using a moderate hopping rate. When tuned on a conventional receiver, this sounds much like water gurgling or bubbling. In fact, a good percentage of unusual signals heard on shortwave in recent years are some form of spread spectrum technology. The relatively narrow bandwidths and slow hopping rates used on shortwave do negate some advantages of spread spectrum, particularly interference rejection and immunity from direction finding techniques. However, spread spectrum on shortwave does offer a high degree of communications security.

At VHF and UHF, spread spectrum really comes into its own. There is enough frequency space available to really spread out a signal and fully benefit from spread spectrum's advantages. A lot of the spread spectrum action is taking place above 900 MHz, and involves personal communications hardware. For example, you may have already seen the new generation of cordless telephones intended for operation above 900 MHz. These units claim operating range in excess of a mile and also claim that users have the same privacy as on a land-line phone. These claims aren't exaggerations; the range is greater (mainly because such cordless phones have output powers in excess of a watt) and the broad spectrum spreading does make it difficult to even tell a signal is present, much less decode it. Other items, like wireless local area networks for personal computers and wireless security systems, will soon be available and these will also operate above 900 MHz.

Future cellular telephone systems will make use of spread spectrum technology, giving users a much greater degree of privacy than now. And many of the plans being floated about for a digital broadcasting band are based on spread spectrum technology. A new digital broadcasting band will give sound quality equivalent to a compact disc.

Despite all the claims for the security advantages of spread spectrum, I have a feeling that it will one day be possible for a clever programmer to develop routines that will analyze a received spread spectrum signal and try out different spreading code possibilities until the right one is found. Now matter how much computing power you can pack into a radio, there will always be more computing power available on a personal computer. I think determined monitors will figure out some way to monitor spread spectrum! ■

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27 MHz COMMUNICATIONS ACTIVITIES

Three channels, 2 watts, and that's the basics of the Realistic TRC-223 handheld. Springtime is waiting in the wings to come prancing in on tiptoes. It inspires thoughts of hiking, cycling, sports, camping, and boating. So, here's a serviceable comms unit offering a couple of channels mated to more wattage than the flea-powered handhelds. At only \$49.99, this is a good deal.

Comes with Channel 14, rocks installed. Additional crystal pairs are available, optionally, to fill the two empty channel positions. Channels 5, 9, 11, 19, 30, and 35 are available on order.

The TRC-223 has an automatic noise limiter (ANL), squelch, low battery indicator, an AC charger, and provisions for an external antenna. Operates from eight "AA" alkaline batteries, or 10 NiCd types of that same size. Get a look at the Realistic TRC-223 at any Radio Shack store.

Less Power To The People

Linear amplifiers are add-on accessories that boost transmitter power. In some radio services they are allowed, but this is not so for CB stations. Nevertheless, there has long been a brisk "underground" and "under-the-counter" CB business in illegal linear amplifiers specifically intended to be used by CB operators.

These devices are often poorly designed and cheaply made in basements and garages, or are bottom of the barrel junk brought in from overseas. They usually sell to CB operators at prices many times more than the normal dealer markup for legitimate equipment. However, boosting a legal 4 watt CB signal to one that is somewhere between 25 and 1,500 watts is a vicarious thrill that many operators have always appeared willing to spend big bucks on.

Linear amplifiers, which CB'ers sometimes call *amps*, *footwarmers*, *linears*, have long irked the FCC. The FCC contends they aren't type accepted, are not being operated within the established CB regulations, and they can cause interference to CB operations, TV sets, telephones, and other radio services.

Recently, the FCC looks to have significantly increased its efforts to catch and issue fines to those the agency alleges are dealing in these devices. Federal law provides criminal penalties for such violations that include fines of up to \$100,000, and jail for up to a year, or both, just for a first offense.

The FCC's Dallas Office, along with US Marshals, went to Driver's CB Shop and Wayside Wholesale Electronics, both in the Weatherford, Texas area. Then to Clays's

Little Radio Shop, Mingus, Texas. They seized an estimated \$150,000 worth of illegal radio equipment, consisting of about 265 linears, and 200 "export" (non-type-accepted) transceivers at these three mentioned businesses.

FCC offices around the nation are writing up fines of large amounts to those CB dealers the agency claims are offering linears and/or non-type-accepted transceivers for sale.

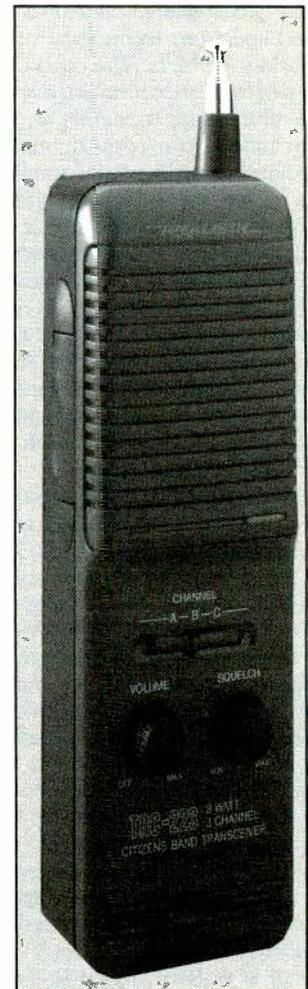
According to FCC documents, the following have recently been sent NAL's for the amounts indicated: Last Stop CB Store, Silver Springs, Fla. (\$16,800); Troy's CB Specialists, Ontario, Calif. (\$20,000); Cuba CB Shop, Cuba, Mo. (\$10,000); CB-10 Electronics, Waynesville, Mo. (\$10,000); Palomar West, Hawaiian Gardens, Calif. (\$14,000); Viking Two-Way, South Gate, Calif. (\$14,000); B&R CB Radios, Lynwood, Calif. (\$7,000); Ratchet Jaw CB Sales, Orange, Calif. (\$14,000); Foster's Stereo Center, Ontario, Calif. (\$7,000); V.W. CB Radio Sales, Downey, Calif. (\$7,000); G&H Electronics, Covina, Calif. (\$7,000); Pat's CB, Moorpark, Calif. (\$20,000); Power Unlimited, Inc., Kentwood, Mich. (\$7,000); R&R Electronics, Trinidad, Colo. (\$11,200); Diamond Cutter's CB Tronics, Olympia, Wash. (\$20,000); Kemo's General Store, Seattle, Wash. (\$20,000); DX World, Chalmette, La. (\$11,200); C&A Radio, Houston, Texas (\$10,000); Jerry's Electronics, Houston, Texas (\$5,600); and Andy's Electronics, Houston, Texas (\$11,200).

Put away your calculator, I'll save you the trouble. This runs to more than \$240,000. Sure looks like the FCC is on the warpath against those who make, sell, and use linears.

Further information from the FCC's Legal Branch regarding those issued NAL's because of being alleged to have offered linears for sale is available by contacting the FCC's Linda Freeman, Field Operations Bureau, phone (202) 632-7050.

From Readers

As you may know, CB "handles" are never used by sideband operators. These stations always identify by the use of sideband numbers. Some numbers have been issued by several different short-lived local and regional groups, although most operators also like the status of sideband numbers that signify their affiliation with national or international organizations that have been in existence over a long period of time. Our own SSB-295 numbers indicate a proud SSB Network affiliation dating back into the 1960's.



Realistic's TRC-223 handheld offers a couple of channels, a couple of watts, and can be had for a relatively low price.

This column receives a considerable amount of mail from readers asking about CB sideband numbers, and the way they may be obtained. We let them know about the SSB Network, which was formed back in 1964. To our knowledge, it's the oldest and largest group of 27 MHz operators in the world. The group's numbers, all with the distinctive "SSB" prefix, are assigned to affiliated operators in the USA, Canada, and throughout the world.

The address of the SSB Network is P.O. Box 908, Smithtown, NY 11787. You can affiliate and get your own SSB Network sideband number very easily. You get a wallet card showing your name and number, an attractive hand-inscribed wall certificate showing your name and number, a copy of "SSB Net Notes" containing sideband operating procedures, and you also receive additional Net materials. All this for \$10 (no foreign checks, please), and it's a one-time fee.



Members of San Antonio REACT team and the American Red Cross gather to accept the donation of \$2,500 in CB products from K40 Electronics. Picture (L to R): Lee Besing, of San Antonio REACT; and members of the American Red Cross, Sharon Earley, George Snell, and Randy Weddle.



SSB Network's famous logo.

There are no yearly dues or other fees. If you enclose an SASE (business size with a 45 cents in US stamps) with your request your affiliation, SSB Net will include an extra item with your materials. The wall certificates are hand inscribed by a professional calligrapher, so please allow several weeks for processing.

Equipment Donated

K40 Electronics, of Elgin, Ill. donated \$2,500 worth of CB equipment to San Antonio REACT for installation into American Red Cross disaster services vehicles.

This will allow for disaster service vehicles to more quickly respond to emergency situations and calls for supplies. Red Cross drivers will be able to more efficiently communicate with REACT teams during crisis situations.

For its part, K40 stated that they realize that volunteers are often placed in pressure situations and need to have reliable communications at all times.

Operation on Unauthorized Frequencies

The FCC sent out NAL's for rule violations that included operating without a license and operation on an unauthorized frequency.

Individuals cited, according to FCC records, were: Glenn D. Seiness, Olympia, Wash. (\$400); Christopher D. Johnson,

McMinnville, Ore. (\$100); Arnoldo Pena, Mission, Texas (\$8,000); James Brady, Bellingham, Wash. (\$400); Lynn Clark, Fullerton, Calif. (\$100); John Lapentina, Jr., Norfolk, Va. (\$8,000).

A Good Question

Chad Cessna, of Ebensburg, Pa. poses a good question. He asks if RV'ers are still using Channel 13 as their monitor channel, as they once were. He remembers when the Good Sam Club was pushing Channel 13 for its members to monitor, but he hasn't heard anything about the idea in a long time. As a matter of fact, he wonders if the Good Sam Club still operates, and if there are any other national RV organizations in existence.

The Good Sam Club is still thriving, and headquartered in Agoura, Calif. We stopped in at a campground and asked a couple of RV'ers if Channel 13 was still the RV monitor channel. They recalled that publicity had been given about this by the Good Sam Club, but nothing much has been said about it for several years. It's a good idea, though, and they all said they would like to see the concept pumped up again. We would, too.

Other than the Good Sam Club, the only other major national RV organization we know of is the Family Motor Coach Club.

Chad wonders if there are other special interest clubs or groups that also promote (now or recently) a national monitor channel for persons who share their interests. We would be interested, too. If anybody has information, pass it along to us and we will run it here.

We'll be shifting into overdrive and doing double nickels, so we are standing by on the side until the April issue. We hope to hear from you. Send us your CB QSL, station photo, local monitor channels, CB news, comments, questions, and opinions.

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CIRCLE 79 ON READER SERVICE CARD

COMMUNICATIONS FOR SURVIVAL

Handhelds Out On The Water

Does your rescue squad normally respond to ocean, lake, or river emergencies? If so, you should know ahead of time what precautions you should take to keep your handheld two-way radio set from becoming permanently water damaged. A few sets can take a quick dip in the water, but most sets will instantly leak.

If your portable radio equipment has no rating for water or weather resistancy, keep the set bone dry. Clear vinyl handheld bags are readily available at most marine electronic stores, or may be ordered from West Marine (800-538-0775, Part No. 410100). This pouch fits all handheld transceivers, and will even float your equipment in case it gets lost overboard or down stream. It is rated 100% waterproof down to 3 feet.

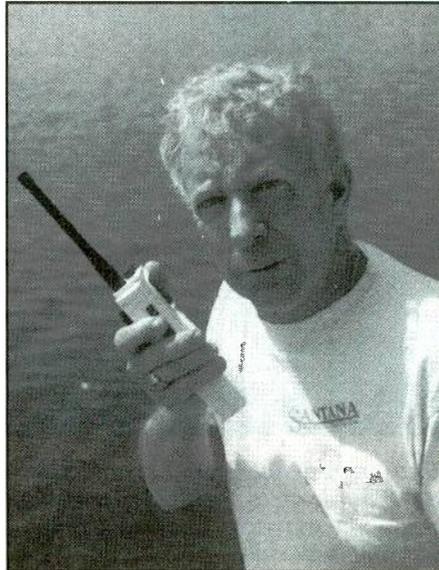
The term "waterproof" does not necessarily mean a handheld radio can withstand immersion. Many manufacturers specify a waterproof radio to meet government CFR (Code of Federal Regulations) standards #46CFRCH.1(20) "watertight." "Watertight" simply means that the handheld will not leak when a stream of water from a hose with a nozzle one inch in diameter is delivered to it with at least 65 gallons per minute from any direction at a distance of 10 feet for five minutes. And while this sounds like your equipment wouldn't leak, it very well might. In a test during a recent boat show, a marine VHF set, described in the literature as a "...compact, waterproof package that fits in the palm of your hand," was momentarily submerged under 10 inches of water for less than five seconds. Within five minutes after the quick dunking the set immediately malfunctioned. A second unit was tested to a quick immersion, and it too failed.

Japanese equipment waterproof standards, abbreviated "JIS," specifically rate electronic equipment to survive blowing mist, light splashes, and light and heavy rain. Ratings do not include immersion.

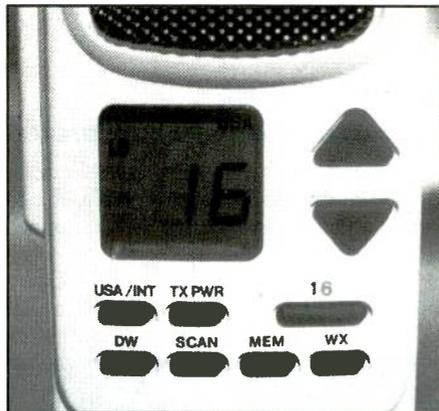
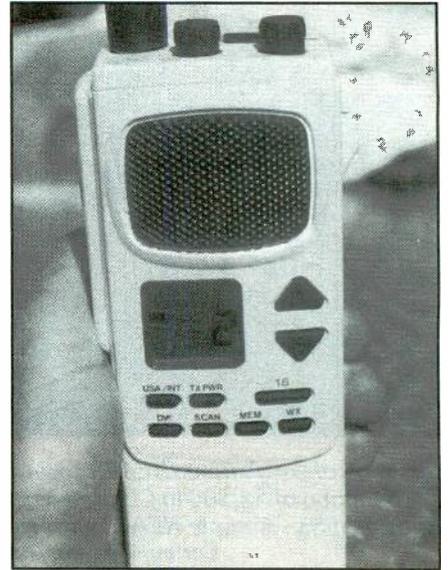
"The National Marine Electronics Association (NMEA) presently has no standards to back up the claims waterproof, water-resistant, and watertight," grumbles Bill Alber, a marine electronics technician. "You would think that a national organization would have a handle on this, but they don't," adds Mr. Alber.

Military standards #810E, Method 512.3, have recently been revised to better describe the IMMERSION leakage test for handheld transceivers. This test is to check the seals or gaskets to prevent water penetration into the interior of the equipment.

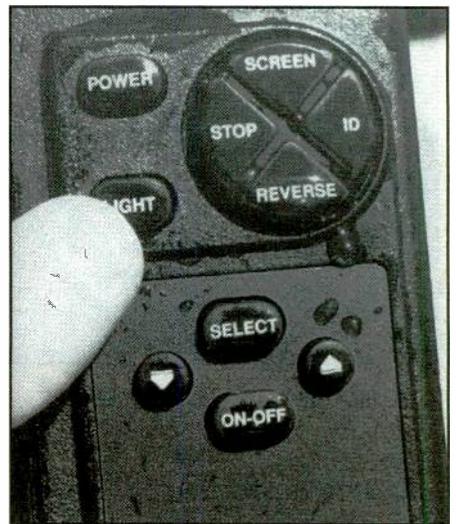
"The depth of immersion effects the pressure differential that develops on the



Author West checks a marine VHF handheld for water resistancy.



This handheld has a splash-resistant keypad.



The Hummingbird waterproof keypad keeps water out to 3 feet below water.

test item. Since the method is designed to test the effectiveness of seals or gaskets, a 1-meter test depth is suggested. This, combined with the initial test item temperature, should result in twice the pressure differential of immersion to 1 meter without leakage," reads the specs. The item is heated for at least two hours before immersion to match in-hand use, and an immersion period of two hours is considered adequate to develop leakage if it is to occur. Any handheld radio rated for military spec #810E, Method 512.3, should surely survive contact with ocean or fresh water.

The following marine VHF handheld transceivers appear to meet these specifications:

Navico synthesized handheld, 813-546-4300

ICOM M15 handheld transceiver, 208-454-8155

Raytheon JRC JHS-7 handheld, 603-881-5200

ACR crystal-controlled VHF handheld, 305-981-3333

Standard Communications Corporation, a leading manufacturer of marine VHF equipment (310-532-5300), offers a "watertight warranty" covering any in-warranty VHF handheld that should become damaged due to water intrusion, if any.

(Continued on page 81)

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Signal intelligence experts, public safety agencies and people with inquiring minds that want to know, have asked us for a world class handheld scanner that can intercept just about any radio transmission. The new Bearcat 2500XLT has what you want. You can program frequencies such as police, fire, emergency, race cars, marine, military aircraft, weather, and other broadcasts into 20 banks of 20 channels each. The new rotary tuner feature enables rapid and easy selection of channels and frequencies. With the AUTO STORE feature, you can automatically program any channel. You can also scan all 400 channels at 100 channels-per-second speed because the Bearcat 2500XLT has TURBO SCAN built-in. To make this scanner even better, the BC2500XLT has AUTO SORT - an automatic frequency sorting feature for faster scanning within each bank. Order your scanner from CEI.

For more information on Bearcat radio scanners or to join the Bearcat Radio Club, call Mr. Scanner at 1-800-423-1331. To order any Bearcat radio product from Communications Electronics Inc. call 1-800-USA-SCAN.

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New FCC Rules Mean Last Buying Opportunity for Radio Scanners

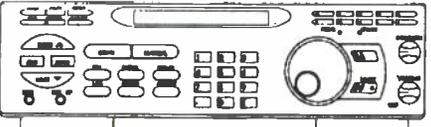
On April 19, 1993, the FCC amended Parts 2 and 15 of its rules to prohibit the manufacture and importation of scanning radios capable of intercepting the 800 MHz cellular telephone service. Supplies of full coverage 800 MHz scanners are in very short supply. If you need technical assistance or recommendations to locate a special scanner or solve a communications problem, call the Communications Electronics Inc. technical support hotline for \$2.00 per minute at 1-900-555-SCAN.

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- 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)
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- 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: PS001 Cigarette lighter power cord for temporary operation from your vehicle's cigarette lighter \$14.95; PS002 DC power cord - enables permanent operation from your vehicle's fuse box \$14.95; MB001 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.



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- ICOM R7100-H base with 900 memory (add \$49.00 shipping) \$1,289.95
- ICOM R9000-H base 30 kHz - 2 GHz. (add \$149.00 shipping) \$4,999.95
- ICOM AH7000-H super wideband discose type antenna \$109.95
- Grundig Satellit 700-H portable with 512 memory & AC adapter \$449.95
- Grundig Satellit 500-H portable with 42 memory & AC adapter \$349.95
- Grundig Cosmopolit-H with integrated mini-cassette recorder \$179.95
- Grundig Yacht Boy 230-H portable shortwave \$159.95
- Grundig Traveler 2-H portable shortwave \$79.95
- Sangean ATS202-H ultra compact 20 memory shortwave \$79.95
- Sangean ATS606-H ultra compact 45 memory shortwave \$149.95
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- Sangean ATS818-H portable without cassette recorder \$189.95
- Sangean ATS818CS-H with cassette recorder \$209.95
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- RELM RH256NB-H VHF 25 watt synthesized transceiver \$289.95
- Ranger RC12950-H 25 watt 10 meter ham radio \$244.95
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- Uniden LRD9000W1-H Super wideband laser/radar Detector \$169.95
- PWB-H Passport to Worldband Radio by IBS \$10.95
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SATELLITE VIEW

BY DONALD E. DICKERSON, N9CUE

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

You may not be aware that there are two proposed mobile satellite services (MMS)—one GEO-stationary and the other, a Low Earth Orbit (LEO) system. The GEO system, with its 22,000 mile-high orbit, could be operational by 1994. Two organizations, American Mobile Satellite Corp., and Telesat Canada will launch two satellites to be placed at 106°W and 113°W. They will be used for radio-location/determination services (locating and tracking cargo and vehicles), paging, Fax, and two-way voice and data services. The GEO-stationary system uses 1.5 and 1.6 GHz.

The newer, lesser known LEO mobile sat system is different in several ways. It is based on the latest electronic technology. Break-throughs in this field have allowed the size of basic communication satellites to shrink dramatically. These small spacecraft have been called microsats, spinsats, lightsats, and cheapsats. The LEO mobile satellite system provides many of the same services as GEO-stationary satellites, at a fraction of the cost. These savings are passed along to the consumer, making LEOSats attractive to both buyer and seller.

The most interesting aspect of the LEO mobile satellite system is the choice of frequencies. The FCC has allocated frequencies in the old 137 MHz satellite band—the first VHF band used for spacecraft. In 1990, no new satellite assignments were placed in the 136-137 MHz section of the band, as it will be used as an aeronautical radio band. The FCC's move has also rejuvenated the low band. The bad news is: most signals in this band will be non-voice.

Along with the 137 MHz band, the FCC has allocated a small segment of 401 MHz to this service. Downlinks are 137-137.025 and 137.175-137.825 MHz; 400.15-101 MHz are for exclusive use, while 137.025-137.175 and 137.825-138 MHz is allocated on a secondary, non-interference basis. In addition, the band currently used by the Transit navigation satellites will be turned over to LEO-MSS in 1997. These include 149-150.05 MHz and 399.9-400.05 MHz. The 148 MHz section of the spectrum may be added if agreement on the format for FDMA burst transmissions in this band can be reached.

Three companies are currently in the race to bring us user-friendly consumer services in satellite form. Volunteers in Technical Assistance (VITA) is actually a non-profit organization which began experimentation on LEO mobile satellite services back in 1984. It was then that they launched an amateur radio satellite using the error-free data formats known as Packet, a popular transmission mode used by several services. Unlike its competition, VITA was able to show in its proposal that they could

provide an inexpensive terminal-to-terminal network of ground stations without using an expensive gateway hub station. VITA provides free medical, educational, scientific, and emergency services to third world countries. They plan to add two additional satellites to their network, and use narrow channel FDMA (Frequency Division Multiple Access).

Orbcomm has a more complicated scheme, as they plan to launch 20 to 26 spacecraft in orbital planes at 45° of each other to provide nation-wide communication coverage. They also plan to use FDMA in a frequency hopping mode called Dynamic Scanning. In this mode, the band will be scanned automatically and when a clear frequency is found a burst transmission will be sent.

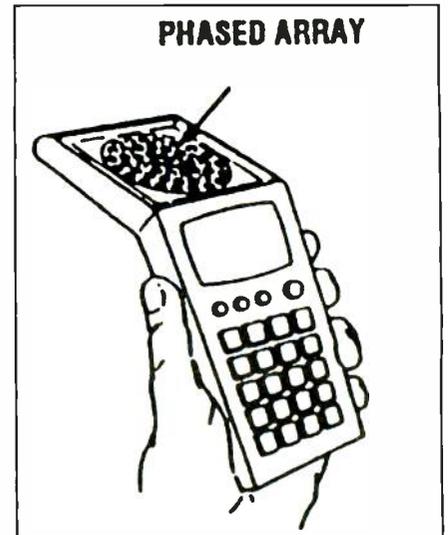
A third competitor, Starsys Inc., has proposed a system of 24 satellites in LEO. They plan to use CDMA (Code Division Multiple Access) in a spread spectrum transmission mode.

Motorola has proposed a similar system for voice communications. Systems such as these are expected to make possible, affordable, nation-wide (or world-wide), voice and data communications using an inexpensive and easy-to-use Star Trek-type communicator. Such systems are expected to be operational by the year 2001.

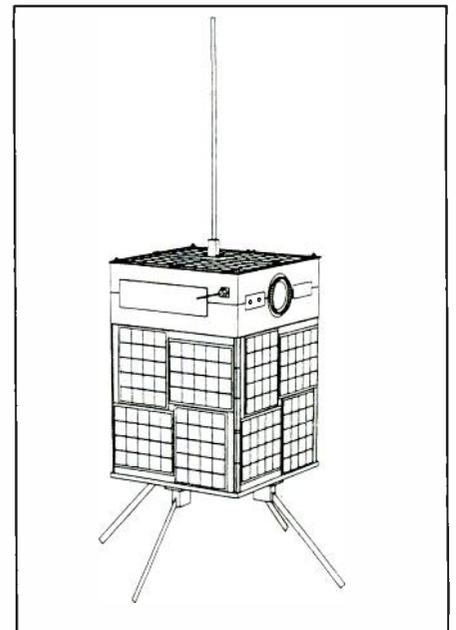
News

On September 26, of last year, Ariane, a European Space Agency, used a launch vehicle to deliver seven spacecraft into orbit from the Kourou, French Guiana spaceport in South America. Four of the spacecraft are of interest to us. The first, ITAM-SAT, built by AMSAT-Italy, is a Packet satellite capable of 1200 baud in PSK (Phase Shift Keying) or AFSK (Audio Frequency Shift Keying). The primary downlink is 435.867, the secondary is 435.822, and the 1200 baud Manchester format uplinks are on 145.875/900/925/950 MHz.

Portugal is our next entry. POSAT-1 is



WEBERSAT is a typical Microsat design.



Notice that this drawing points out the antenna's phased array.

Amateur Satellites

Satellite	Downlink	Uplink	Baud-Mode	Country
ITAMSAT	435.867 MHz	145.875 MHz	9600-AFSK	ITALY
	435.822 MHz	145.900 MHz		
		145.925 MHz	1200 PSK	
		145.950 MHz		
PASAT-1	435.250 MHz	145.925 MHz	9600	PORTUGAL
	435.275 MHz	145.975		
KITSAT-B	435.175 MHz	145.870 MHz	9600	KOREA
	436.500 MHz	145.980 MHz		
EYESAT-A	436.800 MHz	145.850 MHz	300-9600	USA

a scientific and Earth imaging payload. It downlinks on 435.250 MHz at 9600 baud; a secondary downlink is on 435.225 MHz, and uplinks are on 145.925/.975 MHz.

Kitsat-B was also on the Ariane launch vehicle last September. It was built by the Korean Advanced Institute of Space Technology, and has the same message forwarding ability as other Pacsats. This 9600 baud spacecraft downlinks on 435.175/436.500 MHz, and the uplinks are on 145.870/.980 MHz.

Our last entry is Eyesat-A, which is designed to monitor and track mobile industrial equipment. It carries an amateur radio transponder for packet, and has a single downlink on 436.800 MHz, and uplink on 145.850 MHz.

These and two other spacecraft were secondary payloads to the original occupant of the Ariane launch vehicle. The main payload was a APOT-2 French Earth imaging satellite. Sixty percent of all US spacecraft are placed in orbit by the European Space Agency's Ariane launch vehicle.

According to a report by G3BGM in *Oscar News*, the Mir space station has been heard on 145.850 and 144.475 MHz while over Europe. Be sure to add these to your list of possible frequencies to monitor.

Are you space historians ready for this

LEO-Mobile Satellite Frequency Allocations

PRIMARY

137.-137.025 MHz
137.175-137.825 MHz
400.150-401 MHz

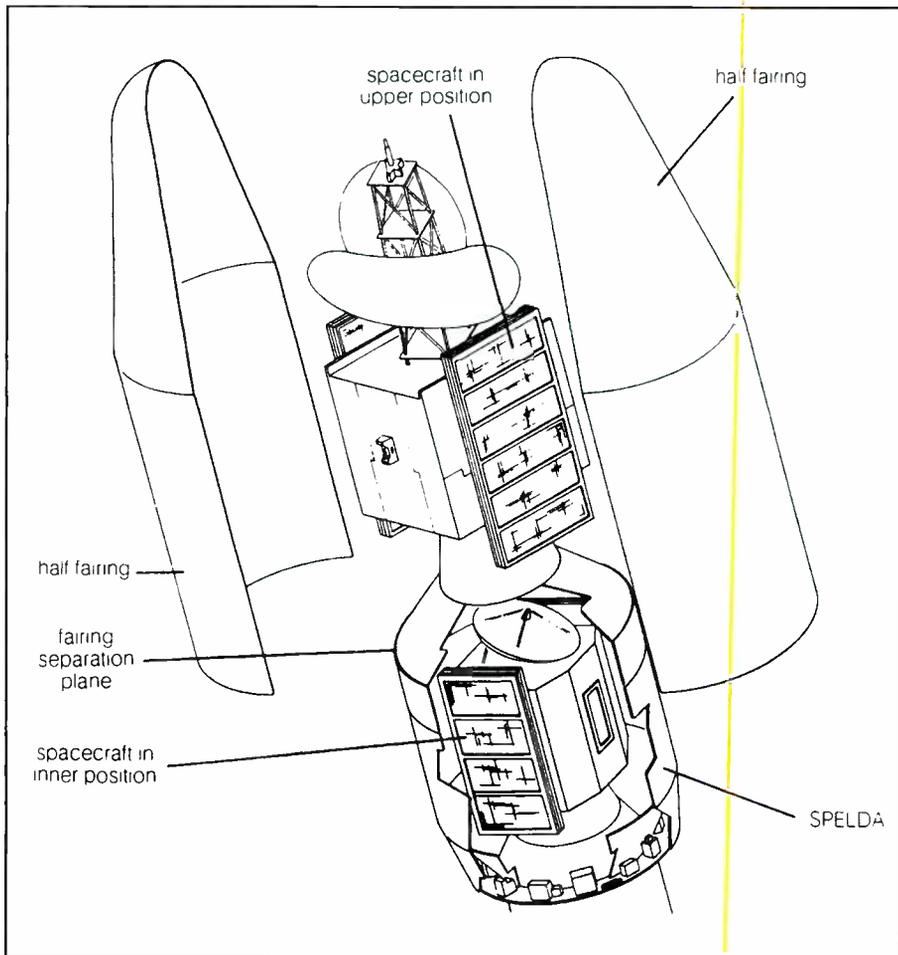
SECONDARY

137.025-137.175 MHz
137.825-138 MHz

ADDITIONAL ALLOCATIONS AFTER 1997

148-150.050 MHz
399.900-400.050 MHz

month's "Space Quiz?" During the early space race days, each of the three military branches, Army, Navy, and Air Force, competed to be the first to successfully launch a rocket capable of placing a satellite in orbit. Which military branch was first? The person with the correct answer will receive a copy of Thomas P. Harrington's newest book, *Tune To Satellite Radio On Your Satellite System*. It is a complete guide to listening to radio signals on your TVRO system. See you next month! ■



This diagram shows satellites attached to an Ariane launch vehicle (ESA).

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YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

A note from Perry Crabill, VA, indicated that his beacon total is now 824 which now includes un-IDs and old stations with new IDs or new frequencies.

Perry uses a Drake R-8 equipped with an LF Engineering Model 201 Preamp and a 65' inverted "L" antenna. He commented "I have been very pleased to find that the power line noise level here has been quite a bit lower this season than the last; I hope it stays that way. This has given me a number of additional stations below 250 kHz, where the noise was especially bothersome in the past."

Bill Farley, NM, wrote, "I have been reading the column for years and enjoy looking for the UTE stations. I specialize in Beacon stations and have sent listings from my travels all over the world. I use a Kenwood R-2000 with a long wire antenna for my beacon monitoring. I was located near Dexter, NM, on this particular beacon DXpedition."

Dwight Simpson, WI, sent in some loggings and said "I was using my Kenwood TS-430S and my Sony ICF 2010 to monitor these transmissions. I use both radios for most of my utility listening."

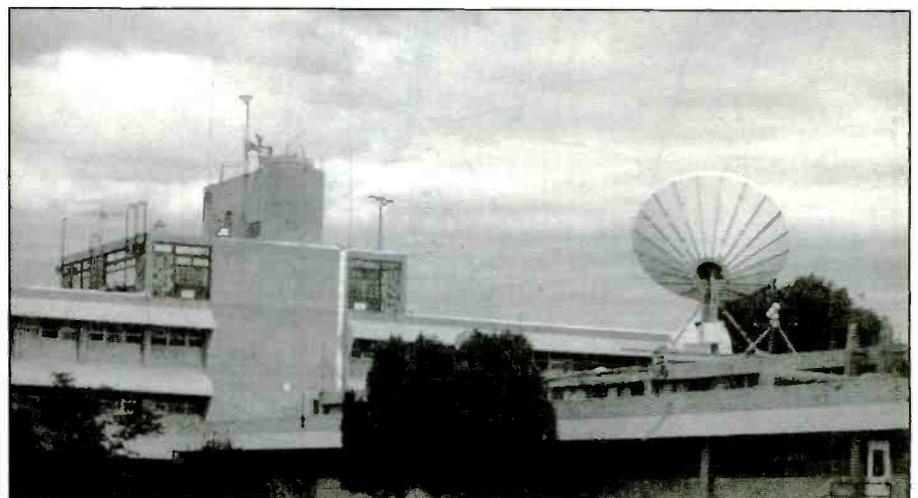
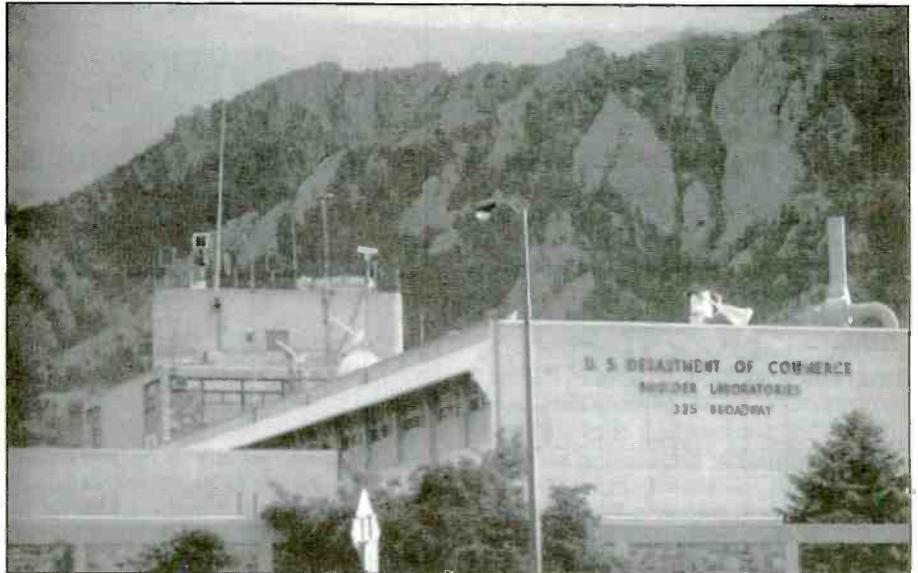
A nice letter was received from Basil Shelley, CA, who claimed to be the youngest contributor to the column. "I have been a utility station DXer for about a year now. I am 12 years old. I am using a DX-440 communications receiver and a random length wire antenna that is 8 ft. high. I plan to build a 20 ft. high longwire soon."

Basil, I agree with your claim and look forward to receiving additional loggings from you.

From Mark Heywood, BC, Canada, we received a list of the HF frequencies from the JEPPESEN chart of the Pacific Ocean.

Hickman radio 6738, 8967, 11176, 13201. Honolulu 3413, 5547, 5574, 8843, 11282, 13288, 13354, 17904. San Francisco 3412, 2869, 5547, 5574, 6673, 8843, 10057, 11282, 13288, 17904. McClellan radio 4725, 6738, 8967, 11176, 13201, 15015, 17975. Pacific Volmet 2863, 6679, 8828, 13282. All in kHz.

With the return of his PFC from RCC Plymouth, Richard Baker, OH, received an informative QSL letter. "RCC Plymouth is responsible for coordinating Search and Rescue operations involving helicopters in the Southern half of British Isles (south of 52.30° North), while RCC Edinburgh controls the Northern portion. Plymouth has at its disposal three flights of Royal Air Force helicopters and two Royal Navy flights. Both Plymouth and Edinburgh will occasionally invoke the use of Nimrod long



These three photos were sent in by Patrick Griffith, CO and show some of the antennas on the Department of Commerce Boulder Lab buildings—this is the control point for WWV.

Telecom New Zealand
International Limited
Telecom Networks House
68-86 Jervois Quay, P.O. Box 1092
Wellington, New Zealand

Telecom
New Zealand
International

Mr Ed Rausch III

6 April 1992

Dear Ed,

Thank you for your letter requesting confirmation of your reception of identification signals from Wellington Radio on 22 March 1992.

I am pleased to confirm that this signal was made by Wellington Radio. This station uses the callsign of ZLW and operates on a range of frequencies from 4 - 22MHz providing long distance CW and Radiotelephone commercial services to ships at sea.

Wellington Radio is located in the capital city of New Zealand and is only 3.5km from the city centre. It is also 950 ft above sea level on one of the highest hills which surrounds the city.

Receivers for this station are remote controlled from a coastal site 12.5 km from the city in a northwesterly direction and the transmitters which are Phillips transmitters radiating about 1 kilowatt each, remote controlled from a site about 120 km north of the city near a small town called Foxton.

Wellington Radio has been in operation since 1911 providing both maritime and fixed communications to remote areas of New Zealand and some Islands in the South Pacific ocean. Most notable of these are Pitcairn Island and also New Zealand's Antarctic Base called Scott Base.

I hope that this information is of interest to you and I wish you all the best in your radio listening.

Yours faithfully,



F W GATES
MANAGER MARITIME RADIO SERVICES

Ed Rausch received this letter QSL from Wellington Radio.

range fixed wing aircraft to assist in distant rescues over the sea.

For your information, it is planned to amalgamate the two separate centers into one National Rescue Centre based at Edinburgh in approximately two years time."

For the past several years I have received requests from some readers for details of the Whitbread Yacht race which gets underway each Fall. Unfortunately, I never obtain the information until after the race has started, but at least I can furnish the dates and destinations of the remaining three legs along with the competitors' names and countries. Leg 4 commenced February 20, 1994, Auckland, New Zealand to Punte Del Este to Forte Lauderdale, FL (5475 NM); and finally. Leg 6 will be May 1994, Fort Lauderdale to Southamp-ton (3818 NM).

There are two yacht classes in the race:

Maxis—La Poste (France); NZ Endeavour (New Zealand); Odyssey (Russia); Furtuna (Spain); Merit Cup (Switzerland); and Uruguay Natura (Uruguay).

Whitbred 60s—Intrum Justia (European crew); Brookfield (Italy); Yamaha (Japan/New Zealand) Tokyo (Japan); Galacia 93 Pescanova (Spain); Hetman Sahaidachny (Ukraine); Odessa (Ukraine/USA); Dolphin & Youth W60 (UK); Winston (USA); US Women's Challenge (USA).

In this month's loggings, see the entry for 12245 kHz. Other ship/shore frequencies are likely to be used for some HF communications. Thanks to the British *Short Wave Magazine*, October SSB Utility Listening column, authored by Graham Tanner, for the race details.

According to an article in the *Martinsburg Morning Journal*, an executive order has delegated the Veterans Administration

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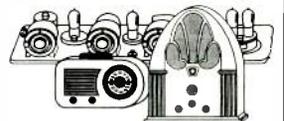
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RG-142B/U—MIL-SPEC	1.30/ft		1.13/ft

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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)

as the provider for medical management of radiation trauma in catastrophic events. Such catastrophes would include exposure to radioactive material, nuclear explosions, and nuclear power plant accidents.

Because the VA is the largest medical provider in the U.S., it is the best prepared to handle radiation problems.

The VA Hospital, in Martinsburg, WV, is the core of the federal disaster relief plan covering nuclear accidents. In such an emergency, the VA would work with various other federal agencies and departments to coordinate the relief efforts.

I would suspect that during SHARES exercises, readers may note VA communications in connection with simulated nuclear accidents.

Before going on to the loggings, we want to welcome contributor Tom Sevart back to the States. He completed his tour of duty with the USAF in England and is now in school studying electronics.

UTE Intercepts. (All Times In UTC)

11.8: OMEGA, Hairu, Hawaii. Hrd midnight to dawn w/weak but reliable sig most nights. (Krey, TX)
24.0: NAA, Cutler, ME, hrd 24 hrs daily w/strong sig. (Krey, TX)
28.5: NAU, Aguada, Puerto Rico, hrd 24 hrs daily w/variable sig strength. (Krey, TX)
134.9: NSS, Annapolis, MD, hrd most nights past 0600 UTC. (Krey, TX)
175: KRY, Chardon, OH, at 1034. Lower. (Crabill, VA)
204: Beacon AEW, Biscayne Bay, FL at 0911. 1000 Hz DSB; Beacon ZZV, Zanesville, OH, at 1146. New freq, ex-332. (Crabill, VA)
209: Beacon SYS, Somerset, PA at 2241. (Ed.); Beacon UK, North Wilkesboro, NC at 0923. (Crabill, VA)
222: Beacon FDR, Frederick, OK at 1202. (Farley, NM)
225: Beacon UZ, Rock Hill, SC at 0940. New ID, ex-IPP. (Crabill, VA)
227: Beacon SJY, San Jacinto Ryan, CA at 0309. (Vaage, CA)
233: Beacon VHN, Van Horn, TX at 1201. (Farley, NM)
245: Beacon ANR, Andrews, TX, at 2246. (Farley, NM); Beacon LUA, Luray, VA at 2244. (Ed.)
253: Beacon H8, Alma, PQ, Canada at 0940. New ID, ex-0H8. (Crabill, VA); Beacon UR, Burbank-Glendale-Pasadena, CA at 0649 (Vaage, CA)
260: Beacon XCB, U/I at 2245. (Ed.); Beacon CEP, Ruidoso, NM at 2246. (Farley, NM)

265: Beacon XPZ, Mt. Weather VIP Facility, VA at 2240. (Ed.)
267: Beacon PCY, U/I at 2247. (Farley, NM)
281: Beacon CNZ, Clarendon, TX at 2247. (Farley, NM)
290: Beacon TMV, Stamford, TX at 2248. (Farley, NM); Beacon AOP, Rock Springs, WY at 0705. (Vaage, CA)
299: Beacon LCR, Las Cruces Mun'l, NM at 0709. (Vaage, CA)
302: Beacon L, Point Loma, CA. No time given. (Forsman, CA)
305: Beacon MI, Manana Island, ME at 1059. New freq, ex-286. (Crabill, VA)
311: Beacon BFE, Brownfield, TX at 2249. (Farley, NM)
322: Beacon H, Seal Island, NS at 1117. New freq, ex-308. (Crabill, VA)
326: Beacon MCY, Mercury Desert Rock near Reno, NV at 0716. (Vaage, CA)
329: Beacon TAD, Trinidad, CO at 2250. (Farley, NM)
335: Beacon CV, Clovis, NM at 2251. (Farley, NM)
338: Beacon PBT, Red Bluff, CA. No time given. (Forsman, CA)
344: Beacon GNC, Seminole, TX at 2251. (Farley, NM)
346: Beacon SIH, location unknown. Moderate signal at 0724. (Vaage, CA)
353: Beacon LI, Little Rock, AR at 1215. (Crabill, VA)

359: Beacon SDR, Snyder, TX at 2252. (Farley, NM)
364: Beacon TZ, Winchester, VA at 2251. (Ed.)
368: Beacon ZP, Sand Spit, BC, Canada. No time given. (Forsman, CA)
369: Beacon LAM, Los Alamos, NM at 2253. (NM)
370: Beacon PAI, Pacoima Barton Heliport, CA at 0739. (Vaage, CA)
374: Beacon EKG, Carisbad Palomar, CA at 0739. (Vaage, CA)
380: Beacon BBD, Brady Curtis Fld, TX at 0742. (Vaage, CA)
382: Beacon IRS, Sturgis, MI at 0611. (Crabill, VA)
383: Beacon PI, Pocatelo Mun'l, ID at 0743. (Vaage, CA)
387: Beacon SPP, San Andreas Island, Colombia at 0452. E sent after ID. (Crabill, VA)
391: Beacon EBY, Neah Bay, NW tip of WA at 0747. (Vaage, CA)
397: Beacon SB, San Bernardino (Norton AFB), CA at 0749. (Vaage, CA)
400: Beacon QQ, Comox CFB, BC, Canada at 0750. (Vaage, CA)
414: Beacon ATS, Artesia, NM at 2255. (NM)
428: Beacon COG, Orange, VA at 2254. (Ed.)
451: Beacon USC, Santa Clara, Cuba, at 1152. New freq 1000 Hz DSB; ex-240 kHz: on request only. (Crabill, VA)
1704: Lyngby, Denmark radio (OXZ) at 2138 in

To: David Sabo, Seoul, Republic of Korea



This confirms your reception of
Colombo Aeradio, Sri Lanka
 on 10066 kHz USB/voice at 1349 UTC on 14 June 1992.

Call sign: Colombo
 Transmitter/Power: Racal TA 1800 Power: 2 KW
 Antenna: Folded Dipole
 QTH: 064923N 0795306 E

(Signature/Official Stamp)
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David Sabo, S. Korea, designed this PFC.

USB w/navigational warnings. (Boender, Netherlands)

1716: PCG, Scheveningen, Holland at 2148 in USB w/wx. (Boender, Netherlands)

2182: GRHJ, MV Shetland Service w/Stonehaven radio in USB at 0007. (Boender, Netherlands)

2598: VCM, St. Anthony CG, Canada in USB at 0111 w/marine wx forecast for Newfoundland/Labrador. (Navary, VA)

2806: ICJ41 August Naval, Italy in CW at 0238 w/VVV mkr. (Navary, VA)

2941: Leningrad Volmet in USB at 2309 w/YL/RR giving wx. Left the air and was replaced by Moscow Volmet YL/RR opr. (Sevart, England)

3000: OM/EE illegal fishing comms in USB at 2051. (Sevart, England)

3016: Santa Maria Aeradio (ICAO Nat-A) in USB at 0248. (Navary, VA)

3123: NMC, CAMSPAC San Francisco wkg a/c Tac Alpha for op's normal report at 0230 in USB. (Baker, OH)

3255: 5F CW msg w/unusual characters at 2326. //3737 kHz. Stopped at 2350. (Sevart, England)

3378: WGY912, Mt. Weather, VA w/3 char. L/F grp msgs in CW at 0206. This station sends this type t/c often. (Sevart, KS)

3860.2: WA3NAN, Goddard Amateur Radio, w/rebroadcast of STS-51 launch from T-3 mins to 0746 launch. LSB mode. (Baker, OH)

3861: 5F CW msg w/unusual chars. at 2138. Stopped with no signdown at 2259 (midnight local time). (Sevart, England)

4029: YL/SS w/"Atencion 69604" at 0500, then 130 5F grps & off w/three "finals." (Mazanec, OH)

4037: MARS net in USB at 0342. AAODF was net control. (Shelley, CA)

4125: NOJ, CommSta Kodiak wkg u/i vessel. Freq used as local "chat" channel in Alaskan waters and is often guarded by NOJ. Hrd 0139 in USB. (Baker, OH)

4763.4: VE706 wkg VAC16 at 2245 in LSB. VEP706 is a hunting camp (poss in Labrador) w/tfc re nbr of moose and caribou killed by hunting parties. Mentioned baiting for bears. VAC16 gave VEP706 Newfoundland phone nmbrs for butcher and transport of meat. Towns mentioned were Deer Lake and Stephenville Nfld. Talk about taxidermy arrangements. (Rausch, NJ)

4880: ULX, YL/EE Mossad stn rptng phonetic msg w/muffled YL in background sending another msg. (Sevart, England)

4900: CHM 7211 wkg CHM 7231 (both u/i Canadian Mil?) w/tng msgs at 0130. Subject of exercise msg dealt with cooking popcorn in a microwave. (Rausch, NJ)

4950: Charlie Alpha, u/i stn in USB at 1330 w/rdo checks to numerous stns. Few stns answered (Sevart, KS)

5205: SLHFM "R" at 1940. (Mason, England); YL/EE in AM rptng 5316 9655 8788 at 0034. Stopped at 0039, carrier off shortly after. (Sevart, England)

5311: "Bulgarian Betty" YL/Serbo-Croat 5F grps in AM at 1400. Also hrd next day, same time. (Sevart, England)

5425: QRA DE KRH50, US Embassy, London in CW at 1940. (Mason, England)

5500: YL/EE rptng '288 oblique 00' from 2000-2005, ended with 'end.' (Mason, England)

5529: YL rptng "Bravo Alpha Yankee 1" at 2000. Mossad stn. (Mason, England)

5532: Amsterdam LD0C in USB at 0306 wkg KLM 550. (Navary, VA)

5550: United 885 clg NY ATC at 0253 in LSB. (Shelley, CA)

5680: Poss outbanders, ID as "Venezuela Radio" and "Northern Lights Station VT6." Spend next 30 mins testing radios. mention they happy now have a 'comm-link' and will save \$\$\$. Later change ID's to CS-1 & CS-2. They right on International SAR freq. Hrd starting at 0042. USB mode. At 0524, Plymouth Rescue (RAF RCC Plymouth, England) wkg Rescue 193 for position report. At 0632, Edinburgh Rescue (RAF RCC Fife, Scotland) wkg Alpine 22 (Mountain rescue team) giving wx in the blind. USB mode. (Baker, OH); Rescue 125 w/Edinburgh Rescue in USB at 1010 "Gas platform heli has already contacted the rig. No further assistance needed." (Boender, Netherlands)

5681: U/i CW stn at 2000 sends 673 for 8 mins & then into 5F grps. (Boender, Netherlands)

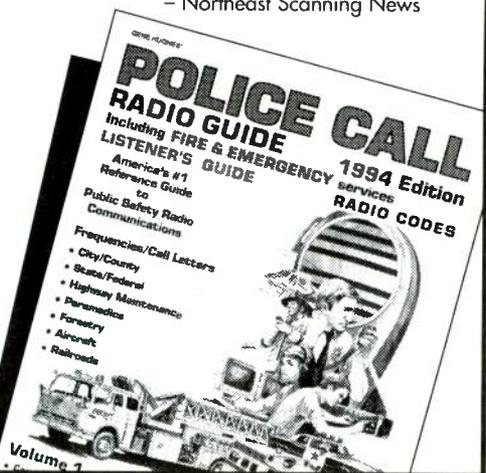
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5696: USCG Rescue 1485 wkg Portsmouth in USB at 0158. Located person in water. Made water landing to pick up downed pilot. Transporting to Nassau. At 0255 Panther, DEA Nassau in USB wkg USCG Rescue 1485 re-arrival at Nassau. At 0500 NAQI, USCGC Chincoteague in USB w/pp to District 8 Ops re vessel in distress—vsl has 5° list and is in danger of sinking at any time. (Navary, VA)

5762: Same YL/SS as 4029 kHz logging. Hrd 0400 & 0600. (Mazanec, OH)

5875: Big carrier here at 2200. At 2204 OM/RR said '236' once. Then at 2215 OM/RR rptd 236 x3, 000 until off at 2220. (mason, England)

6212: USCGC Seneca in USB at 0416 wkg CommSta Boston w/pp to AirStation Brooklyn. (Navary, VA)

6500: National Weather Service wx for Alaskan ocean area at 0225 in USB. (Shelley, CA)

6501/6200: USCGC Iris clg CAMSPAC San Francisco at 0405 w/no joy. At 0407 established comms w/CommSta Kodiak requesting shift to 4 MHz SCN. 4426/4134 kHz. (Rausch, NJ)

6507: Strong AM carrier at 2345. At 2349 "U" rptd in CW until 2359. Then rptd LOLO LOLO LOLO/01723 until 0005. then BT BT & 5F grps. At end of msg rptd LOLO call & msg. Signed down w/AR SK AR SK. (Sevart, England)

6604: OM/SS outbanders in LSB on New York/Gander Volmet freq at 0310. (Sevart, England)

6673: NOAA43 contacts McDill at 0219 & rpts position report prev given on 13267 kHz. At 0347 NOAA43 contacts McDill and gives another position/status report & says ETA for Boston is 0430. 6673 is freq delta. (Simpson, WI)

6676: Sydney Volmet w/conclusion of aviation wx and ID "This is Sydney Volmet out." SEA-VOL hrd 0805 in USB. (Baker, OH)

6731: U/i German Naval vessel? 0901, wkg DHJ59, German Naval Station Wilhelmshaven in EE at 0451 in USB. Have prev picked up these comms also on 6779 kHz USB. Vessels are German Navy ships deployed w/NATO in Atlantic. USB mode. (Baker, OH)

6738: At 0653, Easy Mark wkg McDill requests

BANGKOK RADIO (HSA)

53 Tivanon Road nonthaburi 11000 Thailand

Date JUNE 12, 1993 Time 14:56 utc
Call Sign HSA 2 Frequency 8686.0 KHz
Type of Modulation 100HA1AAN(A1A CW)
Type of Antenna DELTA MATCH
Type of Transmitter NEC HFT 114 JAPAN
Power Output 5.0 KW
Location 100° 34' 07" E 13° 43' 34" N

B. Sukta
Superintendent

Steve McDonald, BC, Canada, received this QSL.



This photo of the MARS Exhibit at the US Air Force Museum at Dayton, OH was taken by R.C. Watts, KY.

freqs for Tiger Eye. Advises P381 (5700 kHz) is primary, X904 (9017 kHz) is secondary. USAF GHFS t/c. USB mode. (Baker, OH)

7030: Warbling tone at 0330. Doesn't sound like a jammer. (McAtee, WV)

7425.5: YL/SS w/3F grps on top of WEWN at 000. (Hassig, IL)

7475: Mayflower w/kg Skybound and Accordion at 0012. Advised 7475 kHz designated W104 which

is primary and X904 is secondary. (Rausch, NJ). All calls are USAF daily tactical callsigns. (Ed.)

7535: Norfolk SESEF hrd 1714-1847. NCDG, USS Comte De Grasse (DD974) w/kg SESEF for HF xmtr tests. NGH Y, USS Peterson (DD969) attempts contact SESEF. "Stamman" w/kg SESEF & requests go green. Later QSY ed 18200 and 5745 kHz in attempt to establish secure RTTY circuit. USS Donald B. Beary (FF1085) w/kg SESEF for xmtr texts. All in USB. (Baker, OH)

7541: At 1015 YL/Bulgarian Betty sending 5F grps. Down w/Konec Konec and CW AAAA. (Mason, England)

7542.6: Illegal fishing comms from Florida in USB at 0331. (Sevart, KS)

7626: QRA DE KWS78 in CW at 1900. (Mason, England)

7886.6: YL/SS in AM at 0304 w/5F grps. Signed w/Finale, finale. (Sevart, KS)

7888: YL/SS w/Atencion 55298 at 0700, then into 76 5F grps. (Mazanec, OH)

8026: YL/Bulgarian Betty sending 5F grps at 1100. Gradually building up t/c after disappearing in late 1991. Can also be hrd daily at 1400 on 5311 kHz. (Mason, England)

8135: At 2100 very strong carrier foll by continuous tone at 2105. Then at 2110 CW stn sending 139 139 139, 1 and into rapid CW 5F grps. (Mason, England)

8215: Phoenix w/rdo check to Scorpion in USB at 1444. (Sevart, KS) One of my Refs shows Phoenix as MCAS Tustin, CA. No listing for Scorpion. (Ed.)

8285: C6LG5, M/S Dreamward concluding R/T t/c at 0340 w/WOM (on 8809 kHz) in USB. (Baker, OH)

8296: Naval Submarine Base clg TWR771 at 2300. Any info on this one?? (Shelley, CA) I do not have a listing for this one either. (Ed.)

8300: "New Star" YL/CC 4F grps in AM at 1235. (Sevart, KS)

8725: BVA, Taipei, Taiwan w/test tape 1458-1500 in LSB. (Shelley, CA)

8840: Three clandestine bcst stns and warble jammers playing cat-and-mouse games on this freq and 8820, 8850, and 8870 kHz. Bcst stns wud change freqs, but jammers would follow. (Sevart, England)

8843: Asiana 202 Welcal BRCK FI 370 gives temp & position report at 1755. Cathay 838 747 400. Hong Kong-Vancouver FI 370 gives position report at 1758. Told at Gruppy to call Vancouver on 128 MHz. Korean 16 MD-11 Seoul-Los Angeles FI 370 gives position report & ETA Denco 1923. Mendicino next. Hrd at 1904. (Heywood, BC, Canada)

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CIRCLE 55 ON READER SERVICE CARD

THE MONITORING MAGAZINE

8906: NY Radio wkg Iberian 6104 in USB at 0001 w/rdo check & Selcal check. (Navary, VA); OTH Radar bur sts at 0210 causing QRM w/ATC comms. (Sevart, KS)

8973: Zero One clg BILG for rdo chk in LSB at 0000. (Shelley, CA)

8974.5: U/i stn retransmitting KRAK (1140 kHz Sacramento, CA) from 0550 to 0700. Retransmission was live, time checks were correct. Causing QRM to customs net on 8972 kHz. (Rausch, NJ)

8976: RAAF Air Force Sydney, Australia wkg Ranger 33 w/position report & Selcal ck and request for wx at Shearwater. (Rausch, NJ)

9251: OTH Radar bursts here at 0521. Also 11233, 11857, and 12764 kHz at various times. (Sevart, KS)

9328: OM/RR at 2055 w/5F grps. Ended w/000 000. (Mason, England)

9833: 5F CW msg w/unusual characters at 1200. (Sevart, England)

9996: RWM, Moscow time station w/CW IDs at 8 and 39 mins past each hour. Monitored 2316-0010. (Rausch, NJ)

10041: 6PWR, u/i VVV QSA? K in CW at 1345. (Boender, Netherlands)

10057: Canadian 3 747 Vancouver-Tokyo Selcal ABGQ gives posit report & ETA. Hrd 2256. Japan Air 65 Los Angeles-Tokyo w/posit report at 2254. Northwest 01 747 LA-Tokyo. Selcal CEBG at 2313 w/ETA 2349. (Heywood, BC, Canada)

10177: YL rptng Whisky Lima from 1300-1305. Then 5F grps for 522 of 88 grps in length. (Mason, England)

10860: OM/EE rptng 431 from 2115-2120. Then 367 x2, 125 x2 and into 5F grps. Ended w/00000. (Mason, England)

11150: US Navy NH600 w/Incirlik in USB at 2150 for rdo check. Not satisfactory. Incirlik explains that he is testing new equipment on this freq. At 2158 Incirlik w/text test +10 count. (Boender, Netherlands)

11176: Navy RM222 w/Andrews at 1717 for pp w/Jacksonville Navy ops. (Starr, MI)

11233: Trenton Military. CanForce stn wkg various a/c in USB at 2154. (Sevart, KS)

11282: San Francisco ATC wkg United 805 at 2211 in LSB. (Shelley, CA)

11342: ARINC Honolulu wkg Delta AGKA w/pp. A/c apparently refused landing rights. Company arranging alternate landing site in Solomon Islands. Sounded like a serious incident. USB at 0350. (Navary, VA)

11387: Sydney, Australia, Bangkok, Thailand and Singapore VOLMET bcsts at 1100, 1110, 1120 respectively. Bangkok report is computer generated electronic voice. Sydney & Singapore hrd in 2100 time slot also. (Rausch, NJ)

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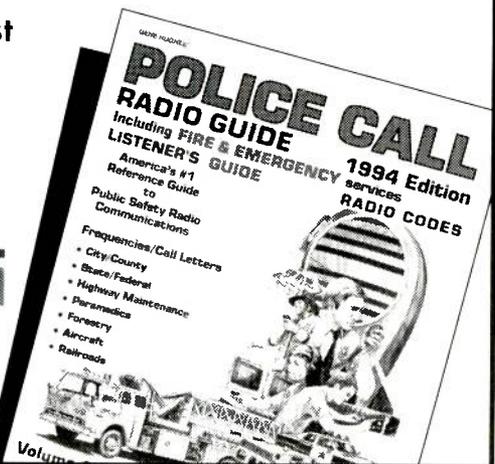
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11470: YL/EE passing 2/3F grps at 1550 in USB. (Shelley, CA)

11570: YL/EE rptng 528 in AM at 1703, then 190 53 and into 5F grps. Signed off w/190 190 190 53 53 00000. (Sevart, KS)

12212: CW stn rptng 791 x3 27 833 x3 24 555 x3. Then sent 27 grp msg for 791 and 24 grp msg for 833. Signed down w/000. (Sevart, England)

12245: At 0006 s/yacht Odessa (URLB), said to be on maiden voyage re race in Uruguay w/WOM, Pennsuco, FL (on 13092 kHz) for R/T t/c. (Baker, OH) This is the Whitbred Yacht Race which described in column. (Ed.)

12251: ELFT8, Cruiseship M/S Celebration in USB at 1319 wkg WOM, Pennsuco, FL. (Navary, VA)

12984: VNG, Landilo, Penrith, NSW Australia, time signal stn in AM at 1424. (Sevart, KS)

13042.5: PJC, Curacao, Netherlands Antilles w/t/c list in CW at 1443. (Sevart, KS)

13089: NMG, USCG CommSta New Orleans wkg F/V Freedom on 3 hr voice sked re status of Cuban nationals they have on board. Hrd 1705 in USB. (Baker, OH)

13211: Air Force 2 clg Offutt Global, Andrews

answers & makes pp to Crown 13 re FAX sent. Hrd 0238 in USB. (Baker, OH)

13267: McDill calls NOAA43 several times for position/status report. 43 answers w/report & tells McDill they unable call on hour because they were running experiment and didn't want HF transmission to bother it. Said 12367 kHz was freq Golf. Later requested QSY to freq Delta (6673 kHz). (Simpson, WI)

13420: OM/EE said '821' once at 1906. Later at 1920 OM/EE rptd '821' til 1925 then 604 x2 33 x2 and into 5F grps. (Mason, England)

13890: YL/GG rptng 'Echo Golf' from 0900-0905 then into 5F grps for 823 of 100 grps in length. (Mason, England)

14366: U/i CW stn at 1910 sending 5F grps using cut nbr 'T' for zero. All other nbrs sent normally. (Navary, VA)

14441.5: USN MARS activity hrd 1835-0129: NNN0CFM, listed by MARS as M/V Dickerson Tide, a MSC vessel, clg Any Ship or Shore MARS station, NNN0NUW (NAS Whidbey Island) answers, NNN0NXL, USS Ashland (LSD48) clg ASSMS, NNN0NAV (MARS HQ, Wash DC) answers, NNN0CLB, USS Long Beach (CGN9) clg Any SS MARS Op, NNN0NHA, (USN Norfolk VA) answers, QSY 14383.5 kHz, NNN0CRB, USS Leyte Gulf (CG55) clg ASSMS, NNN0BWL answers, QSY 13528.5, NNN0MET, MCAS El Toro w/QSY 14818.5 kHz, NNN0COU, USS Saratoga (CV60) clg ASSMS, NNN0HQA (Tulsa, OK) answers, QSY 14463.5 kHz, All in USB. (baker, OH)

14686: Atlas, DEA in USB at 1739 wkg various a/c incl 561, 101, and 520. (Navary, VA)

15015: SAM 28000 clg Andrews at 2115 but no response. Two EAMs ran at same time, McDill & Lajes at 1439. (Starr, MI)

16414: YL/GG rptng 'Kilo Whiskey' from 0930-0935 then 5F grps for 091 and 023. (Mason, England)

17113: GKB3, Portishead, England in CW at 1818 w/DE GKB3 mkr. (Baker, OH)

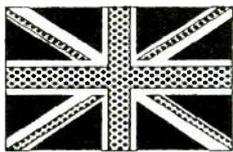
17220.5: NMC, USCG CAMSPAC San Francisco, w/QSX mkr in CW at 1820. (Baker, OH)

20941.5: AAR3CB, w/AEM6USS, both u/i Army stns. In USB at 1858. (Boender, Netherlands)

22330.5: D3E81, Luanda, Angola in CW at 1552 w/mkr. (Navary, VA)

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

27994.5: LUCA clg CQ in CW at 1907. Prob outbänder. (Sevart, England)



"PLYMOUTH RESCUE" RAF RESCUE CENTRE PLYMOUTH, ENGLAND

THIS WILL VERIFY RECEPTION OF:
RAF RESCUE CO-ORDINATION CENTRE PLYMOUTH RESCUE
ON 5680.0 KHZ USB AT 0624 UTC ON 10 SEPTEMBER 1993

TRANSMITTER/POWER: TYPE UNKNOWN, o/p POWER APPROX 10KW

ANTENNA: COMMON WIDEBAND TX/RX.

LOCATION: PLYMOUTH AREA-

VERIFYING OFFICIAL AND STAMP:

Offutt

PFC returned to Richard Baker, OH.

SCANNING VHF/UHF

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

Spring weather isn't too far away. When the first warm days of the end of winter come, it's not a bad idea to check on the antenna farm. How did your antennas make it through the harsh winter that most of the country experiences?

Connectors may have started corroding when ice got inside, cables may have become loose, antenna mounts may need tightening and antennas may be broken because of ice and wind. Check over your antennas as soon as possible and plan your corrective action so you don't miss too much of the listening pleasure.

Our first letter this month comes from Bishwa Shrestha of Rock Springs, Wyoming. Bishwa uses a Realistic Pro-39 scanner and used to be a shortwave listener. With scanning as a new hobby, Bishwa says there isn't too much to be heard in the Rock Springs area. However, here are a few frequencies Bishwa passes along: 154.800, Rock Springs sheriff; 155.445, Rock Springs police; 154.950, Green River police; 155.415, Green River police; 122.800, Rock Springs Airport; 155.550, Western Wyoming College; 135.075, Rock Springs Airport weather service; 158.775, Star bus service.

Thanks for the listing from your area.

Don Drenenberg, W9PST, of Milwaukee, Wisconsin, says he enjoys reading POP'COMM and is interested in the latest scanner frequencies. Don says he is having trouble locating a frequency used by security at Mayfair Mall in the Milwaukee suburb of Wauwatosa, Wisconsin. Don spends a lot of time at this mall as he walks six to eight miles each week there.

He says that the mall formerly used 154.515 for security, but seems to have moved to a new frequency. Don has noticed a short antenna on the guards' handheld radios and wonders whether they are using 800 MHz.

Well, not knowing HOW short the handhelds' antennas are, it's hard to say whether they are using UHF (such as 461-465 MHz) or the 800 MHz band. My bet is they are using UHF, since most mall security forces use this band. In fact, very few (and I mean FEW) use the 800 MHz band.

I did look through some old records and noticed that the mall is licensed as Froedtert Mayfair Inc., on not only 154.515, but also 151.715, both under the call sign of KUM-456. I'd check that 151-MHz frequency for possible action. I'd also search from 461 to 465 MHz and look for a repeater in that segment that the mall may have installed.

For what it's worth, here are some fre-



Eddie Muro doesn't miss much action with this setup at his home in Cedarhurst, New York. A Realistic Pro-2005 is hooked up to a Hustler discone antenna on a six-foot mast on the roof. To the right of the Pro-2005 is a Regency HX1500 with a drop-in charger and a Motorola Expo UHF-handheld he uses for car-to-car chatter. Rounding out the other equipment is a Realistic DX-380 shortwave receiver and a Bearcat 4-6 Thinscan handheld scanner.

quencies used by department stores at Mayfair Mall that I uncovered: 154.625 (paging), Marshall Fields, KWB774; 464.425, JCPenney, WNFK626; 464.725, JCPenney, KNCA778; 464.975, Kohl's, KNGJ-300. Let me know what you hear and if you find anything of interest at the mall.

For the record, Don uses a Uniden Bearcat 800XLT and a Cobra SR12 handheld for his scanning.

Shayne Lovitte of Mobile, Alabama, wrote to tell us about how he monitored a disaster in his area. As you might recall, the Amtrak Sunset Limited train derailed in Saraland, Alabama, in September 1993. Shayne is a firefighter and emergency medical technician in Prichard, Alabama, but was unable to respond to this incident because of his father's health.

Shayne said that at 3 a.m. on Sept. 22, 1993, a tugboat was pushing six barges up the Bayou Canot when the tug pilot radioed that he was lost because of heavy fog. A few moments later he radioed that a barge hit a bridge.

However, by this time, the Amtrak Sunset Limited was passing over the 80-year-old trestle that crosses Bayou Canot. A few moments later, the barge pilot radioed that a train had derailed off the trestle and into

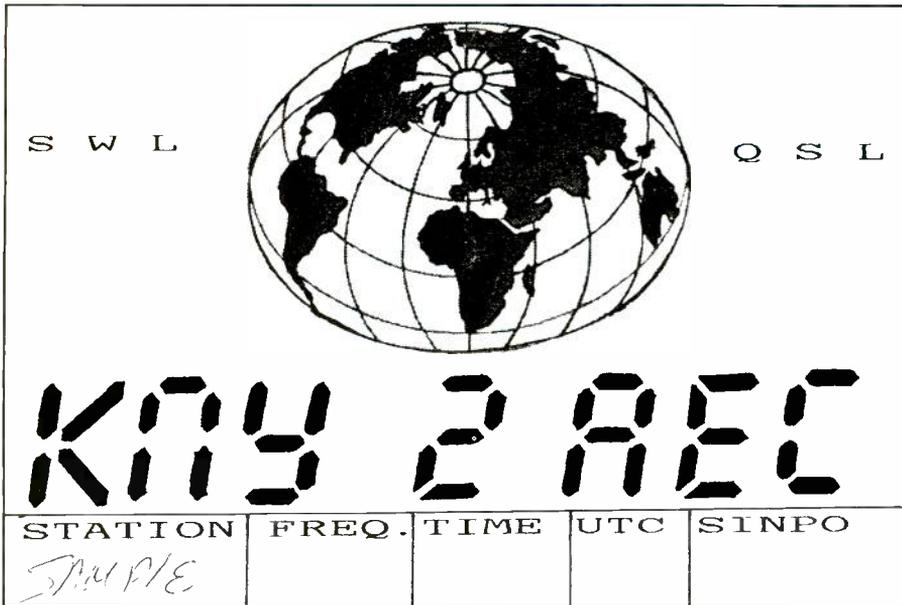
the bayou. This soon was followed by the largest response of emergency personnel ever dispatched in Mobile County, Alabama. Shayne said that there was so much response action that his Uniden Bearcat 890XLT and 200XLT could hardly keep up with all the radio traffic.

Shayne said he was one of those people who thought it wasn't necessary for scanner listeners to have readily available a list of disaster frequencies should something happen in your area. As I have written here numerous times, if you have a list prepared and ready to punch into your scanner, you won't miss any of the exciting action. As Shayne said, "That next disaster might be in your area. It might even save your life."

Here is a list of frequencies that Shayne stayed tuned to while units were carrying out the grim task of accounting for the 210 people on board (of which 47 died): 460.575, Mobile Fire Department, Channel 1; 460.600, Mobile Fire Department, Channel 2; 453.100, Mobile Police Department command; 155.205, Newmans Ambulance; 155.160, Fountains Ambulance; 453.600, Mobile County Civil Defense; 453.400, Mobile County Civil Defense; 134.750, National Guard; 160.370, CSX Railroad; and 156.800, Coast Guard, marine Channel 16.

Shayne said that as a firefighter and EMT, this was the big call he didn't want to hear. Most of the communications at the scene dealt with the dead, Shayne said. "I love scanning," Shayne said, "and I still will be listening for that next big call, but I hope the next one won't be as bad as this one."

Todd Steginski of West Springfield, Massachusetts, says he scans with the following scanners: Uniden Bearcat 855XLT, 55XLT and 140XL. He passes along the following frequencies that are active in his area: 155.520, West Springfield police; 154.145, West Springfield fire; 155.100, West Springfield public works; 460.100, Springfield police, channel 1; 460.450, Springfield police, channel 2, records; 460.500, Springfield police, channel 3, detectives; 42.46, Massachusetts State Police, channel 6, Troop B; 42.500, Massachusetts State Police, Channel 4, tactical; 159.030, Massachusetts State Police, turnpike patrols, Troop E; 159.240, Massachusetts Turnpike Authority, maintenance; 31.46, Massachusetts Environmental Police, base to car; 31.50, Massachusetts Environmental Police, car to base; 460.225, Western Massachusetts Law Enforcement Council (WEMLEC) intercity



This good-looking station card is sent out by Francisco, Registered Monitor KNY2AEC, of Elmhurst, New York.

police net; 460.475, WEMLEC secondary net; 154.175, Springfield fire; 155.265, Charter Ambulance; 155.340, Springfield C-Med ambulance to hospital; 463.000, Springfield C-Med ambulance to hospital, MED-1; 463.125, Springfield C-Med ambulance to hospital, MED-6; 47.98, Western Massachusetts Electric Co. northeast utilities; 134.850, Westover Air Reserve Base tower; 464.575, Springfield school buses; and 151.460, Hampden County Correctional Facility at Ludlow Jail.

Todd also inquires as to how he can become a Registered Monitor. In fact, Scanning VHF/UHF usually gets at least a dozen requests for this information every month. Registered Monitors receive a distinctive identifier, such as my own, KPA3CA, which greatly helps identify them as a serious monitor when writing to others, especially when seeking verification letters or QSL's.

For more information on the popular Registered Monitor program, write to CRB Research Books Inc., P.O. Box 56, Commack, N.Y. 11725, and tell them POP-1-COMM sent you!

F. Robertson of Port Hueneme, California, says he likes to visit the casinos in Las Vegas and Laughlin, Nevada. He has a printout of police and fire frequencies for Las Vegas, but not the casinos. He wonders where he can obtain such a list. One of the easiest ways to obtain a list is to start searching yourself. Most casino communications take place in the 461-465 MHz range, however, some are now migrating to the 851-861 MHz region, too, including some trunked systems. In addition, some paging operations have moved to the 929-MHz band for some casinos (and all of this applies not only in Nevada, but also

in Atlantic City, New Jersey). If you search through these two band ranges, you'll hear most of the casino action.

If you want an actual listing of casino frequencies, one suggestion is to pick up the book, "Monitor America." It has detailed casino frequencies for each of the gambling hot spots in Nevada. Many of our advertisers carry this book.

Don Walters of Orland Park, Illinois, says he uses a Uniden Bearcat 2500XLT and enjoys it a lot. He wrote to inquire about the Registered Monitor program. Don, write to CRB Research Books Inc. at the address listed earlier in this column for complete details.

Michael Langley of Kinder, Louisiana, checks in with some frequencies of interest for his area: 155.565, Allen Parish sheriff; 155.595, Calcasieu Parish sheriff; 155.520, Jeff Davis Parish sheriff; 151.130, Jeff Davis Parish mosquito control; and 161.800, Cameron marine operator.

Charles Boyd, KE0AH, of Louisiana, Missouri, sends along some frequencies for Louisiana, in Pike County, Missouri: 154.340, city fire F1; 154.010, city fire F2; 154.280, city fire F3; 155.010, city police F1; 155.730, city police F2; 156.000, city police F3; 155.475, city police F4; 155.955, city government F1; 155.730, county sheriff F1; 155.010, county sheriff F2; 156.150, county sheriff F3; 155.475, county sheriff F4.

What are your favorite frequencies? How about sending along a photo of your listening post? What questions do you have about scanning? Send them to: Chuck Gysi, N2DUP, Scanning VHF/UHF, Popular Communications, 76 N. Broadway, Hicksville, N.Y. 11801-2909 ■

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FCC ACTIONS AFFECTING COMMUNICATIONS

U.S. Court Of Appeals FCC Motion To Dismiss

In its continued effort to eliminate Application "Mills," the Licensing Division of the Private Radio Bureau dismissed as defective over 100 Multiple Address System (MAS) station applications (Part 94) which had been filed with the Commission by seventeen applicants. The defective applications were photocopied from blank coordination masters purchased by Warren Havens of Sierra Comm Partners, Berkeley, California.

At the time of purchase, Havens did not hold specific application names. By purchasing prepared masters and inserting the names and frequencies later, Havens could not and did not take into account the other applications he prepared at the same time, nor did the coordination report, as required by the Commission's Rules, properly consider contemporaneous applications filed by other applicants. The individual applicant showings required under the provisions of 47 C.F.R. Section 94.63 (d) (4) could not be met. Due to the mass production, the applications were replete with errors.

Petitions for reconsideration were filed on behalf of the applicants in May 1992. The petitions were denied pursuant to delegated authority, on the basis that the applications were defective at the time of submission. The appellants filed appeals before the United States Court of Appeals for the District of Columbia Circuit (cases later consolidated under the lead docket of *Paula Tsacomas vs. Federal Communications Commission*). By Order filed June 29, 1993, the Court granted the Commission's motion to dismiss the consolidated cases on the basis that the appellants had not exhausted their administrative remedies prior to seeking judicial review.

A Petition for a Rehearing *En Banc* was filed with the full Court, but was denied on September 10, 1993.

New FCC Form 323 Available

The FCC Form 323 (Ownership Report) has been revised. All changes to the FCC 323 were approved by the Office of Management and Budget. The revised forms been printed and are available for use. Use of the revised FCC Form 323 will eliminate the need to file a separate FCC 155, Fee Processing Form, as that form has been incorporated into the new form. Licensees and permittees are strongly encouraged to use the new form (September 1993 edition).

Ownership Report forms may be obtained either by writing to the Commission's Form Distribution Center, 2803

52nd Avenue, Hyattsville, Maryland 20781, or by calling (202) 632-FORM and leaving your request on the answering machine provided for this purpose.

New Experimental Licenses

The Commission granted the following experimental applications:

KA2XIK, Virginia Tech Seismological Observatory, to operate on frequencies 216-220 MHz to conduct a research project that will monitor the Giles County Seismic Zone for ground motion. FX: Within the state of VA.

KA2XIL, American Telephone & Telegraph, Co., to operate on frequencies 902-928 MHz for development, testing, and demonstration of a wireless key system. FX & MO: Continental U.S.

KA2XIM, American Telephone & Telegraph, Co., to operate on frequencies 864-868 MHz to perform developmental testing to evaluate the technical and engineering data with personal communications in a wireless PBX. FX & MO: Various AT&T Facilities.

KA2XIN, NEC America, Inc., to operate on frequencies 1626.5-1660.5 MHz for use of INMARSAT-M portable terminals for use in remote areas and in emergency situations. MO: Continental U.S.

KA2XIO, MA-COM, Inc., to operate on frequencies 24050-24250 MHz, 59-61 GHz, and 76-81 GHz for development, testing, and demonstration of low power radars and field disturbance sensors. FX: Lowell, MA.

KA2XIP, MA-COM, Inc., to operate on frequencies 24050-24250 MHz, 59-61 GHz, and 76-81 GHz for development, testing, and demonstration of low power radars and field disturbance sensors. FX: Detroit, MI.

KA2XIR, University of Massachusetts, to operate on frequency 915 MHz for fulfillment of U.S. Army contract. FX & MO: Within Rock Springs, PA & Amherst, MA.

KA2XIS, Volunteers In Technical Assistance, Inc., to operate on frequencies 149.8225, and 149.8925 MHz for use of an earth station in testing software and hardware aimed at furthering development and refining its PACSAT System. FX: Bethel Park, Allegheny, PA.

KA2XIU, American National Red Cross, to operate on frequencies 820-870 MHz for training and demonstration of transceivers and other communication devices for use as part of an emergency relief program. MO: Within the states of FL, LA, & MS.

KA2XIV, Joseph Jurecka, to operate on frequency 9375 MHz for operation of an aircraft radar system for providing real time

weather radar information. FX & MO: Within 33 km of College Station, TX.

KA2XKB, Embarc Communications Services, Inc., to operate on frequencies 901-902 MHz to determine the RF propagation capabilities of low power personal data devices. MO: Miami through West Palm Beach, FL.

KA2XKI, Martin Marietta, Corp., to operate on frequencies 1730-1780 MHz and 2230-2280 MHz for fulfillment of U.S. Army contract. MO: Within the states of FL, NM, & TX.

KA2XKM, Orbital Sciences Corp., to operate on frequencies 2233.5, 2285.5, 5600, and 2420 MHz for fulfillment of U.S. Navy contract. FX: Wallops Island, Accomack, VA.

KA2KGM, Thompson Consumers Electronic, Inc., to operate on frequencies 12.2-12.7 GHz for communication essential in the research and testing of a simulated direct broadcast satellite service. FX: Indianapolis, Marion, IN.

KA2XKY, Cybortech, Inc., to operate on frequencies 10.525 MHz and 49.875 MHz for development and testing of radio transceivers. MO: Burlington, NC.

KA2XLE, Inflight Phone Corp., to operate on frequencies 818, 823, 948, and 953 MHz for development of a digital air-to-ground network that will provide air travelers in Europe with advanced flight link passenger communications and entertainment systems. MO: airborne.

KA2XLR, E.F. Johnson, Co., to operate on frequencies 220-222 MHz for development of the next generation 220-222 MHz equipment. FX & MO: Bumsville, Dakota, MN.

KA2XLY, The Boeing Co., to operate on frequencies 864.1-868.1 MHz for research & testing of GEC Sensors Air Fone on foreign aircraft. MO: Aboard Aircraft.

KA2XLZ, Hunter Engineering Co., to operate on frequencies 910-928 MHz for experimental transmission and reception of 902-928 MHz signals utilizing various forms of modulation method best for the system. FX & MO: Bridgeton, St. Louis, MO.

KA2XMH, National Response Corp., to operate on frequencies 1626.5-1646.5 MHz for use of an INMARSAT System for communication in the event of an oil spill. FX: Calverton, NY.

KA2XMT, Viasat Technology Corp., to operate on frequencies 1626.5-646. MHz for testing and demonstrating portable satellite terminals. MO: Within U.S., Alaska, Hawaii, PR.

KA2XMA, Rutgers University, to operate on frequencies 2.1172 GHz and 2.172 GHz for development and testing of PRMA protocol. MO: within the state of New Jersey.

KA2XMY, State of California, to operate on frequencies 159-161 MHz for operation of a wildlife tracking device. MO: Within the state of California.

KA2XND, Radian Corp., to operate on frequency 9150 MHz to collect wind and virtual temperature profiles for ozone study. FX: Mecklenburg, Charlotte, NC.

KA2XPA, Martin Marietta Corp., to operate on frequencies 138.02-152.975 MHz for fulfillment of U.S. Army contract. MO: Camden, NJ.

KA2XVY, General Atomics, to operate on frequencies 5300, 5350, 58—, and 5850 MHz for the development of unmanned air vehicles with broad range of scientific and military applications. FX & MO: Adelanto, San Bernardino, CA.

KA2XXX, Wireless Technology Inc., to operate on frequencies 2450-2483.5 MHz for the development and testing of a wireless real time video system that will be marketed to the public law enforcement segments of business and industry. MO: Continental U.S.

KA2XXY, Topham Audio, Inc., to operate on frequencies in the 494-608 MHz, 150-216 MHz, 157-174 MHz, and 72.1-75.1 MHz ranges testing FM wireless microphones and walkie-talkies in connection with production of such equipment. FX: Orlando, Orange, FL.

KA2XYZ, General Atomics, to operate on frequencies 5300, 5350, 5800, and 5850 MHz for demonstration of a GNAT-

750 unmanned air vehicle. FX: Blackwell-Tonkawa, OK.

KC2XYU, Phonic Ear, Inc., to operate on frequencies 72, 73., 74.6-74.8 and 75.2-76 MHz to conduct field strength tests of one watt auditory assistance devices. MO: Continental U.S.

KF2XBF, Playfone Systems, Inc., to operate on frequencies 530-1705 kHz, and 88.1-107.9, 54-216, 450-451, and 455-456 MHz to explore the technical and economic feasibility of providing live on-site radio broadcasts to attendees at sporting events. MO: United States, Virgin Islands & Puerto Rico.

Amateur Service International Arrangements

The following arrangements have been made for amateur stations regulated by the FCC to communicate with amateur stations located in other countries.

Permissible countries: Section 97.111 of the Commission's Rules, 47 C.F.R. § 97.111, authorizes an amateur station licensed by the FCC to exchange messages with amateur stations in other countries, except with those in countries whose administration has given notice objecting to such radiocommunications. Currently, there are no banned countries.

Types of Messages: Section 97.117 of the Commission's Rules, 47 C.F.R. §

97.117, stipulates that amateur station transmissions to a different country, where permitted, shall be in plain language and shall be limited to messages of a technical nature related to tests, and to remarks of a personal character for which, by reason of their unimportance, recourse to the public telecommunications service is not justified.

Third party communications: Section 97.115 of the Commission's Rules, 47 C.F.R. §97.115, authorizes an amateur regulated by the FCC to transmit a message from its control operator (first party) to another amateur station control operator (second party) on behalf of another person (third party). No amateur station, however, shall transmit messages for a third party to any station within the jurisdiction of any foreign government whose administration has not made arrangements with the United States to allow amateur stations to be used for transmitting international communications on behalf of third parties.

The following countries have made the necessary arrangements with the United States to permit an amateur station regulated by the FCC to exchange messages for a third party with amateur stations in: Antigua and Barbuda, Argentina, Australia, Belize, Bolivia, Bosnia-Herzegovina, Brazil, Canada, Chile, Columbia, Federal Islamic Republic of Comoros, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, The Gambia, Ghana, Grenada, Guatemala, Guyana, Haiti, Hon-

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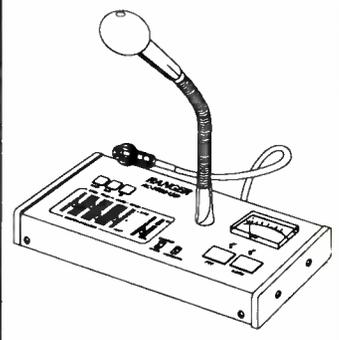
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The United Nations has arrangements with the United States as well, permitting an amateur station regulated by the FCC to exchange messages for a third party with amateur stations 4U1ITU in Geneva, Switzerland, and 4U1VIC in Vienna, Austria.

No amateur station regulated by the FCC shall transmit messages for a third party to an amateur station located within the jurisdiction of any foreign government not listed above. This prohibition does not apply to a message for any third party who is eligible to be the control operator of the station.

Contact: Personal Radio Branch/ssd/prb, Room 5322. (202) 632-4964.

Amateur Service Reciprocal Operating Arrangements

The United States has made arrangements with the following countries to grant a reciprocal operating permit (FCC Form 610-AL) to their citizens who hold amateur

licenses issued by the country of citizenship: Antigua and Barbuda, Argentina, Australia, Austria, The Bahamas, Barbados, Belgium, Belize, Bolivia, Botswana, Brazil, Canada (Canadian amateur service stations do not need a reciprocal operating permit while operating in the United States), Chile, Colombia, Costa Rica, Cyprus, Denmark (including Greenland), Dominica, Dominican Republic, Ecuador, El Salvador, Federated States of Micronesia, Fiji, Finland, France (including French Guiana, French Polynesia [Gambier, Marquesas, Society, and Tubai Islands and Tuamotu Archipelago], Guadeloupe, Ile Amsterdam, Ile Saint-Paul, Iles Crozet, Iles Kerguelen, Martinique, New Caledonia, Reunion, Saint Pierre and Miquelon, and Wallis and Futuna Islands), Federal Republic of Germany, Greece, Grenada, Guatemala, Guyana, Haiti, Honduras, Hong Kong, Iceland, India, Indonesia, Republic of Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kiribati, Kuwait, Liberia, Luxembourg, Mexico, Monaco, Netherlands, Netherlands Antilles, New Zealand, Nicaragua, Norway, Panama, Paraguay, Papua New Guinea, Peru, Philippines, Portugal, Seychelles, Sierra Leone, Solomon Islands, Republic of South Africa, Spain, St. Lucia, St. Vincent, and the Grenadines, Surinam, Sweden, Switzerland, Thailand, Trinidad and Tobago, Tuvalu, United Kingdom (including Bermuda, British Virgin Islands, Cayman Islands, Channel Islands [including

Guernsey and Jersey], Falkland Islands [including South Georgia Islands and South Sandwich Islands], Great Britain, Gibraltar, Hong Kong, Isle of Man, Montserrat, Northern Ireland, Republic of the Marshall Islands, Saint Helena [including Ascension Island, Gough Island, and Tristan Da Cunha Island], and Turks and Caicos Islands), Uruguay, Venezuela and Yugoslavia.

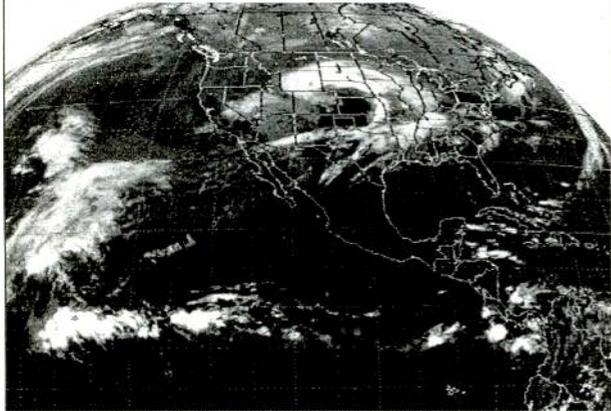
A reciprocal permit is valid for one year or until the expiration date on the alien's amateur service license, whichever comes first. An alien may apply for the permit by sending a completed FCC Form 610-A application and a photocopy of the alien's license to FCC, 1270 Fairfield Road, Gettysburg, PA 17325-7245, U.S.A. The form is available from the FCC Consumer Assistance Branch at the same address or, in some cases, from United States missions abroad.

A reciprocal operating permittee is authorized to operate an amateur station in areas where the amateur service is regulated by the FCC. Such operation must comply with part 97 of the FCC's Rules and the International Telecommunication Union *Radio Regulations*. Operator privileges are those authorized by the alien permittee's own government, but do not exceed those of the FCC Amateur Extra Class Operator.

The call sign transmitted in the station identification procedure is that issued by the licensing country, preceded by an ap-

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appropriate letter-numeral indicator, separated by the slant mark (/) or any suitable word that denotes the slant mark. (Canadian amateur stations must transmit the indicator *after* its call sign.) At least once during each intercommunication, the alien amateur station must include, in the English language, the geographical location as nearly as possible by city and state, commonwealth or possession.

The station location letter-numeral indicators are: Alabama W4; Alaska KL7; American Samoa KH8; Arizona W7; Arkansas W5; Baker Island KH1; California W6; Colorado W0, Commonwealth of Northern Mariana Islands KH0; Commonwealth of Puerto Rico KP4; Connecticut W1; Delaware W3; Desecheo Island, PR KP5; District of Columbia W3; Florida W4; Georgia W4; Guam KH2; Hawaii KH6; Howland Island KH1; Idaho W7; Illinois W9; Indiana W9; Iowa W0; Jarvis Island KH5; Johnston Island KH3; Kansas W0; Kentucky W4; Kingman Reef KH5K; Kure Island, HI KH7; Louisiana W5; Maine W1; Maryland W3; Massachusetts W1; Michigan W8; Midway Island KH4; Minnesota W0; Mississippi W5; Missouri W0; Montana W7; Navassa Island KP1; Nebraska W0; Nevada W7; New Hampshire W1; New Jersey W2; New Mexico W5; New York W2; North Carolina W4; North Dakota W0; Ohio W8; Oklahoma W5; Oregon W7; Palmyra Island KH5; Peale Island KH9; Pennsylvania W3; Rhode Island W1; South Carolina W4; South Dakota W0; Tennessee W4; Texas W5; Utah W7; Vermont W1; Virgin Islands KP2; Virginia W4; Wake Island KH9; Washington W7; West Virginia W8; Wilkes Island KH9; Wisconsin W9; Wyoming W7.

No United States citizen, regardless of any other citizenship also held, is eligible for and FCC-issued reciprocal operating permit. Any person, however, except a representative of a foreign government, may apply for an FCC amateur license upon passing the qualifying examinations. Alien amateur operators staying in the United States for extended periods of time are encouraged to obtain an FCC amateur service license. An alien holding an FCC amateur service license is not eligible for a reciprocal operating permit. But, when an alien obtains an FCC license, it supersedes any FCC-issued reciprocal operating permit held.

Private Radio Bureau contact: J. Joy Alford at (202) 632-4964.

FCC Announces 1994 Maximum Reimbursement Fee For An Amateur Operator License Examination

The FCC announced that the new maximum allowable reimbursement fee for an amateur operator license examination will

be \$5.75. This amount is based upon a 2.7% increase in the Department of Labor Consumer Price Index between September 1992 and September 1993.

Volunteer examiners (VEs) and volunteer-examiner coordinators (VECs) may charge examinees for out-of-pocket expenses incurred in preparing, processing, administering, or coordinating examinations for amateur operator licenses. The amount of any such reimbursement fee from any one examination session, regardless of the number of elements administered, must not exceed the maximum allowable fee. Where the VEs and the VEC both desire reimbursement, they jointly decide upon a fair distribution of the fee.

This announcement is made pursuant to Section 97.527 of the Commission's Rules, 47 C.F.R. § 97.527.

Required Two-Way Radiotelephones for Survival Craft

The implementation dates and equipment carriage requirements listed below apply to the following ships: Passenger ships 100 tons gross tonnage and over; passenger ships less than 100 tons gross tonnage; carrying more than 12 passen-

gers on international voyages; cargo ships 500 tons gross tonnage and over.

Ships built before February 1, 1992:

October 1, 1993—Three or more two-way survival craft radios.¹ Each must operate on 156.8 MHz (VHF channel 16) or 457.525 MHz (UHF). All transceivers must be in type accepted by the FCC as complying with 47 C.F.R. § 80.271 or 47 C.F.R. § 80.1101.

February 1, 1995—Three or more two-way survival craft radios.¹ Each must operate on 156.8 MHz (VHF channel 16) and one other channel—156.3 MHz (VHF channel 6) is recommended. All transceivers must be in type accepted by the FCC as complying with either 47 C.F.R. § 80.1101, or for VHF radios brought on board prior to February 1, 1992, 47 C.F.R. § 80.271.

Ships built after February 1, 1992 and all vessels after February 1, 1999: Three or more two-way survival craft radios.¹ These transceivers must be in type accepted by the FCC as complying with 47 C.F.R. § 80.1101. Each transceiver must operate on 156.8 MHz (VHF channel 16) and one other channel—156.3 MHz (VHF channel 6) is recommended.

¹Cargo ships of 300-500 gross tons are only required to carry two radios. ■

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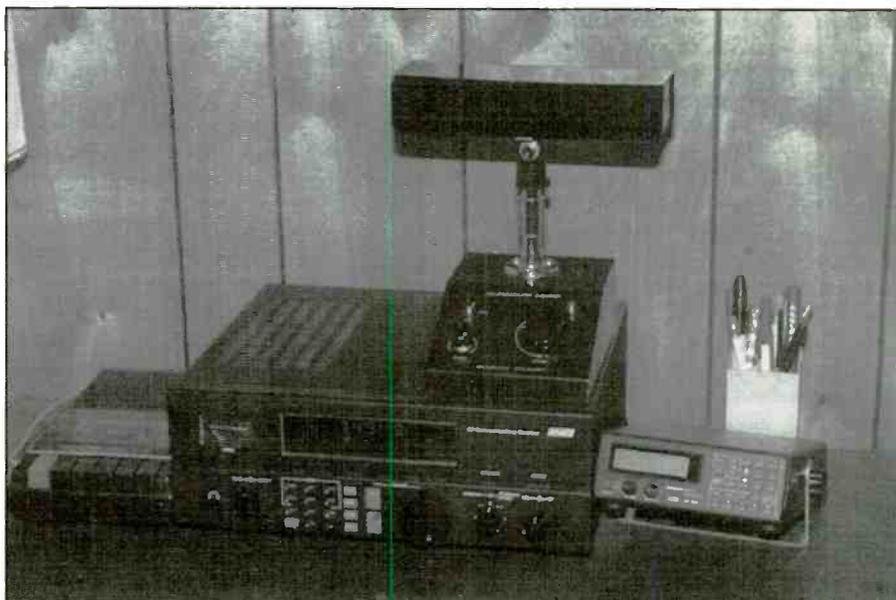
BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL-SHORTWAVE BROADCASTING BANDS

The effort to get a radio ship on short-wave from somewhere in the Caribbean continues. Although work is progressing toward getting the ship ready to go, attempts to get licenses from the governments of St. Kitts, Nevis and Anguilla have all been turned down. On board transmitters are supposed to use eight different frequencies, four during the day and four others at night. Stay tuned!

Another station has now faded into radio history. RIAS (Radio In American Sector) has been absorbed into a new German radio network—Deutschlandradio, which also includes the former Deutschlandfunk network. The new station will broadcast from both Cologne and Berlin. Guess the key question is whether the old 6005 outlet of RIAS remains on the air.

Not again! Reports say that Radio New Zealand International is having financial worries. Both the manager and news director have resigned and haven't been replaced, apparently because of money prob-



The R-8 in the shack of Mark Burns, Terre Haute, Indiana, is about to get hooked to a 1,000 foot antenna.



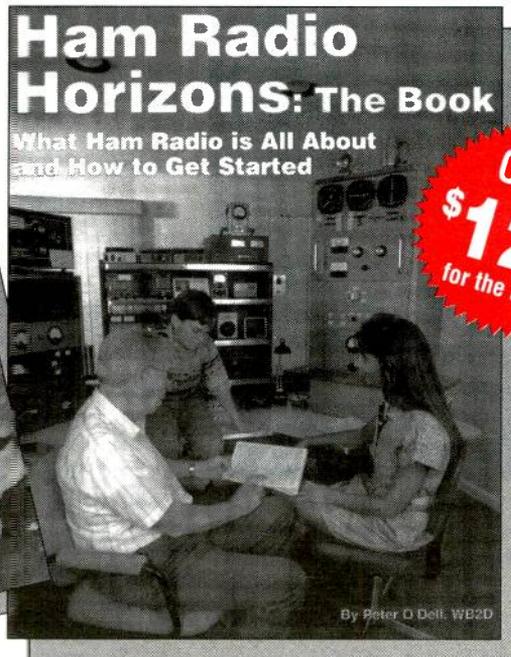
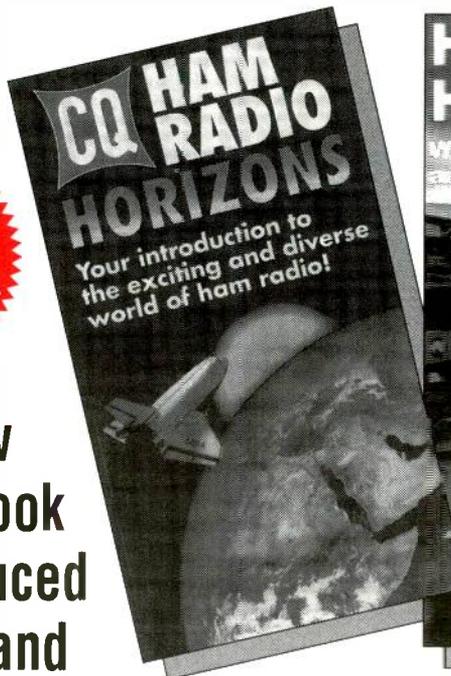
Radio Canada International sends this coverage map with their latest program schedule.



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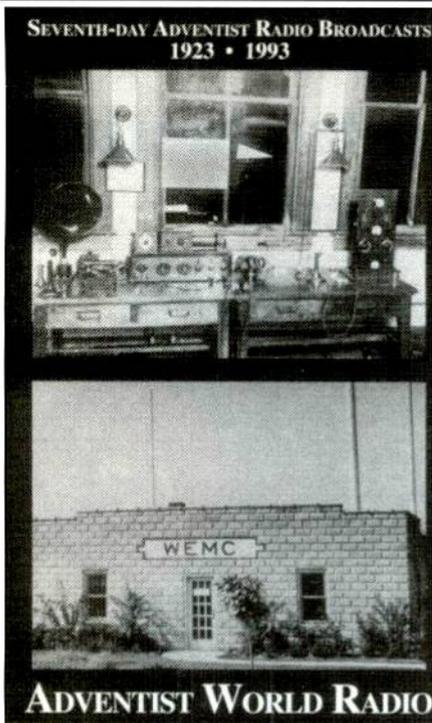
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Some of Adventist World Radio's early days are featured on one of their current QSL cards.

lems. It hardly seems fair that such a great station has had to put up with so many problems over the years!

Radio Australia is spending big bucks to upgrade two of their facilities. The Shepparton site is getting new antenna systems to enable better coverage of Southeast Asia and Papua New Guinea, serving these areas will be this transmitter site's mission from now on. Two new 250 kw transmitters are being installed at the Darwin site, and more antennas added to the complex.

We've told you about Radio Copan International from Honduras, which finally got on the air after such a long wait.

Now there's another new Honduran station reported to be active—Radio Litoral in La Ceiba is apparently operating on 4830 and identifying as "Radio Litoral, la voz internacional de La Ceiba." But somebody isn't thinking, 'cause they picked 4830

which is dominated by Radio Tachira in Venezuela. We've not seen any log reports for this yet.

In other news on the Latin American listening scene, long time Brazilian shortwave station Radio Bare has reactivated on 4895. You should be able to hear this one around 0900.

Another station reactivated—and a lot harder to pick up—is Radio Triunfal Evangelica from Chile on 5825. It's not likely to come booming in unless they've really upped the power. It used to run a mere 50 watts!

A new one in Ecuador is Radio Oriental, operating just a hair under 4800 and signing on in the general area of 1030. Another Ecuadorian, Radio Bahai, has been reactivated and is being heard using 4950 around 0930.

Another bit of challenging DX has to be the Turkish station Radio Izmir, which is only active from around the first of September to the end of May each year. It is operating on or about 7103 between 0700 and 0900 and 1100 to 1300.

Estonian Radio, always an extremely tough catch in North America, is now an impossible one because it is reported to have left shortwave. This, too, seems to have been the result of a money crunch.

Here's an interesting broadcast out of Russia if you can manage to pick it up. Radio Slavanka is a special broadcast for members of the Russian army serving in Tajikistan. It airs Monday through Friday at 1600 to 1630 on 4740, 4940, 4975 and 11985—the latter being the only frequency offering any chance for us here in North America.

AWR's Adrian Peterson says AWR reps have at least looked at the WCSN facility (which is for sale). And he says AWR is looking for ways to expand its coverage in Europe, Africa, the middle east and parts of Asia, either through new stations or via relays. It'll be awhile before we see anything in the way of definite plans, though.

Peterson says that a 10 kilowatt shortwave transmitter is about to be completed and then go on the air from an unspecified Pacific island. Now we wait for information about the who, the where and the when!

MAIL NOTES—Carol Siegel reads **POP'COMM** in braille every month and would like to hear from anyone else who shares the hobby through braille (preferably on cassette tape or in braille) Carol likes the tropical band Africans and uses a Kenwood R-2000. You can contact Carol at 6839 Parsons Avenue, Baltimore, MD 21207-6423.

Mark Burns of Terre Haute, Indiana checks in with an always welcome shack photo. Mark says he usually works medium wave, using a Drake R-8 receiver and has now obtained the material to build a 1,000 foot beverage antenna!

PLEASE BE IN TOUCH—Your shortwave loggings are always welcome. We just ask that you double space the items (at a minimum) and add your last name and state abbreviation after each, otherwise they can't be used. Don't forget those shack photos! Also welcome are QSL cards (non-returnable), station pics, schedules and literature. Your input is what makes this column go!

Here are this month's logs. All times are UTC. Broadcast language is assumed to be English (EE) unless indicated otherwise (FF = French, GG = German, SS = Spanish, etc.)

ALBANIA—Radio Tirana, 11840 at 0140. (Fenwick, PA)

ANTIGUA—BBC relay, 15220 at 1131. (Moser, PA)

ASCENSION ISLAND—BBC relay, 6005 at 0613. (Fenwick, VA)

9610 at 0428 sign on, co-channel with Radio Rwanda. Into FF to Africa at 0430. Also 15260 at 0209. (Lamb, NY)

AUSTRALIA—ABC, Alice Springs, 2310 at 1125 with country songs. (Maywoods DX Team, KY)

ABC Tennant Creek, 2325 at 1127 carrying the same program. (Maywoods, KY)

Radio Australia, 6020 at 1115 with pops. ID. news in Pidgin.

(Zamora, NM) 9580 at 10326. (Moser, PA) 15630 at 1230; 17750//17880 at 0130; 17880//21595 at 0241; 17670//17880//21525 at 0600. (Waldorf, Taiwan) 17795//21740 at 2320 with "Asia focus." (Lamb, NY)

AUSTRIA—Radio Austria Int'l, 9870 at 0134. (Fenwick, VA) 9880//11780//13730 at 1530; 15450 at 1230-1300 close and again at 1330. (Waldorf, Taiwan)

BANGLADESH—Radio Bangladesh on new 13615 at 1247 but very weak. (Rocker, NY)

BELGIUM—Radio Vlanderen Int'l, 7370//9930 at 0040 with "Radio World." Also 17555 at 1330. (Rocker, NY)

BENIN—Radio Benin/ORTB on 4870 at 2141 in FF with African music, ID, drums and news. (Lamb, NY)

BOLIVIA—Radio Fides, 4845 with "Fides" ID in SS at 0127, man talking. (Maywoods, KY)

BOTSWANA—VOA relay, 12080 at 1928 in FF. (Lamb, NY)

BRAZIL—Radio Cultura, Sao Paulo, 17815 in PP at 2241. QRM from 17820. (Paszkievicz, WI)

Radio Bandeirantes, 9645 at 0310 in PP with futbol, jingles. Parallel 6090. (Paszkievicz, WI)

Radio Nacional Amazonia, 6180 at 0900 sign on with IS, ID, phone number, "Bom Dia Brasil" program. (Lamb, NY)

Radio Novas de Paz, 9515 in PP at 2305 with news, sax bridges, ID, time checks, commercials, jingles. (Paszkievicz, WI)

Radio Educacao Rural, 4755 in PP at 2344 with commercials and music. (Maywoods, KY)

Radiobras, 15445 at 1230 with music. (Rocker, NY)

Radio Cancao Nova, 4825 in PP at 0123. (Maywoods, KY)

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Radio Bulgaria hasn't yet run out of the old Radio Sofia style QSL cards. Richard Rontone got this one not long ago.

BULGARIA—Radio Bulgaria, 6210 at 2330 with IS. (Paszkievicz, WI) New 7455, in parallel with 9700 heard at various times between 2330 and 0130. (Lamb, NY; Rocker, NY; Fenwick, VA) 12085 at 1600. (Waldorf, Taiwan)

CANADA—CFRX relaying CFRB on 6070 at 1205. (Zamora, NM)

Radio Japan Sackville relay, 6120 at 1117. (Moser, PA)

CKZN, 6160 at 2320 to 2328 when lost to Radio Netherland sign on. (Maywoods, KY)

Radio Canada Int'l, 9535 at 2359 signing off in SS. Also 11955 at 1700 with CBC news. (Fenwick, VA) 11945 at 2135 and 17820 at 1907. (Vaage, CA)

CENTRAL AFRICAN REPUBLIC—Radio Centrafricaine, 5034 at 2125 in FF but very weak. (Maywoods, KY)

COLOMBIA—La Voz del Cinaruco, 4865 at 0314

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

in SS with Caracol programming, news at 0316. (Zamora, CA) 0514. (Fenwick, VA)

Caracol, Bogota, 5075 at 1108 in SS. (Maywoods, KY)

Radio Macarena, 5975 at 1054 in SS with phone number, talk, ID. (Maywoods, KY)

Ondas del Meta, 4885 at 0327 in SS with pops, news brief, ID at 0331. (Fenwick, VA)

COSTA RICA—AWR on 11870 at 1208 with program highlights, "Family Matters." (Zamora, NM) Radio For Peace Int'l, 7385 at 1222 with DX program. (Zamora, NM)

CHINA—Voice of Jinling, 4875 in CC at 1213

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with Chinese music. (Maywoods, KY)

Gangsu PBS, 4865 at 1216 with singing, talks in CC. (Maywoods, KY)

China Radio Int'l, 9715 at 1300; 11755//15440 at 0900; 11855 at 1330. (Waldorf, Taiwan) 11680 at 0456 with IS, EE ID and sign off. (Maywoods, KY) 11715 at 2002. (Moser, PA)

CUBA—Radio Rebelde, 5025 at 0345 "Emite e Cuba y el Mundo, Radio Rebelde." (Fenwick, VA)

Radio Havana, 6010 at 0045. (Fenwick, VA) 9815 USB at 0138. (Rocker, NY)

CZECH REPUBLIC—Radio Prague on 7345 at 0115 and 9405 at 0126. (Fenwick, VA) 9810 at 0008 with talks and listener letters, 0028 multi-lingual ID "You are tuned to Radio Prague, external service of Czech Radio." (Zamora, NM) 21705 at 0730. (Waldorf, Taiwan)

ECUADOR—HCJB, 3220 at 1045 with religious programming in Quechua. (Maywoods, KY) 15115//17890 at 1335. (Zamora, NM) 17790 at 1925. (Vaage, CA)

La Voz del Napo, 3280 at 1049 in SS with Andean music. (Maywoods, KY) Radio Bahai, 4949.9 in SS at 0946. Latin piano "etudes" circa 1970. (Maywoods, KY)

EGYPT—Radio Cairo, 9900 at 2135. (Rocker, NY) 15220 at 1500 in AA and 1600 on 17690, also AA. (Waldorf, Taiwan)

ENGLAND—BBC, 3975 at 0449 in GG with news, ID, press review. (Lamb, NY) 9410 at 1900. (Moser, PA) 17840 at 1600. (Bailey, AR) 17880 at 1851. (Vaage, CA) 21660 at 1215 to Africa. (Rocker, NY)

FINLAND—Radio Finland Int'l, 15400 at 1406 in Finnish with news. ID at 1410. (Zamora, NM)

FRANCE—Radio France Int'l, 5945 in FF at 0042. (Fenwick, VA) 11670//15365 at 1230. (Rocker, NY) 11910//17650 at 1400 and 15530 in FF at 1600. (Waldorf, Taiwan) 15155//15365 at 1240 with sports. (Zamora, NM)

FRENCH GUIANA—RFO Guyane, 5055 at 0203 in FF, with ID 0207. (Maywoods, KY)

China Radio Int'l, via FG at 0211 on 13685, in SS. (Lamb, NY)

GABON—RFI relay, 4890 at 0453 in FF. (Fenwick, VA)

Africa Number One, 9580 at 0520 in FF with ID, African music. (Lamb, NY) 17630 in FF at 1233. (Maywoods, KY)

GERMANY—Deutsche Welle, 7285 at 0214 with news. (Bailey, AR) 9595 at 0030. (Fenwick, VA) 13790 at 1906. (Moser, PA) 17860 at 1904 in GG. (Vaage, CA)

Bayerischer Rundfunk, 6085 at 0050 in GG. (Fenwick, VA)

GREECE—Voice of Greece, 9420 at 0130. (Rocker, NY) 9425 at 1500 in Greek, 11645 at 1400 in RR; 15630//17515 at 1400 in Greek, with EE at 1439. (Waldorf, Taiwan)

VOA relay, 7205 at 0111. (Fenwick, VA)

GUAM—KSDA/AWR Asia, 15610 at 0130 with religious program. (Waldorf, Taiwan)

GUATEMALA—La Voz de Nahuala, 3360 at 1103 with local music and marimbas, mentions of Nahuala. (Maywoods, KY)

Radio Cultural, 3300 at 0003 with ID in SS. (Maywoods, KY)

Radio Tezulutlan, 4835 at 0124; ID in SS 0127. (Maywoods, KY)

HONDURAS—Radio Copan Int'l, 15675 at 2220 in SS with vocals, ID, address, mailbag program. (Paszkiewicz, WI)

HONG KONG—BBC relay, 11820 at 1447. (Hatenberg, MD)

ICELAND—ISBS, 15770 in Icelandic at 1224. (Maywoods, KY)

INDIA—All India Radio, 7412//9950 at 2212. (Fenwick, VA) 10330 at 1343 and 1530 with features, news, Indian music. (Waldorf, Taiwan) 11620 in various Indian languages at 1427 and 1533, English 1904. (Hatenberg, MD)

INDONESIA—Radio Republik Indonesia, 9679.9 at 1309 in II. (Hatenberg, MD)

RRI Samarinda, 9614.4 in II at 1135, female vocals. (Maywoods, KY)

ISRAEL—Kol Israel, 7465 at 2230 sign on. (Fenwick, VA; Rocker, NY) 9387 Home service "B" program in Hebrew at 1935; Kol Israel on 9435 at 1942

and 9815 at 2157 with Arab domestic service. (Hatenberg, MD) 11603 at 2200 and 15650 at 1400. (Waldorf, Taiwan)

ITALY—RAI, 9710 at 2200 with news. (Waldorf, Taiwan)

JAPAN—Radio Japan, 6085 (via England) at 0654 in JJ, into EE at 0700. (Lamb, NY) 17810 via Yamata at 2318. (Lamb, NY) 9750 at 1530; 11875//15210//15230//17810 at 0330 and 21810 at 0600. (Waldorf, Taiwan)

JORDAN—Radio Jordan, 11810 at 1330 in AA with talks and mideast music. (Waldorf, Taiwan)

KENYA—Kenya Broadcasting Corp., 4915 at 0450 with drums and chants. (Hatenberg, MD)

KUWAIT—Radio Kuwait, 13620 at 1800 with program announcement, lots of music, short news and Gulf War talk. (Waldorf, Taiwan) 2003 with history of Iraq-Kuwait relations. (Moser, PA)

LESOTHO—Radio Lesotho, 4800 at 0115, many mentions of South Africa and Lesotho. (Maywoods, KY)

LITHUANIA—Radio Vilnius, 7150 at 0005. (Fenwick, VA)

MALI—RTV Malienne, 4782.6 in FF at 2136 but barely audible. (Maywoods, KY)

MAURITANIA—ORTM Nouakchott, 4845 at 0102 with sign off procedure, ending with national anthem. (Maywoods, KY) 0630 sign on in AA. (Fenwick, VA)

MEXICO—Radio Mil, 6010 at 1153 with pops, 1157 anthem, 1200 ID "Radio Mil—la voz de ciudad," then news. All SS. (Zamora, NM)

Radio Educacion, 6185 in SS at 1306 with Mexican music and talk. (Zamora, NM) 1318 "Radio Educacion" ID and guitar music. (Maywoods, KY)

MONGOLIA—Radio Ulan Bator, 12015 at 0900-1000 with program featuring outstanding composers of Mongolia. (Waldorf, Taiwan)

MOROCCO—VOA relay, 17785 at 1930 in FF with ID, time, African music. (Lamb, NY)

NAMIBIA—Radio Namibia, 3290 at 0143 with vocals. (Maywoods, KY)

NETHERLANDS—Radio Netherlands, 6020 at 0037. (Fenwick, VA)

9720 at 0815, 9895//13700//15150 at 1500 and 13700 at 1430. (Waldorf, Taiwan)

NETHERLANDS ANTILLES—Radio Netherlands relay, 6165 at 2334. (Zamora, NM) 0350. (Rocker, NY) 17605 at 1928 with IS, ID and sign on. (Moser, PA) 21515 to Africa at 1914. (Lamb, NY)

NEW ZEALAND—Radio New Zealand, 9700 at 1038; 1220. (Moser, PA; Northrup, MO)

NIGERIA—Radio Nigeria, Kaduna, 4770 at 2140. (Maywoods, KY) 0457 in African language with pops, ID at 0504 and news. (Fenwick, VA)

Voice of Nigeria, 7255 at 0545. (Maywoods, KY) 0653. (Fenwick, VA)

NORTH KOREA—Radio Pyongyang, 6570 at 1112. (Moser, PA) 9325 in GG at 2123, 9977 at 1148 in SS. (Hatenberg, MD) 9345

at 1300, 15180 at 0600. (Waldorf, Taiwan) 13760 at 2341 in SS to 2349 sign off. (Lamb, NY)

NORTHERN MARIANAS—KHBI, 9425 with news, letters, IDs. (Pappas, SD)

NORWAY—Radio Norway Int'l, on new 6120 at 2310 in EE. (Rocker, NY)

PAKISTAN—Radio Pakistan, 11570 at 1600 with news, then slow EE; 17705//21730 at 0230 with news, then slow EE. (Waldorf, Taiwan)

PAPUA NEW GUINEA—NBC Port Moresby, 4890 at 1132 with pops, local time "20 'til 10", ID and "Concert Hall." (Maywoods, KY)

Radio Milne Bay, 3365 at 1151 with children singing, talks in Pidgin. (Maywoods, KY)

Radio Western Highlands, 3375 at 1145 in Pidgin, "wanna-wanna bilong." (Maywoods, KY)

Radio New Ireland, 3905 at 1156, country/western. EE. (Maywoods, KY)

PERU—Radio Horizonte, 4505 in SS at 0905, Andean-flavored vocals, full IDs. (Maywoods, KY)

PHILIPPINES—FEBC, 11650 at 2257 in EE with IS, ID. (Paszkiewicz, WI)

Radio Pilipinas, 17760//17840//21580 at 0230 with sign on, "Voice of Democracy" program, news. (Waldorf, Taiwan)

Radio Veritas Asia, 9520 with EE ID at 1228, into Ukrainian at 1230. (Pappas, ND) 1300 with religion. (Waldorf, Taiwan)

VOA relay, 15185//17735//17820 at 2259 with

IS, ID, news. (Lamb, NY)

POLAND—Polish Radio on new 11815 at 1301. (Rocker, NY)

PORTUGAL—Radio Portugal, 9570 at 0138 in PP. (Fenwick, VA) 9705 at 0156. (Rocker, NY) 17900 at 1900 and 21515 at 1430. (Waldorf, Taiwan) VOA relay on 6140 at 0530. (Fenwick, VA)

ROMANIA—Radio Romania Int'l, 6155 at 0235. (Rocker, NY)

RUSSIA—Radio Moscow, new 7150//7180 at 2210. (Rocker, NY) 0108. (Fenwick, VA) These two plus parallels 9620//12050 at 0227. (Lamb, NY) On top of CHU, 7335, at 2314. (Maywoods, KY) 9480 in AA at 1957; 9550 at 2153 (Hatenberg, MD) 9705 at 1400; 12050 at 0600; 12050//15170//17570//21625 at 0230. (Waldorf, Taiwan) 12020//new 15380 at 1230. (Rocker, NY) 12020 at 1128. (Moser, PA)

15425//17570 at 2330. (Zamora, CA) Radio Galaxy, 9880 at 2239 with modern Russian music. (Hatenberg, MD)

Radio Aum Shinrikyo, 15425 at 2030 sign on. Address given as 3-8-1 Hitoana Fujinoyma Shizouka, Japan 41801. Then Radio Moscow ID and off. (Zamora, NM)

AWR Russia via Novosibirsk, 9810 at 1059 with IS, ID, choir, religion in presumed CC. (Lamb, NY) 9835 at 0230 with ID, fanfare, IS, religion. Radio Budapest absent from the frequency. (Paszkiwicz, WI)

Radio Rossii, 12175 USB feeder at 12557 in RR with IDs, news. (Lamb, NY)

RWANDA—Radio Rwanda, new 15340 at 1800-1830 in FF with orchestra, announcements, mentions of Rwanda and news. (Paszkiwicz, WI) 1936 with "Vie Nouvelle" religious program, African music, ID, anthem and off 2102. Also on new 9610 at 0256 sign on with IS and ID in several languages. (Lamb, NY)

DW Kigali relay, 7225//9565 at 0402 and 15424 at 2147. (Lamb, NY)

SAUDI ARABIA—BSKSA, 11935 in AA at 1906. (Hatenberg, MD)

17895 in AA at 0300. (Waldorf, Taiwan)

SEYCHELLES—FEBA, 11710 at 1530 with mostly Asian news, Bible talk. (Waldorf, Taiwan) 11975 at 1940 in AA, Off at 2004. (Lamb, NY)

SIERRA LEONE—SLBC, 2155 in EE with talks, ID "This is the SLBC in Freetown," drums, music. (Lamb, NY) 0728, political speech. Low modulation. (Maywoods, KY)

SINGAPORE—BBC relay, 9740 at 1235. (Zamora, NM) 1121. (Hatenberg, MD) 11750 at 1456. (Lamb, NY) 1506, and 11920 at 1510. (Hatenberg, MD)

Singapore Broadcasting Corporation/Radio One, 5052 at 1122 very poor. (Maywoods, KY) 1330 with old pops, PSAs, news at 1500 and 1600. (Waldorf, Taiwan)

SLOVAK REPUBLIC—Radio Slovakia Int'l, 17535 at 0830. (Waldorf, Taiwan)

SOLOMON ISLANDS—SIBC, 5020 with singing/chanting at 0508. (Hatenberg, MD)

SOUTH AFRICA—Channel Africa, 11750 at 0525 in PP with African music, ID, news. (Lamb, NY) 15240 at 1500 sign on. (Waldorf, Taiwan)

SABC, 3320 at 0139 with vocals. (Maywoods, KY)

SOUTH KOREA—Radio Korea, 5975 at 1400 with news. 7275 at 0633. (Waldorf, Taiwan) 7275 at 1230 sign on in RR. (Zamora, NM)

11715 via Canada at 1037. (Moser, PA)

SPAIN—Spanish Foreign Radio, 5970 at 1210 in SS. (Northrup, MO) New 9540 at 0016 with DX program. (Rocker, NY)

11945 at 0000 with IS, ID. (Fenwick, VA) 17870 in SS at 1901. (Vaage, CA)

SUDAN—Rep. of Sudan Radio, 9165 at 0320 in AA with news, ID "Huna Omdurman" and easy listening music to possible jamming at 0324. (Lamb, NY)

SRI LANKA—SLBC, 15425 at 1500 with news and "Music From the Studio." (Waldorf, Taiwan)

SWEDEN—Radio Sweden, 9695 at 0002 with news. (Fenwick, VA)

15240 at 1451 with sports, 1459 ID and off. (Zamora, NM) Here and parallel 17870 at 1330. (Rocker, NY) 17740 at 1230; 17870 at 1430 to North America. (Waldorf, Taiwan)

SWAZILAND—Trans World Radio, 5055 at 0519 with music. (Hatenberg, MD)

SWITZERLAND—Swiss Radio Int'l, 6135 at

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0101. (Fenwick, VA)

7480 at 1329 with ID, ending service to SE Asia, 1330 into FF. Also at 1312 in // with 11690. (Zamora, NM) 9885//12035//13635//15505 at 2004. (Moser, PA) 15505 at 1500. (Waldorf, Taiwan)

SYRIA—Radio Damascus, 12085 at 1851 in GG with Arabic music, talks by woman. (Hatenberg, MD) 15095 at 2140 with music, ID, "Reports From Syria." (Zamora, NM)

TAHITI—Radio Tahiti, 11827 at 0358 man in FF with island music. (Maywoods, KY)

TAIWAN—Voice of Free China via WYFR, 5950 at 0250. (Bailey, AR) 9765//11745//11860 at 0200. (Waldorf, Taiwan)

Voice of Asia, 7445 at 1100 with news and features on China. (Waldorf, Taiwan)

TANZANIA—Radio Tanzania, 5050 at 0330 with frequent mentions of Dar es Salaam, ballads, country. (Paszkiwicz, WI)

THAILAND—Radio Thailand, 11905 at 0345 "This is Radio Thailand from Bangkok." (Waldorf, Taiwan)

TOGO—RTT Togolaise, 5047 at 1215 in FF. (Maywoods, KY)

TUNISIA—7475 at 2108, 11550 at 1756 and 17500 at 1510, all in AA. (Maywoods, KY) 12005 at 1900. (Hatenberg, MD)

TURKEY—Voice of Turkey, 9445 at 0127 with Turkish music. (Fenwick, VA) 9445 at 2134, 9460 at 1950 and 2140, 11955 at 1521 and 15350 at 2135. (Hatenberg, MD)

UKRAINE—Radio Ukraine Int'l, 4825//7195//7240//9505//9860 at 0003 in GG. Then all into EE at 0100, adding 17690. (Lamb, NY) 7195 at 2200. (Rocker, NY) 17890 at 0100. (Waldorf, Taiwan)

UNITED ARAB EMIRATES—UAE Radio, Dubai, 13675 at 1600 and 21700 at 0530 with "Islamic Encyclopedia." (Waldorf, Taiwan)

UAE Radio, Abu Dhabi, 11710 at 2214; 2330. (Fenwick, VA; Rocker, NY) 21735 at 1015 in AA. (Waldorf, Taiwan)

UNITED STATES—WINB, Red Lion, 15145 at 2317. (Zamora, NM)

Croatian Radio via WHRI at 0003 sign on 9495, into another language at 0006. (Zamora, NM)

UZBEKISTAN—Radio Tashkent, 9540 at 1215 with ID, editorial. (Northrup, MO) 17745 at 1200 with news. (Waldorf, Taiwan)

VATICAN—Vatican Radio, 6245 at 0615. (Fenwick, VA) 9605 at 0225. (Rocker, NY) 11625 at 2017. (Lamb, NY) 11640 at 1600 with mass (Saturdays only), 15090//17525 at 1345 to 1405. (Waldorf, Taiwan) 15090 at 1401. (Zamora, NM)

VENEZUELA—Radio Rumbos, 4970 at 0520 in SS. (Fenwick, VA)

Radio Tachira, 4830 at 0213, upbeat vocals. (Maywoods, KY)

Ecos del Torbes, 4980 at 0050 with ID 0053. (Maywoods, KY) 0137. (Fenwick, VA)

VIETNAM—Voice of Vietnam, 9730 at 1109 and 10059 at 1151. (Hatenberg, MD) 15010 at 1330 with ID. (Maywoods, KY)

YUGOSLAVIA—Radio Yugoslavia on 9580 at 0100 and 0203. (Rocker, NY) 17710 at 1943 with news, songs, ID, schedule. (Lamb, NY)

A thunderous thank-you to the following reporters this month:

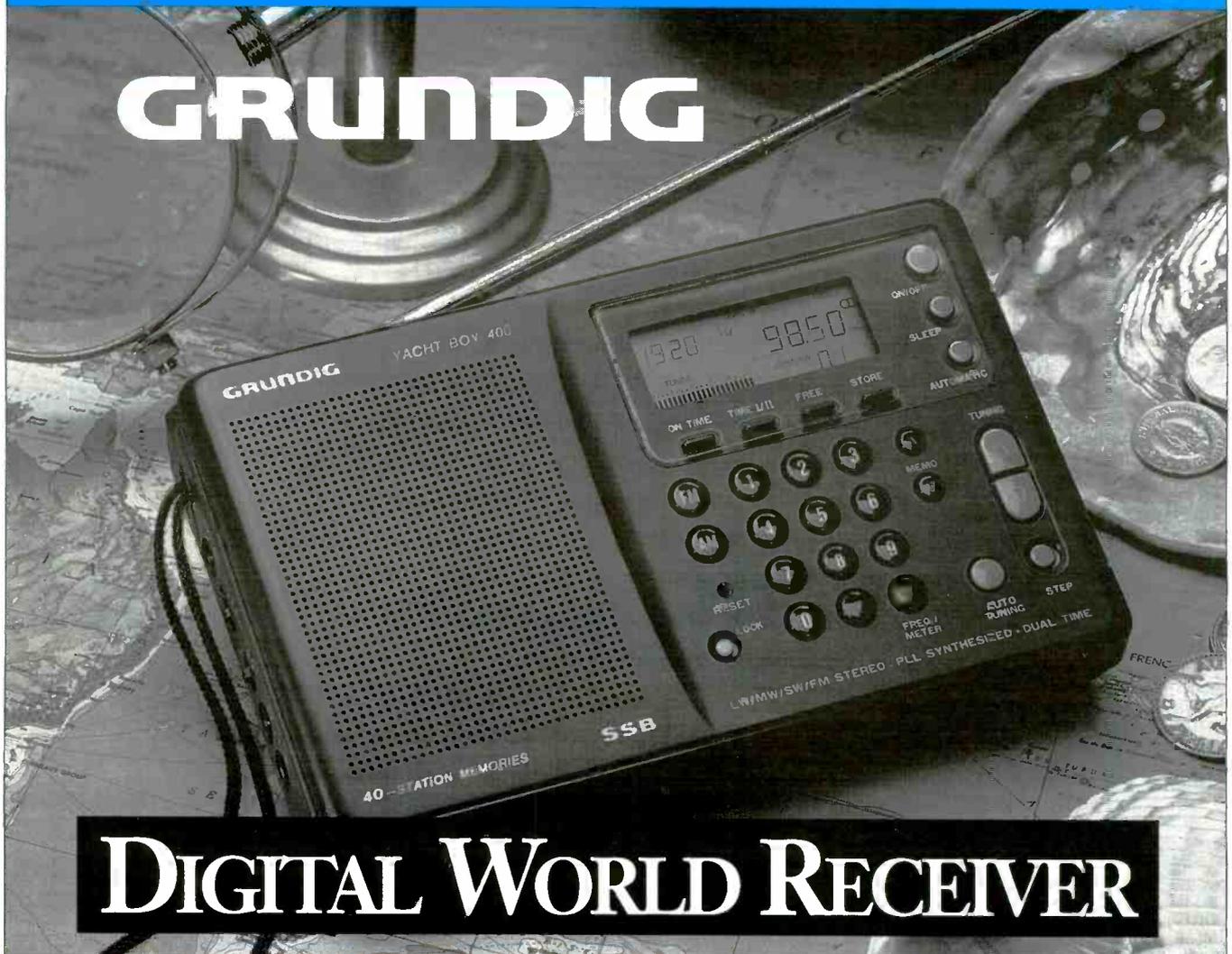
Larry R. Zamora, Albuquerque, NM; Kelly Bailey, Midland, AR; Mickey Waldorf, Taipei, Taiwan; Daryl Rocker, Herkimer, NY; Marina Pappas, Huron, SD; Mark Northrup, Gladstone, MO; The Maywoods DX Team, (DXpeditioning in Kentucky and consisting of Ed Shaw, Loy Lee, Wayne Gregory, John Hafendorfer, Jim McClure, Chuck Everman, Jerry Johnson and special out-of-state guest Jerry Lineback); Bjorn F. Vaage, Granada Hills, CA; M. Hatenberg, Baltimore, MD; Charles Fenwick, Chesapeake, VA; Marie Lamb, Brewerton, NY; Richard Contone, Jamaica, NY; Sheryl Paszkiwicz, Manitowoc, WI and William Moser, New Cumberland, PA. Many thanks to all of you!

Until next month, good listening!



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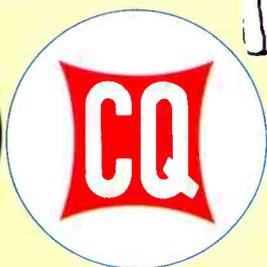
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4



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6



Item # 13



7



8



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10

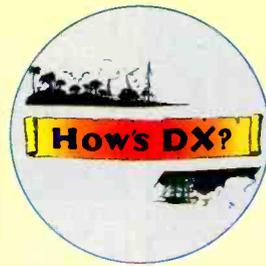


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THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Robert Hall of South Africa reports this month about problems he had with using Enterprise Radio Applications' ERA Synoptic Decoder, a device which translates five-figure meteo codes, used by weather stations worldwide, into plain and readable English.

The decoder is manufactured and sold in Great Britain. It connects to the RS-232 serial ports of computers or some RTTY decoders such as the Universal M-8000.

Hall says he purchased a synoptic decoder several months ago and hooked it up to his M-7000 Communications Terminal. For some unknown reason the M-7000's parallel and serial ports were damaged by the connection.

"Frequent panic faxes flew back and forth to ERA and Universal Radio (in Reynoldsburg, Ohio)," says Hall. "Both answered promptly and helpfully."

ERA soothed Hall's saddened feelings by sending him an MK2 Microreader, costing about \$250.00, for free. It lets him read the translated weather codes. "Now I have the whole system up and working," Hall says joyfully.

He gives kudos to ERA and to Universal Radio, which has "always shown me the type of excellent service one has come to expect from premier U.S. companies that have to compete for business." Universal Radio is a *POP'COMM* advertiser.

Along with his report, Hall attached a printout of some weather code translations he received. Here are two of them:

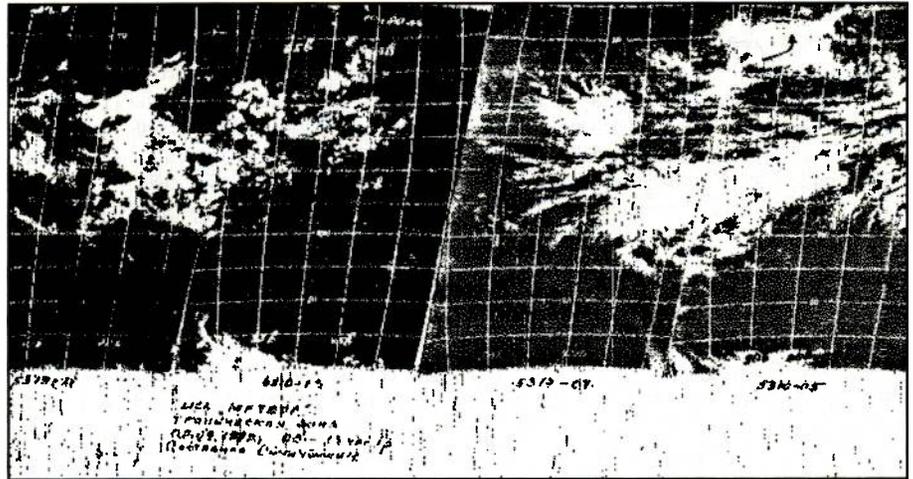
"Belgium station at Florennes (manned). Cloudbase 2500+ or no cloud. Visibility 20 kilometres. Cloud cover 1/8ths. Wind bearing 070 deg at 15 knots. Air temperature +8.8. Dew point +2.4. Pressure 1033.2 millibars. 3 hr change -0.2 millibars. Cloud no stratocumulus, stratus, cumulus or cumulonimbus."

"Luxembourg station at Luxembourg (automated). Cloudbase 600 to 1000 metres. Visibility 22 kilometres. Cloud cover 7/8ths. Wind bearing 060 deg at 08 knots. Air temperature +5.7. Dew point 0.8. Pressure 1033.3 millibars. 3 hr change +0.3 millibars. Cloud stratocumulus."

Those were translations of five-figure weather codes sent by HZN49, Jeddah Meteo, Saudi Arabia, on 17590.0 kHz at 1350 UTC, 850/100.

For information and pricing on the ERA synoptic decoder and MK2 Microreader, write to Enterprise Radio Applications Ltd., 26 Clarendon Court, Winwick Quay, Warrington WA2 8QP, Great Britain.

Fred Osterman, owner of Universal Radio, advises *POP'COMM* readers to determine the compatibility of their radios, decoders, monitors, printers, and other



Russian meteor satellite photo mosaic. Sent by RDD79, Moscow Meteo, Russia, on 10980 kHz at 2340 UTC. (Submitted by Steve Wielgos of India.)

equipment, with one another before making purchases. When purchasing radio gear from Europe for use at your listening post, make sure beforehand that they'll operate with the American electrical system at 60 Hz and 110 volts. Most European electrical devices operate at 50 Hz and 220 volts, so they won't work here. When I bought a Wavecom W-4100 Data Analyser from Switzerland several months ago, I had the manufacture alter the power supply so that the decoder would operate when plugged into an electrical outlet in my home.

While cleaning out my file cabinets recently, purging them of letters and loggings accumulated during many years of writing this column, I came across a letter from Dave Freed, who, in 1986, was in the U.S. Army, stationed at Frankfurt, Germany. He told of some of the pranks that were often pulled on new operators in the radio room:

- When working in a large Teletype tape relay station, it used to be customary to send a new operator to the supply room to get a "tape stretcher." Of course, tape stretchers never existed, but then the new guy didn't know that! (This always applied to Teletype tape, Freed explained, something relay stations were always knee deep in back many years ago. Tape relays don't exist any more, having given way to automatic switching.)

- Then there was the one about the "box of channel numbers." Those are the funny numbers you sometimes see when an RTTY station begins its transmission with ZCZC followed by a sequential number. Usually those sequential numbers were programmed into the TTY sending unit, or in the case of a manual station, were applied on-line by the operator. They never came in a "box!"

- The granddad of all commcenter jokes again was applied to the new guy. Most of the time, in a busy tape relay station, the Teletype tape was light yellow in color. However, as the tape roll wound down, it usually turned pink or purple. Oftentimes, the chad bins in the machines would then contain yellow and pink, or purple, chad punches. Since commcenters handled all manner of messages traffic, it was usually announced to the new operator that these different colored chads had to be separated by color. The yellows were "unclassified" and the pinks, or purples, were "classified." There followed the procedure of dumping all the chad bins in the middle of the floor of the station, then having the new op meticulously attempt to separate them one by one. A humiliating and time-consuming experience; I know, because such happened to me when I was a newbie, 21 years ago.

"Some of these jokes are still carried out," Freed wrote, "but not as much as before, largely because the military has changed. The equipment has changed, the people—and their values—have changed, and the military no longer seems to have a sense of humor."

In October's column, I said that the SIT-FAA callsign, AFA05, had been assigned to Homestead AFB, Fla., and was reassigned to Miles City, Mont., shortly after Homestead was leveled by a hurricane. I was curious and asked why the U.S. Air Force has a SITFAA station in the wilderness of Montana while all the other SIT-FAA stations in the country are on the East Coast, close to the Central and South American SITFAA stations.

After reading that item, Douglas Stingley of Oregon decided to do some detec-

tive work to find out about the Miles City, Mont., site.

Stingley writes, "I telephoned the Miles City, Mont., Chamber of Commerce and queried about any military presence in their city. The closest is a USAF radar station in Forsyth, a town 45 miles WSW of there on U.S. Interstate 94."

"Could this Miles City registry be a cover for its real location at Malmstrom AFB, Great Falls, Mont.?" Stingley asks, adding, "That base has KC-130 refueling tankers and a large transport corps presence."

"For the reason it's so far north," Stingley asks, "could the Canadian Air Force be a silent partner in the SITFAA net?"

Moscow Maritime RTTY: UAT, Moscow R., Russia, can be heard on 6499.0 kHz sending RTTY to ships on 6261.0 kHz, 8707.5 to ships on 8346.5, 13089.0 to ships on 12509.0, 17228.0 to ships on 16691.0, and 22567.5 to ships on 22198.5.

The RTTY Ranch has expanded its radiofax facilities, adding weather map imaging computer hardware and software from POP'COMM advertiser OFS WeatherFAX of Raleigh, N.C., and two Swagursat video demodulators, one for receiving polar orbiting satellites, the other for the GOES transmissions that are found on the Space-net 3 satellite. The first Swagursat unit plugs into the 10.7 MHz output of an ICOM R-7100 and demodulates the signals of NOAA and Russian Meteor satellites to the proper bandwidth for weather satellite imagery. The other unit, called Swagursat GT, is connected to a television satellite receiver. Both Swagursats are available from OFS WeatherFAX, although I bought mine directly from the manufacturer. For information on these products contact OFS at

6404 Lakerest Court, Raleigh, N.C. 27612.

Also being added, as a birthday present from the YL, is a Vanguard WEPIX 2000B synthesized polar orbiting weather satellite receiver, that operates like a scanner radio, but tuned only to the weather satellite frequencies. The YL also included a preamp and that turnstile antenna I talked about getting several columns back. This receiver is from Vanguard Electronic Labs, 196-23 Jamaica Ave., Hollis, N.Y., 11423, another POP'COMM advertiser.

Meanwhile, using just the R-7100 and the Swagursat polar orbiting satellite video demodulator, I obtained a printout, shown in this column, of one of the Russian Meteor satellites that transmits on 137.300 MHz. The picture quality is not the greatest, only because I was using the television aerial on the roof as the antenna. The image was gotten before I had the OFS WeatherFAX equipment, which would've enabled me to enhance the picture and improve its quality.

The photo is a positive image. I later learned that meteor satellite photos should be printed as negative images.

Stax of Fax Dept.: Press photos of Agence France Presse are occasionally being sent in color by AZG641, Buenos Aires, Argentina, on 11480.0 kHz. Last November, I saw a newsfax broadcast in which a photo was separated for color content of magenta, cyan, and yellow. That was the first time I saw AFP's photos in color over shortwave radio. The Associated Press sent color photos over shortwave radio eight years ago, before it moved its operations to C-band TVRO satellite.

Contributors: Some of you are submitting loggings giving frequencies that were monitored on either upper or lower side-

Abbreviations Used In The RTTY Column

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

band. If you are one of them, please indicate "LSB" or "USB" on your logsheets. The listings presented here are all supposed to be "center frequencies." When I get reports that deviate from them it slows down my work because I have to look up the center frequency for each entry. Thanks for making my job just a little bit easier.

RTTY Intercepts

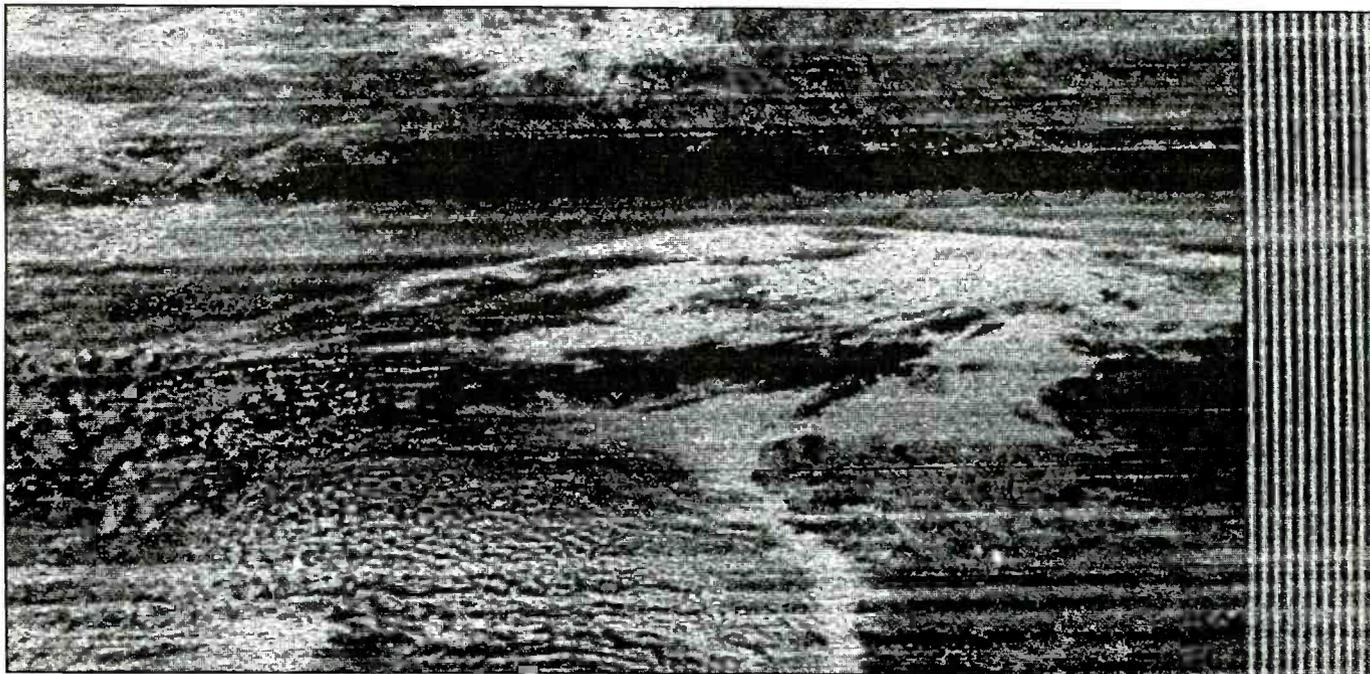
441.0: GCC, Cullercoats R., England, w/msg, FEC at 1512. (Ary Boender, NLD) This must be a new freq. for GCC. The only RTTY freq. I have on file for GCC is 1615.0 kHz. GCC is most likely fully automated and remotely controlled from Portishead here as it is on 1615.0—Ed.

518.0: PBK, Netherlands COGARD, w/NAVTEX msgs at 0203, FEC. (Boender, NLD)

3229.3: AFS, Olfutt AFB AWC, Elkhorn, Nebr., w/wx at 0242, 850/75. (Bjorn Vaage, WA6AKQ, Calif.)

4002.0 & 4045.0: YRR2, Bucharest Meteo, Romania, w/coded wx at 1808, 50 baud. (Boender, NLD)

4174.5: IBXT, the Italian cargo ship Agip Piemonte, w/TLX tfc, ARQ at 0500. (Jim Navary, AA4JN, Va.)



Russian meteor satellite image captured on 137.300 MHz as the satellite orbited over the RTTY Editor's house. A television aerial was the antenna used to pick up the signal.



Goal! (Newsfax from Telam, Buenos Aires, Argentina. Monitored by Robert Margolis.)

10224.7: KNY29, Egyptian Emb., Washington, D.C., heard at 0040 in ARQ. (Peter Card, R.I., via SPEEDX)

10348.0: "6XM8" w/RVRY & foxes, 200/100 at 1935. (Harold Manthey, N.Y.) Not a Madagascar c/s, Harold. No one's come forward yet to say who it really belongs to—Ed.

10535.0: CFH, CANFORCEMET, Halifax, N.S., Canada, w/coded wx, 850/75 at 2257. (Liangas, Greece)

10663.5: AFS, Offutt AFB AWC, Elkhorn, Nebr., w/coded wx, 850/75 at 0336. (Vaage, Calif.)

11068.3: LOR, Puerto Belgrano Navrad, Argentina, w/5L grps, 385/100 at 2158. (Ed.)

11080.0: SANA, Damascus, Syria, w/nx in FF at 0925, 50 baud. (Liangas, Greece)

11439.0: "MSO Philadelphia" w/cont. ref. to Amer. persons, then msg to Kinshasa ambassador w/L.A. nx, ARQ at ??? (Liangas, Greece)

11440.2: EIP, Shannon Air, Ireland, w/RVRY, 850/50 at 1340. (Manthey, N.Y.)

11451.0: IMB3, Rome Meteo, Italy, w/RVRY + CQ, 50 baud at ??? (Liangas, Greece)

11638.0: DDH8, Pinneberg Meteo, Germany, w/coded wx, ?? baud at 2337. (Liangas, Greece)

12148.0: SOM230, PAP, Warsaw, Poland, w/nx in Polish, FEC at 1846. (Navary, Va.)

12212.5: YZ07, Tanjug, Belgrade, Yugoslavia, w/nx in EE, 425/50 at 1536. (Manthey, N.Y.)

12223.5: Un-ID idling at 1849, foll by "DE RPFK" in ARQ. (Navary, Va.) It's the Portuguese Air Force—Ed.

12477.5: C6BB, the Bahamian cargo ship, Trinidad & Tobago; EQHY, the Iranian cargo ship Iran Esteghlal; & C6BC, the Bahamian cargo ship Harold La Borde, heard at 1949, 2108, & 2109 respectively, all ARQ. (Ed.)

12479.0: MOSH, the British ship Zim Jamaica, class unknown, w/TLX t/c at 1913. ARQ. YTKP, the Yugoslav cargo ship Peljesac, w/TLX at 2148, ARQ. (Ed.)

12482.0: LAPJ3, the Norwegian psgr ship Nordic Prince, w/ARQ msg to LAMU4, Monarch of the Seas, at 2124. (Ed.)

12491.5: PPML, the Brazilian bulk carrier Frota-chile, w/TLX to Frotocan, ARQ at 1903. (Ed.)

12495.5: 5LHW, the Liberian bulk carrier Dragonland, w/pos. rpt & ETA msg via CCS, CANCOGARD, Halifax, N.S., ARQ at 1852. Was carrying genl cargo & motor vehicles. Asked for reply by satellite. (Ed.)

12496.0: SKUN, the Swedish cargo ship Atlantic Compass, w/ARQ t/c at 1854. (Ed.)

12496.5: VRFF, Product Endeavor, w/TLX to WLO, ARQ at 1622. (Baker, Ohio) Hong Kong bulk carrier—Ed.

12503.5: C6IK5, ship Mountain Blossom, w/TLX to WLO in ARQ at 1754. (Baker, Ohio) See the logging at 8392.0—Ed.

12561.0: EEMD, the Russian cargo ship Proliv Vilkitskovo, w/RVRY to UDK2, Murmansk, 170/50 at 1558. (Ed.)

12630.0: KMI, Dixon R., Calif., w/short list of radiotelephone t/c at 1620. FEC. (Ed.)

12631.0: WOM, Ft. Lauderdale R., Fla., w/info on services, FEC at 1622. (Ed.)

12632.0: WOO, Ocean Gate R., N.J., w/t/c list, foll by NWS wxcast issued by NMC/MET Ops Div., Washington, D.C. Was FEC at 1623. (Ed.)

12637.5: UMW, Murmansk R., Russia, w/msgs at 1626, ARQ. (Ed.)

12639.5: OST50, Oostende R., Belgium, wkg un-ID'd ship, ARQ at 1637. (Ed.)

12661.4: CFH, CANFORCEMET, Halifax, N.S., w/CWHF wx data, 850/75 at 0130. (Hetherington, Fla.)

12906.0: MTO, RN, Rosyth, Scotland, w/available channels list, 75 baud at 2115. (Liangas, Greece)

12958.3: CCS, Santiago Navrad, Chile, w/5L grps at 2300, 850/100. (Hetherington, Fla.)

13059.0: EBA, Madrid Navrad, Spain, w/CQ's for navareas at 1655, foll by navareas in SS at 1700, 170/75. (Ed.)

13510.0: CFH, CANFORCEMET, Halifax, N.S., w/coded wx at 2152, 850/75. (Liangas, Greece)

13511.0: MKD, RAF, Akrotiri, Cyprus, w/RVY's, foxes & 10 count, 170/50 at ??? (Liangas, Greece)

13563.4: 3MA22, CNA, Taipei, Taiwan, w/nx in EE, 850/50 at 0825. (Hall, RSA)

4462.5: WLO, Mobile R., Ala., w/wx + t/c lists, FEC at 0439. (Vaage, Calif.)

4602: Irish Defense Forces station "89" clg "13" in ARQ at 1758. No joy. Then calls "0A" in Dublin to make contact with "13" because of poor QSO. (Boender, NLD)

5317.0: DFZG, MFA, Belgrade, Yugoslavia, w/nx in EE, 75 baud at 1605. (Boender, NLD)

5885.0: Un-ID w/5L grps at 1922, 75 baud. (Zacharias Liangas, Greece)

6262.0: "YP691" w/Satnav fixes, Packet at 2120. (Navary, Va.)

6273.0: WKSD, ship New York Sun, w/TLX in ARQ via WNU at 1445. (Richard Baker, Ohio) American tanker owned by New York Shipping Co. Home port is Wilmington, Del.—Ed.

6274.5: LAUS4, ship Wilrider, w/TLX via WLO in ARQ at 0225. (Baker, Ohio) Norwegian bulk carrier—Ed. KIMH, S/S Montrachet, w/TLX via WLO at 0245, ARQ. Montrachet is a steam tanker owned by Apex Oil. (Baker, Ohio)

6314.0: NMF, Boston COGARD, w/wx in FEC at 0155. (Baker, Ohio)

6317.5: VCS, CANCOGARD, Halifax, N.S., w/ice bulletin, ARQ at 1305. (Baker, Ohio)

6328.0: WOO, Ocean Gate R., N.J., w/wx & radiotelex t/c lists, FEC at 0217. (Vaage, Calif.)

6384.3: CKN, CANFORCE, Vancouver, B.C., w/NAWS marker, 850/75 at 1607. (Ed.)

6672.0: Un-ID in AA, 1810-1818, 50 baud. (Liangas, Greece)

6835.2: GFL22, Bracknell Meteo, England, w/wx, 425/50 at 0200. (Robert Hall, RSA)

6852.7: Un-ID idling, ARQ-M2/96 at 0205. (Hall, RSA) Probably VLV, Mawson Base, Antarctica—Ed.

6920.0: RGC70, Kiev Meteo, Ukraine, w/coded wx, 50 baud at 1837. (Liangas, Greece)

7624.0: HZN47, Jeddah Meteo, Saudi Arabia, w/coded wx at 2210, 850/100. (Liangas, Greece)

7928.5: Un-ID w/encryption, 250/81 at 0533. (P. Loo, Quebec, Prov., Canada)

7945.7: Un-ID idling, 2154 to past 2304, ARQ-E/96. (Ed.)

7959.0: 9BC23, IRNA, Teheran, Iran, w/nx re Greek election & Islamic minorities, 50 baud at 2052. (Alex Bottonelli, Italy, via SPEEDX)

7998.0: FDY, FAF, Orleans, France, w/test tape at 0925, 50 baud. (Bottonelli, Italy, via SPEEDX)

8392.0: C6IK5, the Bahamian tanker Mountain Blossom, w/pos. rpt at 1811, ARQ; & KPSB, the American cargo ship Coronado, w/ETA Freeport msg at 1827, ARQ. Home port is Wilmington, Del. (Ed.)

8422.5: KPH, San Francisco R., Calif., w/t/c lists, FEC at 2101. (Vaage, Calif.)

8428.5: VAI, CANCOGARD, Vancouver, B.C., w/wx in FEC at 0250. (Jason Berri, Calif., via SPEEDX)

8428.6: ZSC62, Capetown R., RSA, w/"urgency" msg re survivors from sunken ship Nagos, FEC at 1220. (Hall, RSA)

8463.0: CKN, CANFORCE, Vancouver, B.C., w/NAWS marker + freq. list, 850/75 at 0110. (Hetherington, Fla.)

8470.8: ZRH, Capetown Navrad, RSA, w/hydro-sans, navareas, & wx, 170/75 at 1216. (Hall, RSA)

8514.0: WLO, Mobile R., Ala., w/t/c list at 0340, FEC. (Hall, RSA)

9130.0: Un-ID w/encryption, 500/40.5 at 1317. (Ed.)

9190.5: RDZ75, Moscow Meteo, Russia, w/coded wx at 1310, 400/50. (Ed.)

9214.0: "V5G," MFA, Bucharest, Romania, w/t/c at 2208, ROU-FEC/164.5. (Ed.)

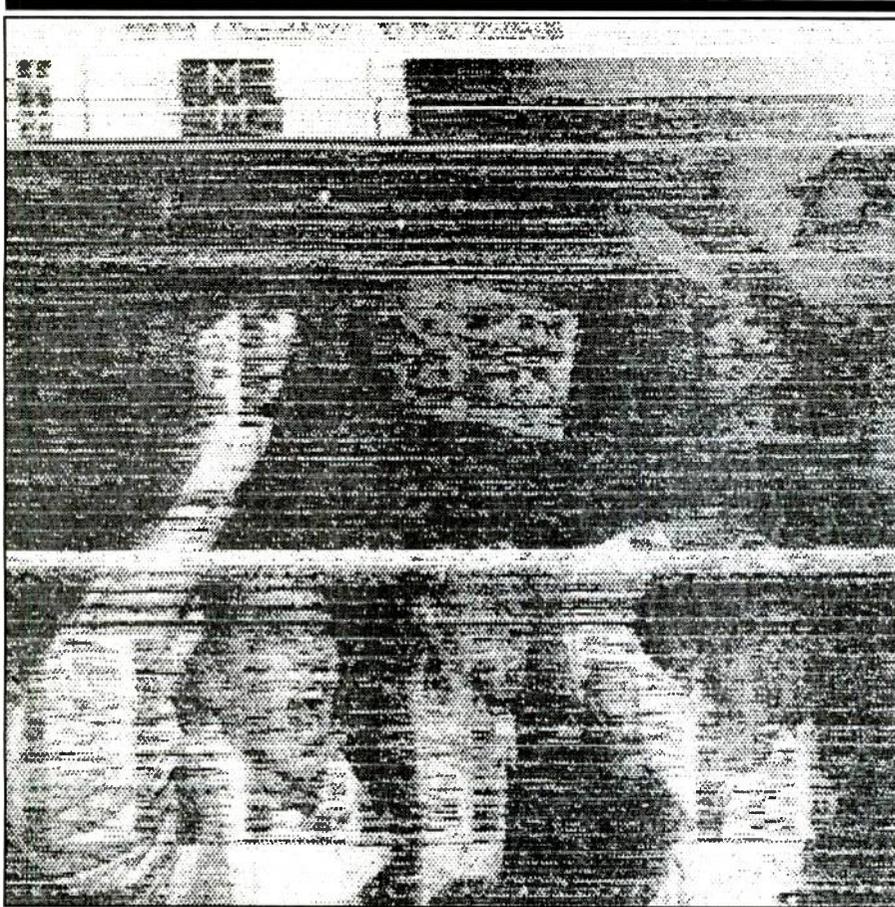
9417.0: BZP59, Xinhua, Beijing, China, w/nx in EE, 425/75 at 1927. Was // BZR69 on 9495.0 kHz. (Liangas, Greece)

9264.0: OMZ, MFA, Prague, Czech Republic, w/text in Czech, 100 baud at 0930. (Liangas, Greece)

9430.0: ZAT, ATA, Tirana, Albania, w/RVRY, 50 baud at 1748. (Boender, NLD)

9446.7: Un-ID w/AFP nx in FF, ARQ-E/72 VFT, HTS circuit, at 0525. (Ed.)

10162.5: YIL71, INA, Baghdad, Iraq, w/nx in AA at 1330, 380/50. (Ed.)



Magenta color separation news photo of Agence France Press as sent by AZG641, Buenos Aires, Argentina. Monitored on 11480.0 kHz at 2220 UTC by the RTTY Editor.

13580.1: HMF36, KCNA, Jungsan, North Korea, w/nx in EE, 269/50 at 0828. (Hall, RSA)
13803.5: RPTTA, Portuguese AF, Ponta Delgada, Azores, w/5L grps at 1325, ARQ. (Manthey, N.Y.)
13846.7: RFVI, FN, Le Port, Reunion, w/"controle de voie" to RFQP, Djibouti, ARQ-E3/100 at 1941. (Ed.)
13953.0: "P6Z," MFA, Paris, w/5L grps to "U3H," French Emb., Moscow, FEC-A/192 at 1825. (Hetherington, Fla.)
14352.7: SAM92, Swedish Emb., Managua, Nicaragua, w/5L grps at 1829, SWED-ARQ. On another day, Swedish Emb., Caracas, Venezuela, w/5L grps & Telex at 1813. & Swedish Emb., Guatemala City, Guatemala, w/Telex t/c at 1825, both SWED-ARQ. (Ed.)
14358.0: Un-ID wx sta. w/coded wx. 50 baud at 2235. (Liangas, Greece) Probably was GFL24, Bracknell, which xmits usually on 14356.0—Ed.
14367.0: SNN299, MFA, Warsaw, Poland, w/visa applicants list at 1720, POL-ARQ. (Ed.)
14387.0: MFA, Sofia, Bulgaria, w/text in Bulgarian, 500/75 at 1500. (Ed.)
14462.2: Possibly TNL, ASECNA, Brazzaville, Congo, w/EGRR wx data at 2129, 378/100. (Ed.)
14481.7: RFTJ, FN, Dakar, Senegal, w/AFP nx in FF + 5L grps, ARQ-E3/48 at 1506. (Ed.)
14605.0: Un-ID w/"Ministerio da Marina" notices in SS (?), at 0207. 850/75. (Vaage, Calif.) Might've been PWN, Natal Navrad, Brazil, w/notices in PP—Ed. "VKX" w/5F grps at 1500. 75 baud. Header read, "11199 00166 00000 04236 00029." (Boender, NLD)
14611.8: PWX33, Brasilia Navrad, Brazil, w/Export Gold '93 t/c to LOL, 850/75 at 1638. (Ed.)
14633.3: RFLI, FN, Ft. de France, Martinique, w/relay of nx & msgs to RFLIG, Cayenne, at 2045, ARQ-E3/96. (Hetherington, Fla.)
14674.0: DFZG, MFA, Belgrade, Yugoslavia, w/nx in EE, 425/75 at 1515. (Hetherington, Fla.)
14760.2: CNM61, MAP, Tangier, Morocco, w/nx in FF at 1040, 444/50. (Hall, RSA)

14683.0: Un-ID Romanian diplo w/encryption, ROU-FEC/164.5 at 1535. (Ed.)
14806.3: CLP1, MFA, Havana, Cuba, xmitting at 500/50 & then at 500/75 to Nigeria & Nicaragua, at 2100. (Hetherington, Fla.)
14813.2: CLP1, MFA, Havana, Cuba, w/circulars & msgs to embassy in Nicaragua, 444/50 at 1559. (Ed.)
14815.2: CLP1 w/prensaminrex at 1618, 450/75. (Ed.)
14880.0: JMG4, Tokyo Meteo, Japan, w/wx at 0226, 850/50. (Vaage, Calif.)
14930.2: USN MARS sta. NNNONAL w/ARQ t/c at 2007. (Vaage, Calif.) NNNONAL is the USS Abraham Lincoln (CVN-72)—Ed.
14935.2: NNNONIK, USN MARS, Mayport, Fla., w/MARSgrams, ARQ at 1825. (Vaage, Calif.)
15655.0: CNM65, MAP, Rabat, Morocco, w/nx in FF at 1550, 357/50. (Ed.)
15801.5: "PAPR," MFA, Paris, France, w/circular in FF at 1655, ARQ6-90/200. (Ed.)
15821.8: Un-ID w/encryption, SWED-ARQ at 1542. (Ed.)
15827.7: XBRD, Marina Tres, Guaymas, Sonora, Mexico, w/Telexes to XBRA, ARQ at 1713 & 1949. (Ed.)
15845.0: SUA289, MENA, Cairo, Egypt, w/nx in AA, 325/75 at 1454. (Ed.)
15919.8: CFH, CANFORCE, Halifax, N.S., w/NAWS marker, 850/75 at 1823. (Ed.)
16011.7: MFA, Sofia, Bulgaria, w/5F grps & circular in Bulgarian at 1404, 500/75. (Ed.)
16015.7: DMK, MFA, Bonn, Germany, w/crypt to & op msgs to Dakar & Conakry at 1420, ARQ-E/96
16080.4-16083.0: Un-ID USMIL in VFT w/ch. 1 on 16083.0 w/AP/UIP nx at 50 baud. & ch. 2 on 16082.6 w/coded wx from KAWN & KGWC at 75 baud. Encryption on some other ch's. (Ed.)
16081.7: Probably KNY29, Egyptian Emb., Washington, D.C., w/5L grps & msg in AA at 1704, ARQ. (Ed.)
16171.2: Egyptian Emb., Rome, Italy, w/5L grps

& texts in AA to Cairo, ARQ at 1433. (Ed.)
16175.2: NNNOCRJ, USN MARS aboard the USS Talbot (FFG-4), w/t/c in ARQ at 2014. (Vaage, Calif.)
16291.0: RFFXC, FF, Versailles, France, w/ZNR ZIC msg to RFFXL, Beirut, Lebanon, ARQ-E/72 on the XXL circuit at 1610. (Ed.)
16318.8: MFA, Cairo, Egypt, w/t/c in AA, ARQ at 1611. (Hall, RSA)
16626.7: Egyptian Emb., Luanda, Angola, w/Angolan war nx in EE to MFA, Cairo, ARQ at 1602. (Ed.)
16651.7: Un-ID w/what appeared to be nx in Greek, ARQ at 2113. (Ed.)
16687.0: C6HP4, the Bahamian ship M.C. Pearl, class unknown, w/ETA Birkenhead msg in ARQ at 1740. VSL was monitoring St. Lys Radio. (Ed.)
16690.0: C6CS9, the Bahamian cargo ship Margit Gorthon, w/ETA msg to Gorthon Helsingborg, ARQ at 1648. (Ed.)
16713.5: UAAA, the Russian vessel Kapitan Bether, w/t/c to St. Petersburg R., Russia, ARQ at 0007. ELBC8, the Liberian tanker Nordic heard at 1613, ARQ; & XCSH, the Mexican vessel Tabasco, w/TLX's in ARQ at 1617. (Ed.)
16717.0: S6CH, the Singaporean reefer Avila Star, w/TLX for relay by Portishead Radio, ARQ at 1604. (Ed.)
16787.0: Un-ID, Manila, Philippines, w/nx in EE at 1800, FEC. (Loo, Canada)
16830.0: HEC27, Bern R., Switzerland, w/kg 9HAM3, ship Xanadu, ARQ at 1410. (Navary, Va.)
17066.0: UAT, Moscow R., Russia, w/t/c at 1300, 170/50. (Hetherington, Fla.)
17448.0: KNY32, Bulgarian Emb., Washington, D.C., w/nx in Bulgarian, 485/75 at 1429. (Hetherington, Fla.)
17464.5: "V5G," MFA, Bucharest, Romania, w/encryption, ROU-FEC/164.5 at 1440. (Loo, Canada)
17522.0: 5KM, Bogota Navrad, Colombia, w/IANTN t/c to PWX, Brazil, 1000/75 at 1828. (Ed.)
18022.0: DGS70, PIAB, Elmshorn, Germany, w/nx in GG at 1505, FEC-A/96. (Ed.)
18026.8: Un-ID w/5L grps, FEC-A/192 at 1540. (Ed.)
18242.0: Possibly AJE, USAF AWN, Croughton AB, England, w/EGRR aviation wx data, 362/75 at 1651. (Ed.)
18299.9: OMZ, MFA, Prague, Czech Republic, w/t/c to Tunis at 1237, & Tel Aviv at 1237, 400/100. (Hetherington, Fla.)
18320.7: RFTJ, FN, Dakar, Senegal, w/"journal des sports," ARQ-E3/192 at 1800. (Ed.)
18547.6: "V5G," MFA, Bucharest, Romania, w/encryption at 1710, ROU-FEC/164.5. (Loo, Canada)
18640.0: CLP1, MFA, Havana, Cuba, w/prensaminrex, 485/50 at 1500. (Ed.)
 18872.3: BZR68, Xinhua, Yuryumqi, China, w/nx in EE at 1150, 496/75. (Hall, RSA)
19361.3: AFS, Offutt AFB AWC, Elkhorn, Nebr., w/wx at 1740, 831/75. (Ed.)
19463.0: SUNA, Khartoum, Sudan, w/nx in EE, 170/50 at 1747. (Ed.)
19712.0: URD, St. Petersburg R., Russia, w/nx in RR, 170/50 at 1415. (Hetherington, Fla.)
19732.0: UFO, Kholmok R., Russia, w/msgs at ????. 170/50. (Hetherington, Fla.)
20020.0: German Emb., Cairo, Egypt, w/msgs & coded grps to Bonn, ARQ-E/96 at 1350. (Hetherington, Fla.)
20112.5: FJY2, Port-aux-Francais, Kerguelen I., w/t/c in FF for TAAF, Paris, ARQ-E3/96 at 1259. (Hall, RSA)
20246.5: Un-ID w/encryption, ARQ-E/288 at 1430. (Ed.)
20732.2: "GMN" w/RYRY at 1646, foll by QRU SK SK at 1648, 425/75. (Manthey, N.Y.) Not a British c/s, Harold. It's a figment of an op's imagination at a mysterious sta. somewhere—Ed.
23085.0: CLP1, MFA, Havana, Cuba, w/prensaminrex, 425/50 at 1455. (Manthey, N.Y.)
23322.0: "DJBX," French Emb., Djibouti, w/5L grps at 1443, ARQ6-90/200. (Ed.)
23369.8: HZN50, Jeddah Meteo, Saudi Arabia, w/coded wx, 850/100 at 1438. (Ed.)
23921.7: RFFA, Mindefence, Paris, France, w/t/c, ARQ-E3/192 at 1603. (Ed.)
23991.5: Un-ID w/RYS & ID buried under QRM, 50 baud at 1443. Went QRT a min. later. (Ed.)

Beaming In (from page 5)

quencies between 1 GHz and 10 GHz, with 30 Hz resolution.

The SETI program was scheduled as a 10-year project. However, with the cost of SETI running about \$12-million per year, the government austerity watchers have pulled the plug on the project.

Some critics have poked fun at the SETI project, saying that it smacks of science fiction, fantasy, flying saucers, E.T., and little green men. They feel that tax money should be more wisely be allocated to less frivolous and more pressing matters, such as public health, education, roads, the elderly, the environment, and many other things.

One critic, Tom Devine, who represents a group called the Government Accountability Project, was quoted in the *Star* weekly tabloid referring to SETI as an "outer space fishing expedition." He said that it was difficult to defend such a project when people are going hungry. In addition, he had doubts that "these types of research projects" will come up with any scientific discoveries, and that often the only ones who derive benefit from them are "our rich and powerful corporations."

The *Star* also offered the opinions of Congressman John Duncan (R-Tenn.), who thought it was "ridiculous" to spend for projects like this in light of our national debt, "taking money from people who are barely making it..."

It is my understanding that NASA is open to obtaining private funding in order to continue SETI. SETI is certainly a worthwhile project. It would be a shame to see it shut down because of the lack of funds, plus the public's inability to either take it seriously or see any reasons for SETI. Let's hope that some funding arrives to keep SETI going.

I don't have any pet theories or agendas regarding life on other planets, or UFO's. I'm inquisitive and have an open mind on these matters. Using radio and optical astronomy, we can observe only a portion of the universe. In general, just based upon what can be observed from Earth, the laws of mathematical probability state there must be at least hundreds of thousands of other planets supporting intelligent life.

Would other civilizations attempt to communicate with us? What technologies could we learn from them? Might they someday arrive here? SETI receiving even a single definite signal deliberately sent out by any trans-cosmic civilization would have a dynamic impact upon humanity. It would

cause ripples in our views of cosmology, theology, and ourselves. Nations, religions, races, and individuals, would have to consider if, after all, as human beings, there may be more things that bind us together than differences that separate us. Maybe that makes some people uneasy.

Tuning the amateur and international shortwave bands, hearing the voices of the world community, provides unique benefits. After a while, you learn how small the world really is, and that someone half-way around the world has stopped being a stranger. Unlike the person whose only link with the world is their TV set and car radio, you realize you're a part of the world—not just a resident of a particular city, town, state, or province.

As we edge towards the 21st Century, it's time for the public to stop getting the giggles or complaining about spending money for projects consisting completely of pure research, that is, those along the lines of SETI and the Super Collider. The little blob of mud we all share can no longer be considered an isolated speck in the Milky Way. We need to ascertain Earth's place in the cosmic community. These projects are needed to seek out information that will help us understand and better use the laws of the universe, and to aid, establish, extend, and portend the future of our civilization. ■

China Pops Out (from page 14)

1992. During the same year there were reported to be some 12,000 foreign investment enterprises and 600 foreign government agencies of various ilk, not to mention other English-speaking foreigners working in the province.

GREC attempts to serve this audience with news, tourist information, investment advice, financial news, cultural and sports news, Chinese-English lessons, and entertainment. It does not carry any advertising. It is even available in the guest rooms of the city's major hotels. The station uses eight producers and announcers, most of whom were picked for their English speaking abilities, as opposed to their broadcast experience. Once hired they were given a three month course in broadcasting, including news gathering, writing, announcing and other aspects of the art.

Some of the training was supplied by people from Radio Beijing-China Radio.

The station is on the air about 12 hours a day, in three segments—the entire morning period, plus late afternoon to early evening and again in the late evening.

Hong Kong's communications authorities believe that a second transmitter broadcasts from the city of Jiangman but the powers used at either site are unknown. Although the station has now been on the air for some time, GREC doesn't seem to have made any move to expand its coverage area. Maybe they haven't even played "Achy, Breaky Heart" yet! ■

Emergency (from page 50)



A waterproof VHF handheld which also floats (Humminbird DC-5).

Humminbird (205-687-6613) will soon announce a 1-meter submersible VHF handheld featuring complete synthesis for all-channel operation.

So the best advice is to check out the water-resistant capabilities of your VHF handheld equipment long before you head

out on a rescue call near lakes, rivers, and the ocean. If you doubt that your unit can survive a splash of water or a soaking from a fire hose, you best get that inexpensive vinyl pouch to completely seal up your set. This way, when you and your equipment get wet, both will survive. ■

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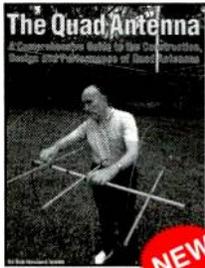
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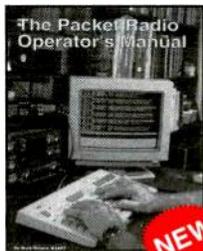
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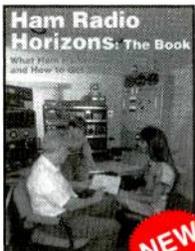
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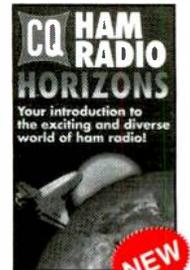


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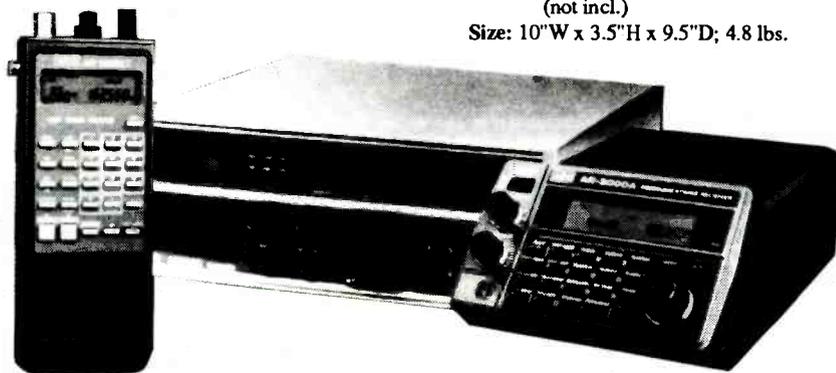


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TENTATIVE SPECS

Frequency: 30-kHz-30MHz plus optional internal VHF converter 108-174MHz

Memories: 100 programmable w/ scan

Modes: AM, LSB, USB, CW, FAX, FMN

Sensitivity:	30-540kHz	540-1800kHz	1.8-30MHz
CW	<1μV*	<5μV*	<5μV*
SSB	<1μV	<5μV	<5μV
AM	<3μV	<15μV	1.5μV
FM	N/A	N/A	.5μV

*Sensitivity improves with optional 500Hz CW Filter.

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

Tuning Accuracy: 10Hz

Stability: <±5PPM(-5°F + 130°F)

Image & Spurious rejection: >70dB

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

Dynamic Range: >100dB @ 25kHz spacing

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

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

(3) Hi-Z for whip

IF Output: 455kHz -20dBm 8 Pin Din

Computer: RS-232C

Power: 12VDC -800mA (max. audio); 8AA Nicad or Alk (not incl.)

Size: 10"W x 3.5"H x 9.5"D; 4.8 lbs.

AR3000A Widest coverage on the market today with a high level of performance and versatility from long wave thru shortwave, VHF and onward to the upper limits of UHF and SHF! Uses 15 band pass filters before the GaAsFET RF amplifiers unlike other receivers which may rely largely on broad band amplifiers. High sensitivity thru the entire coverage with outstanding dynamic range and freedom from intermodulation effects.

Frequency: 100kHz-2036MHz Mode: USB, LSB, CW, AM, FMN, FMW Circuitry: Triple(USB/LSB/CW/AM/FMN) and Quadruple(FMW) conversion superheterodyne
Memories: 400 (4 banks/100 channels)

Scan Rate: 50 ch/sec Search Rate: 50 steps/sec

Sensitivity(μV): 2.5-1800MHz CW, SSB .25/AM1.0/FMN .35/FMW 3.0

Selectivity: SSB, CW 2.4kHz/ AM, FMN 12kHz FMW 180kHz

Power: 13.8VDC, <.5A max audio, AC adapt. incl.

Size: 5.5"W x 3.5"H x 7.9"D; 2.6 lbs.

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Features include:

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- Cig light plug cord
- Belt Clip • Case
- Flex antenna and earplug
- 1 Year Factory Warranty

Frequency: .5-1300MHz

Mode: AM, FMN, FMW

Memories: 1000; 10 independant banks

Tuning Steps: 5kHz-995kHz

Attenuator: 10dB (helps prevent overload)

Controls: Key pad and rotary tuning

Sensitivity: FMN <.5μV / FMW <1.0μV / AM <1μV

Power: 12VDC, AC adapt. incl., 4 NiCad incl.

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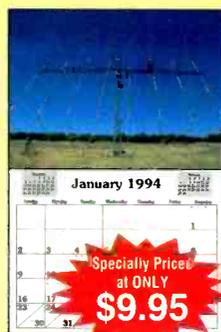


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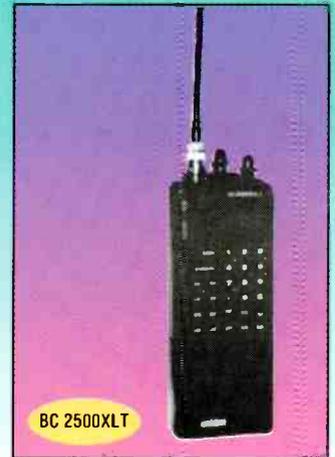


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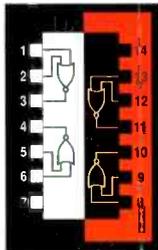
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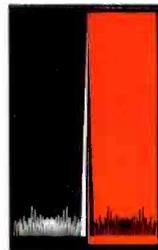
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